Fed by Books:
The Circulation of Knowledge on Famine Plants in Ming-Qing China and Tokugawa Japan

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Abstract

This dissertation examines the dynamics of knowledge production and transcultural interactions in Ming-Qing China and Tokugawa Japan through the lens of famine plant manuals, i.e. writings that center on edible plants for use in times of food shortages. I argue that this genre was created out of the specific socioeconomic settings in pre-modern East Asia where food shortage proved to be a recurring theme, by a transnational epistemic community that shared interests in the natural world and concern for governmental affairs. My inquiry contributes to a deeper understanding of knowledge transformation and cultural interconnections: in the historical world of the Sinosphere where the learned elites shared a "high culture" written language and a rich literary tradition, most visibly embodied by the Sinitic script, concepts were expressed in words that did not cross borders via translation, but via their recontextualization and co-articulation in new socio-cultural and linguistic realities.

Drawing evidence from administrative manuals, medical texts, local gazetteers and private notes, my findings suggest four main points concerning the shuffling classifications and hierarchies of famine food knowledge. First, despite that state intervention in famine relief was framed as Confucian signs of benevolent rule, famine plant manuals were created as responses to the limitations of the governments' capacities to implement relief campaigns. Second, although derived from the *bencao* (materia medica) genre, famine plant manuals were largely devoid of medical interest and thus provided an alternative approach to natural history. The understanding of famine foods was shaped by the accessible natural resources and by epistemic interconnections within pre-modern East Asia, and such understanding also transformed the planning and utilization of the natural world, generating new knowledge about it. Third, although the increasing availability of textual knowledge about famine plants benefitted from the flourishing commercial publishing industry, the production and circulation of famine plant manuals featured a not-for-profit logic, underlined as a benevolent and charitable cause. Fourth, famine plant manuals negotiated between diverse knowledge fields, with statecraft and bencao in particular. On the one hand, they were tailored to governmental purposes and became absorbed in an all-encompassing famine relief discourses. On the other hand, they broadened the range of objects of investigation in the study of the natural world and suggested a de-medicalized approach.

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1 Introduction

“植物之生于天地間，莫不各有所用，苟不見諸載籍，雖老農老圃亦不能盡識，而可亨可茹者，皆蹂躪于牛羊鹿豕而已……本草書中所載，多伐病之物，而于可茹以充腹者，則未之及也……可以療飢者，恐不止黃稗而已也。苟能知悉而載諸方冊，俾不得已而求食者……因得以裨五穀之缺，則豈不爲救荒之一助哉”[1]

“All the plants that grow between heaven and earth have their own uses. If they are not recorded in books, even experienced farmers and gardeners can not identify all of them, and those that can be picked and cooked are only left to be trampled on by oxen, sheep, deer, and pigs…What is recorded in *bencao* literature are mostly objects to cure illnesses, but as to things that can be eaten to satisfy hunger, they are not mentioned...things that can ease hunger are likely to be more than barnyard grass and such. If they can be known in detail and recorded in books, those who have no choice but to search for food are enabled to…make up for the shortage of the five grains—is this not a help for famine relief?”

Writing at the beginning of the fifteenth century, Bian Tong 卞同 (fl. 1406), the chief courtier to the Prince of Zhou in Kaifeng, Henan, sought to situate the prince’s pionieering compilation *Jiuhuang bencao* 救荒本草 (Materia Medica for Famine Relief) within the established *bencao* tradition, while expanding its focus from curing ailments to identifying plants that could serve as edible sources during times of famine. Starting from the premise that all plants had potential uses that were worth documenting, Bian qualified all as objects of study and expanded the scope of knowledge. By subordinating the embodied expertise of farmers to textual knowledge, he established the authority of the manual compilers over claims about the identification and properties of edible plants. In his vision, previously marginalized plants could come to play a vital secondary dietary role as supplements and substitutes when the supply for staple crops failed, providing critical nourishment in times of hardship.

Bian could scarcely have imagined that this work would inspire a new genre of specialized texts focused specifically on cataloging plant-based famine foods in both China and Japan over subsequent centuries (Table 1-1). This genre subtly challenged established boundaries between statecraft and nature studies.

[1] Bian Tong 卞同, “Preface,” in *Jiuhuang bencao yizhu* 救荒本草譯注 (Shanghai: Shanghai guji chubanshe, 2015).

Table 1-1 List of Famine Plant Manuals until the Early Nineteenth Century

Date	Publisher/Publishing Place	Title	Compiler	Illustration
1406	Kaifeng, Henan	*Jiuhuang bencao*	Zhu Su	Yes
1525	Taiyuan, Shanxi	Reprint of *Jiuhuang bencao*		
1527	Nanjing	*Yecai pu*	Wang Pan	Yes
1534	Baoding (?): Zhou Jin	Reprint of *Jiuhuang bencao*		
1551	Zhang Shouzhong	Reprint of *Yecai pu*		
1555	Wei county, Hebei: Lu Jian	Reprint of *Jiuhuang bencao* (1525) and *Yecai pu*		
1562	Anju county, Chongqing	Abridged reprint of *Jiuhuang bencao*		
1566	Xingguo subprefecture, Hubei: Zhu Kun	Abridged reprint of *Jiuhuang bencao* (1562)		
1586	Shaanxi: Li Wen	Reprint of *Jiuhuang bencao*		
1586	Hangzhou (?)	Reprint of *Yecai pu*		
1593	Hangzhou: Hu Wenhuan	Abridged reprint of *Jiuhuang bencao* (1566)		
1622		*Yecai bolu*	Bao Shan	Yes
1639	Pinglutang	Inclusion of *Jiuhuang bencao* and *Yecai pu* in *Nongzheng quanshu*		
1642	Suzhou	*Jiuhuang yepu* (*Yecai pu*) and	Yao Kecheng	Yes

		Jiuhuang yepu buyi in *Shiwu bencao*		
1716	Kyoto	Reprint of *Jiuhuang bencao* and *Yecai pu* (*Nongzheng quanshu* version)		
1799	Kyoto	Revised reprint of *Jiuhuang bencao* and *Yecai pu* (1799)		
1802	Yonezawa Domain	*Kate mono*	Nozoki Masayoshi	No
1828	Komatsu Domain	*Kyūkō honzō bassui*	Domain community granary	No
1833	Sendai Domain	*Kyūkō ryaku*	Sasaki Bokuan	No
1833	Edo	*Sojiki oshiegusa*	Ōkura Nagatsune	No
1833	Edo	*Bikō sōmoku zu*	Takebe Seian	Yes
1836	Katō Sanyotei	*Kyūkō zasshoku shū*		No
1836	Inui Takayoshi	*Tenpō kikin surimono utsushi*	Hiramatsu Rakusai	No
1837	Yoshida Domain (?)	*Kikin no toki no shokumotau no tairyaku*	Nakayama Umashi	No
1837		*Kikin doshi no shukumotsu*	Mr. Motōri	No
1837	Hōyōsai (Nishio Taiji); Hakusaidō (Matsuzaki Kan'ichi)	*Kyūkō shokumotsu benran*	Itō Keisuke	No
1837		*Kyūkō shokumotsu*	Morimoto	No

		benryaku	Mayumi	
In the Tenpō Era	Mito Domain (?)	*Kyūga roku*	Shōji Kensai	Yes
Unknown (1830-1853)	Manuscript	*Kyūki shokuhin kō*	Sakamoto Kōne	Yes
Unknown (1830-1853)	Manuscript	*Shūi kyūki shokuhin kō*	Sakamoto Kōne	Yes
1847	Edo	Handwritten copy of *Jiuhuang bencao* and *Yecai pu* (1555)		
1851	Tsu Domain	*Kyūkō sōhin zufu*	Oka Yasusada	Yes
1856	Ankang, Shaanxi: Zhang Pengfei	Reprint of *Jiuhuang bencao*		
1884	Tokyo	*Kyūkō shokubutsu shūsetsu*	Itō Keisuke	No
1885	Kyoto	Reprint of *Kyūkō shokubutsu shūsetsu*		
1903	Tokyo	*Kyūkō shokubutsu*	Shirai Mitsutarō	Yes
1946	Shanghai: Henry Lester Institute	*Famine Foods List in the Chiu Huang Pen Ts'ao*	Bernard E. Reed	Yes

After languishing in obscurity for more than a century, the monograph was suddenly rediscovered by Chinese officials at various levels of the administration and rapidly reprinted and evaluated for its potential utility for famine relief, especially on occasions of catastrophic regional crop failures. In the processes of reproduction and dissemination, the prince's foundational work highlighting plants from northern China came to be paired with another

influential manual on edible plants called *Yecai pu* 野菜譜 (An Album of Wild Vegetables), compiled in the early sixteenth century based on acute famine experiences in the Jiang-Huai region. These two works did not merely inspire the publication of supplementary titles such as *Yecai bolu* 野菜博錄 (An Extended List of Wild Vegetables) and *Jiuhuang yepu buyi* 救荒野譜補遺 (Supplement to *Jiuhuang yepu*) in late imperial China, but also deeply informed and nourished the study of edible plants in Tokugawa Japan through the rich material and cultural Sino-Japanese exchange.

In Japan's Tokugawa period, the detailed characterizations of Chinese plants recorded in these manuals first piqued the interest of Japanese herbalists and physicians. During times of food shortage, this medically-trained group realized the potential utility as well as importance of properly identifying and utilizing native plant resources as famine foods for the populace. These healers actively promoted such ideas to domain lords and officials across Japan. Over time, this advocacy led to the inclusion of edible plants in several domains' famine relief discourses, especially in northeastern domains which were prone to frequent crop failures and food crises. Other domains also displayed a growing interest in useful plants through collecting sporadic reports on edible plants within their borders. Meanwhile, some motivated individuals took it upon themselves to distribute small printed pamphlets freely to maximize the circulation of this valuable lifesaving knowledge as widely as possible throughout literate society. This quest to broadly disseminate empirical knowledge about edible plants to the populace peaked during the Tenpō Famine of the 1830s, which had stirred unprecedented social unrest and anxiety.

In contrast, in the contemporaneous Qing China, elite interest in cataloging and distributing knowledge of famine plants had mostly faded away by the eighteenth century. This was largely because the empire had successfully mobilized extraordinary financial resources and bureaucratic coordination to implement large-scale famine relief and subsistence policies on a regular basis. However, substantive concern for edible plants as famine foods revived somewhat in the latter half of the nineteenth century, when the imperial court possessed much less wealth and power to organize effective relief campaigns due to increasing external threats from western imperialism combined with mounting internal turmoil and rebellion. Still, in both the Chinese and Japanese cases, the assiduous collection and meticulous articulation of knowledge about edible plants as famine foods drew heavily on development in nature studies while also engaing closely with urgent political struggles to

maintain social stability and contain civil unrest in an era of crisis. This potent edible plant discourse continued to shape thinking about famine prevention and food supply strategies well into the twentieth century.

This dissertation examines the dynamics of knowledge production and transcultural interactions in Ming-Qing China and Tokugawa Japan through the lens of famine plant manuals as a thematic genre. The central historical question is: why and how were famine plant manuals produced and circulated as a distinct genre carrying vital epistemic importance in premodern East Asia? I conceptualize thses manuals as an "epistemic genre", a form of text shaped to construct and transmit knowledge in certain cultural contexts, as proposed by Gianna Pomata.[2] The brief overview of the genesis and spread of such manuals in China and Japan indicates that their development was enabled by cultural interconnections rather than isolated origination. Comparing the two cases allows exploration of the entanglements between diverse yet interlinked epistemic traditions that transcended nation-state boundaries, while also providing a comparative perspective.

This approach seeks to elucidate the deeper epistemic interconnections underlying the textual artifacts in premodern East Asia, where learned elites shared a "high culture" based on written language and a rich literary tradition, most visibly embodied in mastery of the Sinitic script. This historical world was fundamentally shaped by transcultural interactions rather than any Sinocentric diffusion, challenging conventional assumptions. Students of the history of knowledge must recognize key concepts were recontextualized and co-articulated in new sociocultural and linguistic realities through adaptation and negotiation, rather than simply translated intact.

The dissertation will oscillate between China and Japan to highlight both the structural affinities and subtle differences in social practices surrounding the production and circulation of famine food knowledge as a vital genre. Each case study will situate the manuals in their immediate context, while also elucidating the broader connections forming a shared textual culture that enabled knowledge flows through material texts across geographical boundaries. Understanding how the genre emerged similarly through transcultural knowledge networks,

[2] Gianna Pomata, "The Recipe and the Case: Epistemic Genres and the Dynamics of Cognitive Practices," in *Wissenschaftsgeschichte Und Geschichte Des Wissens Im Dialog / Connecting Science and Knowledge*, ed. Kaspar von Greyerz, Silvia Flubacher, and Philipp Senn (Göttingen: Vanderhoeck & Ruprecht, 2013), 131–54.

yet diverged in locale-specific usages, provides a model for analyzing epistemic transformations in premodern Asia.

I start my inquiry by questioning the social foundations underlying the production and reproduction of famine plant manuals: who initiated and conducted the writing, editing, and publishing processes of these manuals? When and where did such activities take place? By tracing the diverse motivations and agendas behind manuals produced in Ming-Qing China and Tokugawa Japan, I argue that the manuals emerged to fill conspicuous gaps left by institutional relief campaigns. The manuals constituted an integral and unique component of the survival strategies people developed, which explains why famine foods became compelling objects to think with and write about, especially in the late-sixteenth- and early-seventeenth-century China and early-nineteenth-century Japan. It is perhaps not at all surprising that my findings suggest that the emergence of famine plant manuals inherently challenged the reach and capabilities of governmental authorities, while also encouraging more self-organization at the community level.

Zooming into the content and structure of the manuals yields deeper questions about the conceptualizations, categorizations and representations of famine foods codified in them: what specific bodies of knowledge were selectively abstracted by the compilers from people's agricultural and medicinal practices as well as famine experiences? How were the recommended edible plants approached textually and visually through these manuals? Through my analysis, I find that the *bencao* genre, which was the most prominent textual approach to nature in premodern East Asia, exerted great influence on the articulation and organization of plants as famine foods within the manuals.

A third illuminating perspective into the historical formation of famine food discourses as a genre involves tracing the social lives of the manuals themselves: how were the manuals distributed and circulated?[3] Who had access to and actually read the manuals? The manuals travelled widely across regional and national boundaries and their circulation spanned a long time period, which required mobilizing the interest and efforts of a diverse range of individuals and institutions with disparate motivation. Evidence shows that the proliferation of manuals largely spread through means beyond commercial logic, even though their dissemination relied heavily on the material resources, technologies and human expertise

[3] Arjun Appadurai, ed., *The Social Life of Things: Commodities in Cultural Perspective* (Cambridge: Cambridge University Press, 1988).

supplied by the flourishing printing industry. In addition, as the written knowledge encoded in the manuals was frequently transformed into more accessible oral forms and communicated through informal word-of-mouth channels, the actual audience and impact of the manuals could have been far larger than what the extant written records directly indicate.[4]

The logical question to examine after tracing the circulation of the manuals is therefore, to what uses were they ultimately put by different readers and communities? I highlight that the manuals were not easily absorbed or assimilated into existing bodies of knowledge. Instead, they created anxieties for government officials about the state's financial capacity and bureaucratic resources to adequately implement famine relief policies. The manuals also challenged established medical approaches centered on elite pharmacopeia.

Overall, by tracing the dynamic social lives and intricate intellectual roles of famine plant manuals as a genre, I argue that they emerged out of the specific socioeconomic conditions in premodern East Asia where food supply instability and recurrent shortage proved to be an enduring historical theme. These manuals were created and refined by a decentralized yet interconnected transnational epistemic community in China and Japan that shared fundemental interests in studying the natural world along with concerns for strengthening governance and aiding the common people. I suggest that although derived from the *bencao* genre, the intended use of famine plant manuals were largely devoid of medical interest and instead provided an alternative approach to natural history focused on survival needs. I argue that as embodiment of self-help efforts, the manuals inherently challenged state capacities to implement centralized, encompassing famine relief campaigns. The practical understanding of plants as famine foods proves to have been shaped by the accessible natural resources and by epistemic interconnections facilitating knowledge exchange within premodern East Asia. In turn, this understanding also transformed planning related to the management and utilization of the natural world, while generating new knowledge about the environment. By studying those manuals not as solitary titles, but as parts of an emerging genre, I demonstrate how boundaries between different epistemic fields, in particular statecraft and *bencao*, were negotiated and redefined, things less evident when the focus is only on individual works.

1.1 Definitions, Sources and Methods

[4] For the flow of legal knowledge through oral as well as textual channels in Qing China, see Ting Zhang, *Circulating the Code: Print Media and Legal Knowledge in Qing China* (University of Washington Press, 2020).

To refine my range of study and highlight my focus, I would like to explain my use of the terms "famine plants" and "famine plant manuals".

Historians and anthropologists have debated the appropriate terminology to denote foods consumed in scarcity. A range of related terms have been suggested, including traditional edible plants, wild food plants, alternative foods, substitute foods, emergency foods, supplementary foods, unconventional foods, and more.[5] Scholars like the anthropologist Paul E. Minnis have advocated the use of the overarching term "famine foods" to describe this category, given its common parlance and familiarity to broad audiences.[6]

However, in my own analysis, I conciously prefer the more precise term "famine plants" rather than the broader "famine foods" when discussing the key epistemic objects of investigation primarily codified and examined within the Chinese and Japanese genres I have designated "famine plant manuals". My terminological choice is intended to highlight the largely vegetal origin of the edible items that came to constitue a distinct field of documentation and examination by premodern East Asian authors, as evidenced by the manuals' contents.

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[5] Although scholars have not adequately addressed their conceptualizations of the categories, they did use different terms with different emphasis. "Emergency foods" and "unconventional foods" were used to underline the rareness of their consumption under conditions of food availability. In particular, they often implied wilderness in their classifications. See Tom Vorstenbosch et al., "Famine Food of Vegetal Origin Consumed in the Netherlands during World War II," *Journal of Ethnobiology and Ethnomedicine* 13, no. 63 (December 2017); Mohammed Rahmatullah et al., "Correlation Between Non-Conventional Plants Consumed During Food Scarcity and Their Folk Medicinal Usages: A Case Study in Two Villages of Kurigram District, Bangladesh," *American-Eurasian Journal of Sustainable Agriculture* 5, no. 2 (2011): 240–46. Starting from a different perspective but holding similar connotations, "wild food plants" were used to emphasize wilderness and indicate their supplementary uses to and substitute uses for major food crops in periods of food shortages. See Alessandro Boesi, "Traditional Knowledge of Wild Food Plants in a Few Tibetan Communities," *Journal of Ethnobiology and Ethnomedicine* 10, no. 75 (December 2014); J.R.S. Tabuti, S.S. Dhillion, and K.A. Lye, "The Status of Wild Food Plants in Bulamogi County, Uganda," *International Journal of Food Sciences and Nutrition* 55, no. 6 (September 2004): 485–98. In comparison, the term "traditional edible plants" does not always highlight wilderness, but rather emphasizes local knowledge. For example, research on the consumption items by the Naxi people included many cultivated species. See Zhang Lingling et al., "Ethnobotanical Study of Traditional Edible Plants Used by the Naxi People during Droughts," *Journal of Ethnobiology and Ethnomedicine* 12, no. 39 (December 2016). The term "substitute foods" could be closely related to a scientific discourse that addressed nutritional sources. See Gao Hua 高華, "Food Augmentation Methods and Food Substitutes during the Great Famine," in *Eating Bitterness: New Perspectives on China's Great Leap Forward and Famine*, ed. Kimberley Ens Manning and Felix Wemheuer, trans. Robert Mackie (UBC Press, 2011). In a few cases, hierarchies were made between different kinds of famine foods. See M. M. Bhandari, "Famine Foods in the Rajasthan Desert," *Economic Botany* 28, no. 1 (January 1974): 73–81.

[6] For example, scholars used the terms "emergency foods" and "non-conventional foods" interchangeably with "famine foods", see Bhandari, "Famine Foods in the Rajasthan Desert"; Vorstenbosch et al., "Famine Food of Vegetal Origin Consumed in the Netherlands during World War II"; Rahmatullah et al., "Correlation Between Non-Conventional Plants Consumed During Food Scarcity and Their Folk Medicinal Usages: A Case Study in Two Villages of Kurigram District, Bangladesh."

This is not to suggest that only plants were considered or consumed as famine relief sustenance in practice during historical episodes of food scarcity. In fact, various organic materials such as animals, as well as inorganic materials including certain types of soils, clays, or minerals, were commonly ingested during subsistence crises as acts of desperation. This consumption of non-plant famine foods is acknowledged in the famine plant manuals themselves, such as *Kate mono*, as well as in other writings.

For instance, the Tenmei famine of Japan saw a wide range of non-plant life forms eaten in order to assuage hunger, spanning from wild animals such as birds and deer to domesticated animals including cats, dogs and chicken.[7] There was even consumption of culturally taboo animals such as horses, as well as marine animals such as shellfish, pointing to the lengths people went to consume unfamiliar famine foods. Similarly, tn the North China Famine of 1876-79, when even wild grasses and tree barks grew scarce as famine intensified, various types of soils and clays were consumed as desperate substitutes.[8] This historical practice of geophagy had precedents in China potentially dating back to the Ming dynasty, if not earlier, and endured well into the 20th century across cultures, providing not only satiety but vital nutrients while helping detoxify other indigestible plant substances.[9]

However, in the specific genre of famine plant manuals I examine, non-plant famine foods only warranted marginal supplemental mention rather than substantial discussion or documentation. Unlike famine plants, other organic and inorganic famine relief substances did not open up entirely new fields of epistemic investigation or classification in their own right, at least within the East Asian textual traditions I analyze for the premodern period.

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[7] Kikuchi Isao 菊池勇夫, *Ue to shoku no nihonshi* 飢えと食の日本史 (Tokyo: Yoshikawa kōbunkan, 2019), 68–70; Mizuguchi Tsunetoshi 溝口常俊, "*Sameoyakusho nikki*kara mita tenmei kikin to gyoson: hachinohehan no bai 『鮫御役所日記』から見た天明飢饉と漁村－八戸藩の場合－," *Ritsumeikan daigaku jinbun kagaku kenkyūjo kiyō*, no. 87 (2006): 177. On the prevalence of meat consumption in premodern Japan, see Hans Martin Krämer, "'Not Befitting Our Divine Country': Eating Meat in Japanese Discourses of Self and Other from the Seventeenth Century to the Present," *Food and Foodways* 16, no. 1 (March 14, 2008): 36–40. On the consumption of animals in the twentieth-century Asia and Europe during famines, see Antonia-Leda Matalas and Louis E. Grivetti, "Non-Food Food during Famine: The Athens Famine Survivor Project," in *Consuming the Inedible: Neglected Dimensions of Food Choice*, ed. Jeremy M. MacClancy, C. J. K. Henry, and Helen Macbeth (New York and Oxford: Berghahn Books, 2009), 135–36; Evgeny Krinko, Alexander Skorik, and Alla Shadrina, "The Don and Kuban Regions During Famine: The Authorities, the Cossacks, and the Church in 1921–1922 and 1932–1933," *Nationalities Papers* 48, no. 3 (May 2020): 575; Vorstenbosch et al., "Famine Food of Vegetal Origin Consumed in the Netherlands during World War II," 9–10.

[8] On the pattern of famine food use, see Violetta Hionidou, "What Do Starving People Eat? The Case of Greece through Oral History," *Continuity and Change* 26, no. 1 (May 2011): 113–34.

[9] Kathryn Jean Edgerton-Tarpley, "From Bodhisattva Earth to Man-Made Meat Essence: Famine Foods in Late Qing, Nationalist and Maoist China," *Environment and History* 26, no. 1 (February 1, 2020): 110–15; Paul E. Minnis, *Famine Foods: Plants We Eat to Survive* (Tucson: University of Arizona Press, 2021), 4–5.

The edibility of plants presented as famine foods in the manuals was only conceptualized through intricate processes of verification and transformation. Early studies of famine plants highlighted their wildness. For instance, Bernard Emms Read identified edible wild plants as the subject of *Jiuhuang bencao*, appreciating the effort to record them as immediate famine remedies. Similarly, Joseph Needham decisively translated *Jiuhuang bencao* into English as "Treatise on Wild Food Plants for Use in Emergencies" when analyzing the content. Needham even named the section devoted to famine-related applied botany in the late imperial China "Studies on Wild (Emergency) Food Plants".[10] However, as I demonstrate through textual analysis in chapter two, a closer examination of the actual historical categorical distinctions made by the compilers themselves reveals a much more complex and nuanced picture. In truth, many of the specific plant items codified and recommended within the manuals as famine foods were commonly cultivated crop species and routinely consumed in daily diets, rather than only wild flora foraged during crises.

In my dissertation, I define famine plant manuals as specialized writings primarily focused on documenting and disseminating practical knowledge related to edible plants considered useful for nourishment specifically during periods of food shortage. As a genre, these works characteristically documented pertinent details such as plant names, growing ranges, physical features, and feasible preparation methods via informative texts and images.

Remarkably, this genre has not yet been adequately recognized or cohesively defined by scholars. A handful of previous studies have pointed out shared topical concerns related to codifying knowledge on edible plants for emergency famine use within certain texts. However, scholars have differed considerably in their suggested approaches to naming, organizing, and grouping such works into a unified field of study.

Amano Motonosuke referred to nine Ming works as *kyūkō sakumotsu chojutsu* 救荒作物著述 (lt. writings on crops for famine relief). Through this proposed categorization, Amano suggested that these particular Ming texts collectively summarized knowledge regarding the identification and use of wild plant in disasters.[11]

[10] Bernard Emms Read, "Preface," in *Famine Foods Listed in the Chiu Huang Pen Ts'ao* (Taipei: Southern Materials Center, 1982), 1–8; Joseph Needham, *Science and Civilisation in China: Biology and Biological Technology*, vol. 6 (Cambridge: Cambridge University Press, 1986), 328–55.
[11] Amano Motonosuke 天野元之助, "Mindai ni okeru kyūkō sakumotsu chojutsu kō 明代における救荒作物著述考," *Tōyō gakuhō* 47 (1964): 32.

However, Amano's own term *sakumotsu* (crops) was somewhat perplexing and internally contradictory. This is because the Japanese word *sakumotsu* predominantly denots cultivars, and yet when discussing the content of the texts themselves, Amano specifically highlighted wild plants. In fact, Amano clearly distinguished between two sub-categories, wild edible plants versus domesticated crops when explaining the object of investigation in *Jiuhuang bencao*.[12] This showed that the umbrella term *kyūkō sakumotsu* failed to capture the diversity of wild and domesticated plant species actually covered by the works Amano aimed to categorize.

In addition, Amano's proposed genre term *chojutsu* meaning writing or literature highlighted the descriptive textual nature of the manuals. However, this overlooked the vital role played by images in many of the works, given around half of the works contained extensive images of plants alongside characters.

Furthermore, Amano's expansive list incorporated texts such as *Yesu pin* 野簌品 (Tasting Wild Vegetables) which were not explicitly written with the intent of documenting plants specifically for famine relief purposes. This suggested Amano's category reflected more of an etic, external scholarly perspective rather than an emic one grounded in the shared motivations and values of the original compilers themselves.[13]

In my analysis, I aim to foreground the compilers' own intentions in order to construct a coherent genre category reflecting emic historical perceptions and priorities. In my view, it was the authors' common goals, worldviews, and approaches underlying the documentation of famine plant knowledge that fundamentally grouped these works together into a unified corpus. This initial genesis as a genre arose from shared internal motivations, not just external retrospective categorization.

More recent studies on famine plant manuals have largely based their discussions on Amano's scholarship, following his categorization despite some divergent opinions on details. Dong Kaichen criticized Amano's term *kyūkō sakumotsu* (crops for famine relief). Dong argued that in truth, the overwhelming majority of plant species documented and discussed within the manuals were wild plants rather than cultivated crops. As an alternative, Dong proposed using the term *jiuhuang zhiwu* 救荒植物 (plants for famine relief) to more accurately reflect the content focus. Under this revised nomenclature, Dong grouped together

[12] Amano Motonosuke, 33.
[13] Amano Motonosuke, 52.

eight Ming works as *jiuhuang zhiwu zhushu* 救荒植物著述 (writings on plants for famine relief).[14]

Despite their diverging perspectives on the appropriateness of classifying the flora in questions as "crops" versus "plants", Dong largely followed Amano's approach in identifying and grouping together a core literature corpus on the subject of famine relief botany. The one major exception was that Dong eliminated *Yecai pu*, authored by Hua Hao 滑浩 (*jinshi* 1475), from his list. Both Dong and Amano acknowledged that Hua Hao had essentially just republished Wang Pan's 王磐 (1454?-1524) *Yecai pu* without illustrations under his own name. However, while Amano chose to list Hua Hao's work as a separate text from Wang Pan's original, Dong regarded it as just another edition of Wang's *Yecai pu*.[15]

This disagreement highlights intricate questions central to premodern book history. Given that many compilations in practice consisted of collages pieced together from multiple sources, how should modern scholars attempt to reliably establish authorship attribution and situate the relationship of such works to their sources? There are certainly no straightforward universal answers here, since judgments inevitably depend heavily on the specific research agenda and interests of the historians. As such, rather than attemp to classify Hua Hao's *Yecai pu* definitely as either an individual work unto itself or merely an alternate edition, I prefer to approach it more flexibly, as just one of the many works assembled from the vibrant discourse around documenting knowledge on the timely subject of edible plants.

While Dong situated this specialized literature within the expansive genre of agricultural treatises, Bu Fengxian instead chose to categorize such works under the more focused heading of *yecai lei* 野菜類 (wild vegetables) as a distinctive sub-genre of famine relief books and enumerated nine titles as core representatives.[16] However, use of the term *yecai* to characterize these works' content could also prove misleading in certain resepects. First, as previously discussed, a substantial portion of the plants covered intentionally cultivated crop varities rather than only wild flora. Second, the rubric of proto-vegetables obscures the fact that many listed famine foods were classified variously as grains, fruits, herbs and woods, not limited to vegetables. Finally, the term *yecai* carried particular literary and cultural

[14] Dong Kaichen 董愷忱, "Mingdai jiuhuang zhiwu zhushu kaoxi 明代救荒植物著述考析," *Zhongguo nongshi*, no. 1 (1983): 99–104.
[15] Amano Motonosuke, "Mindai ni okeru kyūkō sakumotsu chojutsu kō," 47–48; Dong Kaichen, "Mingdai jiuhuang zhiwu zhushu kaoxi," 101.
[16] Bu Fengxian 卜風賢, "Zhongguo gudai jiuhuangshu de chuancheng he fazhan 中國古代救荒書的傳承和發展," *Gujin nongye*, no. 2 (2004): 78–88.

connotations of elite lifestyle and self-cultivation that extended well beyond the realm of subsistence food source knowledge. Nevertheless, despite these potential limitations, Bu's ultimate grouping of core texts again matched Amano's original list quite closely.

In comparison with Bu, He Huiling proposed relating this specialized literature to the genre of *bencao*. She divided the expansive *bencao* literature into two main branches, those focused on medicinal applications versus those focused on dietetic functions. Under this framework, He classified the corpus of works she termed *jiuhuanglei bencao wenxian* 救荒類本草文獻 (herbal literature for famine relief) as a distinctive subfield of dietetically-oriented *bencao* writings.[17]

However, despite recognizing the notable influence of *bencao* literature on the genesis of famine plant manuals, I remain quite skeptical about the appropriateness of definitely classifying these manuals fully within the *bencao* tradition. In my assessment, famine plant manuals in fact cut across and combined elements of multiple genres and traditions. They varied widely in their specific composition and balance of informative textual versus vivid visual components, ranging from predominantly text-focused book to manuals dominated by woodblock illustrations. Hence, I suggest that famine plant manuals should be conceptualized as an independent genre, rather than a sub-genre of *bencao*, agricultural treatises or famine relief writings.

In terms of the scope and time period covered by her proposed literary corpus, He Huiling significantly expanded the spatiotemporal range compared with previous scholars. Amano Motonosuke, Dong Kaichen, and Bu Fengxian had concentrated primarily on analyzing Ming dynasty texts as the heart of the genre. However, He pointed to the late Qing compilation *Jihuang bibei* 濟荒必備 (Essentials for Famine Relief) as a notable echo of the Ming famine plant manual tradition during the subsequent dynasty.[18] Even more crucially, He discussed the reception of Chinese famine plant manuals in Japan and their influence on Japanese materia medica literature and famine relief writings.[19] This expanded the genre beyond China into a transnational body of knowledge that crossed boundaries and enabled transfer of knowledge between traditions.

[17] He Huiling 何慧玲, "Jiuhuanglei bencao wenxian zai zhongri lianguo de chuancheng 救荒類本草文獻在中日兩國的傳承" (MA thesis, Zhongguo zhongyi kexueyuan, 2014), 17–18.
[18] He Huiling, 58–59.
[19] He Huiling, 75–87.

He Huiling also differed substantially from previous scholars in her sources by not limiting the scope of discussion solely to stand-alone monographs devoted exclusively to famine plants. Instead she consciously expanded the evidentiary range to search for and incorporate any pieces from a much wider variety of of textual sources, such as individual sections or chapters extracted from larger works, and fragmented writings touching on famine plant knowledge in some capacity. On the one hand, casting such a wide evidentiary net offers possibilities to develop an extraordinarily detailed and nuanced picture of the full range of histographic opinions expressed about proper documentation and usage of plant resources as famine foods. However, on the other hand, this approach of eclectically juxtaposing writings of vastly different physical forms and contexts of production runs the risk of considerably underestimating the pivotal impact of materiality on patterns of circulation and the accrual of cultural significance for certain texts. Therefore, in my analysis I aim to situate purpose-designed stand-alone monographs, which clearly constituted cohesive conceptural objects that acquired particular meanings in their own right within the historical record, closer to the centre of discussion. From this vantage point, I will then investigate the dynamic ways such seminal monographs interacted with and informed each other, as well as how they ultimately catalyzed, shaped, and lent their organizational templates to the broader heterogeneous famine plant knowledge discourse preserved in other fragments.

While a scholarly consensus has been reached regarding the identification and grouping of Chinese famine plant manuals into a coherent genre, the process of accurately identifying and classifying comparable literature in Japanese is still in its early developmental stages. Japanese scholars have made a few attempts to categorize famine relief writings, but yet to differentiate famine plant manuals as an independent genre, which this dissertation argues for.[20] When analyzing the manuals' structure and content, they did observe influence of *honzōgaku*. For example, Etō Akihiko suggested that works such as *Bikō sōmoku zu* embodied practical applications of herbal knowledge, deviating from the orthodox approaches to natural history.[21] This observation is a shared feature of premodern Chinese and Japanese famine plant knowledge.

[20] Asami Megumi 浅見恵 and Yasuda Ken 安田健, eds., *Kyūkō* 救荒, Kinsei rekishi shiryō shūsei 4 (Tokyo: Kagaku shoin, 2006).
[21] Etō Akihiko 江藤彰彦, "Honzōgaku no denpa, jūyō, katsuyō: kurashi no gawa kara mita honzōgaku to kyūkōsho 本草学の伝播・受容・活用——暮らしの側から見た本草学と救荒書——," in *Nihon nōsho zenshū* 日本農書全集, vol. 68 (Tokyo: Nōsan Gyoson Bunka Kyōkai, 1996), 28–29.

This study draws upon a diverse range of primary source materials, including various handwritten and printed editions of the famine plant manuals themselves, official dynastic and local histories, genealogical records, regional and local gazetteers, historical book catalogues, personal notes, diaries, encyclopedias, and other documents.

Through extensive research, I have identified around twenty Chinese and Japanese titles that will form the core corpus for analysis as representative examples of the famine plant manual genre. In order to compile a substantial catalog for study, I have further managed to consult over one hundred different versions of these key works. A great many of the titles I examine, especially lesser-known Japanese pamphlets, have never been studied in depth before. Often scattered in obscure corners of libraries and archives, the bulk remain far from fully digitized and accessible online.

Therefore, in addition to utilizing major digitalization projects already conducted by institutions such as the National Library of China, National Diet Library of Japan, and university libraries including Tokyo, Kyoto, and Waseda for accessing famine plant manuals, I travelled across multiple sites in both China and Japan. Through on-site research at museums and libraries, I discovered unknown titles, accessed rare editions, and collected various copies of the same editions. For example, when visiting the Hirosaki City Library, I came across an untitled, anonymously handwritten manuscript of plant illustrations that turned out, upon closer inspection, to be a private transcription of the nineteenth-century work *Kyūki shokuhin kō* 救飢食品考 (Investigation on Famine Foods) originally compiled by the renowned Edo-period herbalist and painter Sakamoto Kōnen 坂本浩然 (1800-1853). This unexpected finding implies that, despite its ostensibly limited circulation beyond the author himself, clandestine hand-copied versions of manuals like this one still managed to spread within fairly exclusive networks among fellow herbalists and elite amateurs. Such restricted dissemination in turn enabled private access to privileged knowledge, while also severely limiting its reach.[22]

This extensive search is intended not just for isolated inquiry into each title as a solitary artifact. More crucially, it allows for holistic analysis of the corpus as an increasingly coherent, interactive genre centered on a shared theme. Without aggregating knowledge of the

[22] Sakamoto Kōnen 坂本浩然, *Kyūki shokuhin kō* 救飢食品考, n.d. For producing manuscripts to transmit as well as to restrict access to knowledge, see Peter F. Kornicki, "Manuscript, Not Print: Scribal Culture in the Edo Period," *The Journal of Japanese Studies* 32, no. 1 (2006): 33–35.

numerous different editions and variants in circulation, it would be nearly impossible to reliably reconstruct the geographical breadth and historical development of the complex circulation networks through which the manuals spread. Similarly, grasping how different copies critically informed each other through trans-textual interconnection is key to examining how these works accrued new social significance and practical meanings grounded in their constantly evolving material forms within different spatial, temporal, and cultural contexts. Finally, carefully comparing different versions can potentially reveal traces left by diverse readers, such as marginal notations, commentary, or textual emendations. These insights in turn shed invaluable light on the actual use and reception of the knowledge encoded in the manuals.

I consult official histories and local gazetteers to specify environmental conditions around the production of the manuals. While official histories focused on major famines and general relief, gazetteers supplemented with localized narratives. Still, many more local food shortages were unrecorded, scattered across individual writings like diaries and literature.

While a handful of the most famous famine plant manuals were composed by well-known historical figures and have been relatively well-researched by modern historians, a great many more were produced by obscure or even completely anonymous authors about whom very little biographical information survives beyond the attribution of a name to the text itself. And even less is typically known about the many other crucial actors and intermediaries involved in the material production and circulation of manuals beyond the sole figure of the nominal author, despite the complex reality that any successful book was necessarily produced through cooperation between a multitude of different agents. Local gazetteers and genealogical records can sometimes offer clues regarding the social status, familial ties, geographic origins, cultural identities and occupations of key actors associated with manuals, which enables more informed inquiry into their potential motivations and roles within wider processes of practical botanical knowledge production and dissemination.

In terms of hard evidence directly attesting to the specific circulation networks through which manuals physically spread between sites of production, reading, and application, such concrete information remains exceedingly scant. Other than extracting relevant circulation details from paratextual components of the manuals themselves, such as prefaces and postfaces, early modern book catalogues and trade records only occasionally contain indicators of which texts travelled along particular communication channels or ended up in

the hands of certain readers. For instance, the seventeenth-century catalogue of Momijiyama Bunko in Japan confirms that copies of the seminal Chinese manual *Jiuhuang bencao* were already transmitted to Japan by that time through maritime trade networks.[23] This in turn implies potential access to such texts by highly-placed groups well-connected to the Tokugawa shogunate power structure, including the shoguns themselves, their family members, high-ranking samurai officials, and respected scholars.

Perhaps most difficult of all is thoroughly investigating the actual reception of manuals and how readers interacted with, comprehended, and applied the practical knowledge contained within them. However, reader-generated marginalia, notes, and commentaries, whether incorporated directly into the original text, recorded in accompanying notebooks, or preserved as transcriptions of lectures, can provide invaluable hints about processes of reconceptualizing famine plants and repurposing the use of manuals beyond their original contexts. As one salient example, the prolific Edo scholar Ono Ranzan's various transcribed lectures and notes on *Jiuhuang bencao* demonstrate how he identified Japanese botanical equivalents by creatively combining information extracted from the original texts and images with his own extensive field experience. In Ono's hands, comprehension of the manual becomes oriented less toward abstract philanthropic goals of famine relief, and more toward material products for trade.

I mainly use the methods of book history to grapple with the production, circulation and reception of famine plant manuals. By situating each manual in its unique political and socioeconomic settings, I contend that the manuals were produced in responses to the limited capacities of the governments in times of scarcity.[24] Inspired by Francesca Bray's study of agricultural texts as avenues to transmit technological information, my research interrogates textual and pictorial encodings of famine plant knowledge and identify the languages, registers, and techniques that the compilers of famine plant manuals developed to build a new

[23] Ōba Osamu 大庭脩, "Tōhoku daigaku kano bunko kazō no gobunko mokuroku 東北大学狩野文庫架蔵の御文庫目録," *Kansai daigaku tōsai gakujutsu kenkyū jo kiyō* 3 (1970): 71. For detailed discussions on circulation networks, see chapter three.

[24] For an example of how a technical treatise was integral to a literatus' political writing campaign against the ills of his time, see Dagmar Schäfer, *The Crafting of the 10,000 Things: Knowledge and Technology in Seventeenth-Century China* (Chicago: University of Chicago Press, 2011).

understanding of edibility.[25] Recognizing "noncommercial" from a theoretical and methodological approach, I use the category for publications, including both imprints and hand-written copies, rather than publishers and argue that the content shaped production processes and distribution channels.[26] Following books across languages and boundaries, I reconstruct interregional and transnational circulation networks that facilitated material and intellectual exchanges between different epistemic communities. I highlight the reception of famine plant manuals in politics and nature studies through their reproduction, translation and adaptation, and pay attention to the elements in the historical intellectual trends that prioritized or marginalized the discussions about famine plants. Second, as the life stories of the manuals spanned several centuries, accompanied by long-term development of institutions and enterprises such as the evolution of famine relief policies and the rise and spread of print culture in certain regions, I take the long-durée perspective to show the trajectories of change straddling the fifteenth and nineteenth centuries.[27] Following Lorrain Daston's suggestion on examination of shifting epistemic values over time within and among cultural traditions, I look at the classifications and hierarchies of famine relief knowledge and *material medica* knowledge and demonstrate that the understanding of famine foods shaped and was shaped by statecraft as well as nature studies.[28] Last but not least, the emergence of famine plant manuals crossed political and cultural boundaries, demanding analysis beyond the nation-state framework. [29] I use a transcultural approach to not only compare the differences between, but also interrogate the entanglements behind knowledge production in early modern East Asia. On the one hand, in Ming-Qing China, famine plant manuals were tailored to governmental purposes and eventually became absorbed in an all-encompassing famine relief discourse,

[25] Francesca Bray, "Chinese Literati and the Transmission of Technological Knowledge: The Case of Agriculture," in *Cultures of Knowledge: Technology in Chinese History*, ed. Dagmar Schäfer (Leiden: Brill, 2011); Francesca Bray, *Agricultural Illustrations: Blueprint or Icon?* (Routledge, 2013).
[26] Michaela Bussotti and Jean-Pierre Drège, eds., *Imprimer sans profit?: le livre non commercial dans la Chine impériale* (Geneva: Librairie Droz S.A., 2015); Joseph P. McDermott, "'Noncommercial' Private Publishing in Late Imperial China," in *The Book Worlds of East Asia and Europe, 1450–1850: Connections and Comparisons*, ed. Joseph P. McDermott and Peter Burke (Hongkong: Hong Kong University Press, 2015).
[27] For the study of long-term transformation of *material medica* knowledge, see He Bian, *Know Your Remedies: Pharmacy and Culture in Early Modern China* (Princeton: Princeton University Press, 2020); Federico Marcon, *The Knowledge of Nature and the Nature of Knowledge in Early Modern Japan* (Chicago: University Of Chicago Press, 2015).
[28] Lorraine Daston, "The History of Science and the History of Knowledge," 2017.
[29] On the transnational and cross-cultural perspective in recent Sinosphere studies, see Nanxiu Qian, Richard Joseph Smith, and Bowei Zhang, eds., *Reexamining the Sinosphere: Cultural Transmissions and Transformations in East Asia* (Amherst, NY: Cambria Press, 2020); Nanxiu Qian, Richard Joseph Smith, and Bowei Zhang, eds., *Rethinking the Sinosphere: Poetics, Aesthetics, and Identity Formation* (Amherst, NY: Cambria Press, 2020).

while in Tokugawa Japan, herbalists and physicians held authorities about knowledge claims to famine plants. On the other hand, philanthropic interest in famine plants in different regions was motivated by similar concerns for recurring food crises, and the authors and users of the manuals mobilized common material and intellectual sources that were transmitted through channels of exchange.

1.2 Historical Background

In Ming-Qing China and Tokugawa Japan, hunger proved to be a consistently recurring problem plaguing society. According to comprehensive counts compiled by Timothy Brook using dynastic histories and regional gazetteers records from across China, there were a total of 28 major famines recorded during the Ming dynasty alone, with the most severe crises occurring in the 1430s, 1450s, 1540s, 1580s and 1640s.[30] During the latter half of the Qing dynasty, the frequency of famine increased to an unprecedented level, largely due to compounding factors such as overpopulation and environmental deterioration exacerbating existing societal vulnerabilities.[31]

In Japan, the Tokugawa period also witnessed numerous major famines and many more small-scale regional food shortages. A number of unusually cold summer in northern Honshu, coupled with devastating floods and severe droughts elsewhere, led to sharply reduced grain harvests in the late 1630s and early 1640s. This precipitous drop in crop yields escalated into the so-called Kan'ei Great Famine, which resulted in mass starvation and the deaths of a huge number of commoners and livestock across the Japanese archipelago from starvation and diseases.[32] Later, in 1732 and 1733, southwestern Japan was struck by the Kyōho Famine. Then in July 1783, the eruption of Mount Asama caused extensive damage to rice and other staple crops planted in eastern and northeastern Japan. The situation was drastically compounded as the volcanic eruption was followed by the onset of abnormal cold weather lasting several years, leading to massive nationwide crop failures that persisted until 1788.[33] And in the 1830s, the Tenpō Famine swept through Japan, made worse by a coincident

[30] Timothy Brook, "Nine Sloughs: Profiling the Climate History of the Yuan and Ming Dynasties, 1260-1644," *Journal of Chinese History* 1, no. 1 (January 2017): 36–37.
[31] Lillian M. Li, *Fighting Famine in North China: State, Market, and Environmental Decline, 1690s-1990s* (Stanford, CA: Stanford University Press, 2007), 6.
[32] Atwell, 1986, 226; Kikuchi, 1997, chap. 2.
[33] For effects of the Tenmei Famine on Tokugawa society, see Kikuchi Isao 菊池勇夫, *Kinsei no kikin* 近世の飢饉 (Tokyo: Yoshikawa kōbunkan, 1997), chap. 6.

epidemic outbreak, leading to one of the most serious mortality crises of the era.[34] While these major historical famines lasted for longer durations and affected much wider geographic areas, and thus are most well-known today as the seminal great famines of the Tokugawa period, even relatively small-scale yet still highly devastating regional famines could have an enormous impact on particular local communities. One illustrative example is the Hōreki Famine which arose in northeastern Japan during 1754-1755.

Although it is reasonable to believe that the written records have not managed to document every single subsistence crisis across history, and that divergent opinions regarding famine definitions could influence articulation and categorization of disastrous situations, the representative examples provided above underscore the depressingly common risks posed by severe food shortages and crop failures to premodern societies in both China and Japan.

While the sheer frequency of subsistence crises striking China and Japan certainly does not imply that the societies in question were completely submerged under endless famines, as the numerous good harvest years still significantly outnumbered bad ones, the imperial regimes were nevertheless continuously faced with the immense political challenges of stemming recurring bouts of widespread dearth and hunger. This is because famines were rarely articulated or conceptualized merely as unfortunate results of natural disasters beyond human control. Instead, they were interpreted as clear evidence of mismanagement, negligence, or even moral failing on the part of the country's rulers. Not only did sustainably and reliably feeding the common people help directly guarantee stable tax revenues flowing into state coffers, but adequately addressing famine also proved necessary for the regime to retain its perceived cosmic and religious mandate to continue ruling.[35]

This prevalent conception of governmental responsibility to actively alleviate hunger and food scarcity gave birth to the development and relative institutionalization of a complex series of bureaucratic measures aimed at preventative famine mitigation alongside post-hoc relief efforts. Many of these came to feature centralized state-coordinated granary systems as a core instrument.

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[34] For the demographic consequences of the Tenpō Famine, see Janetta, 1992. Kikuchi, 1997, chap. 7.
[35] R. Bin Wong, "Chinese Traditions of Grain Storage," in *Nourish the People: The State Civilian Granary System in China, 1650-1850*, ed. Pierre-Étienne Will and R. Bin Wong (Ann Arbor: Center for Chinese Studies, University of Michigan, 1991); Kathryn Edgerton-Tarpley, "Qing Officialsom and the Politics of Famine," in *Tears from Iron: Cultural Responses to Famine in Nineteenth-Century China* (University of California Press, 2008).

The classical Confucian text *Book of Rites* underscored the sociopolitical importance of stockpiling surplus grain by setting forth aspirational standards for extraordinarily high reserve requirements to be maintained. According to this traditional formulation, only a granary system with sufficient stockpiles to provide for nine full years of consumption requirements could truly qualify a country as having adequate reserves. Falling below six years' worth of stock would lead to heightened societal tensions and vulnerabilities, while dipping under three years' reserves would directly imperil the survival of the state itself. These kinds of ritual stipulations and pronouncements helped fuel elite political concerns with developing expansive government granary schemes.

R. Bin Wong has outlined the gradual development of three main complementary types of granaries pursued by Chinese officials.[36] The so-called "ever-normal" granary first emerged during the Jin dynasty (265-420) to help stabilize prices and reduce seasonal scarcity by having administrators actively purchase grains at low cost after harvests, then strategically selling portions of these stockpiles at low fixed prices during lean periods before the next harvest. This system, refined over time, remained of central importance in subsequent regimes. It was joined by the charity granary, which provided direct provision of grain or loans to the needy during dearth, first arising during the Sui dynasty (589-618). And community granaries, promoted by the influential Song Neo-Confucian philosopher Zhu Xi 朱熹 (1130-1200), focused on offering credit to peasant communities to purchase grain.

By the Ming dynasty, the imperial government had developed an elaborate and reasonably effective institutionalized set of famine relief policies combining granary reserves, and tax remissions.[37] However, the state gradually lost capacities and commitment to intervene in subsistence crises over the course of the seventeenth century. In contrast, their Qing successors exhibited impressive abilities to fight famine, at least during the dynasty's eighteenth century heyday, thus legitimizing their conquest rule by prominently upholding ideals of benevolent governance.[38]

Although the Tokugawa shogunate and domain lords in Japan also aimed to legitimize and reinforce their authority by demonstrating the ability to practice benevolent governance

[36] Wong, "Chinese Traditions of Grain Storage."
[37] Jennifer Eileen Downs, "Famine Policy and Discourses on Famine in Ming China, 1368-1644" (PhD Diss., University of Minnesota, 1995), 27–29.
[38] Pierre-Étienne Will, *Bureaucracy and Famine in Eighteenth Century China*, trans. Elborg Forster (Stanford: Stanford University Press, 1990).

for the common people, the specific organizational methods and institutional structures for providing famine relief varied enormously from China's bureaucratic model to a significant extent.[39]

One major area of divergence lies in the fact that a centralized, state-coordinated granary system along Chinese lines never played such a pivotal logistical role within famine relief efforts across Tokugawa Japan. Despite granaries of certain types being believed to have first emerged in ancient times, with charity granaries first clearly instituted by Emperor Monmu in the early eighth century and ever-normal granaries created by Emperor Junnin later that same century, by the early modern period no truly national, integrated granary network had been established by Japan's authorities.[40] In particular, granaries of any sort remained strikingly underdeveloped in rural areas well into the eighteenth century.[41] Furthermore, in cases where granaries did exist locally, they were often more closely connected to the management of financial matters rather than being oriented toward subsistence crisis relief per se.[42] For instance, examining the specific famine relief measures undertaken by urban authorities in the Ōno Domain during the devastating Tenmei Famine of the 1780s reveals that granary reserves and distributions in no way constituted an indispensable component of the relief schemes actually implemented on the ground.[43]

In fact, famine response across Tokugawa Japan was usually carried out through a combination of various relief measures, some promulgated in a top-down manner by domain governments but at least as many, if not more, initiated by self-organized groups including villages, neighborhood associations, occupational guilds, and religious fraternal organizations.[44] While domain officials might be credited for high-level initiatives like setting up emergency gruel kitchens to feed the starving, distributing small grain loans, or granting

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[39] For the ideology of benevolent rule in Tokugawa Japan, see Maren Annika Ehlers, "Introduction," in *Give and Take: Poverty and the Status Order in Early Modern Japan*, 413 (Cambridge, Massachusetts: Harvard University Asia Center, 2018).
[40] Mark J. Ravina, "Confucian Banking: The Community Granary (Shasō) in Rhetoric and Practice," in *Economic Thought in Early Modern Japan*, ed. Bettina Gramlich-Oka and Gregory Smits (Leiden: Brill, 2010), 185–87.
[41] Kinoshita Mitsuo, "Sanctions, Targetism, and Village Autonomy: Poor Relief in Early Modern Rural Japan," in *Public Goods Provision in the Early Modern Economy: Comparative Perspectives from Japan, China, and Europe*, ed. Masayuki Tanimoto and R. Bin Wong (Oakland: University of California Press, 2019), 85.
[42] Ravina, "Confucian Banking: The Community Granary (Shasō) in Rhetoric and Practice," 194–204.
[43] Maren Annika Ehlers, *Give and Take: Poverty and the Status Order in Early Modern Japan* (Cambridge, Massachusetts: Harvard University Asia Center, 2018), 220–21.
[44] Maren Ehlers, "Benevolence, Charity, and Duty: Urban Relief and Domain Society during the Tenmei Famine," *Monumenta Nipponica* 69, no. 1 (2014): 55–101.

limited tax exemptions, in practice they were generally proved to have been reluctant as administrators to actively intervene in local affairs. As such, authorities frequently ended up largely delegating the concrete responsibilities of disaster relief implementation to these diverse autonomous self-governing bodies embedded within local communities, as such groups were supposed to provide forms of mutual aid as a culturally-expected first line of defense.[45]

For example, during the so-called Wild Boar Famine which struck the Hachinohe Domain in northern Honshu during 1749, it was the commoner-led local community itself, in particular relatively wealthy merchants and the network of Buddhist monasteries, who actively took on distributing the bulk of material famine aid to their suffering neighbours.[46] Meanwhile, the peasants who made up the majority of the population were essentially left to their own devices to survive as best they could, by conducting boar hunts in the hills and forests and praying en masse for divine relief.[47] Not only did the domain authorities provide only quite limited, indirect relief such as supplying some firearms to assist in communal boar hunting efforts or sponsoring religious rituals propitiating the gods for succor, they proved fundamentally unable to comprehensively address the more structural, underlying issues that greatly increased the inherent possibility of famine striking in the first place, alongside exacerbating the extreme difficulty of organizing effective relief after the fact.[48] On the one hand, the practice of cash-crop soybean farming encouraged to take advantage of the growing urban food demand had resulted in the unintended ecological consequence of spurring a booming population explosion of wild boars within the deforested terrain surrounding Hachinohe. This in turn led to the animals directly competing with humans for vital food resources during times of scarcity. On the other hand, the highly fragmented political character of Japan's decentralized polity, divided as it was between numerous quasi-autonomous domains jealously guarding their borders and prerogatives, intrinsically hindered the emergence of any integrated, overarching cross-regional food distribution network, whether governmental or commercial in nature, that could have helped more widely distribute local surpluses to alleviate hunger in famine-afflicted districts.

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[45] For relief schemes in urban areas, see Ehlers. For relief schemes in rural areas, see Kinoshita Mitsuo, "Sanctions, Targetism, and Village Autonomy: Poor Relief in Early Modern Rural Japan."
[46] Brett L. Walker, "Commercial Growth and Environmental Change in Early Modern Japan: Hachinohe's Wild Boar Famine of 1749," *The Journal of Asian Studies* 60, no. 2 (May 2001): 339–40.
[47] Walker, 338–40; 345–46.
[48] Walker, "Commercial Growth and Environmental Change in Early Modern Japan."

Where, in this kind of famine relief scheme that prioritized material and monetary measures, should famine plant manuals be located? These texts emerged not from institutionalized governance but localized attempts to circulate knowledge mobilizing intellectual and communal resources amid crisis. Though not governmentally-driven, manuals encouraged self-reliance, illuminating the limits of political and economic power by questioning top-down relief and exploring decentralized survival strategies.

I argue that this genre reveals self-organized knowledge production arising to fill urgent needs unmet by authorities. This liminal position, embedded within yet transcending structures of power, enabled vital information sharing towards survival despite instability.

To develop this argument, I draw on three interdisciplinary fields – famine relief, *bencao* studies or *honzōgaku*, and book history. This multifaceted framework elucidates how manuals operated at the margins of formal systems disseminating knowledge for subsistence where institutional interventions fell short. Their presence points to relief schemes' incompleteness, while their alternative strategies underscores potential beyond institutional paradigms.

1.3 Literature Review

1.3.1 Famine Politics and Knowledge Production

The concept of famine relief encompasses both preventative measures aimed at averting food shortages before they arise as well as interventions focused on alleviating acute scarcity after crisis strikes. Historically, such efforts could be undertaken by a wide range of actors, from grassroots initiatives among the masses to centrally-directed campaigns organized by the state. While scholars have extensively addressed the issue of famine relief arising in many different premodern societies around the world, very few historical examples featured truly large-scale famine interventions spearheaded and implemented primarily by the centralized state. For instance, in his analysis of early modern England, Buchanan Sharp examined the limited role played by the English government when it came to actively managing domestic grain supplies and regulating the grain trade.[49] The state ultimately relied heavily on commercial channels and market exchange to import additional grain from abroad as needed during subsistence crises rather than developing its own centralized distribution systems.

[49] Buchanan Sharp, *Famine and Scarcity in Late Medieval and Early Modern England: The Regulation of Grain Marketing, 1256–1631* (Cambridge University Press, 2016).

In stark contrast, numerous scholars have argued that the principles of a broad, proactive role for the centralized state in actively oversighting and managing nationwide food supply chains were both widely admitted in political philosophy and actively conducted in real administrative practices across imperial China over many dynasties. For instance, Pierre Étienne Will has convincingly demonstrated how, during the High Qing in the eighteenth century, officials developed the logistical capacities to successfully implement large-scale famine relief campaigns distributing grain widely.[50] These interventions were enabled by the fact that Qing officials held strong ideological beliefs in the imperial state's inherent responsibility to actively secure domestic food supplies for the populace in times of severe crisis.

However, successfully delivering on such expansive relief efforts required a huge investment of financial resources alongside massive bureaucratic coordination that often went far beyond the actual fiscal and administrative capacities possessed by the imperial state, despite rhetoric about its powers. Historians like Jennifer Downs and Lilian Li have compellingly demonstrated how over time, both the Ming and Qing dynasties gradually failed to fully and effectively implement their own stated relief policies and distribute promised aid as their available political and economic resources inexorably diminished from their peak.[51]

The vacuum left by the weakening central state's inability to adequately respond, then, motivated a host of other diverse societal agents and institutions to undertake their own relief initiatives in response to local needs. For instance, Joanna Handlin Smith has examined how a range of autonomous benevolent societies in late Ming China, led by figures like merchants, students, physicians, and local elites, took it upon themselves to provide food relief for their communities independent of state direction.[52] By the late nineteenth century, the spectrum of actors involved had expanded even further, to include a prominent role for western missionaries and other foreigners initiating high-profile famine relief campaigns in China.[53]

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[50] Will, *Bureaucracy and Famine in Eighteenth Century China*.
[51] Downs, "Famine Policy and Discourses on Famine in Ming China, 1368-1644"; Li, *Fighting Famine in North China: State, Market, and Environmental Decline, 1690s-1990s*.
[52] For charitable enterprises in imperial Chinese society, see Fuma Susumu 夫馬進, *Chūgoku zenkai zendōshi kenkyū* 中国善会善堂史研究 (Kyoto: Dōhōsha, 1997); Leung Angela Ki-che, *Shishan yu jiaohua: mingqing de cishan zuzhi* 施善與教化：明清的慈善組織 (Taipei: Lianjing chuban shiye gongsi, 1997).
[53] On missionary relief efforts, see Paul Richard Bohr, *Famine in China and the Missionary: Timothy Richard as Relief Administrator and Advocate of National Reform, 1876-1884* (Cambridge, MA: Harvard University, 1972); Andrea Janku, "Sowing Happiness: Spiritual Competition in Famine Relief Activities in Late Nineteenth-Century China," *Minsu Quyi* 143 (2004): 89–118; Li, *Fighting Famine in North China: State, Market, and Environmental Decline, 1690s-1990s*, 276–77.

While the majority of scholarly studies examining responses to famine crises in imperial China have tended to focus heavily on analyzing the relief policies and campaigns undertaken by emperors, their court advisers, and the nationwide bureaucracy, the historiography dealing with famine relief efforts in Tokugawa Japan has centered primarily around assessing the roles played by more local and regional governing bodies. Despite the Tokugawa shogunate's overarching efforts to consolidate political authority and establish centralized control, the actual day-to-day business of providing fundamental public goods and services largely remained the responsibility of the numerous relatively autonomous local and regional governing bodies scattered across the archipelago. For instance, Kinoshita has shown how in rural Japan, individual villages at the local level customarily shouldered the primary duty of providing basic subsistence support and relief to their own resident commoner populations afflicted by famine, with formal, systematic relief programs only granted in a selective, ad hoc manner by their feudal overlords only in certain dire cases.[54] Similarly, in examining responses to famine crises striking urban areas, Ehlers has highlighted the leading roles undertaken by institutions like urban neighborhoods and professional guilds in actively organizing and directly funding many relief activities for the urban poor in their vicinity.[55] Ehlers shows how these local groups cooperated and negotiated with, rather than being controlled by, domain officials and town magistrates in places like Ōno Domain during the devastating Tenmei Famine of the 1780s.

Whether scholarship has tended to concentrate on analyzing state-led or more societal responses to acute subsistence crises and food shortages, much of this work has focused predominantly on examining the implementation of policies and the mobilization of institutional resources, whether human, financial, or material in nature. Yet in order to fully illuminate the human experience of famine historically, I suggest that equal attention deserves to be shifted onto unpacking the myriad processes involved in the messy co-production and fluid communication of famine relief knowledge itself across different groups in society. While historical research into responses to famine has necessarily relied heavily upon interpreting surviving textual sources as windows into past behaviours and mentalities, scholars have arguably not yet adequately addressed the question of how knowledge about the lived experience of scarcities came to be consolidated into these written forms that were seen

[54] Kinoshita Mitsuo, "Sanctions, Targetism, and Village Autonomy: Poor Relief in Early Modern Rural Japan."
[55] Ehlers, "Benevolence, Charity, and Duty."

as valuable or useful enough to reproduce and circulate to wider audiences in the first place. In particular, the widespread phenomenon within Chinese and Japanese history of seeing a notable proliferation of specialized manuals compiled by local authors specifically focusing on codifying and transmitting knowledge about plants consumed as a survival strategy during times of hunger presents a curious case study that warrants deeper explanation and analysis on its own terms.

1.3.2 Beyond *Bencao*

The study of plants and their practical uses in relation to human affairs has a long historical lineage that can be traced back at least as far as the medicinal and culinary herbals produced in ancient times.[56] In the Chinese context in particular, early exploitative, anthropocentric records focused on distinguishing those plants and natural substances that acted as poison versus those that served as medicine. These writings were attributed to the mythic sage-king Shennong, known as the Divine Farmer, whose legendary cataloging achievements laid the textual foundations for the development of *bencao* pharmaceutical learning over successive eras.

He Bian has comprehensively outlined the continuous history in China of material medica knowledge being systematized in *bencao* texts from the fifth century all the way through the sixteenthth century. Bian demonstrates how the influential, government-sponsored *bencao* texts arising across this long period came to dominate the medical intellectual landscape, reinforcing elite perceptions and specialized approaches to studying, cataloging and depicting natural objects like plants primarily based on their practical uses as sources of healing.[57]

The remarkable longevity and persistence of these Chinese medicinal pharmacopeia established textual, organizational and pictorial conventions that coalesced in the sixteenth-century masterwork *Bencao gangmu* 本草綱目 (Systematica Materia Medica). This expansive compendium synthesized and systematically surpassed the *bencao* genre, encompassing nearly 2,000 entries spanning minerals, fauna and flora.[58] As Georges Métailié

[56] For early Greece, see Laurence M. V. Totelin, *Hippocratic Recipes: Oral and Written Transmission of Pharmacological Knowledge in Fifth- And Fourth-Century Greece* (Leiden: Brill, 2009). For early China, see Donald John Harper, *Early Chinese Medical Literature: The Mawangdui Medical Manuscripts* (New York: Kegan Paul International, 1998).

[57] Bian, *Know Your Remedies: Pharmacy and Culture in Early Modern China*, chap. 1.

[58] For a through identification and explanation of the terms, places, figures, sources and substances in *Bencao gangmu*, see Zhang Zhibin and Paul U. Unschuld, eds., *Dictionary of the Ben Cao Gang Mu: Chinese Historical Illness Terminology*, vol. 1 (Oakland: University of California Press, 2015); Hua Linfu, Paul D. Buell, and Paul

has underlined, the utilitarian approach toward examining and cataloging all living creatures and natural objects primarily as potential pharmaceutical ingredients continued to heavily prevail in Chinese intellectual culture for centuries after, a worldview that should be understood within a larger context where the study of the natural world was very often tailored expressly to serve anthropocentric, instrumental purposes.[59]

With the introduction of this monumental *Bencao gangmu* into Japan in the seventeenth century and the flourishing of extensive scholarly attention paid to studying the text, a similar perception of natural objects as holding value specifically for their uses in serving human medical needs was also notably underlined and propagated within Japanese academic circles studying *honzōgaku* in the early Tokugawa period. During this era, a textualist approach and lexicographical methods of identifying nature primarily through book-based medicinal names and applications initially prevailed.

However, Federico Marcon has deftly crafted how the development of *honzōgaku* in Tokugawa Japan gradually departed in significant ways from the path followed by its Chinese pharmacopeia counterpart.[60] He highlights how it came to encompass diverse subject matter ranging beyond straightforward materia medica into realms like agronomy, botany and natural history more broadly. It employed novel sets of scholarly habits emphasizing firsthand observation, experimentation and open discussion. And it highlighted use of unconventional representation tools like "true-to-nature" artistic illustrations over the classical schematics.[61] In this sense, Tokugawa nature studies ended up closely resembling concurrent developments in Renaissance Europe, where increasingly rigorous practices of collecting, describing and

U. Unschuld, eds., *Dictionary of the Ben Cao Gang Mu: Geographical and Administrative Designations*, vol. 2 (Oakland: University of California Press, 2017); Zheng Jinsheng et al., eds., *Dictionary of the Ben Cao Gang Mu: Persons and Literary Sources*, vol. 3 (Oakland: University of California Press, 2018). For a detailed investigation on *Bencao gangmu*, see Carla Nappi, *The Monkey and the Inkpot: Natural History and Its Transformations in Early Modern China* (Cambridge: Harvard University Press, 2009).

[59] Georges Métailié, "Concepts of Nature in Traditional Chinese Materia Medica and Botany (Sixteenth to Seventeenth Century)," in *Concepts of Nature: A Chinese-European Cross-Cultural Perspective*, ed. Hans Ulrich Vogel and G. Nter Dux (Leiden: Brill, 2010).

[60] Marcon, *The Knowledge of Nature and the Nature of Knowledge in Early Modern Japan*.

[61] For the practices of pictorial presentation and the conceptual core behind them in the late Tokugawa period, see Maki Fukuoka, *The Premise of Fidelity: Science, Visuality, and Representing the Real in Nineteenth-Century Japan* (Stanford: Stanford University Press, 2012). For making visual arguments during the Renaissance in Europe, see Sachiko Kusukawa, *Picturing the Book of Nature: Image, Text, and Argument in Sixteenth-Century Human Anatomy and Medical Botany* (Chicago: University of Chicago Press, 2012).

depicting the natural world in standardized ways out of a "pure" intellectual interest in the objects themselves as curiosities were rapidly taking shape across scientific circles.[62]

Like the established pharmaceutical texts of the *bencao* genre, the quest to identify and describe famine plants fundamentally lay in recognizing and emphasizing their potential virtues of utility and application to human needs, and thus this novel field fit relatively easily into the existing anthropocentric approaches to cataloging and depicting the natural world that had developed within Chinese and Japanese intellectual cultures. In particular, the evident influence of certain enduring textual, organizational, and illustrative conventions originating in classical *bencao* literature provided some degree of justification for the incorporation of famine plant manuals into the framework of *bencao* knowledge.[63]

However, I aim to problematize and unravel this notion of famine plant manuals constituting a straightforward, uncontested subdomain squarely within the boundaries of *bencao* studies. Instead, I want to emphasize the inherently fluid, shifting nature of the porous categories and hierarchies continually being negotiated and renegotiated within the dynamic construction of knowledge fields. I argue that the emergence of famine plant manuals ultimately served to broaden the acceptable range of objects of study as well as open up space for alternative systems of approaching, analyzing, and representing the natural world, and thus these manuals can be seen as actively negotiating and destabilizing the boundaries of normative *bencao*/*honzōgaku* fields through their very existence.

In particular, the active production and dissemination of practical plant knowledge related to famine foods was not monopolized solely by established cultural authorities within the orthodox *bencao* tradition, such as professional herbalists and physicians. Instead, the compilation and advancement of famine plant manuals was often crucially initiated, patronized, and informed by elite amateur scholars from broader backgrounds who possessed an intellectual interest in cataloging nature. In many ways, famine plant manuals can be seen as counteracting the more rigidly normative tasks put forth in pharmacological compendia to strictly standardize the nomenclature, essential qualities, and proper hierarchical utilizations of medicinal plants, while authoritatively designating and delineating their proper places within a closed, defined cosmology. In contrast, as a loose grouping of literature bound

[62] Brian W. Ogilvie, *The Science of Describing: Natural History in Renaissance Europe* (Chicago: University of Chicago Press, 2008).
[63] Bian, *Know Your Remedies: Pharmacy and Culture in Early Modern China*, 34.

together primarily by a shared practical subsistence purpose rather than adherence to textual conventions, famine plant manuals by nature simultaneously mobilized and synthesized various kinds of knowledge and intellectual resources well beyond the limits of medicine alone. This encompassed the integration of non-medical empirical observations, folk botanical wisdom, culinary perspectives on edible flora and fauna, and other unorthodox approaches to cataloging nature, challenging the firmer distinctions maintained between seemingly disparate or competing spheres of natural knowledge within the culture, while also introducing provocative new perspectives.

Overall, my research findings suggest that the distinctive study of and literary production focused on codifying famine plants constitutes a clearly integral, yet uniquely understudied aspect of the multidimensional inquiry into the natural world taking place during both Ming-Qing China and Tokugawa Japan. Thus contextualizing and highlighting the manuals compiled on this marginalized topic within the larger, messier picture of scholarly intellectual culture at the time would ultimately do well to greatly enhance and deepen our modern understanding of the complex mix of competing motivations, incentives and meanings that informed and gave widespread appeal to diverse forms of natural studies in the early modern period. The improvised mobilization of knowledge and resources seen in the famine plant manuals provides a compelling window into the dynamism and interdisciplinary cross-pollination thriving even within seemingly well-defined knowledge fields in response to the urgent needs and interests of the day.

1.3.3 Moral Obligation, Noncommercial Publication and Transregional Circulation

In both the mid-late Ming dynasty in China and the mid-late Tokugawa period in Japan, major advancements in printing technology centered in urban hubs like the Jiangnan region and the cities of Edo and Kyoto enabled the flourishing of a diverse publishing industry that could circulate texts through increasingly far-reaching distribution networks. Much scholarship examining the history of the book in East Asia has concentrated predominantly on exploring the rise of commercial printing, which many argue constituted an integral and essentially unique aspect of early modernity in China and Japan. For instance, drawing on the specific example of Jianyang in Fujian developing from the Song into the Ming dynasty, Lucille Chia has emphasized the significance of shifting economic factors and incentives that fundamentally determined the repertory of titles printed, heavily shaped the prevalent visual and aesthetic styles of publications, and ultimately contributed substantially to enabling the

explosive expansion of the overall book trade.[64] Mary Elizabeth Berry has compellingly revealed the ways in which practical forms of knowledge circulated rapidly through the wide array of inexpensive, mass-produced commercial imprints like maps and travel guides ended up profoundly influencing the rise of a sense of national collectivity and unified imagined community among readers across geographic and social strata.[65]

However, the people actually living within the literacy spheres of sixteenth-century China or nineteenth-century Japan would have enjoyed access to and actively consumed a literary world made up of a far more heterogeneous array of publications than just commercially-printed works alone. For instance, in his wide-ranging bibliographic study, Timothy Brook has enumerated at least 738 different titles that were published directly by the official agencies of the centralized imperial state in Beijing and Nanjing in Ming China.[66] His work suggests the enduring reality that the government itself functioned as a major prolific publisher, with its diverse official publications being broadly circulated as part of the textual economy among various officials, degree-holders, and even foreign envoys. Dai Lianbin has revisited and reanalyzed the catalogue of Ming imprints compiled by Du Xinfu, making the claim that actually more than two-thirds of the titles documented were works best classified as "household publications", texts financed, compiled, and distributed by private individuals or amateur scholarly societies rather than commercial or state publishers.[67] Dai argues that these noncommercial household publications likely exceeded governmental imprints as well as commercial publications in sheer number during the peak era of output from the end of the fifteenth century to the early seventeenth century. Fabian Drixler and Niels van Steenpaal have revealed through case studies how in Tokugawa Japan, authors ranging from village elites to Edo intellectuals proactively used their own initiative to mobilize resources from personal finances to circles of collaborators in order to produce hundreds of original works including woodblock-printed pamphlets and illustrated placards conveying information and arguments tailored to local contexts from preventing infanticide to countering popular

[64] Lucille Chia, *Printing for Profit: The Commercial Publishers of Jianyang, Fujian (11th-17th Centuries)* (Cambridge, Mass.: Harvard University Asia Center, 2002).
[65] Mary Elizabeth Berry, *Japan in Print: Information and Nation in the Early Modern Period* (Berkeley: University of California Press, 2007).
[66] Timothy Brook, "A Bibliography of Books Published by the Ming State," in *Imprimer sans profit?: le livre non commercial dans la Chine impériale*, ed. Michaela Bussotti and Jean-Pierre Drège (Geneva: Librairie Droz S.A., 2015), 155–99.
[67] Dai Lianbin, "Household Publications in the Society of Ming Hangzhou," in *Imprimer sans profit?: le livre non commercial dans la Chine impériale*, ed. Michaela Bussotti and Jean-Pierre Drège (Geneva: Librairie Droz S.A., 2015), 339–414.

superstitions.[68] These amateur publishers then improvised distribution methods from posting in public spaces to giving out texts for free in order to achieve substantial circulation of their messages to broader audiences across Japan that went far beyond their immediate social networks. In essence, these instances illuminate how, beyond just commercial printing, active publishing efforts by diverse actors ranging from state agencies to amateur scholars also played vital yet underappreciated roles throughout the early modern eras in China and Japan.

In addition to printed imprints, non-profit publications encompassed handwritten copies as well. Joseph Dennis has illustrated how in the Song dynasty, the majority of local and regional gazetteers recording geographical and cultural knowledge about specific localities continued to be produced and circulated primarily in the form of manuscripts, whether fully handwritten or woodblock printed but with only limited partial distribution.[69] Similarly, Peter Kornicki has identified and analyzed the diverse array of manuscript formats that were actively produced and selectively circulated in elite circles during the Edo period in early modern Japan.[70] He argues that these served a variety of key roles from responding directly to localized needs and specialized interests to preserving and transmitting traditional knowledge to intentionally restricting external access and evading potential censorship by the shogunate. The range of manuscripts encompassed crucially important works like local topographies, regional histories, academic textbooks, practical farming manuals, and teachings on medical techniques.

In reality, the boundaries delineating commercial and noncommercial forms of publishing remained far more porous and blurred, rather than concrete and rigid, as various works manifested flexible production and circulation patterns across the perceived sectors.[71] While my aim here is not to thoroughly interrogate or deconstruct the definitions, taxonomies and relationships posited between the notions of "commercial" and "noncommercial" forms of publication, I suggest that carefully examining the production and distribution history of

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[68] Fabian Drixler, *Mabiki: Infanticide and Population Growth in Eastern Japan, 1660-1950* (Berkeley: University of California Press, 2013), chap. 9; Niels van Steenpaal, "Taming the Fire Horse: The Free Distribution of Anti-Supersition Pamphlets in Early Modern Japan," *East Asian Publishing and Society* 5, no. 2 (2015): 178–216.

[69] Joseph Dennis, "Early Printing in China Viewed from the Perspective of Local Gazetteers," in *Knowledge and Text Production in an Age of Print: China, 900-1400*, ed. Lucille Chia and Hilde De Weerdt (Leiden: Brill, 2011).

[70] Kornicki, "Manuscript, Not Print: Scribal Culture in the Edo Period," 33–42.

[71] For the collaboration between non-profit ventures and commercial industry in Tokugawa Japan, see van Steenpaal, "Taming the Fire Horse: The Free Distribution of Anti-Supersition Pamphlets in Early Modern Japan."

specialized texts like famine plant manuals can shed revealing light on elucidating the deeper significance and impact of publications produced with a more secondary or nominal interest in potential profit incentives. This can provide broader insight into their creation, dissemination, and consumption patterns despite operating outside commercial spheres.

Unlike the European publishing landscape, where commercial printing and bookselling centered in major cities has been argued by scholars like Elizabeth Eisenstein to constitute a keystone element of historical modernity, noncommercial publications in fact occupied a uniquely privileged and prominent role within the overall composition of textual records studied from early modern East Asia.[72] Despite the inherent diversity of non-profit publications spanning numerous distinct types and genres, varying greatly in their intended geographic reach and catering to highly divergent groups of readers with differential underlying purposes, certain clear preferences and regular patterns in terms of genre can be discerned. These gravitated toward the production and dissemination of expected categories like Buddhist and Daoist religious scriptures, Confucian philosophical classics, dynastic and local histories, lineage and community genealogies, and gazetteers documenting individual temple histories.[73]

The focused texts dealing explicitly with codifying and disseminating practical knowledge related to famine plants do not merely represent yet another marginal genre and coherent book trade category to tack onto the periphery of the vibrant noncommercial publication sphere, in which certain prominent types of not-for-profit textual production have been thoroughly addressed in previous book history research. More significantly, analyzing famine plant manuals in depth also crucially highlights the enduring influence and gravity of fundamental moral obligations, humanitarian intentions, and philanthropic motivations in inspiring and driving the very manufacture of these literary products focused on creatively transferring specialized practical knowledge beyond commercial incentives.[74] As such, they were often originally inspired by earnest thoughts centered on promoting the fundamental

[72] Commercial publishing has been argued to have impacts on political, social and intellectual history. For the making of "imagined community", see Benedict Anderson, *Imagined Communities: Reflections on the Origin and Spread of Nationalism* (London: Verso, 2006). For the spread of Enlightenment ideas, see Robert Darnton, *The Business of Enlightenment: A Publishing History of the Encyclopédie, 1775–1800* (Cambridge, Mass.: Harvard University Press, 1987).
[73] Bussotti and Drège, *Imprimer sans profit?: le livre non commercial dans la Chine impériale*.
[74] On the influence of moral obligations on Chinese printing, see Tsien, 1985, *Paper and Printing*, in *Science and Civilization in China.*

humanitarian virtues of compassion, benevolence and charity toward the suffering of others, rather than commercial considerations.

Furthermore, placing handwritten copies and imprints directly alongside each other as objects of joint analysis helps productively transgress and break down the artificial dichotomy scholars like Peter Kornicki have identified between notions of scribal manuscript culture versus print culture.[75] Instead it better highlights the complex, nuanced ways in which handwritten and printed modes of textual production and circulation in fact played fundamentally complementary roles in enabling the spread and preservation of valuable information within society, despite their obvious differences in material form.

1.4 Chapter Outline

Chapter one sets the stage by tracing the emerging of famine plant manuals in Ming-Qing China and Tokugawa Japan, which were originated from three writing traditions in particular, i.e. agricultural treatises, *bencao* literature and famine relief writings. I argue that these manuals responded to recurring food crises that could not be eliminated by institutional relief efforts in premodern East Asia. Various actors, including local officials, literati, herbalists, physicians, commoner philanthropists and commercial publishers, participated in the compilation of famine plant manuals to demonstrate humanism, channel literary energies, increase political, social and cultural influences, and gain economic benefits. By combining and transforming herbal knowledge and famine experience, famine plant manuals evolved into a specific genre that cut across existing genres.

Chapter two examines differentiated understandings of famine plants in Ming-Qing China and Tokugawa Japan by analyzing texts and images in famine plant manuals. Investigating selection, classification, description, and visualization of plants, I argue that "famine plants" was a dynamic category, shaped by and shaping concepts of edibility, seasonality, toxicity, and accessibility within specific material realities and intellectual environments. To meet the practical needs for foraging and consumption, authors highlighted availability and safety, centering texts on recipes. In comparison, they relegated images to secondary identification roles, if not merely decoration and attraction. Despite influence from

[75] Cynthia J Brokaw, "Publishing, Society and Culture in Pre-Modern China: The Evolution of Print Culture," *International Journal of Asian Studies* 2, no. 1 (2005): 155. For the Japanese case, see Kornicki, "Manuscript, Not Print: Scribal Culture in the Edo Period." For the European cases, see David McKitterick, *Print, Manuscript and the Search for Order, 1450-1830* (Cambridge: Cambridge University Press, 2003).

bencao literature on the composition of famine plant manuals, they reformulated form and content for practicality.

Chapter three explores the manufacture and circulation of manuals in handwritten and printed forms with corresponding distribution modes. Manuscript culture persisted alongside printing, increasing availability of difficult-to-access writings, spreading emergent messages, and limiting knowledge access. Official printin, especially strong in the sixteenth-century China, and free printing, thriving in the nineteenth-century Japan, multiplied imprints. Handwritten and printed copies complimented each other, widening circulation and expanding readership. I argue that the non-profit production and distribution underscored popularizing famine plant knowledge as a benevolent, charitable cause.

Chapter four examines the reception and application of manuals, frequently discussed in famine administration and nature studies. I argue that the ambiguous positioning of famine plant manuals between statecraft and *bencao* opened up possibilities for diverse actors to apply them to different purposes. Encouraging self-reliance outside government narratives yet indicating relief failure through compelled foraging, manuals were marginalized from official schemes, if ever included. Further, officials shifted focus from foraging guidance to promoting cultivation of certain plants, underlining the utmost importance of prevention in famine relief. Largely overlooked in China as diverging from *bencao*'s pharmaceutical approach, manuals provided valuable natural knowledge for Japanese scholars, shaping understandings of nature.

The epilogue concludes the dissertation by giving a glimpse of the production and circulation of famine plant manuals in the twentieth century in and beyond East Asia. It highlights how development in epistemic fields like chemical analysis and and nutritional science combined with shifting attitudes toward famine foods reconfigured and transformed the categories, hierarchies, and meanings surrounding texts cataloging useful plants. This underscores the need for continual scholarly reassessment and recalibration of knowledge across time and space in tandem with larger socio-cultural transformations.

Overall through this study of the corpus of manuscripts and imprints focused on famine plants produced in early modern China and Japan, I aim to achieve a more sophisticated, nuanced understanding of the myriad complex dynamics at play in the contingent, mediated processes of knowledge production and transmission active in a historical world where concepts were expressed and moved between translation zones not solely via clean

transmission through literal linguistic translation of terminology, but rather via active processes of contextualized reinterpretation and strategic co-articulation of ideas in new socio-cultural, political, and epistemic realities.

2 The Emergence of Famine Plant Manuals

In 1399, when the Jianwen Emperor ascended the throne, he inititated a campaign against his uncles to weaken their political and military power, which he saw as a threat. One target was his uncle Zhu Su 朱橚 (1361-1425), the Prince of Zhou, who was accused of conspiracy against the new emperor. Zhu Su was arrested and exiled to Yunnan as punishment. It was not until 1402 when Zhu Su's full brother Zhu Di 朱棣 (1360-1424), later known as the Yongle Emperor, overthrew Jianwen and seized power for himself that Zhu Su was finally able to return from exile to his fief in Kaifeng, Henan.[76]

Although having deposed Jianwen, the Yongle Emperor continued his predecessor's policy of suppressing princes through strict limits on their military forces and political involvement.[77] Even the new emperor's own full brother faced stringent restrictions on his activities and power. Between the seventh and ninth months in the third year of the Yongle era alone, the emperor was recorded to have harshly rebuked Zhu Su three separate times: once for commandeering official and private ships to carry food supplies for the princely household, again for exercising unauthorized command over military forces, and a third time for posting notices outside his fief.[78]

Having been thorouly denied political and military rights and confined to his fief, Zhu Su turned to scholarly pursuits and book compilation to occupy his time. By 1406, he had already completed at least three medical treatises: *Baosheng yulu* 保生余錄 (Extensive Record of Life Preservation), *Puji fang* 普濟方 (Prescriptions for Universal Relief), and *Xiuzhen fang* 袖珍方 (Pocket-size Prescriptions, preface 1391).[79] Now he embarked on a new project with the aim of collecting information on edible plants that could provide sustenance for hard times. To support this work, Zhu Su purchased seedlings and buds from local farmers to grow examples of the plants in his own garden. Once they had reached maturity, he then

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[76] In 1402, before the Yongle Emperor's capture of Nanjing, Zhu Su was summoned from Yunnan to the capital and imprisoned there, probably as hostage. He was officially returned to his fief in the first month of the first year of the Yongle era.

[77] For the Yongle Emperor's concrete *xuefan* 削藩 (weaken the vassal states) measures, see Liang Manrong 梁曼容, "Mingdai fanwang yanjiu 明代藩王研究" (PhD Diss., Northeast Normal University, 2016), 50–66.

[78] MSL, Yongle, 3/7/5, 44: 690-691; 3/7/10, 44: 692-693; 3/9/9, 46: 711. Records of Ming princes' misbehaviours clustered in the Yongle era, indicating that the Yongle Emperor emphasized his centralized power by disciplining the princes. See Liang Manrong, 57–59.

[79] Zhu Su commissioned the compilation of *Baosheng yulu* and *Puji fang* at the age of twenty or so in the 1380s, and *Xiuzhen fang* around 1390. See his preface in the 1415 reprint of *Xiuzhen fang* in Taki Mototane 多紀元胤, *Yiji kao* 醫籍考, trans. Guo Xiumei 郭秀梅 and Okada Kenkichi 岡田研吉 (Beijing: Xueyuan chubanshe, 2007), 416–17.

commissioned artists create detailed paintings depicting each ripe plant. These images were paired with explanatory texts describing which parts were edible and how each plant whould be prepared. This endeavor ultimately resulted in the creation of *Jiuhuang bencao*, the first known monograph solely focused on famine plants. Zhu Su's pioneering work would circulate widely and inspire a new genre of literature on edibles that flourished in Ming-Qing China and Tokugawa Japan.

The compilation of a book dedicated to planning for food scarcity and famine seems curiously out of step with a claimed era of peace and abundance.[80] In 1405, the year before the publication of *Jiuhuang bencao*, the emperor sent the immense treasure fleet led by admiral Zheng He 鄭和 (1371-1433) on the first of seven famed maritime expeditions, intended to project the empire's power and wealth abroad.[81] That same year, he also mobilized over 2000 scholars from across China to search exhaustively for texts to be included in what was later known as *Yongle dadian* 永樂大典 (The Great Canon of the Yongle Era), the largest encyclopedia ever compiled up to that point. The massive work, surpassed in size only centuries later by Wikipedia, was bold statement of the emperor's authority over knowledge and culture.[82]

This context raises compelling questions. Why did interest in cataloging famine plants arise as the fifteenth century dawned? And why did the concern with collecting and circulating knowledge famine plants persist for centuries thereafter?

This chapter investigates the sociopolitical and cultural conditions that enabled the production of individual famine plant manuals within their specific historical circumstances. Much of the existing scholarship on famine relief tends to concentrate on governmental policies and societal institutions, without adequately addressing the critical epistemic processes of generating and communicating knowledge that were integral to organized and individual disaster prevention and preparation.[83] By shifting the focus to analyzing famine

[80] Bian Tong, "Preface."
[81] On Zheng He's voyages as power projection to establish hegemony, see Edward L. Dreyer, *Zheng He: China and the Oceans in the Early Ming Dynasty, 1405-1433* (New York: Pearson Longman, 2007); Tansen Sen, "Zheng He's Military Interventions in South Asia, 1405–1433," *China and Asia* 1, no. 2 (December 20, 2019): 158–91. On the routes taken in the voyages from 1405 to 1433 in the Middle East and southern Asia, see Zhou Yunzhong 周運中, *Zheng He xiaxiyang xinkao* 鄭和下西洋新考 (Beijing: Zhongguo shehui kexue chubanshe, 2013).
[82] See Shih-Shan Tsai, *Perpetual Happiness: The Ming Emperor Yongle* (Seattle and London: University of Washington Press, 2001), 132–37.
[83] For governmental famine relief policies and campaigns in Ming-Qing China, see Downs, "Famine Policy and Discourses on Famine in Ming China, 1368-1644"; Will, *Bureaucracy and Famine in Eighteenth Century China*. For governmental and societal famine relief campaigns in Tokugawa Japan, see Ehlers, "Benevolence, Charity,

plant manuals and the context of their compilation, this chapter seeks to illuminate governmental responsibilities and capabilities regarding food shortages. I argue that this genre arose in response to recurring scarcities that could not be completely eliminated by governmental efforts. To substantiate this argument, the chapter will unfold in three sections. First, I will examine understandings of famine plants before the fifteenth century, demonstrating that they had already been discussed in various genres of writing before the publication of *Jiuhuang bencao*, including agriculture treatises that promoted the cultivation of alternative crops, *bencao* literature concerned with nurturing health and prolonging life, and famine relief texts that framed the reliance on unorthodox plants as a sign of societal breakdown and catastrophe. Second, I will look into the possible motivations and literary approaches behind the creation of *Jiuhuang bencao*. I suggest that the newfound effort to document famine plants as a distinct subject of study in its own right were driven by personal interest in the natural world and pursuit for for social and cultural influence when political participation was discouraged, rather than state directives or catastrophes. In addition, the compilation process reveals two key approaches that proved central to the genre: on the one hand, *bencao* literature shaped the classification scheme and descriptive vocabulary pertainting to plants while, on the other hand, direct observation and study of actual plant specimens was identified as indispensable source of empirical knowledge rather than mere book learning. Last, I will trace the growing body of famine plant knowledge over successive centuries by situating the production and reproduction of manuals within their own specific sociopolitical and intellectual contexts, demonstrating that the recurrence of food shortages and famines played a vital role in sustaining an ongoing practical concern with cataloging and circulating knowledge on edible plants, despite governmental intermittent attempts to mitigate the problem through relief policies.

2.1 Alternative Crops, Immortality Diets, and Human Tragedies

The consumption of plants as emergency food sources during times of shortages has a long history in China, as evidenced by descriptions and discussions found in both private records and official documents over the centuries. In the late Liang dynasty (502-557 CE), frequent droughts coupled with destructive locusts plagues afflicting the areas south of the

and Duty"; Kikuchi Isao 菊池勇夫, *Kikin kara yomu kinsei shakai* 飢饉から読む近世社会 (Tokyo: Azekura shobō, 2003).

Yangtze River forced common people to forage for whatever sustenance they could find in the surrounding hills, mountains, lakes and rivers.[84] In 618 CE, during the turbulent collapse of the Sui dynasty, the added pressures of heavy taxation imposed on the distressed populace, combined with widespread food scarcity, compelled many to take desperate measures such as collecting barks and leaves, pounding stalks into powders, and even boiling soils in an attempt to assuage their hunger.[85] When Tang troops later blockaded the city of Luoyang in 621, cutting off critical food supplies, the trapped residents were reduced to consuming grass roots and tree leaves out of starvation.[86] Across history, natural calamities, financial pressures exacerbated by corruption and taxation, and the devastating impacts of military conflicts all could necessitate this type of search for makeshift famine foods.

Given the lamentably common occurrence of famine conditions, it is unsurprising that the consumption of alternative food sources during times of crisis is discussed in a rich corpus of literature spanning multiple genres, including agricultural treatises, *bencao* literature, and statecraft writings. However, different genres tended to highlight distinct aspects of plants as famine food. Agricultural treatises focused on the potential utility of cultivating emergency backup crops. *Bencao* literature emphasized the use of plants to nourish health and prolong life, even in dire circumstances. Statecraft writings framed the reliance on foraging weeds and plants as a clear sign of societal breakdown and catastrophic famine requiring immediate state intervention.

One of the most prominent genres addressing plants as famine foods consists of agriculture treatises, defined by Bray as "works that provide a systematic, comprehensive description of agricultural methods and techniques".[87] These include dedicated monographs focused on a single plants species, as well as more extensive general overviews of farming practices.

The earliest known mention of famine plants appeared around the Common Era in the earliest general agricultural treatise *Fan Shengzhi shu* 氾勝之書 (Book by Fan Shengzhi), compiled by Fan Shengzhi 氾勝之 (fl. first century BCE). Little is known about the author

[84] Li Wenhai 李文海, Xia Mingfang 夏明方, and Zhu Hu 朱滸, eds., *Zhongguo huangzhengshu jicheng* 中國荒政書集成, vol. 1 (Tianjin: Tianjin guji chubanshe, 2010), 18.
[85] Li Wenhai, Xia Mingfang, and Zhu Hu, 1:19.
[86] Li Wenhai, Xia Mingfang, and Zhu Hu, 1:24.
[87] Francesca Bray, *Science and Civilisation in China*, ed. Joseph Needham, vol. 6 (New York: Cambridge University Press, 1984), 55.

except that he served as a Han dynasty official under Emperor Cheng (r. 51-7 BCE). He was first a *yilang* 議郎 (official court gentleman for consultation), then *quannong shi* 勸農使 (agricultural promotion commissioner), and later *qingju shizhe* 輕車使者 (Commissioner of charioteers). Fan spent part of his career instructed agricultural production in Shaanxi, which presumably informed the empirical knowledge recorded in his treatise. Although the treatise was lost sometime between the Song and Yuan dynasties, valuable excerpts survive through quotation in later works like the agricultural treatise *Qimin yaoshu* 齊民要術 (Essential Techniques for the Common People) and the encyclopedia *Taiping yulan* 太平御覽 (The Imperial Reader Compiled during the Taiping Reign). Based on these surviving fragmented passages, *Fan Shengzhi shu* seems to have provided a comprehensive overview of the major field crops that were grown and the agricultural methods that were employed in northern China during the Former Han Period (206 BCE – 8 CE).

Out of the thirteen crops that received detailed description and instruction, including grain on the stalk, millet, wheat, rice, barnyard grass, soybeans, small beans, nettle-hemps, hemps, melons, gourds, taros, mulberries, Fan singled out two resilient plants – barnyard grass and soybean – which he proposed should be purposefully planted in order to prepare for periods of potential food shortage. While neither were obscure plants, Fan's novel recommendation recognized that their hardy, high-yield properties could provide supplementary food at times when primary staple crops failed. In this way, his treatise constituted the earliest known written suggestion to strategically cultivate certain select supplementary species for their famine relief potential, though he did not go so far as to formulate an explicit systematic concept of "famine plants" per se. Nonetheless, Fan Shengzhi's astute recognition of millet and soybeans as disaster-resilient crops that could save lives in times of need represented a preliminary step toward the later development of famine plant literature in the following centuries.

More than five centuries after the pioneering work of Fan Shengzhi, another middle-ranking official named Jia Sixie 賈思勰 (fl. early sixth century) compiled *Qimin yaoshu,* the earliest agricultural treatise surviving in entirety. This book was completed between the 530s and 540s, in the midst of a particularly turbulent period of political chaos, constant warfare, and disruption of agricultural lands resulting from the fall of the Northern Wei dynasty (386-534) in 534. The traumatic upheavals and regional devastation caused by ongoing wars likely informed Jia's interest in famine foods.

Expanding beyond the specialized focus on farming in Fan Shengzhi's earlier treatise, the encyclopedic *Qimin yaoshu* covered a diverse range of topics related to agriculture, forestry, animal husbandry, fisheries and an array of technical sideline occupations over the course of its 92 expansive chapters and 10-*juan* of dense text. Although not consolidated into any defined section or subject category, Jia's prescient and detailed discussions regarding plants as famine foods were dispersed across multiple chapters and sections. This structure indicates that while Jia was clearly interested in going beyond staple crop promotion to cover alternative edible plants, he did not formally synthesize these accounts into a discrete, cohesive theory of "famine plants", unlike the focused famine plant manuals that would emerge centuries later. However, Jia did thoughtfully include substantive explanations on cultivation and usage for eight key plant species that he singled out as particularly important famine foods: barnyard grass, soybeans, taro, turnips, apricots, mulberries, acorns, and water chestnuts.

Jia significantly built upon and enriched Fan Shengzhi's foundation by elaborating on their uses. For barnyard grass and soybeans that had already been mentioned in Fan's agricultural treatise, Jia acknowledged and validated their usefulness as alternative famine relief crops by directly quoting the relevant passages on their properties from Fan's work. However, Jia also deliberately revisited and expanded upon Fan's brief discussions of taros and mulberries. While Fan had mainly detailed practical cultivation techniques for these two plants without elaborating on consumption habits, Jia crucially highlighted and foregrounded their significant potential to serve as vital emergency food sources during times of shortage. Going beyond farming advice, Jia suggested specific methods of processing and storing mulberries that could maximize their famine relief utility. He proposed that dried mulberries in particular could serve as pivotal food substitute when grains ran short.[88] To justify this usage, Jia cited a historical anecdote in which a county magistrate encouraged the preservation of dried mulberries, which were then offered as vital provisions for the military troops of the regional warlord Cao Cao 曹操 (155-220.[89] The prevalence of dried mulberries across northern China by the sixteenth century proved these fruits to be a crucial food resource that Jia claimed had saved countless lives during recurrent famines in the region.[90]

[88] Jia Sixie 賈思勰, *Qimin yaoshu yizhu* 齊民要術譯注, trans. Miao Qiyu 繆啓愉 and Miao Guilong 繆桂龍 (Shanghai: Shanghai guji chubanshe, 2006), 311.
[89] Jia Sixie, 311.
[90] Jia Sixie, 312.

While mulberries were used as famine foods in practice, another potent famine food source - taro – was underutilized. Jia lamented that "now many people in the central plains do not take them seriously and shut their eyes to and turn deaf ears to taros".[91] He responded to this neglect of a potent famine food resource with harsh criticism, declaring that "knowing but not cultivating led to vanishing lives".[92] As a corrective, he explicitly urged rulers and governors to vigorously promote the widespread cultivation of taro, which he affirmed "can be used to relieve famine and survive bad years".[93]

Moreoever, Jia expanded the scope of edible plants for famine relief beyong Fan Shengzhi's treatise, elaborating in detail on four additional food resources: acorns, turnips, apricots, and water chestnuts. He noted that acorns were typically only used to fatten pigs during years of good harvest, but pragmatically stated that during times of poor harvest they "can be consumed by people as staple food." [94] This conditional differentiation in use clearly indicated that the identification of "famine foods" remained a flexible category, defined largely by practical intentions based on urgent need. While the edible value of acorns still needed to be underlined by Jia, the efficacy of turnips as famine food was already confirmed by an imperial edict of planting turnips to buffer the poor harvest caused by locust plagues and floods in 154.[95] However, Jia did not actually consider turnips an ideal famine relief crop due to their limited output.[96] Instead, he promoted the integration of turnips into everyday diets, providing a recipe for delicious steamed turnip that blurred the conceptual lines between routine foods and famine foods.[97] Furthermore, Jia verfied the efficacy of apricots for relieving famine by citing historical accounts in which people lived on apricots in times of turmoil.[98] Beyond direct nutritional value, he explained that apricots could provide indirect economic value through barter and trade for precious cereal grains. Finally, his unique advocation for cultivating the aquatic plant water chestnut crucially expanded the scope of the quest for substitute famine foods to include potentially overlooked sources in lakes and rivers.

While in the preface, Jia claimed that the massive compendium was merely intended as a practical instruction manuals for the education of the younger generation in his own family,

[91] Jia Sixie, 168
[92] Jia Sixie, 168
[93] Jia Sixie, 168
[94] Jia Sixie, 352.
[95] Jia Sixie, 182.
[96] Jia Sixie, 182.
[97] Jia Sixie, 182.
[98] Jia Sixie, 278.

the frequent suggestions directed at rulers on governance matters such as promoting the cultivation of taro indicate that the book was envisioned to appeal to a much broader audience of elite readers.[99] This is confirmed by the later printing and distribution of *Qimin yaoshu* among literati-officials during the Northern Song dynasty (960-1127), which would help disseminate concern for famine plants.

The observations on potential famine plants scattered through *Qimin yaoshu* were also selectively passed down and disseminated through the Yuan dynasty compilation *Nongsang jiyao* 農桑輯要 (Collections of Essentials for Agriculture and Sericulture). This imperial work, edited by a team of officials, was basically a collage of more than ten previous agricultural treatises, with the replicated *Qimin yaoshu* making up a third of the final work.[100] In selecting content to incorporate, the compilers intentionally made judicious choices to retain only extracts deemed useful for instructing pragmatic agricultural and sericulture production, eliminating portions devoted to theoretical lexicography, etymology, or botanical classifications. Therefore, it seems more than coincidental that they specifically chose to retain substantive discussions about plants with noted efficacy as famine foods from *Qimin Yaoshu*. The inclusion of detailed accounts regarding cultivation and processing for six plants including barnyard grass, soybeans, mulberries, taros, turnips, and acorns could signal an attempt to subtly incorporate consideration of famine plant knowledge into the orthodox state agricultural agenda.[101]

Yet despite this potential significance, *Nongsang Jiyao* itself did not lay any overt special emphasis on plants for famine relief as a discrete category. Systematic attention came shortly after in the treatise *Nongshu*, compiled around 1313 CE by scholar-official Wang Zhen. Wang Zhen 王禎 (1271-1333). Though an individual work rather than imperial project, Wang's comprehensive text was also primarily intended to instruct local officials on agricultural administration, including suggestions on the cultivation of famine plants.

Divided into three sections covering agricultural techniques, a thorough catalog of grains, and a review of essential farmint implements, the book concentrated its discussions on famine foods in the second section, placing particular emphasis on fruits and vegetables as essential

[99] On the target reader in the preface, see Jia Sixie, 16. On the intended reader in the text, see e.g. Jia Sixie, 168.
[100] Most of the books cited were compiled by Song and Jurchen-Jin authors and rarely tackled the southern regions. See Wang Yuhu 王毓瑚, "Guanyu *Nongsang jiyao* 關於'農桑輯要,'" *Beijing nongye daxue xuebao*, no. 2 (1956): 80.
[101] The promotion of the cultivation of water chestnuts was eliminated, though.

supplements to grains during periods of shortage.[102] It also for the first time included a discrete chapter exclusively devoted to principles of famine prevention. This unprecedented section listed a wide-ranging variety of potential supplemental food sources that could be relied upon during times of shortage, including preserved fruits, fried rice and beans, arrowroots, konnyaku, acorns, chestnuts, fish, turtles, shrimps, crabs, clams, spiral shells, water celeries and algae.[103] Wang Zhen's unprecedented systematic treatment of food substitutes across terrestrial and aquatic environments signaled a steady coalescence of concern over plant and animal-based relief options for recurrent scarcities.

In particular, Wang Zhen built upon the foundational works of Fan and Jia by providing more detailed discussions on the strategic uses of eight specific plants as famine foods: black beans, peas, sorghum, turnips, radishes, apricots, mulberries and elm. While Fan had vaguely noted that soybeans in general made resilient alternative crops, Wang observed that black beans in particular were ideally suited to consume as a substitue for staple grains during poor harvests.[104] In his examination of peas, Wang drew from an already lost agricultural work called *Wuben zhiyan* 務本直言 (Plain Talk on Agricultural Fundementals), which had highlighted two important properties that made peas especially suitable for edible uses in times of scarcity: first, peas "are valued for ripening early in the year" compared with other grains and beans, allowing them to be harvested ahead of complete crop failures later in the season; and second, "among all the beans, peas can be stored for the longest time", providing rations long after other foods have spoiled.[105] Interestingly, the earlier state-commissioned anthology *Nongsang Jiyao* had also excerpted from *Wuben Zhiyan* (referred to as *Wuben xinshu* 務本新書), yet omitted any mention of peas' potential as famine food in its entry, instead merely urging farmers to cultivate more peas in general due to advantages like productivity and storability.[106] This comparison reveals Wang Zhen's acute awareness of practical hunger solutions. In this pragmatic spirit of compiling solutions to recurrent famines,

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[102] Wang Zhen 王禎, *Wang Zhen nongshu* 王禎農書, ed. Wang Yuhu 王毓瑚 (Beijing: Nongye chubanshe, 1981), 77. Scholars tend to focus on the third section *Nongqi tupu* 農器圖譜 (Illustrated List of Agricultural Implements), highlighting the innovative method of encoding and transmitting agricultural knowledge in technical illustrations. See Francesca Bray, "Science, Technique, Technology: Passages between Matter and Knowledge in Imperial Chinese Agriculture," *The British Journal for the History of Science* 41, no. 3 (September 2008): 336–40.
[103] Wang Zhen, *Wang Zhen nongshu*, 169–72.
[104] Wang Zhen, 88.
[105] Wang Zhen, 89.
[106] Dasinongsi 大司農司, ed., *Nongsang jiyao yizhu* 農桑輯要譯注, trans. Ma Zongshen 馬宗申 (Shanghai: Shanghai guji chubanshe, 2009), 68.

he took care to collect and cite historical records that documented desperate consumption of foraged apricots, mulberries and elm bark to justify their utility as potential survival foods of last resort.

Beyond documentation, Wang Zhen also placed emphasis on actively promoting the cultivation of potential famine food sources as well. He singled out pest-resilient taro, mulberry and water chestnut as uniquely well-suited to withstand ravages from locust plagues and therefore advocated for their mass plantation as a wise preparedness measure that could mitigate future famines. Unlike previous agricultural writers, who mainly focused on northern China, Wang drew on experience across southern and northern regions to observe localized practices.[107] Hailing from Shandong, he spent his official career in Anhui and Jiangxi and travelled around in Jiangsu and Zhejiang.[108] From this broad experience, he noted that while radish was consumed in both south and north, turnip was rarely found in the south. Given turnip's similarly wide cultivation range and quick harvest, Wang suggested promoting it in the south as well.

By highlighting viable edible uses during scarcities, these agricultural writers justified advocating planting specific crops to combat harvest instability. More broadly, promoting strategic plantation was integral to imperial promotion of agriculture and sericulture across dynasties.

Parallel to the articulation of famine foods in agricultural treatises, they were discussed in detail in medicinal writings as well. In these pharmacological texts, knowledge of plants that could serve as supplementary food during times of severe grain shortage was closely intertwined with the medical practice of nourishing life and prolonging vitality, which had been central to medical knowledge since early antiquity. This empirical pharmacological knowledge regarding edible plants often shaped and was shaped by Daoist teachings. For instance, in the fourth century, the Daoist Master Ge Hong 葛洪 (283-343) compiled *Baopuzi* 抱樸子 (Master Embracing Simplicity), which detailed various practices and substances for attaining immortality. In the chapter "*xianyao* 仙藥 (medicine for transcendence)" that *baizhu* 白朮 (root of *Atractylodes macrocephala*) could be consumed by people of all ages during

[107] On the contrast between northern and southern technology, see Bray, *Science and Civilisation in China*, 6:61–62.
[108] Dai Biaoyuan 戴表元, "Preface," in *Wang Zhen nongshu* 王禎農書 (Changsha: Hunan kexue jishu chubanshe, 2014), 928.

years of poor harvest to save the consumption of grains, since people could not distinguish their taste and texture from normal grains and called it *mifu* 米脯 (dried rice). This early pharmacological account of a versatile famine food was later excerpted and included in *Jiyan fang* 集驗方 (Collected and Tested Prescriptions) compiled by physician-official Yao Sengyuan 姚僧垣 (499-583). Yao quoted the passage in a section recording a prescription using *baizhu* to treat wounds. Both references were ultimately quoted in the Song pharmacopeia *Jingshi zhenglei beiji bencao* 經史証類備急本草 (Materia Medica Collected from Classics and Histories for Emergency Uses, Classified by Syndromes, hereafter *Zhenglei bencao*), showing the confluence between dietetic and pharmaceutical traditions in documenting grain substitutes.

Yet in ancient China, such documentation did not highlight their practical edible use during times of shortage, but rather focused on immotality and transcedence. In the fifth century, the Daoist master Tao Hongjing 陶弘景 (456-536) compiled a critical re-edited version of *Shennong bencao jing* 神農本草經 (The Divine Farmer's Classic of Materia Medica), which had been attributed to the lengendary *Shennong,* inventor of agriculture and pharmacology, and established as a model for the study of *bencao*. In Tao's version, making people not hungry with certain substances including plants was deemed as a wondrous medicinal effect for extending lifespan and achieving transcendence. At least 50 medicines, including jades and animal products, were claimed to magically prevent hunger. Yet they were not deemed as a practical solution to food shortages. Only briefly in the very last section of the book discussing medicines that had only been recognized in names but not in reality (*youmingwushi* 有名無實) were two actual famine plants documented: water chestnuts, which were plenty in the area of Lujiang, were roasted and substituted for rice as staple food; *wuhe* 烏禾, a kind of purple-black barnyard grass, was substituted for grains in times of scarcity. At this early stage, the core pharmacological tradition marginalized and dismissed the use of plant-based medicines as substitute foods, only discussing the topic in passing alongside fantastical immortality ingredients.

It was not until the Song dynasty that discussions about famine foods multiplied in medicinal writings.[109] In 1058, following the tradition established by the preceding Tang

[109] In 658, under the decree of Emperor Gaozong, a groups of officials participated in the compilation of a new *bencao* based on and modelled after *Shennong bencao jing jizhu*, expanding the number of entries from 730 to 850. This Tang-pharmacopeia which bridged medical knowledge between early and late medieval China,

dynasty, the imperial court commissioned the compilation of a two-part pharmacopeia. One component was called *Tujing bencao* 圖經本草 (Illustrated Classic of Materia Medica), essentially a collection of local reports that were often created by local physicians. These individuals were tasked by the central government with investigating and explaining the practical uses of various plants, animals, minerals, and other natural substances found within their localities. Modern reconstructions of the now lost work reveal that it contained meticulous documentation of 814 different medicines and substances with identified medicinal usages, 642 of which were further accompanied by detailed illustrations. Altogether the work contained 933 images, making it a richly visualized pharmacopeia. Out of the hundreds of entries, a small but significant subset were explicitly noted to be occasionally consumed by locals as grain substitutes and famine foods during times of failed harvests and food scarcity.

Some flora and fauna recorded had long been known and used as traditional famine foods since antiquity, representing a continuity of ancestral knowledge. Meanwhile, other plants and substances had more recently emerged as viable hunger relief foods, demonstrating the fluidity of famine food knowledge and categories over time as both agriculture and tastes shifted. For example, wax was described as "often eaten by ancient people in times of crop failure to survive difficult years," representing a well-established traditional famine food passed down.[110] In contrast, *gugen* 菰根 (the root of wild rice) was noted to have once been "regarded as a delicious food" in ancient times, but was now "collected to substitute for grains in years of poor harvests," demonstrating how formerly everyday consumables recategorized into makeshift famine foods following agricultural changes. [111]

Such records tracing the changing uses and shifting statuses of particular substances over successive generations indicated how the category of famine foods shuffled in tandem with agricultural landscape and food culture. In this context, earlier scholar-officials who had zealously promoted the cultivation of multi-purpose plants that could also serve as potential famine foods, like Jia Sixie with the taro, would have been heartened to learn their

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however, barely extended knowledge about food consumption in times of scarcity and showed little concern for famine foods.

[110] Su Song et al. 蘇頌, *Bencao tujing* 本草圖經, ed. Shang Zhijun 尚志鈞 (Beijing: Xueyuan chubanshe, 2017), 464.

[111] Su Song et al., 298.

introduction and integration efforts succeeded, with *Tujing bencao* noting taro "now exists everywhere" across China just a few centuries later.[112]

The highly localized and region-specific organization of *Tujing bencao*'s content also foregrounded the innate geographic associations between certain famine foods and their habitats, which directly tied to availability.[113] In Sichuan for instance, where taro was "cultivated most widely" compared to elsewhere in China, it was accordingly known to be "substituted for grains to survive bad years" when harvests failed.[114] This demonstrates how localized abundance and accessibility of wild or cultivated plants was always a central consideration when provincial scholars selected and defined the most viable options for their localities.

While agricultural treatises logically focused on proper cultivation techniques to maximize yields of plants with potential usage as famine foods, medicinal texts like *Tujing bencao* with their emphasis on beneficial or detrimental health effects also paid particular attention to how consumption of various substitutes functionally impacted the human body during prolonged crises. For example, the entry of elm bark in *Tujing bencao* stressed that it "does no harm to people" when eaten by "peasants" "to substitute for grains" "in years of crop failure".[115] This highlights intentional assessment of safety alongside efficacy. Likewise, after first confirming that soybeans could reliably "avoid grain dependence and survive the bad years", the compilers of *Tujing bencao* cautioned that "excessive consumption makes the body heavy", showing their practice of balancing urgent survival utility alongside long-term health considerations[116]

Compared with the hundreds of standard pharmaceutical substances and medicines included, plants and substances flagged as viable potential famine foods still constituted a relatively modest subset of *Tujing bencao*'s overall content. Moreover, later medicinal books and pharmacopeias added very little to the existing famine food lists, except occasional new additions like the root of yellow water lily, noted in the eleventh-century *Zhenglei Bencao* to resemble lotus root and thus be able to serve as an emergency grain substitute.[117] More

[112] Su Song et al., 535.
[113] On the territorial organization of the Tang-Song *bencao*, see Bian, *Know Your Remedies: Pharmacy and Culture in Early Modern China*, 18–20.
[114] Su Song et al., *Bencao tujing*, 535.
[115] Su Song et al., 358.
[116] Su Song et al., 580.
[117] Tang Shenwei 唐慎微, *Zhenglei bencao* 証類本草, ed. Shang Zhijun et al. 尚志鈞 (Beijing: Huaxia chubanshe, 1993), 181.

broadly, a plant or substance's potential viability as a famine food seemed largely disconnected from its designated medicinal properties, flavors, or original classifications in the texts. For instance, edible substitutes ranged from medicines officially classified as superior quality down to those labeled inferior, and were derived from diverse categories including herbs, trees, insects, fruits, minerals, and more. This suggests that the distinct concept of situational famine foods sat awkwardly within the highly medicalized pharmacological framework of *bencao* texts, requiring alternative structures and categorization.

Overall, the increasing attention devoted to crop failure and famine scenarios over time within medicinal writings reflectes rising systemic worries over food supply reliability, which in turn shaped the textualization of pharmaceutical knowledge by necessitating integration of survival knowledge.

This intensified concern surrounding frequent disasters and famines also gave rise to a specific genre of texts focused on outlining famine relief administration principles and practices.[118] One of the earliest known efforts to comprehensively collect and systematically organize such information was *Jiuhuang huomin shu* 救荒活民書 (Book for Relieving Famine and Saving People), compiled in the thirteenth century by the official Dong Wei 董煟 (*jinshi* 1193) and presented to the imperial court. This seminal work was structured in three parts. First, it cited and provided commentary on a range of historical responses to famines dating all the way back to the pre-Qin period up until the year 1182, synthesizing several centuries of relief precedents. Second and most critically, it proposed a list of 20 concrete bureaucratic relief measures that Dong Wei argued officials should prioritize implementing during contemporary and future crises, outlining a comprehensive famine response schema.

[118] Scholars have not agreed on a concrete definition of famine relief writings, variously termed as *jiuhuangshu* 救荒書 (famine relief books), *huangzhengshu* 荒政書 (famine administration books), *huangzheng shiji* 荒政史籍 (historical records of famine administration), etc.. For debates on the definition of famine relief writings, see Xia Mingfang 夏明方, "Xuyan: qingmo minchu yiqian zhongguo huangzhengshu kaolun 序言：清末民初以前中國荒政書考論," in *Zhongguo huangzhengshu jicheng* 中國荒政書集成, ed. Li Wenhai 李文海, Xia Mingfang 夏明方, and Zhu Hu 朱滸, 1 vols. (Tianjin: Tianjin guji chubanshe, 2010). In this section that examines discussions about famine foods in famine relief writings before the publication of *Jiuhuang bencao*, I do not discuss *Zhenghuang shilüe* 拯荒事略 (A Sketch of Famine Relief) which has often been attributed to Ouyang Xuan 歐陽玄 (1283-1357) but is likely to have been compiled in Ming. On the compiler and date of *Zhenghuang shilüe*, see Wang Yong 王勇, *Siku tiyao congding* 四庫提要叢訂 (Jinan: Qilu shushe, 2018), 162–63.

Third, it recorded assorted opinions, accounts, and examples of current famine relief practices, providing a snapshot of thirteenth-century relief efforts on the ground.

Notably, the promotion or distribution of famine foods was not included among Dong's proposed bureaucratic measures. He objected to officially encouraging mass consumption of edible plants, even mockingly criticizing a desperate proposal once put forward by the political usurper Wang Mang 王莽 (45 BCE-23 CE) to boil tree leaves into paste as the Han dynasty faced drought and flooding.[119] Although Dong's dismissal partly reflected the Confucianist rejection of Wang Mang's political legitimacy, it more importantly reveals how marginalized Dong considered foraged famine foods within formal bureaucratic relief administration overall. While Dong certainly acknowledged the harsh reality that commoners resorted to self-help efforts like eating fern roots or boiling whatever greens they could find simply to survive during the worst periods of poor harvests, he argued that such individual actions should not be elevated into part of the government's policy agenda.[120] Rather, in Dong's view officials should remain focused on core relief tasks like granary management and cross-regional grain circulation.[121]

In this context, Dong's primary purposes in documenting the consumption of famine foods were twofold: first, to emphasize just how desperate the overall subsistence crisis situation had become, underscoring the need for comprehensive bureaucratic response; and second, to highlight resultant social conflicts that could occur over foraging rights as hungry people roamed farther afield in search of anything edible. For example, Dong compared the idle urban dwellers who despite making little productive contribution to society were still receiving relief provisions and filling their hunger, versus the peasants who despite toiling in the agricultural fields so fundamental to the empire's survival did not receive any relief and were forced to barely subsist off of foraged fern roots and wild kudzu.[122] Through this stark contrast, Dong powerfully criticized the profoundly unequal distribution of relief resources, which demonstrated deep policy failures by overlooking the most vital agricultural producers in the countryside. Even worse in his account, uncontrolled roaming and competition over famine food sources caused disputes, as when Shandong locals hindered refugees from Hebei

[119] Li Wenhai, Xia Mingfang, and Zhu Hu, *Zhongguo huangzhengshu jicheng*, 1:16.
[120] Li Wenhai, Xia Mingfang, and Zhu Hu, 1:16; Li Wenhai, Xia Mingfang, and Zhu Hu, 1:19.
[121] Li Wenhai, Xia Mingfang, and Zhu Hu, *Zhongguo huangzhengshu jicheng*, 1:52–55.
[122] Li Wenhai, Xia Mingfang, and Zhu Hu, 1:58.

province from freely hunting, fishing, and foraging during the eleventh-century famines, eventually requiring government mediation.[123]

2.2 The First Monograph

By the fifteenth century, famine plants had been increasingly documented and discussed in various literature including agricultural treatises, medicinal texts and statecraft writings. Yet they were not treated as a coherent, discrete subject of scholarly knowledge in its own right up to that point.

The pioneering compilation of *Jiuhuang bencao* notably changed this situation and transformed the landscape. This was the first known work to explicitly present edible plants that could be used as substitutes and supplements during food shortages as a distinct field worthy of intellectual investigation and documentation. It also extensively utilized and built upon the textual format established in earlier pharmacopeias as a major organizational mode for investigating and recording famine plant knowledge.

Although the exact year in which the *Jiuhuang bencao* book project was initiated is unclear, it is reasonable to suggest that the undertaking likely started sometime between 1403 and 1406 based on contextual evidence. In the eighth month of the fourth year of the Yongle era (1406), Bian Tong, the chief administrator in the princely establishment wrote a preface for the completed work recalling that "His Majesty the Prince of Zhou…compiled a book named *Jiuhuang bencao* and ordered me to write a preface for it." While not specifying the initial start date, Bian's preface indicates the project had reached completion by 1406.

Moreover, considering all the plants documented and described in *Jiuhuang Bencao* were native species collected from Henan, it can be reasonably inferred that the focused research project likely commenced sometime after Zhu Su's return there in 1403. Earlier, Zhu Su had been banished southwest to remote Yunnan by his nephew the Jianwen Emperor, who was forcefully attempting to weaken the power of prince-vassals and limit their autonomy as part of a broader policy of imperial centralization. However, this initiative failed when Zhu Su's ambitious brother Zhu Di usurped the throne in 1402, establishing himself as the Yongle Emperor and quickly recalling Zhu Su from exile.

[123] Li Wenhai, Xia Mingfang, and Zhu Hu, 1:41.

For the rest of his life until 1425, Zhu Su resided in Kaifeng, located in the Yellow River basin plains.[124] Kaifeng had not originally been Zhu Su's personal fiefdom, however. Back in 1370 he had initially been granted the wealthy Hangzhou. But the region's tremendous economic importance made it unsuitable as a prince's personal domain. Thus in 1378 Kaifeng, the former secondary capital demoted in status after the Ming founding, became Zhu Su's new domain. In 1381, the construction of the prince's palace was finally completed. Between 1381-1389, 1392-1398, and again from 1403 onward until his death, Zhu Su spent much time residing in Kaifeng as prince. Throughout these decades, he frequently experienced the flooding of the Yellow River there, with inundations recorded in 1381, 1382, 1384, 1390, 1391, 1392, 1397, 1404, 1410 among other years.[125]

This consistent exposure to Yellow River floods and consequent crop failures likely allowed Zhu Su to directly witness commoners forced to scavenge various vegetation to stave off hunger when harvests were destroyed. Such firsthand experiences probably inspired his interest in thoroughly documenting such plants that could serve as make-do famine foods in his 1400s project and raised his awareness of substitute food knowledge's immense practical value during inevitable times of crisis.

Prior to taking up famine plants as a focus, Zhu Su had already sponsored works like *Baosheng yulu, Puji fang,* and *Xiuzhen fang.* His prolific patronage of compiling pharmacological knowledge likely served as a conduit for channeling scholarly energies and providing intellectual refuge during periods when he was deprived of political power by the court.[126] Sponsoring such compilations could also build social reputation and enhance cultural influence for a prince.[127]

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[124] In 1402, Zhu Su asked to build a new palace in Luoyang as the previous one in Kaifeng was flooded by rivers. His request was approved by the Yongle Emperor. In 1405, however, Zhu Su reported that as the flood receded and the dikes were strengthened, it was labour-saving to repair the old palace in Kaifeng. The emperor then suspended the construction work in Luoyang. Therefore, Zhu Su's fief remained in Kaifeng. This could also be inferred from the fact that of all the 174 plants whose distribution were recorded in detail in *Jiuhuang bencao*, 133 of them were from Kaifeng.

[125] For records of disasters and famines in Henan during Zhu Su's life, see Qiu Yunfei 邱雲飛 and Sun Liangyu 孫良玉, *Zhongguo zaihai tongshi (mingdai juan)* 中國災害通史（明代卷） (Zhengzhou: Zhengzhou daxue chubanshe, 2009), 276–321.

[126] Although Zhu Yuanzhang established feudalistic princedoms and envisioned that princes should perpetuate the emperor's control all over the country, in the first half of the fifteenth century, the princes gradually lost their political and military control over the land they were invested and never regained their power. See David M. Robinson, "Introduction," in *Culture, Courtiers, and Competition: The Ming Court (1368-1644)*, ed. David M. Robinson (Cambridge, Mass.: Harvard University Asia Center, 2008); Craig Clunas, *Screen of Kings: Royal Art and Power in Ming China* (London: Reaktion Books, 2013), chap. 1.

[127] Ming princes involved themselves in various activities to maintain their influence and show off their power. For their patronage of Daoism, see Richard G. Wang, *The Ming Prince and Daoism: Institutional Patronage of*

Thus Zhu Su's interest in documenting and categorizing famine plants should be understood as a part of his broader lifelong devotion to collecting, organizing and circulation knowledge on materia medica more widely. In his 1406 introductory preface to *Jiuhuang bencao*, Bian Tong situated the work within the medicinal writing tradition. As he observes, "Ever since the Divine Farmer first tasted herbs and woods, distinguished their qualities of cold, warm, sweet and bitter, and used them as medicines to save people from premature death by epidemics, later generations have depended on building upon such knowledge to prolong life." However, Bian Tong points out that previous pharmacological texts within this tradition focused heavily on documenting substances "to beat diseases, but do not touch upon edible things that can fill the stomach." [128] By calling attention to the general lack of systematic coverage on edible plants as famine foods up to that point in knowledge systems, Bian Tong emphasizes just how innovative and important a focused epistemic contribution the prince's commissioned *Jiuhuang Bencao* represented by compiling this formerly neglected body of urgent survival knowledge for the first time.

A closer examination reveals the profound influence and legacy of earlier medicinal texts, particularly the influential Song *Tujing Bencao*, on both the production process and internal composition of *Jiuhuang bencao*. Just as Tang officials had commissioned detailed illustrations of medicinal flora, fungi, and other substances alongside explanatory textual descriptions for reference, and just as the Song state-commissioned pharmacopeia compilers had asked local physicians and scholars across the empire to provide drawings and written evaluations of their local materials, the Ming compilers responsible for *Jiuhuang Bencao* similarly relied on a workflow of painters producing lifelike images of plants accompanied by recorded details on their edible parts and preparation.[129] This visual-textual format of detailed illustrations supplemented by information-rich entries directly continued the sophisticated documentation conventions developed in previous *bencao* traditions.

Moreover, a closer analysis shows that the internal classification system and structural organization of entries within *Jiuhuang Bencao* clearly demonstrate the similarly decisive role which established *bencao* literature precedents played in shaping how famine plant

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an Elite (Oxford and New York: Oxford University Press, 2012). For their patronage of arts, see Clunas, *Screen of Kings: Royal Art and Power in Ming China*.

[128] Bian Tong, "Preface."

[129] Su Song et al., "Bencao tujing zouchi," in *Bencao tujing*, ed. Shang Zhijun (Beijing: Xueyuan chubanshe, 2017); Bian Tong, "Preface."

knowledge itself would be systematically approached and presented. Specifically, the work primarily built its overarching content framework upon the taxonomic structure pioneered in the late eleventh-century *Zhenglei Bencao*, compiled by the physician Tang Shenwei 唐慎微 (fl. late eleventh century. *Jiuuang bencao* likely referenced an updated revised edition of *Zhenglei bencao* known as *Chongxiu zhenghe jingshi zhenglei beiyong bencao* 重修政和經史証類備用本草 (Materia Medica for Emergency Use, Classified by Syndromes, Revised edition of the Zhenghe edition, hereafter *Zhenghe bencao*).[130] Within this framework, plants already documented in *Zhenghe bencao* were prioritized and discussed first, while newly included plants were added in a subsequent section, either because they had been obscure local species, or because they were deemed unworthy of medicinal classification and entry in traditional *bencao* literature. Through this organization, *Jiuhuang Bencao* simultaneously demonstrated continuity with prestigious pharmacological texts that came before, while also innovatively elevating famine plants as a distinct field of study.

Close examination of the text in *Jiuhuang bencao* reveals its extensive derivation and synthesis of plant knowledge from a diverse range of earlier *bencao* works, primarily mediated through *Zhenghe bencao*. For documenting the medicinal uses of the plants, *Jiuhuang bencao* usually provides explicit citations to relevant sections in *Zhenghe bencao*. The descriptive details on plant forms also trace back directly to a variety of earlier *bencao* sources.

The entry on water caltrops provides an illustrative example of this compilation process. It brings together details on habitats, physical appearance, flavors, nature, toxicity, edible parts, and consumption methods from an array of earlier pharmacopeias including the fifth-century *Shennong bencao jing jizhu* 神農本草經集注 (Collected Commentary on *Shennong bencao jing*, abbreviated as SNBCJJZ), the seventh-century *Xinxiu bencao* 新修本草 (Newly Compiled Materia Medica, abbreviated as XXBC), *Tujing bencao* (abbreviated as TJBC), and *Zhenglei bencao* (abbreviated as ZLBC) (underlining and identification of source texts mine).

"*lingjiao* 菱角

[130] *Zhenglei bencao* was compiled in 1082 and 1083, published in various editions in the twelves and thirteenth centuries. The most widely available edition was *Zhenghe bencao*, which was published in 1249 and reprinted multiple times throughout the Ming Dynasty, most likely accessible to Zhu Su. On the publishing history of *Zhenglei bencao*, see Dai Fanjin 戴蕃瑨, "Chulun *Jingshi zhenglei beiji bencao* 初論《經史証類備急本草》," *Xinan shifan xueyuan xuebao*, no. 2 (1981): 83–90.

Named *jishi* in *bencao* literature, also named *ling.* Exists everywhere. (TJBC) Rampant in the water, toothed triangle leaves floating above the water. Bear yellow-white flowers. There are two kinds of fruits, one with four spiny angles and the other with two. (TJBC) Among the kind with two angles there are purples ones with tender skins, they are called *fuling* 浮菱 (floating water caltrops) and especially tasty. (TJBC) Sweet in taste, neutral in nature, not toxic. (ZLBC) Some say it is cold in nature. (SNBCJJZ)

To relieve famine: collect fresh big water caltrops, shell and eat them raw. Old and small ones should be boiled and eaten. Some people dry the fruits in the sun, roast them on a fire as rice to substitute grains. (SNBCJJZ) They can be made into moist white powders that are beneficial for people. (XXBC) Daoist practitioners steam, dry, mix with honey and eat to refrain from eating grains and pursue immortality. Some say, to mix with honey/sugar and eat results in parasites in human bodies. (SNBCJJZ) Some say eating too much will make the five internal organs cold, damage *yangqi* (vital energy of *yang*), lead to sexual impotence and cause the stomach to distend. Drink warm alcohols with ginger or hold *wuzhuyu* in mouth, and swallow saliva, this can remove (the discomfort). (SLBC)

To treat illness: See the entry of *jishi* in the section of fruit in *Zhenglei bencao*." [131]

While profoundly indebted to *bencao* literature, *Jiuhuang bencao* expanded plant knowledge mainly through two approaches. First, it provides more extensive and nuanced descriptive details on plant morphology, specifying features like stem shape and leaf structures. Second, it offers differentiated instructions on preparation methods based on freshness and storage conditions.

While pioneering as the first known text specializing in famine plants, *Jiuhuang bencao* relied heavily on amalgamating, reconciling, and expanding upon the vast pharmacological knowledge codified in previous *bencao* textual tradition. Its extensive sourcing and borrowing from earlier works shows deep integration within this established medicinal literature lineage, even while enlarging boundaries into the new domain of edible plants.

2.3 Famine Plant Manuals in Ming-Qing China

Jiuhuang bencao did not immediately ignite interest in systematic research on the subject of famine plants. In fact, in the century after its original publication, the obscure treatise

[131] Su Song et al., *Bencao tujing*, 526. The text is reconstructed from *Daguan bencao*, *Zhenghe bencao* and *Bencao gangmu.*

remained largely unknown to the wider world, with only a handful of local literati demonstrating some passing familiarity with the title.[132]

It was not until the early sixteenth century that fresh impetus and intense new efforts were invested into the gathering and textual documentation of empirical knowledge regarding edible plants that could serve as famine food substitutes. During Zhengde's reign (1505-1521), a series of floods and droughts swept across the Jianghuai region.[133] In the city of Gaoyou, which was located in Jiangsu along the northern bank of the Yangtze River, the local literatus Wang Pan observed emaciated people collapsing from hunger in the roadways.[134] Although Wang's own socioeconomic status insulated him from directly experiencing food shortage issues, he became acutely cognizant that many less fortunate commoners were barely surviving the calamity by desperately gathering various plants from the countryside to substitute for their vanished staple grain crops.[135] Alarmed that starvation could drive people to unwittingly consume toxic flora and fatally poison themselves in their quest for sustenance, Wang was inspired to compile a practical handbook documenting the specific identification and safe preparation of regional edible wild plants. Residing in the west of the city, Wang conducted extensive reading and made detailed empirical inquiries, eventually compiling information on 60 different local plants.[136] As a skillful painter and song composer, he created one original illustration and one descriptive verse for each documented edible plant.[137] In

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[132] Li Lian 李濂, "Preface," in *Jiuhuang bencao yizhu* 救荒本草譯注 (Shanghai: Shanghai guji chubanshe, 2015).

[133] Wang Pan 王磐, "Preface," in *Yecai pu* 野菜譜, 1551. For a list of the floods and droughts in the Jianghuai region, see Qiu Yunfei and Sun Liangyu, *Zhongguo zaihai tongshi (mingdai juan)*, 475–508.

[134] Wang Pan, "Preface." Little is known about Wang Pan's life. He was conventionally assumed to be born around 1470 and die in 1530, but a careful examination of local people's records suggests that both dates should be earlier. See Feng Jiahua 丰家驊, "Wang Pan de shengzunian, jiashi he jiaoyou 王磐的生卒年、家世和交游," *Wenxian*, no. 2 (1990): 57–60.

[135] Zhang Shouzhong 張守中, "Preface," in *Wang Xilou xiansheng yüefu* 王西樓先生樂府, 1551; Wang Pan, "Preface."

[136] Wang Pan, "Preface." It is not clear what Wang Pan read and who he inquired and thus difficult to decide whether he employed textual approaches only or combined with empirical approaches. Wang stated that he "only got sixty-odd plants", but all the editions included sixty plants only. Probably he reduced the number to sixty in the process of compilation, or probably he casually wrote down "sixty-odd" in the preface.

[137] Wang Pan. Wang described his painting and writing activities in his own verses. See for example Wang Pan 王磐, *Wang Xilou yüefu* 王西樓樂府, ed. Li Qing 李慶 (Shanghai: Shanghai guji chubanshe, 1989), 1–2. Wang's nephew Zhang Shouzhong claimed that Wang was a master of poems, paintings as well as songs. The prefecture gazetteer also mentioned that Wang Pan was versed in poems and paintings and especially good at composing songs. See Zhang Shouzhong, "Preface."; *Yangzhou fuzhi* (Wanli), *juan* 18: 48. Except for those in *Yecai pu,* Wang Pan's paintings did not pass down. Yet he was well-known as a literati painter in the local region. See Wang Zengqi 汪曾祺, *Wang Zengqi quanji* 汪曾祺全集, ed. Ji Hongzhen 季紅真 and Zhao Kun 劉偉 (Beijing: Renmin wenxue chubanshe, 2019), 26. Most of the scholarship about Wang Pan concentrates on his songs, which usually depicted leisure life and natural landscape, but sometimes also satirized contemporary politics. The Ming play writer and theorist Wang Jide 王驥德 (d. 1623/4) compared Wang Pan with famous

1524, Wang finally completed the entire album, giving it the title *Yecai Pu*. Through providing this practical knowledge to both government authorities and the general public, Wang Pan found an outlet to channel his humanitarian instincts and social conscience, despite never actively pursuing the conventional path of entering the civil service examinations or serving in an official government post. Nevertheless, he remained deeply concerned with issues of social welfare and public benefit.[138]

When Wang Pan was compiling *Yecai pu* in the south, officials in the north discovered the potential benefits of *Jiuhuang bencao* to famine administration and initiated a reprint in 1525.[139] This was spearheaded by Bi Zhao 畢昭 (*jinshi* 1499), promoted to Governor of Shanxi in 1523, who was informed of the book by Cai Tianyou 蔡天祐 (1440-1534), promoted to Inspector of Shanxi in the same year.[140] They took interest in resurrecting the book for practical concerns about the often disaster-struck region. In a memorial submitted to the throne in 1528, Cai stated that Shanxi had continuously faced disasters and crop failures, resulting in insufficient provisions for the local princely households.[141] Historical records corroborate Cai's memorial, documenting tax reductions approved for multiple counties, sub-prefectures, and military garrisons across Datong Prefecture in the early 1520s, as a result of severe droughts in 1523 and 1524.[142] While not yet causing outright famine, the unrelenting disasters were likely to have sharply raised government attention on preventative, relief and mitigation measures, especially for officials like Cai who already had extensive concrete experience managing famine responses: during the Zhengde reign, he was celebrated to have saved 10,000 people from a poor harvest in Liaoyang (in today's Liaoning) by developing

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dramatists Xu Wei 徐渭 (1521-1593) and Tang Xianzu 湯顯祖 (1550-1616) and crowned him as master of northern songs. See Wang Jide 王驥德, *Wang Jide Qulü* 王驥德曲律 (Changsha: Hunan renmin chubanshe, 1983), 242. Modern scholars such as Ren Zhongbei 任中敏 (1897-1991) summarized Wang Pan's poetic style as *qingli* 清麗 (fresh and beautiful). For literature analysis about Wang Pan's works, see Ren Zhongmin 任中敏, *Sanqu congkan* 散曲叢刊 (Nanjing: Fenghuang chubanshe, 2013), 1096; Zhao Yishan 趙義山, "Ming sanqushi yanjiu 明散曲史研究" (PhD Diss., Sichuan University, 2004), 107–12; Deng Yichao 鄧義超, "Wang Pan wenxue yanjiu 王磐文學研究" (MA thesis, Yangzhou University, 2018).

[138] Wang Pan, "Preface." Wang once entered local school but quit. See *Yangzhou fuzhi* 揚州府志.

[139] Li Lian, "Preface."

[140] MSL, Jiajing, 2/10/24, 32: 6. On the biography of Bi Zhao, see Wang Zengfang et al., *Jinan fuzhi* (Daoguang), 51: 2. On the biography of Cai Tianyou, see *Shanxi tongzhi* (Yongzheng), 94: 2–3.

[141] MSL, Jiajing, 7/3/9, 86: 4.

[142] MSL, Jiajing, 2/8/5, 30: 4; 3/8/29, 42: 11. Of all the disasters, Shanxi was most frequently hit by and damaged by droughts. See Zhang Lifen 張麗芬, "Mingdai shanxi zaihuang yanjiu 明代山西災荒研究" (MA thesis, Xinan University, 2006), 4. For a list of disasters in Shanxi, see Zhang Jie 張傑, *Shanxi ziran zaihai shi nianbiao* 山西自然災害史年表 (Taiyuan: Shanxisheng difangzhi bianzuan weiyuanhui bangongshi, 1988); Liu Qingtong 劉慶桐, *Zhongguo qixiang zaihai dadian: shanxi juan* 中國氣象災害大典：山西卷 (Beijing: Qixiang chubanshe, 2005).

coastal farmland.[143] Therefore, it was not surprising that Cai became impressed by the famine relief manual and recommended it to Bi.

The manual's reprint certainly strengthened the profiles of both officials. They were favorably compared to model officials Li Hang 李沆 (947-1004) and Fan Zhongyan 范仲淹 (989-1052) for sharing concerns about commoners' welfare, living up to the ideal benevolent official image.[144]However, the project may have also aimed to restore Cai's reputation after he was denounced for cowardice and inaction during the Datong rebellion, indulging the rebels.[145] The reprint could have justified Cai's capabilities, improving his image hurt by the criticism. Meanwhile, Bi Zhao requested resignation to care for his sick mother around the time of the reprinting. This suggests the reprint was one of his final achievements before withdrawing. [146] Embodying benevolence and charity seemed a perfect gracious conclusion to his office term.

The 1525 reprint marked the entrance of famine plant manuals into the governmental agenda. As discussed previously, when Prince Zhu Su originally compiled the manual, as a member of the royal family he did not wield significant direct political authority or influence over contemporary policies. Thus his idiosyncratic compilation was assembled purely according to his own scholarly tastes and personal interests. The obscure final published version circulated only through the Prince's semi-private literati social networks. By contrast, the decision by powerful serving officials Cai Tianyou and Bi Zhao to deliberately select this overlooked centuries-old text for officially sanctioned reprinting and distribution validated the important relevance and value of its specialized botanical knowledge for governmental famine relief administration. The reprint's dissemination among local administrators and officials advanced official awareness of famine plants as a strategic resource deserving consideration.[147]

A pivotal development that advanced famine plant manuals coalescing into a distinct genre was the juxtaposed joint reprinting of *Jiuhuang Bencao* and *Yecai Pu* together in 1555, which acknowledged the conceptual categorization of these previously disconnected texts.

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[143] Zhang Tingyu et al. 張廷玉, *Mingshi* 明史 (Beijing: Zhonghua shuju, 2000), 3522.
[144] Li Lian, "Preface."
[145] MSL, Jiajing, 3/12/15, 46: 4-5; 3/12/23, 46: 7; 4/1/3, 47: 1.
[146] MSL, Jiajing, 4/2/20, 48: 7.
[147] For discussions about official printing, see chapter three.

In the previous years, Wei county within Daming prefecture had suffered a series of poor harvests under the administration of the newly appointed magistrate Lu Jian 陸柬 (*jinshi* 1550), who assumed office there in 1553.[148] However, Magistrate Lu believed that competent governance could prevent isolated crop failures from escalating into full-blown famine disasters.[149] He personally ensured the timely distribution of relief from the local charitable granaries while also urgently exploring supplementary aid measures, deeply concerned that reliance on routine relief protocols alone may prove insufficient should a genuine subsistence crisis arise from the ongoing agricultural troubles.[150]

Lu found inspiration for shoring up the county's crisis resilience by looking to historical accounts of edible plants utilized for survival during ancient periods of shortage, such as cultivating elms and turnips during the Han and Shu Han (221-263) and consuming wild kudzu and yam during the Tang. He further justified the incorporation of plant-based food resources by appealing to the revival of ancient foraging traditions, which could promote diligence and thrift among the populace.[151] Nevertheless, Lu underscored famine prevention as the foremost priority, framing the encouragement of herbs and woods consumption as an emergency backup measure, if not an outright last resort.[152]

The reason that Lu reprinted *Jiuhuang bencao* and *Yecai pu* in tandem was their shared benevolent intention of documenting plants that could serve as food substitutes during lean times of harvest failure.[153] Despite divergent formats and styles, he emphasized that the northern focused *Jiuhuang Bencao* and southern focused *Yecai Pu* held complementary

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[148] Lu Jian 陸柬, "Preface," in *Jiuhuang bencao* 救荒本草, 1555. For the date of his transfer, see *Daming xianzhi* (The Republican period), 13: 25.

[149] Lu Jian, "Preface." His idea that highlighted the importance of famine prevention was echoed in the other preface of the 1555 edition: "the best is to have no famine, the second best is to manage famine, the worst is to have no governance. No famine does not mean no years of poor harvests, but means they do not develop into disasters; to manage famine means to relieve famine; if there is no governance, then even in years of good harvests, the country has famines." See Shen Sui 申嵓, "Preface," in *Shūken'ō kyūkō honzō* 周憲王救荒本草 (Kyoto, 1716).

[150] Shen Sui, "Preface." The term *yicang* 義倉 (charity granary) came into use in the Sui Dynasty, referring to granaries that stored special tax revenues for local famine relief. The practice of establishing charity granaries continued into the Tang Dynasty (618-907). In the Song Dynasty, charity granaries more often made loans than selling grains at reduced prices. In the Ming Dynasty, charity granaries revived in the sixteenth century. For a brief history of charity granaries, see Wong, "Chinese Traditions of Grain Storage," 9–12. For features of regional charity granaries in the Ming, see Ni Genjin 倪根金, "Mingdai guangdong shecang, yicang kao 明代廣東社倉、義倉考," *Guangdong shizhi*, no. 2 (2002): 3–6.

[151] Lu Jian, "Preface."

[152] Lu Jian; Shen Sui, "Preface."

[153] Lu Jian 陸柬, "Postface," in *Yecai pu* 野菜譜, 1847.

scopes that together formed a comprehensive universal guide.[154] For Lu, their common motivations and content superseded stylistic differences in categorizing the texts jointly.

Lu further expanded the conceptual scope of famine plant manuals to include information on hunger prevention techniques.[155] This precedent was later emulated in texts such as *Jiuhuang Yepu Buyi.*

While Lu framed plant consumption as secondary to direct famine prevention in his governance ethos, Hu Cheng 胡乘 (fl. 1562) zealouly preached the immense importance of actively circulating famine plant knowledge. In the spring and summer in 1562, severe droughts led to famines in Sichuan.[156] After an unnamed high-ranking local official, likely the prefect, had alleviated the dire conditions using conventional relief measures, he showed a copy of *Jiuhuang bencao* to his subordinate Hu Cheng, county magistrate of Anju. [157] The superior aimed to reproduce and distribute the manual so that commoners could learn to identify edible plants and take preventative self-reliance measures to stave off starvation in future lean harvest years.

To maximize the book's accessibility and utility for the populace, Hu selectively condensed the original 414 plants down to 112 entries. His abridged selection focused on plants easily recognized by sight and smell, which proliferated in both convenient and remote areas.[158] Hu ambitiously declared his intention to produce a manual benefiting all people under heaven universally. This aspirational reprinting project was favorably compared to the legendary inventor Yi's creation of the section-field system, which enabled the people to survive an enduring 7-year drought during the Shang dynasty (17th-11th century BCE), both portrayed as extraordinary feats of visionary benevolence.[159]

In Hu's view, circulating such famine plant manuals could provide more comprehensive relief coverage than conventional measures including distributing grains, selling grains at reduced prices, offering loans and establishing gruel kitchens.[160] Yet ironically, it was precisely by effectively implementing those routine government relief protocols that the official had resolved the immediate shortage. While Hu Cheng exaggerated the effectiveness

[154] Lu Jian. For detailed analysis of the composition of the manuals, see chapter two.
[155] Lu Jian.
[156] Hu Cheng 胡乘, "Preface," in *Shūken'ō kyūkō honzō* 周憲王救荒本草 (Kyoto, 1716). The 1562 edition is not extant, but Hu Cheng's preface is retained in the 1593 edition and Japanese editions.
[157] Hu Cheng.
[158] Hu Cheng. Hu could have also expected to reduce printing costs by issuing an abridged edition.
[159] Hu Cheng. The method of *qutian* was recorded in Fan Shengzhi's agriculture treatise.
[160] Hu Cheng.

of the manual in order to flatter his superior, he simultaneously acknowledged the inherent limitations of standard bureaucratic aid responses, which officials often struggled to mobilize promptly.[161] His fervent promotion suggests recognition of the potential value of the manual as a supplementary source of crisis resilience, despite constraints on conventional relief.

Despite the innate deficiency of conventional measures and practical difficulties officials faced in mobilizing aid, few officials went as far as Hu in promoting self-help manuals as superior solutions that should take primacy over standard institutional responses. Although the official Zhu Kun 朱崑 (fl. 1566) reprinted *Jiuhuang bencao* based on Hu Cheng's abridged edition, he did not fully share Hu Cheng's conviction that proactively circulating famine plant manuals among the common people to encourage self-reliance could provide more extensive and effective relief coverage benefiting the majority, compared to government distribution of material aid.[162] Instead, he viewed famine plant manuals as expedients that could be discarded and abandoned once competent governance and effective administration were restored.[163]

In 1565, Zhu's jurisdication of Xingguo suffered devastating floods, droughts, widespread crop failures, and ensuing hunger.[164] At that time, Zhu had just only been relegated from county magistrate to the lower rank of assistant subprefecture magistrate.[165] With limited time and resources, he was unable to implement impactful measures to stimulate agricultural productivity and increase crop yields. Moreover, the meager government granaries Zhu now oversaw lacked adequate grains to distribute for relief.[166] Given these severe constraints, the sole recourse available was for Zhu to hastily reprint the abridged manual which was luckily brought with him to guide vulnerable commoners toward dependence on foraging herbs and woods.[167] Given that publishing books was considered a prestigious undertaking that could boost the producers' profiles in the world of letters, Zhu Kun could have also intended the reprinting project as a way to showcase his achievement while sanctioned, hoping that it could help restore his reputation and aid his future

[161] Downs, "Famine Policy and Discourses on Famine in Ming China, 1368-1644," 97. The problem was not unique to the Ming. Zhu Xi also complained that the ever-normal granaries responded too slowly to crises. See Ravina, "Confucian Banking: The Community Granary (Shasō) in Rhetoric and Practice," 182.
[162] Like the 1562 edition, the 1566 edition is not extant. Zhu Kun's preface was reproduced in the 1593 edition and Japanese editions.
[163] Zhu Kun 朱崑, "Preface," in *Shūken'ō kyūkō honzō* 周憲王救荒本草 (Kyoto, 1716).
[164] Zhu Kun.
[165] Zhu Kun, "preface," in *Shūken'ō kyūkō honzō* (Kyoto, 1716); *Xingguo zhouzhi* (Guangxu), 12: 16.
[166] Zhu Kun, "Preface."
[167] Zhu Kun.

advancement up the ladder of officialdom after demotion.[168] Yet for him, circulating such famine plant manual was a last resort, when regular relief measures were simply not at hand. He promised that if given sufficient time in office, he would devote himself wholeheartedly to the far superior approach of proactively improving livelihoods and economic conditions, making reliance on famine plant manuals unnecessary.[169]

Zhu Kun's view that "*jiuhuang wu qice* 救荒無奇策 (famine relief had no unusual schemes)" and famine plant manuals were a last resort was reiterated decades later by Li Wen 李汶 (1535-1609), the Grand Coordinator of Shaanxi in the 1580s. Li Wen decided to reprint *Jiuhuang bencao* based on a 1555 edition. Although Li had not read Zhu Kun's earlier preface stating similar perspectives, after extensively surveying historical and contemporary relief measures, he also placed supreme importance on disaster prevention and preparedness at the center of wise administration. Within this relief ethos, publishing specialized famine plant manuals could only be considered a relatively helpless move.[170]

However, while Zhu Kun had expressed optimism in the potential efficacy of famine prevention schemes, Li Wen betrayed a sense of grievous incapability in alleviating a prolonged regional famine crisis. Starting with droughts in 1582, Shaanxi had been suffering a devastating multi-year famine.[171] Homeless refugees wandered from place to place, while corpses clustered on the ground.[172] Local officials faced accusations of negligence and failing to mobilize sufficient relief to the victims.[173] In reponse, the central government ordered the

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[168] For officials publishing for the sake of prestige, see K. T. Wu, "Ming Printing and Printers," *Harvard Journal of Asiatic Studies* 7, no. 3 (1943): 232.
[169] Zhu Kun, "Preface."
[170] Zhu Kun. The original words were "*zhenji wu qice* 賑濟無奇策 (relief has no unusual schemes)" by the famous Confucian scholar Zhu Xi 朱熹 (1130-1200), who, however, was suggesting that more attention should be paid to prevention than relief. He proposed that famine relief should concentrate on two things: harmony with the universe that promised bountiful harvests and grain storage that prepared for subsistence crises. See Li Jingde 黎靖德, ed., *Zhuzi yulei* 朱子語類 (Changsha: Yuelu shushe, 1997), 2377. On Zhu Xi's thought of relieving famine by prayers, see Li Huarui 李華瑞 and Wang Haipeng 王海鵬, "Zhu Xi rangmi jiuhuang sixiang shulun 朱熹禳弭救荒思想述論," *Zhongguo nongshi*, no. 3 (2004): 82–89. On Zhu Xi's conceptualization of the community granary, see Richard von Glahn, "Community and Welfare: Chu Hsi's Community Granary in Theory and Practice," in *Ordering the World: Approaches to State and Society in Sung Dynasty China*, ed. Robert P. Hymes and Conrad Schirokauer (Berkeley, Los Angeles, and Oxford: University of California Press, 1993). Li Wen 李汶, "Preface," in *Jiuhuang bencao* 救荒本草, 1586. Li took charge of Shaanxi since 1577, first as assistant administration commissioner, then as administration vice commissioner, later as provincial commissioner and finally as Assistant Censor-in-Chief touring Shaanxi. See MSL, Wanli, 5/1/23, 58: 6; 5/12/7, 70: 2; 10/7/4, 126: 1; 11/3/2, 135: 1.
[171] Li Wen, "Preface."; MSL, Wanli, 10/7/13, 126: 4.
[172] Li Wen.
[173] MSL, Wanli, 12/6/25, 150: 6.

mass distribtuion of relief grains and huge numbers of tax exemptions.[174] Yet even exhausting the entire storage of granaries in Shaanxi could not alleviate the persistent food supply shortages. With both local and central relief efforts stetched to their limit, officials and commoners helplessly turned to ritual prayer and sacrifice in desperation.[175] Confronted by an enduring famine and mass starvation that resisted all attempted remedies, Li Wen lamented the inherent fragility and vulnerability of human society in the face of nature's overpowering might.[176] This stark calamity called into question the limits of human agency when faced with extreme natural forces.

As a serving official, Li Wen felt that by merely promoting plant foraging instead of providing direct food aid, he was failing in his duty to relieve starvation through the established bureaucracy.[177] In contrast, as a non-official outsider to government, the scholar-merchant Hu Wenhuan 胡文煥 (fl. 1593) saw his 1593 reprinting of *Jiuhuang Bencao* as inherently embodying the virtue of benevolent governance.[178] For engaged literati like Hu excluded from the officialdom, sponsoring such publications offered an alternative form of political participation and humanitarian service. Thus the very same act of reproducing famine plant manuals held profoundly differentiated layers of significance depending on the unique position and perspective of the initiators.

Hu Wenhuan incorporated an abridged 1566 edition of *Jiuhuang Bencao* into his encyclopedic compendium *Gezhi Congshu* 格致叢書 (Collectanea for Investigating Things and Extending Knowledge), displaying his broad interest encompassing medical traditions. By situating this famine relief manual within the *bencao* tradition, as Li Lian 李濂 (1488-1566) had done, Hu understood the text as representing an alternative approach focused neither on curing illness nor nourishing wellness, but rather serving the urgent need of relieving hunger.[179]

Likely influenced by their notable joint printing side-by-side in the landmark 1555 edition, Hu Wenhuan also explicitly compared *Jiuhuang Bencao* with the other pioneering

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[174] Li Wen, "Preface." For example, the disaster-stricken prefectures of Yan'an, Qingyang and Pingliang were exempted from taxation obligations in 1584. See MSL, Wanli, 12/6/24, 150: 6.
[175] Li Wen. For the role of religious beliefs and practices in local governance, see Jeffrey Snyder-Reinke, *Dry Spells: State Rainmaking and Local Governance in Late Imperial China* (Cambridge, MA: Harvard University Asia Center, 2009).
[176] Li Wen, "Preface."
[177] Li Wen.
[178] Hu Wenhuan 胡文煥, "Preface," in *Shūken'ō kyūkō honzō* 周憲王救荒本草 (Kyoto, 1716).
[179] Li Lian, "Preface."; Hu Wenhuan, "Preface."

famine plant manual *Yecai Pu*, considering both as belonging to the same genre of specialized texts. However, unlike Lu Jian who placed the two manuals on equal standing, Hu offered targeted critique arguing that *Yecai Pu* had a more limited range of plants covered and provided less detailed elaboration on their edible uses.[180]

From Hu's perspective, manuals like *Jiuhuang Bencao* should only be considered as supplements for self-help and last resort, not as resources depended upon by officials instead of fulfilling their governance duties of preventative preparation and direct distribution of grain or cash relief. Nevertheless, Hu acknowledged that such compilations still offered modest utility, as when people were forced into severe hunger, eating plants was marginally better than eating nothing, and when starving people resorted to foraging hazardous unknown flora, having guidance on edibility was better than total ignorance.[181]

Hu Wenhuan did not only reiterate the subsidiary role of famine plant manuals in administration, but also underlined the limits of knowledge circulation and application. He pointed out that the efficacy of such manuals depended on readers' ability to link texts and images to real plants and accessibility of natural resources.[182] By highlighting the obstacles to translating words into actions, Hu Wenhuan problematized Hu Cheng's proclaimed universal relief benefits from circulation. He acknowledged that famine plant manuals, like other relief measures, could not save everyone, despite promotions of comprehensive coverage.[183]

Unlike previous editions of famine plant manuals that were generally issued in the immediate face of disasters and famines, Hu Wen Huan's 1593 reprint was notably produced during a period of peace and abundance. Moreover, his edition specifically targeted literati and newly affluent commoner readers in the economically flourishing Jiangnan region, who were not necessarily preoccupied with urgent hunger concerns.[184] To arouse interest in such a practical manual among audiences removed from subsistence crises, Hu Wenhuan promoted the manual's edicational functions. He stated that it could serve to remind comfortable elites

[180] Hu Wehuan 胡文煥, "Editorial principles," in *Shūken'ō kyūkō honzō* 周憲王救荒本草 (Kyoto, 1716).
[181] Hu Wenhuan, "Preface."
[182] Hu Wenhuan.
[183] Hu Wenhuan.
[184] Hu Wenhuan. On the economic and cultural life in the late sixteenth century, see Timothy Brook, *The Confusions of Pleasure: Commerce and Culture in Ming China* (Berkeley, Los Angeles, and London: University of California Press, 1999), chap. "Summer: The Last Century (1550-1644)." On the readership of Hu Wenhuan's publications, see Benjamin Elman, "Collecting and Classifying : Ming Dynasty Compendia and Encyclopedias (Leishu)," *Extrême Orient Extrême Occident* 1, no. 1 (2007): 141; 146–47.

of difficult times, preventing them from indulging excessively in luxurious pleasures and overlooking the enduring importance of disaster prevention and preparation.[185]

Hu's innovative rhetorical framing tapped into lively contemporary moral debates spawned by late Ming China's commercial transformation and rising standards of living.[186] Famine administration became a particular battlefield where crop failures and food shortages were frequently ascribed to inadequate preparedness resulting from an excessively indulgent and morally questionable lifestyle of extravagance among the wealthy. Within this morality rhetoric, Hu Wenhuan's grandnephew Hu Guangsheng 胡光盛 (fl. 1593) recast obscure edible plants as virtuous coarse fare epitomizing a simple and restrained life, in contrast to fine culinary indulgences. He transformed the original use of famine plant manuals by suggesting that they provided alternative diets for the affluent to embrace simplicity, self-restraint and self-cultivation away from decadence.[187]

Many late Ming literati supported preferring vegetables over meat to oppose contemporary extravagance. Obscure official Long Zun 龍遵 (fl. 1467) suggested that a simple diet centered on vegetarianism could bring peace and tranquility, criticizing the fastidious and lavish tastes of officials in his day.[188] Playwright Gao Lian 高濂 (fl. 1573-1620) argued that the excessive pursuit of sensual pleasures in food and drink could severely harm both the body and the spirit.[189] Borrowing concepts and terms from Buddhist philosophy, he proposed that adopting a vegetarian diet could help regulate the body while clearing away destructive greed and hatred. The famous playwright Li Yu 李漁 (1611-1680) promoted increased vegetable consumption as a way to honor the virtue of thrift, while also reviving what he portrayed as an idealized tradition of simplicity from antiquity.[190] By advocating a vegetable-oriented simple diet, those literati established their elite identity.

Their preferences crystalized into the creation of a group of texts that specialized food texts dedicated to elaborating on vegetarian recipes and ingredients, which intersected with

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[185] Hu Wenhuan, "Preface."
[186] On the accelerated commercialization and the "breakdown" of moral order in the late Ming, see Brook, *The Confusions of Pleasure: Commerce and Culture in Ming China*, chap. "Summer: The Last Century (1550-1644)." On the attribution of social ills to moral decay in the late Tokugawa Japan, see David L. Howell, "Hard Times in the Kantō: Economic Change and Village Life in Late Tokugawa Japan," *Modern Asian Studies* 23, no. 2 (1989): 349–71.
[187] Hu Guangsheng 胡光盛, "Postface," in *Shūken'ō kyūkō honzō* 周憲王救荒本草 (Kyoto, 1716).
[188] Long Zun 龍遵, *Shise shenyan* 食色紳言, Wanli.
[189] Gao Lian 高濂, *Zunsheng bajian* 遵生八箋 (Beijing: Renmin wenxue chubanshe, 2007).
[190] Li Yu 李漁, *Xianqing Ouji* 閑情偶寄 (Shanghai: Shanghai guji chubanshe, 2000), 262.

the tradition of famine plant manuals.[191] The confluence between such elite vegetarian food writings and practical plant identification manuals aimed at subsistence was best illustrated by *Yecai bolu* 野菜博錄 (An Extended List of Wild Vegetables), completed by Bao Shan 鮑山 (1590?-?) in 1622. Hailing from Wuyuan (in current Jiangxi), Huizhou prefecture, Anhui, Bao was one of the many literati who did not pursue an official career. After quitting the Imperial Academy in Nanjing in 1610, he lived in Mt. Huangshan for seven years.[192] By reading books such as *Yecai pu* and *Jiuhuang bencao*, as well as consulting monks in Mt. Huangshan, he expanded his expertise concerning edible plants, even planting many in his own garden to vary his personal diet.[193]

In Bao Shan's estimation, thses tasty and refreshing plants were ideally suited to provide literati who spurned fame and fortune like himself with a means of culinary self-cultivation and refined pleasure.[194] In addition to their gastronomic appeal, they could also be used to treat illness and relieve hunger.[195] With their combination of good flavor and easy accessibility, Bao Judged such palnts as superior famine foods compared with conventional emergency substitutes like barnyard grass.[196] Although Bao Shan had multiple purposes in mind during the compilation of *Yecai bolu*, he intended it primarily as a resource for self-cultivation through vegetable consumption, with only a secondary purpose of preparation knowledge for crop failures and food shortages.

However, the lingering concerns over food shortages were not unfounded, as ongoing military conflicts in the frontier areas, especially the northeast, could quickly trigger severe subsistence crises.[197] In 1618, Nurhaci (1559-1626), the founding khan of the rising Later Jin dynasty (1616-1636) based in Manchuria, attacked and forced the surrender of the strategic

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[191] Titles in this genre included *Rucao bian* 茹草編 (Eating Herbs)*, Yecai jian* 野菜箋 (Notes on Wild Herbs) and *Yesu pin*. *Rucao bian,* an illustrated manual of 101 edible plants with poetic evocation, collecting time and processing methods by Zhou Lüjing 周履靖 (1549-1640). See Francesca Bray, Vera Dorofeeva-Lichtmann, and Georges Métailié, eds., *Graphics and Text in the Production of Technical Knowledge in China: The Warp and the Weft* (Leiden: Brill, 2007), 490–91, 493–95. *Yecai jian*, by Tu Benjun 屠本畯 (1542-1622), listed 21 (22 claimed in the preface) wild vegetables from Ningbo. See Amano Motonosuke 天野元之助, *Zhongguo gunongshu kao* 中國古農書考, trans. Peng Shijiang 彭世獎 and Lin Guangxin 林廣信 (Beijing: Nongye chubanshe, 1992), 204. *Yesu pin*, originally a chapter in Gao Lian's *Zunsheng bajian* (Eight Treatises on Respecting Life, 1591), later included in various collectanea, described 96 wild edible plants with details on appearances, characters and processing methods. See Gao Lian, *Zunsheng bajian*, 371–83.

[192] Bao Shan 鮑山, "Preface," in *Yecai bolu* 野菜博錄, 1622; Cheng Dazhong 程大中, "Postface," in *Yecai bolu* 野菜博錄, 1622.

[193] Bao Shan, "Preface."

[194] Bao Shan.

[195] Bao Shan.

[196] Bao Shan.

[197] Cheng Dazhong, "Postface."

Ming border garrison town of Fushun. In 1619, he led his forces to decisively defeat the Ming troops and their Chosŏn allies in the battle of Sarhu. By 1622, he had conquered most of the Liaodong Peninsula, including Shenyang which was established as the new capital in 1625, and remained the status until 1644.[198] The various famine relief writings including famine plant manuals usually highlighted calamities and disasters as key factors that could lead to devastating famines if not properly prevented, but the publication of *Yecai bolu* brought up wars as another major cause of food shortages. This emphasis underscored how intensifying military conflicts could inspire urgent interest in reproducing and distributing famine plant manuals. In the late nineteenth and early twentieth centuries, famine plant manuals were also produced in response to wars destabilizing food security, further emphasizing their persisting practical relevance amid external crises.

While *Jiuhuang bencao* had often been situated within the *bencao* tradition, *Yecai pu* had remained largely disconnected from this medical tradition for much of the Ming dynasty. However, the late Ming compendium *Shiwu bencao* 食物本草 (Materia Dietetica) compiled by the obscure Suzhou literatus Yao Kecheng 姚可成 (fl. 1642) included an enlarged version of *Yecai pu*, which he retitled as *Jiuhuang yepu* 救荒野譜 (An Album of Wild Vegetables for Famine Relief), placing famine plant knowledge within the same sphere as documentation of mediicnal drugs and cures.[199] This modification of the original title to highlight the fundamental purpose of hunger relief also further distinguished the text from those works produced mainly out of literati recreational or aesthetic interest in cataloguing esculents. Yao Kecheng substantially supplemented the original *Yecai pu*'s 60 plants by an adiition 60, while retaining the earlier format of situating texts above and images below. For clarity, I will hereafter refer to Yao's supplement as *Jiuhuang yepu buyi* 救荒野譜補遺 (Supplement to *Jiuhuang yepu*).

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[198] For the rapid expansion of Jurchen power in the northeast, see Kenneth M. Swope, *The Military Collapse of China's Ming Dynasty, 1618-44* (London and New York: Routledge, 2014), chap. 1.

[199] It was under debate who actually compiled *Shiwu bencao*. The title page claimed that the book was edited by the Yuan physician Li Gao 李杲 (1180-1251), revised by Li Shizhen and supplemented by Yao Kecheng. However, the prefaces, including one supposedly by Li Shizhen, proved to have been forged, questioning the credit of the book to Li Gao and Li Shizhen. Most of the entries, the classifications and the texts could be traced back to *Bencao gangmu*, suggesting that the book could have been a profit-seeking compilation by late Ming book publishers. Yao Kecheng certainly did some editorial work, as he newly included *bigu* recipes and lists of famine plants at the beginning of the book, and made comments starting with "Yao Kecheng yüe (Yao Kecheng said)" in the last two *juans* that seemed to be a supplement to the previous 20 *juan*. For discussions on the author, see Zheng Jinsheng 鄭金生 et al., eds., *Shiwu bencao* 食物本草 (Beijing: Zhongguo yiyao keji chubanshe, 1990), 454–56.

Yao's key impetus in taking the effort to reprint and enlarge *Yecai Pu* stemmed from the devastating famines striking the late Ming dynasty during the reign of the Chongzhen Emperor (r. 1628-1644). From 1634 onwards, rampaging rebel forces swept through central China, while natural disasters of droughts and excessive rains led to catastrophic crop failures.[200] The combination of internal instability caused by wars and external calamities resulted in skyrocketing prices of grain and basic provisions which drove much of the population into severe hunger and displacement as refugees. By 1640-1641, even the normally fertile and prosperous Jiangnan region saw apocalyptic scenes of masses starving to death in the streets.[201]

In the following two centuries, there appeared to be a marked lack of any new titles compiled specifically on famine plants, nor further reprints made of earlier manuals. This dearth can likely be explained by the established sophistication of imperial Chinese famine relief schemes by the high Qing, which tended to place great emphasis on centralized government efforts, infrastructure, and distribution of relief resources while marginalizing strategies of self-reliance or foraging for wild substitutes at the local level.[202] This shift is epitomized by the intentional elimination of *Jiuhuang Bencao* from the compendious agricultural encyclopedia *Shoushi Tongkao* compiled in the early eighteenth century (see chapter four for details).

However, by 1856, amidst a context of declining imperial strength, fiscal pressures, and breakdown in the effectiveness of centralized relief institutions, the famine plant manual emerged once again as an important genre, this time in northwestern Shaanxi province. That year, the northwestern provinces including Shaanxi suffered from poor harvests resulting from summer droughts lasting one to two months, followed by ruinous autumn locust plagues.[203] In Xi'an, rivers had dried up completely by the fifth month, and despite occasional rainfall in the sixth month, hot and parched conditions persisted, causing widespread

[200] For peasant rebellions and the Ming battling efforts, see Swope, *The Military Collapse of China's Ming Dynasty, 1618-44*, chaps. 4–6. For disasters and famines during the Chongzhen reign, see Timothy Brook, *The Troubled Empire: China in the Yuan and Ming Dynasties* (Cambridge, Mass. and London: Belknap Press of Harvard University, 2010), 249–52.
[201] Zheng Jinsheng et al., *Shiwu bencao*, 428.
[202] For the interventionist state policy during the Qing Dynasty, see Will, *Bureaucracy and Famine in Eighteenth Century China*; Helen Dunstan, *State or Merchant? Political Economy and Political Process in 1740s China* (Cambridge, Mass.: Harvard University Asia Center, 2006); Li, *Fighting Famine in North China: State, Market, and Environmental Decline, 1690s-1990s*, chaps. 7, 8 and 9.
[203] Zhang Pengfei 張鵬飛, "Preface," in *Jiuhuang bencao* 救荒本草, 1856.

withering of crop seedlings.[204] The situation was exacerbated by the locust swarms arriving from the east in the seventh month, which voraciously consumed leaves and ears of grain plants across the fields.[205] However, this was merely the first wave of what would become a series of devastating locust plagues sweeping Shaanxi over the next several years. In fact, the Xianfeng reign (1831-1861) featured continuous locust plagues and the year 1856 saw the worst outbreak afflicting much of the empire, from coast to inland, south to north.[206]

To the south of Xi'an lays Ankang, which was fortunately spared the worst effects of the regional disasters. By 1856, the local literatus Zhang Pengfei 張鵬飛 (1783-1857) had already devoted two decades to the local cultural activities including establishing academies and publishing books, after being effectively banished back home in 1837 following a volatile encounter with Beijing officials.

Throughout his life, Zhang remained firmly on the fringe of the officialdom. He was admitted to the Imperial Academy as a graduate for preeminence from the local school in 1813, and earned the *juren* degree in 1821. After that, he failed to advance any further.[207] a decade of unsuccessfully waiting for an official posting in Sichuan left Zhang still unemployed. To provide for his family, he worked as a private tutor while running a bookshop in Chengdu.[208]

In the autumn of 1837, Zhang Pengfei traveled to Beijing carrying a sizable quantity of books for sale in the imperial capital. However, when attempting to enter the city, he refused to pay the standard transportation taxes on commercial goods, claiming that the items were simply for private use. This stance led to Zhang being severely beaten by the incensed customs enforcement officials on duty at the gates. The violent confrontation did not end there. The supervising official in charge of the investigation then made the calculating decision to detain Zhang in prolonged custody, making the spurious claim that Zhang was in fact the one who had aggressively perpetrated violence against the initially innocent customs officers.

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[204] Yuan Lin 袁林, *Xibei zaihuang shi* 西北災荒史 (Lanzhou: Gansu renmin chubanshe, 1994), 529.
[205] Zhang Pengfei, "Preface"; Yuan Lin, *Xibei zaihuang shi*, 1473.
[206] For a general picture of the locust plagues during the Xianfeng reign, see Li Wenhai 李文海 and Zhou Yuan 周源, *Zaihuang yu jijin* 災荒與飢饉 (Beijing: Gaodeng jiaoyu chubanshe, 1991), 91–102.
[207] Zhang failed in the metropolitan exam seven times. In 1836, he tried out his luck for the last time, and gave up the hope to enter officialdom after being arrested and forced home in 1837.
[208] He published at least thirty titles there, including reference books, agricultural treatises, medicinal writings, military books, and local gazetteers. For Zhang's publishing activities in Sichuan, see Meng Wenqiang 孟文強, "Qing zhonghouqi Ankang Zhangshi lailutang keshu yanjiu 清中後期安康張氏來鹿堂刻書研究" (MA thesis, Shaanxi Normal University, 2018), 24–25.

Seeking to make an harsh exemplary punishment out of the case, the powerful imperial Censorate even suggested to the Emperor that Zhang's *juren* degree should be retroactively canceled as further punishment. Fortunately for Zhang, this vindictive proposal was not approved in the end. As a final resolution, Zhang Pengfei was dismissed from the custody of the Ministry of Justice and essentially forced to return home in disgrace, abruptly ending his scholarly career in the capital before it could even begin in earnest.

Although this scandal permanently terminated any hope of gaining an official career appointment, Zhang Pengfei remained actively engaged with governmental affairs and policy debates throughout the rest of his life. He frequently exchanged ideas and proposals with officials. In 1847, he presented his *Guanzhong shuili yi* 關中水利議 (Discussions on hydraulic engineering in the Central Shaanxi Plain) to Lin Zexu 林則徐 (1785-1850), at that time Governor of Shaanxi.[209] In 1852, he compiled *Pingfei shice* 平匪十策 (Ten Tactics to Pacify Bandits), hoping to present it to the throne. By submitting lengthy written tracts on urgent issues like hydraulic engineering projects or effective tactical methods for pacifying the empire's rampant banditry problems, Zhang always hoped to contribute practical solutions to governance issues.

This pragmatic approach to affairs of government aligned closely with the contemporary revival interest in *jingshi* 經世 (ordering the world), or practical statecraft, among literati in the late Qing.[210] Beginning in the early nineteenth century, engagement with practical public affairs through actional proposals gained prominence, moving beyond the purely philosophical and moral critiques that had dominated the political sphere in the late eighteenth century. This shift was embodied in the 1827 publication of *Huangchao jingshi wenbian* 皇朝經世文編 (Collected Essays on the Statecraft of the Qing Dynasty), a compilation of Qing statecraft writings across technical topics aimed at reforming the bureaucracy by Wei Yuan 魏源 (1794-1857) and He Changling 賀長齡 (1785-1848).[211] The compilation of statecraft

[209] Zhang Pengfei 張鵬飛, "Guanzhong shuili yi 關中水利議," in *Congshu jicheng xubian* 叢書集成續編 (Shanghai: Shanghai shudian chubanshe, 1994), 531.
[210] On the intellectual atmosphere in the late Qing, see Philip A. Kuhn, "Ideas Behind China's Modern State," *Harvard Journal of Asiatic Studies* 55, no. 2 (December 1995): 295–337.
[211] On the ideas in *Huangchao jingshi wenbian*, see Benjamin A. Elman, "The Relevance of Sung Learning in the Late Ch'ing: Wei Yuan and the Huangch'ao Ching-Shih Wen-Pien," *Late Imperial China* 9, no. 2 (1988): 56–85.

writings proliferated throughout the nineteenth century, becoming particularly crucial during reconstruction efforts following the devastating Taiping Rebellion (1850-64).[212]

Zhang Pengfei's commitment to practical statecraft also deeply influenced his publishing activities. In 1830, he published *Qiqi Tushuo* 奇器圖說 (Illustrations and Descriptions of Extraodinary Devices), a work originally compiled by Wang Zheng 王徵 (1571-1644) in 1627, illustrating many Western machines and the foundational mechanical knowledge behind their operation through detailed words and diagrams.[213] In 1849, Zhang edited and compiled a supplementary volume to the compendium *Huangchao Jingshi Wenbian*, in order to better balance its coverage between conditions in the empire's northwest regions compared to the southeast. His supplement placed great emphasis on vital topics like agricultural techniques, medical practices, and military strategy and tactics. Throughout his editorial career, Zhang concentrated on disseminating practical manuals and texts, which he deemed far more valuable than lofty philosophical theories that brought little concrete benefit to society.

Despite his forced retreat from the capital and inability to formally join the imperial bureaucracy, Zhang Pengfei persevered in pursuing service to the state and betterment of the people through harnessing his skills in publishing and knowledge dissemination. This was also exemplified by his 1856 reprint of *Jiuhuang bencao*, amidst severe food shortage exacerbated by natural calamities and massive displacement from the Taiping Rebellion.[214] Zhang Pengfei justified such disasters as inevitable outcomse of human misconduct which were regulated by the heaven, but believed Confucian scholars including Zhang himself could alleviate crises by caring for the commoners, regardless of their political and social status.[215] With limited resources himself, Zhang's strength was information dissemination, not direct donations.[216] Seeking to provide accessible food substitution options so the populace would

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[212] On the development of the statecraft genre, see Andrea Janku, "Preparing the Ground for Revolutionary Discourse from the Statecraft Anthologies to the Periodical Press in Nineteenth-Century China," *T'oung Pao, Second Series* 90, no. 1 (2004): 65–121.

[213] On the mechanical knowledge encoded in *Qiqi tushuo*, see Zhang Baichun et al., *Chuanbo yu huitong:* Qiqi tushuo *yanjiu yu jiaozhu* 傳播與會通——《奇器圖說》研究與校注 (Nanjing: Jiangsu kexue jishu chubanshe, 2008).

[214] Zhang Pengfei, "Preface." On the consequences of the war and the experiences of the commoners, see Tobie Meyer-Fong, *What Remains: Coming to Terms with Civil War in 19th Century China* (Stanford: Stanford University Press, 2013).

[215] Zhang Pengfei, "Preface."

[216] Zhang Pengfei was born in a poor family and embarrassed by debts every now and then. See Meng Wenqiang, "Qing zhonghouqi Ankang Zhangshi lailutang keshu yanjiu," 8–9. In comparison, the super rich former official Qi Biaojia 祁彪佳 (1603-1645), for example, distributed cash here and hand-outs there in the food shortages during the Chongzhen reign. See Joanna Handlin Smith, *The Art of Doing Good: Charity in Late*

not revolt in desperation, his reprint targeted those in their prime years.[217] Though marginalized and constrained, Zhang upheld the literati responsibility for public welfare through this strategic publishing choice aimed at preserving social stability.

2.4 Famine Plant Manuals in Tokugawa Japan

The emergence and early development of famine plant manuals as a distinct genre in Japan was largely catalyzed and associated with the reproduction of several major Chinese works on edible pants, initially marked by the 1716 Kyoto printed editions of *Jiuhuang Bencao*, *Yecai Pu*, and *Jiuhuang Yepu Buyi*.[218]

The specific combination of these three Chinese works for reprinting in Japan was decided upon the *honzōgaku* scholar Matsuoka Gentatsu 松岡玄達 (1668-1746). In his own studies, he had encountered *Jiuhuang bencao* deriving from Hu Wenhuan's edited series *Gezhi congshu*, as well as *Yecai pu* and *Jiuhuang yepu buyi* contained within Yao Kecheng's expansive pharmacological work *Shiwu bencao.*[219] It is unclear clear why Matsuoka singled out precisely these titles for production, but he was possibly influenced by *Nongzheng quanshu*, which had grouped and categorized both *Jiuhuang bencao* and *Yecai pu* together under the subject heading of famine administration. This agricultural compendium had circulated in Japan by the mid-seventeenth century and later became the master copy of the Japanese edition of *Jiuhuang bencao* and *Yecai pu*.[220] The Confucian scholar Itō Tōgai 伊藤東涯 (1670-1736) classified the three works as famine relief books, and specifically regarded *Yecai pu* and *Jiuhuang yepu buyi* as supplementary texts expanding on the more comprehensive *Jiuhuang bencao.*[221] His disciple, the physician Kagawa Shūtoku 香川修徳 (1683-1755), further emphasized the importance of daily preparedness for potential famines,

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Ming China (Berkeley: University of California Press, 2009), 217. For civilian efforts at famine relief in late imperial China, see Smith, chaps. 6–7.

[217] Zhang Pengfei, "Preface."

[218] Shirai Mitsutarō 白井光太郎, *Kyūkō shokubutsu* 救荒植物 (Tokyo: Sūzanbō, 1903), 5–14.

[219] Matsuoka Gentatsu 松岡玄達, "Preface," in *Kyūkō yafu* 救荒野譜 (Kyoto, 1716). On the circulation of Chinese books in Tokugawa Japan, see Peter F. Kornicki, *The Book in Japan: A Cultural History from the Beginnings to the Nineteenth Century* (Hawaii: University of Hawaii Press, 2001), 296–300; Ōba Osamu 大庭脩, *Nichū kōryū shiwa: Edo jidai no nichū kankei o yomu* 日中交流史話—江戸時代の日中関係を読む (Ōsaka: Nenshōsha, 2003).

[220] On the circulation of *Nongzheng quanshu* in Japan, see Pan Jixing 潘吉星, "Xu Guangqi zhu *Nongzheng quanshu* zai guowai de chuanbo 徐光啓著《農政全書》在國外的傳播," *Qingbao xuekan*, no. 3 (1984): 94.

[221] Itō Tōgai 伊藤東涯, "Preface," in *Kyūkō yafu* 救荒野譜 (Kyoto, 1716).

suggesting proactively popularizing and disseminating famine plant knowledge in advance rather than waiting for crises.[222]

Yet Matsuoka's personal motivations for reproducing the texts stemmed from a desire to fill perceived knowledge gaps left by the major Chinese pharmacological works *Zhenglei Bencao* and *Bencao Gangmu*, rather than acute subsistence concerns.[223] As a pioneering naturalist in Tokugawa era Japan who made his living operating a private academy and delivering public lectures, Matsuoka firmly situated the famine plant manuals, *Jiuhuang bencao* in particular, within the scholarly tradition of *bencao* literature, adhering closely to philological analysis of the Chinese sources while advancing academic documentation of Japan's own indigenous species of medicinal plants.[224]

After the destructive Great Kyoto Fire of 1788 incinerated the original woodblocks, the Kyoto commercial publisher Nagamatsudō 長松堂 decided to plan a new revised reprint to replace the lost edition, likely because substantial demand remained as earlier imprints had broadly circulated.[225] The publisher asked Ono Ranzan 小野蘭山 (1729-1810), a direct disciple of Matsuoka Gentatsu, to collate and revise the texts for reproduction. During years of teaching *bencao* literature using the previous 1716 edition as reference, Ono had compiled extensive notes on its flaws and inaccuracies. Consulting a newly imported Ming dynasty edition, Ono produced supplementary materials correcting the previous errors, including mistaken authorship, rearranged plant order, and missing passages, which were incorporated when the revised compilation was finally issued in 1799.[226] This new updated imprint was likely to have continued serving as a teaching reference for naturalists and scholars, while further disseminating knowledge of edible plants potentially transferrable to Japan's own environmental context.

The first indigenously compiled Japanese famine plant manual can be traced back to *Bikō sōmoku zu*, which, although it only came into print in Edo in 1833, had already been initially completed in manuscript form back in 1771.

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[222] Kagawa Shūtoku 香川修徳, "Preface," in *Kyūkō yafu* 救荒野譜 (Kyoto, 1716).
[223] Matsuoka Gentatsu, "Preface."
[224] On Matsuoka's approaches to the natural world, see Ueno Masuzō 上野益三, *Nihon hakubutsugaku shi* 日本博物学史 (Tokyo: Kōdansha, 1989), 76–79. In chapter four, investigation into the actual use of the 1716 Japanese printed editions would reveal that they were studied primarily by herbalists and physicians for the practical purpose of plant identification and documentation, rather than crisis relief.
[225] Ono Ranzan 小野蘭山, "Postface," in *Kyūkō hōnzō* 救荒本草 (Kyoto, 1799); Ōta Chōgen 太田澄元, *Kyūkō kimon* 救荒記聞, n.d.
[226] Ono Ranzan, "Postface." The problem with the 1716 edition was discussed in detail in various Ono's teaching notes.

This early manual was devised as an illustrated sequel and extension to the famine relief book *Minkan bikō roku*, which had been urgently written in the midst of the Hōreki Famine that afflicted the northeast Japan from 1755 to 1763. *Minkan bikō roku* was distributed as an administrative manual targeted at village eads across the Ichinoseki Domain, with the intent of providing practical solutions to help mitigate the ongoing crisis of severe food shortages. In fact, the work had already devoted almost half of its pages to extensively discussing the identification, collection and consumption of various herbs and woods as famine foods, substantially shaping emerging Japanese discourses on the vital role of famine plants. However, since it also included a wide range of additional content on agricultural methods like alternative plant cultivation and food preservation techniques, it extended far beyond the narrow bounds of a specialized famine plant manual. In contrast, *Bikō sōmoku zu* was compiled years after the initial disaster had passed, with the intent of methodically summarizing and recording the various types of plants that had actually been consumed during the famine. This was done in order to specifically prepare readers to deal with potential future crises by preserving critical knowledge of edible plants that had proven essential for survival.

Both of these pioneering works were compiled by Takebe Seian 建部清庵 (1712-1782), a domain physician serving the Ichinoseki Domain, who took the initiative to launch these book projects entirely under his own direction. He lamented his lack of material resources to provide the famine-afflicted commoners with substantial relief aid in the form of food, clothing or monetary provisions. However, he eventually discovered an alternative means of helping the populace by translating his own specialized expertise as a doctor into basic instructions and guidance on utilizing a range of plants as supplementary foods to reduce starvation. This was, on the one hand, inspired by the documentation of famine plants in the Ming famine relief work *Huangzheng yaolan* 荒政要覽 (Essential Book on Famine Administration, 1607), and on the other hand, facilitated by the open acknowledgement of foraged edible plants as an absolutely vital and essential part of the emergency diet for commoners during subsistence crises when conventional crops failed in the Japanese context.[227] Even though the Ichinoseki Domain had made tremendous efforts to provide government-directed relief, including opening up the granaries, distributing gruel and allocating rations of grains on a daily basis, the commoners were not supposed to rely solely

[227] Takebe Seian 建部清庵, "Editorial principle," in *Minkan bikō roku* 民間備荒録, 1833.

on the dole for survival. Instead, they had to take the initiative to collect diverse edible plants to serve as supplementary food sources, an element of self-reliant survival for which the government could not be expected to provide full support.[228]

Because of Takebe's pioneering efforts to disseminate and popularize famine plant knowledge, he was compared with the legendary sage-king Yu, who had supposedly forged nine tripod cauldrons engraved with images of monsters, in order to help the commoners better distinguish dangerous creatures and thus facilitate their understanding of the natural world through the power of images.[229] Just like Yu's mythical cauldrons, Takebe's illustrated famine plant manual aimed to provide the commoners visual knowledge to identify safe edibles for survival.

In the aftermath of the Tenmei Famine of the 1780s, considered one of the worst and longest food crises across the entire Tokugawa period, new Japanese famine plant manuals emerged as follow-ups building upon the pioneering work started by Takebe Seian.[230] In 1782, poor harvests and crop failures were reported from various regions, including the vulnerable northeast. Then in 1783, major volcanic eruptions of Mt. Iwaki and Mt. Asama covered large swathes of vital food-producing areas across the Kanto Plain, a major food-producing with ash. Sustained poor yields continued to impact the country until the late 1780s.

The Yonezawa Domain situated in the heavily affected northeast also reported severe harvest shortfalls during the Tenmei Famin. However, due to proactive reforms initiated by the domain lord Uesugi Yōzan 上杉鷹山 (1751-1822), who revived grain storage systems and promoted agriculture, the domain experienced lower levels of population loss compared with other hard-hit northeastern domains.[231] In addition, Yōzan commissioned court physicians to collect and record famine relief knowledge. This effort resulted in the compilation of *Hanrō shū* 飯粮集 (Collection of Items to be Mixed with Rice), which summarized more than one hundred edible plants. However, this compilation only survived in manuscript form and does not seem to have achieved wide circulation at the time.

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[228] Takebe Seian 建部清庵, "Prefatory words," in *Bikō sōmoku zu* 備考草木図, 1833.
[229] Sugita Hakugen 杉田伯元, "Preface," in *Bikō sōmoku zu* 備考草木図, 1833.
[230] For a general picture of the Tenmei Famine, see Kikuchi Isao, *Kinsei no kikin*, chap. 6.
[231] Takagaki Jūnko 高垣順子, *Yonezawahan kankō no kyūkōsho* Kate mono *o tazuneru: "Kate mono", "kate mono" soshite "kate mono"* 米澤藩刊行の救荒書『かてもの』をたずねる:「かて物」・「か手物」そして「かてもの」 (Aizuwakamatsu: Rekishi shunjyū shuppansha, 2010), 13.

The elite concern for codifying knowledge on famine foods in the wake of disaster was not limited to the singular efforts of the domain lord Yōzan. The domain official and policy advisor Nozoki Yoshimasa 莅戸善政 (1735-1603) also repeatedly proposed issuing a series ofseveral edicts on utilizing famine foods in the late 1790s. These included suggestiongs to reduce rice consumption by preparing it as porridge or mixing it with foraged plants, instructing commoners to actively collect and store wild grass and vegetables that could serve as supplementary foods, and promoting the cultivation of disaster-resistant crops.[232] Although the proposed edicts do not seem to have been formally issued at the time, likely because harvests had recovered, the very suggestion of such policies indicates Nozoki's constant attention to strategically utilizing natural resources for crisis management. In fact, Nozoki invited the herbalist Satō Chūryō 佐藤中陵 (1762-1848) in 1792 to assist the domain in cultivating and processing medicinal plants. Nozoki specifically asked Satō to compile a text on famine foods.[233] This text likely informed Nozoki's more ambitious famine plant manual project proposed to the council in 1800. For this new project, Nozoki again consulted court physicians to rigorously examine each plant under consideration, while referencing a wide range of Chinese and Japanese texts, including including Takebe Seian's *Minkan bikō roku*.[234] Eventually this project yielded an extensive compilation detailing preparation instructions for about 80 different plants, which was titled *Kate mono* かてもの (Things to be Mixed with Rice). In contrast to the limited circulation of *Hanrō shū, Kate mono* was officially published in 1802 and then widely distributed across the Yonezawa Domain, actively spreading practical knowledge of edible plants for future crisis relief (see chapter three).

The devastating Tenmei Famine of the 1780s had broadly catastrophic impacts across Japan, not just limited to the heavily afflicted northeast regions, but also extended to southwestern ones. The massive scale of starvation and death in the Komatsu Domain also left deep trauma and scars across the local community. In direct response, the Komatsu magistrate took the initiative to establish a community granary as a relief storehouse in 1824/25.[235]

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[232] Takagaki Jūnko, 29.
[233] Takagaki Jūnko, 30.
[234] Takagaki Jūnko, 19.
[235] "preface," in *Kyūkō honzō bassui* (Komatsu: Shasō, 1828); Yamamae Keisuke 山前圭佑, "Komatsu no shasō: Takaokachō shasō setsuritsu no moto ni natta Komatsu 小松の社倉 - 高岡町社倉設立のもとになった," *Kanan chihōshi kenkyū*, no. 55 (2008): 2. Community granaries in Tokugawa Japan took up a wide range of roles: some served primarily as relief storehouses, while others as lending institutions. For the different functions of community granaries, see Ravina, "Confucian Banking: The Community Granary (Shasō) in Rhetoric and Practice," 180. While the Confucian scholar Zhu Xi 朱熹 (1130-1200) originally advocated community granaries as private institutions that were run by local gentries to compete with or even replace state intervention,

However, the local authorities realized that depending solely on the granary alone would likely be insufficient, as a single facility could not rapidly provide enough provisions across an entire domain during a major famine. Therefore, the runners of the granary also took steps to strategically compile writings on edible plants that could serve as famine foods. The intent was to broadly equip the locals with practical knowledge on potential plant substitutes and supplementary foods that could be foraged from the surroundings during shortages.[236] This resulting compilation was titled *Kyūkō honzō bassui*, and it selectively drew from existing famine relief books to present 155 different plants, including 47 woods, 96 herbs, and 12 vegetables, which were known to be available in the domain. Specifically, it incoporated plant information from 96 entries in *Jiuhuang bencao* and 17 entries in *Yecai pu*.

While the earlier Hōreki and Tenmei Famines had motivated the compilation of the first wave of Japanese famine plant manuals, it was the Tenpō Famine striking in the 1830s that subsequently catalyzed a whole new generation of manuals to emerge.[237] In 1833 alone, at the peak of the great famine, the prolific agricultural writer Ōkura Nagatsune 大蔵永常 (1768-1861) rapidly published in Edo, which was the centre of flourishing commercial publishing at the time, three different famine relief titles intended to address urgent contemporary needs. One of these was a dedicated famine plant manual titled *Sojiki oshiegusa* 粗食教草 (Instructions for a Plain Diet), also known as *Keizai oshiegusa* 経済教草 (Economical Instructions), detailing the edible parts and preparation methods for 92 plants that could serve as famine foods.[238]

Just as before, the northeastern regions of Japan were once again among the worst affected by widespread crop failures and massive population loss during the Tenpō crisis. In

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the learned Japanese did not make a clear distinction between private and official institutions, as they did not have a national system of granaries to battle against, and thus having little difficulty with setting up a governmental community granary. For the Japanese rhetoric and practices of community granaries, see Ravina, "Confucian Banking: The Community Granary (Shasō) in Rhetoric and Practice."

[236] "preface."

[237] For a general picture of the Tenpō Famine, see Kikuchi Isao, *Kinsei no kikin*, chap. 7.

[238] In some library catalogues including the National Diet Library Digital Collections, the author of the book was identified as the playwright Takai Ranzan 高井蘭山 (1762-1839), the preface writer. Yet Takai stated that the publisher asked him for writing a preface for the book, which implied that he should not be the author. See Takai Ranzan 高井嵐山, "Preface," in *Sojiki oshiegusa* 麁食教草 (Edo, 1833). On the other hand, Ōkura Nagatsune in his other famine relief books suggested the readers to turn to *Sojiki oshiegusa* for details about the consumption of grass roots and tree fruits, indicating that *Sojiki oshiegusa* was his work as well. See Ōkura Nagatsune 大蔵永常, "Introduction," in *Tokuyōshoku kagami* 徳用食鏡 (Edo, 1833); Ōkura Nagatsune 大蔵永常, "Postface," in *Tokuyōshoku kagami* 徳用食鏡 (Edo, 1833). For the identification of the author as Ōkura Nagatsune, see Isono Naohide 磯野直秀, "Nihon hakubutsugakushi oboesho 12 日本博物学史覚え書 XII," *Keiōgijuku daigaku hiyoshi kenkyū kiyō*, no. 31 (2002): 41–42.

1833, when extreme cold weather and excessive rainfall caused harvests to fail, the Sendai domain saw its yields plummet below one-third of normal levels.[239] In direct response to this crisis, the Sendai Domain physician Sasaki Bokuan 佐々城朴安 (1785-1801) compiled a famine plant manual titled *Kyūkō ryaku* 救荒略 (A Sketch of Famine Relief). Drawing upon the Chinese manuals *Jiuhuang bencao* and *Yecai pu*, Sasaki selected 205 plants that could serve as edible substitutes during the famine. The selected plants were verified to be safe for consumption and accessible in the northeast Japan through thorough investigation by Sasaki's fellow domain physicians. Similar to the production of *Bikō sōmoku zu* and *Kate mono,* this demonstrates how domain physicians were mobilized to creatively adapt knowledge from plant texts to the specific ecology of their own domains, in order to compile practical manuals distributing actionable knowledge on edibles.[240]

The extreme crop failures and food shortages of the Tenpō Famine extended beyond just the northeastern domains, instead causing severe impacts across multiple regions of Japan.

In the Tsu Domain, the rainy spring followed by a cool summer and an autumn overwhelmed by heavy winds and floods in 1836 resulted in disastrously poor harvests. In response, the local samurai Hiramatsu Rakusai 平松楽斎 (1792-1852), who had already compiled several famine relief treatises in the early years of the crisis, came out with yet another work focused specifically on edible plants. This piece took the form of a short untitled pamphlet, essentially just a few pages that pragmatically listed 61 different plants along with their potential culinary uses and preparation methods. Yet Hiramatsu contended that proper disaster preparation could effectively prevent poor harvests from deteriorating into outright famines. He also explicitly criticized the current penchant for luxurious and wasteful lifestyles, interpreting the ongoing food crisis as a stern warning from heaven against such decadence.[241]

The Mito Domain was also heavily impacted, with devastating losses of 75% of the all-important rice crop, alongside 50% destruction of of barley and wheat yields.[242] The Mito Confucian scholar and physician Shōji Kensai 庄司健斎 (fl. first half of the nineteenth century) compiled an undated famine plant manual *Kyūga roku* 救餓録 (A Record of Hunger

[239] Marius B. Jansen, ed., *The Cambridge History of Japan*, vol. 5 (Cambridge: Cambridge University Press, 1989), 118.
[240] Sasaki Bokuan 佐々城朴安, *Kyūkō ryaku* 救荒略, 1833.
[241] Hiramatsu Rakusai 平松楽斎, *Tenpō kikin kyūkō surimono utsushi* 天保飢饉救荒刷物写, 1836.
[242] Jansen, *The Cambridge History of Japan*, 5:118.

Relief). Although the exact compilation date is uncertain, it is likely to have been written in direct response to Mito's severe harvest destruction in the midst of the Tenpō Famine.

In the Kii Domain, the poor suffered during the bitterly cold winters, as food prices skyrocketed out of reach. The domain physician and herbalist Sakamoto Jun'an 坂本純庵 (fl. early nineteenth century) compiled a text on herbaceous and woody plants that could serve as famine foods. His pragmatic compilation was then included in the multi-volume *Kyūkō benran* 救荒便覧 (A Handbook of Famine Relief) edited by Kii Confucian scholar Endō Kakushū 遠藤鶴洲 (1789-1851) and issued in 1836. The text was proofread and illustrated by Jun'an's son, Sakamoto Kōnen, who likely expanded upon his father's work in his own undated manuals *Kyūki shokuhin kō* and *Shūi kyūki shokuhin kō* 拾遺救飢食品考 (Supplements to *Investigation on Famine Foods*).

Apart from samurai officials and physicians equipped with specialized expertise, ordinary commoners outside bureaucracy were also often stimulated by humanitarian insticts to compile and distribute famine plant manuals. In 1836, an obscure Katō Sanyōtei 加藤三余亭 (fl. 1836) published *Kyūkō zasshoku shū* which he distributed for free. In 1837, a wealthy farmer from Shinano named Morimoto Mayumi 森本真弓 (fl. 1830s) published a single-sheet compilation *Kyūki shokumotsu benryaku* 救飢食物弁略 (A Sketch of Famine Foods), which concisely recorded processing instructions for 8 plants. Morimoto seemed deeply concerned with developing practical survival strategies for commoners during times of severe hardship, as he also compiled texts like *Kikan shichi no hō* 飢寒施治の法 (Remedies for Hunger and Coldness) and *Kyūkō shō* 救荒抄 (Excerpts of Famine Relief).

Subsistence crises continued to drive the adaptation of plant knowledge to alleviate disasters. In 1850, a series of natural disasters afflicted western Japan. In the seventh month, severe storms led to the total loss of 1 million *koku* worth of crops across the domains of Ise, Owari, Mikawa, Minō, Tōtōmi, and Suruga.[243] The Ise herbalist Oka Yasusada 岡安定 (1810-1874) lamented this massive crop failure that had driven people of all social standings into difficulties.[244] While he referred to the Confucian classics which advised maintaining one-year of grain reserves for every three years to guard against instability, he did not go on to emphasize bolstering official storage. Rather, he proposed that adopting a plain diet which

[243] The Owari Domain was hit by another two storms following this one and troubled by floods, consequently losing 599721 *koku*, 97 percent of the *omotedaka*. See "2010 nen 8 gatsu no shūnen saigai 2010 年 8 月の周年災害," Bōsai jōhō shinbun, accessed April 27, 2023, http://www.bosaijoho.jp/reading/years/item_6059.html.
[244] Oka Yasusada 岡安定, "Preface," in *Kyūkō sōhin zufu* 救荒草品図譜 (Tsu, 1851).

economized grain consumption represented the most realistic and immediate preparation commoners could make for subsistence crises.[245]

Outside the officialdom, Oka highlighted self-reliance as the most convenient and efficacious solution in times of disaster. He consulted Hiramatsu Rakusai, selected local edible plants, and compiled the illustrated *Kyūkō sōhin zufu* 救荒草品図譜 (Illustrated List of Herbs for Famine Relief). This practical guide was also known as *Kyūkō sōhin zu* 救荒草品図 (Picture book of Herbs for Famine Relief) and *Kyūkō yasai zusetsu* 救荒野菜図説 (Illustrated Manual of Wild Vegetables for Famine Relief).

The 1850 famine also impacted the Shimabara Domain. Commissioned by the domain government, physician Kaku Hika 賀来飛霞 (1816-1894) investigated the edible plants covered in *Jiuhuang bencao* and *Yecai pu*, and then compiled reports summarizing locally available edible plants titled *Kyūkōhonzō ryakusetsu* 救荒本草略説 (A Brief Explanation about *Kyūkō honzō*) and *Kyūkōyafu ryakusetsu* 救荒野譜略説 (A Brief Explanation about *Kyūkō yafu*).[246]

By the early nineteenth century, Japanese famine relief discourses had been heavily shaped by Chinese texts.[247] While western natural history had begun to influence the ideas and practices of Japanese naturalists, their impact on famine relief knowledge remained peripheral at this stage.[248]

A key naturalist who embodied both eastern and western influences was Itō Keisuke 伊藤圭介 (1803-1901). He represented a transitional figure as both the last *hōnzogaku* scholar as well as the first Japanese biologist. Keisuke's background blended both scholastic lineages. Initially he studied Chinese medicine under his physician father and *honzōgaku* under the renowned herbalist Mizutani Hōbun 水谷豊文 (1779-1833) in Owari. But in 1821, he began engaging with western medicine under the *rangaku* (Dutch learning) scholar Fujibayashi Fuzan 藤林普山 (1781-1837) in Kyoto. This east-west synthesis was catalyzed further when Keisuke met the German physician and botanist Franz von Siebold (1796-1866) in 1826. Siebold was travelling between the Dutch trading station of Dejima in Nagasaki and the

[245] Oka Yasusada.
[246] Kaku Hika 賀来飛霞, "Editorial principles," in *Kyūkō honzō ryakusetsu* 救荒本草略説, 1851.
[247] Itō Keisuke 伊藤圭介, *Kyūkō shokumotsu benran* 救荒食物便覧 (Nishio and Matsusaki, 1837).
[248] On the interaction between *honzōgaku* and European natural history in the eighteenth century, see Marcon, *The Knowledge of Nature and the Nature of Knowledge in Early Modern Japan*, 127–39. On the reception of western knowledge in general, see Marius B. Jansen, "Rangaku and Westernization," *Modern Asian Studies* 18, no. 4 (October 1984): 541–53.

Shogun's court in Edo, when Keisuke's teacher Mizutani exchanged plant knowledge with him. This encounter precipitated Keisuke studying at Siebold's school in Nagasaki from 1827 to 1828.

As a parting gift, Siebold gave Keisuke a copy of Swedish naturalist Thunberg's (1743-1828) *Flora Japonica* (1784) documenting Japanese plants. Keisuke applied Linnaeus's binominal taxonomic system to native species in the book. This resulted in his 1829 publication *Taisei honzō meiso* 泰西本草名疏 (Annotations on Western Names of Herbs), embodying the first attempt to systematically implement Linnaean taxonomy in Japan.

Despite grasping western taxonomy, Keisuke's early famine relief efforts still operated firmly within the longstanding *honzōgaku* tradition. During the Tenpō Famine in 1837, Keisuke compiled the relief manual *Kyūkō shokumotsu benran* 救荒食物便覧 (Handbook of Famine Foods), a large poster that listed the names and edible parts of 104 herbaceous and 19 woody plants as famine foods. In the preface, Keisuke acknowledged the common practices of the poor foraging for whatever plants they could find to make up for grain shortfalls in times of scarcity. His expressed purpose was to facilitate wider circulation of localized knowledge on edible plants between regions.

Interestingly, despite Keisuke's familiarity with European natural history, this western knowledge did not seem to substantially impact his articulation and presentation of famine plants in the manual. Keisuke clearly stated that his compilation was not reliant on western botanical authorities. He justified this statement by noting that the same plant growing in different climates and locales could exhibit differing properties. This implied that western textual discourses about Japanese plants were not necessarily reliable guides for practical use.

Moreover, although fully capable of applying the Linnean binominal nomenclature, Keisuke declined to classify famine plants this way in the manual. He did not pair Japanese vernacular names with Latin names, nor did he arrange entries alphabetically in the western manner. Instead, Keisuke followed the longstanding tradition of Japanese herbalists who had been predominantly influenced by and familiar with Chinese *bencao* literature. He paired Japanese names with corresponding Chinese names, reflecting the continued dominance of Sino-Japanese botanical epistemology in organizing famine relief knowledge at this stage. The likely reason he eschewed newer western classification was its unfamiliarity, especially among lower-class commoners who were the primary beneficiaries meant to gain survival knowledge from the manual. This is evidenced by the fact that Keisuke's groundbreaking

work *Taisei honzō eiso* was appreciated and used almost exclusively within small circles of naturalist scholars themselves rather than wider society. Moreover, as discussed later in the next chapter, intricate and systematic classification was simply unnecessary in a practical famine relief manual, since elucidating abstract taxonomical relationships between plants was of little relevance to desperate foragers.

It was only in the late nineteenth century, as western science assumed prominence, that Keisuke finally presented famine plants remarkably differently compared with earlier Japanese manuals. In 1870, the newly formed Meiji government appointed Keisuke to lecture on botany at the institute that would become Tokyo University. When the university was established in 1877, he was named adjunct professor and given a special post at the Koishikawa botanical garden. In 1880, Keisuke became director of the botanical garden. Then in 1881, he was appointed professor of the department of science, holding the position until his death in 1901. During his post at Tokyo University, Keisuke continued searching edible plants, now with greater resources. At Koishikawa, he empirically collected and tasted cultivated Chinese, Japanese and western plant to identify ideal famine foods.

Keisuke's expanded research was eventually crystalized into a report submitted to the Ministry of Education, published as *Kyūkō shokubutsu shūsetsu* 救荒植物集説 (Collected Discourses on Famine Plants) in the *kanpō* (official gazetteer) in 1884. These reports were later collected and reprinted as a manual, such as the 1885 Kyoto edition.

The reports documented 121 plants, providing their Japanese, Chinese, and western names, distributions, growth habits, morphology, and uses. It incorporated new western species like the western variety of *tororo aoi*, said to have been imported in 1862. Most significantly, Keisuke comprehensively applied Linnaean classification, showcasing the influence of western natural history on Japanese famine relief by the late nineteenth century.

The quest for famine foods continued into the twentieth century. In early April 1903, the botanist Shirai Mitsutarō 白井光太郎 (1863-1932), at that time Assistant Professor of College of Agriculture at Tokyo University, heard about the distress in the northeast region of Japan, which had attracted international attention. According to the Los Angeles Herald, the crop failure in the previous year had resulted in devastation all over Japan and led to severe food crises in the northeast in particular.[249] By early March, the official number of deaths

[249] "Famine in Japan: The Failure of Rice Crop Causes Dire Suffering in Some Provinces," *Los Angeles Herald*, March 5, 1903.

from starvation already exceeded 140,000. International initiatives were taken to raise funds and provide urgent food aid for the afflicted populace. Deeply moved by accounts of the distress, Shirai completed a famine plant manual titled *Kyūkō shokubutsu* 救荒植物 (Plants for Famine Relief) remarkably quickly within only a few days. In his preface, Shirai claimed that there were still very few specialized books on the subject of edible plants that could serve as famine foods, and therefore his timely compilation could provide a useful reference to address this knowledge gap.[250] Rather than investigating the causes of the disaster, Shirai pragmatically highlighted the immediate importance of broadly transmitting famine plant knowledge, openly acknowledging the harsh reality that many starving people had been forced to consume roots and leaves of herbs and woods in their desperation to fulfill hunger in times of scarcity.

After providing a concise review of the history of the investigation on famine foods in Japan up to that point, Shirai then curiously devoted a separate section of his manual to meticulously situating all 435 famine plants into the Linnaean classification system, with their specific edible parts marked as well. However, this academic exercise was not merely a case of purely scholarly interest in scientific taxonomy on Shirai's part. In the subsequent section of his work focused on cooking methods and preparation, he pragmatically explained that plants belonging to the same genus could often be prepared in similar ways, showing the practical value of incoroporating this type of botanical knowledge to suggest more effective utilization methods.[251]

Since proper cooking methods were central to rendering plants truly edible and usable as famine foods, Shirai extensively cited and referenced a diverse range of earlier famine plant manuals as well as survey reports on natural products, in order to certify and pass on the correct preparation methods for each specific plant. Yet he underlined that it was still not enough to simply pin down the appropriate famine plants to consume and teach people the right cooking procedures. He soberly observed that one of the major reasons for many deaths during famines was the accidental consumption of poisonous plants due to inadequate knowledge. Therefore, as a precaution Shirai also recorded 26 different wild plants and their various toxic effects, intended as a practical warning to prevent unwitting readers from making dangerous misidentifications and consuming harmful varieties during future crises.

[250] Shirai Mitsutarō 白井光太郎, "Foreword," in *Kyūkō shokubutsu* 救荒植物 (Tokyo: Sūzanbō, 1903).
[251] Shirai Mitsutarō, *Kyūkō shokubutsu*, 36.

2.5 Conclusion

Thus far, I have traced the emerging of famine plant manuals in both imperial China and Tokugawa Japan. It is evident that the pragmatic need to abstract, record, and transmit discrete knowledge on edible plants that could potentially serve as famine foods arose relatively early on in East Asian history. I contend that what fundamentally distinguishes this focused body of texts from previous discourses and fragmentary knowledge about consuming substitute plants during food shortages lies in the explicit attempts made by compilers to methodically collect and systematize relevant famine relief information. Additionally, later works consciously referred back to and even directly quoted from earlier exemplars, illustrating the texts' interconnection while also pursuing a specific form of practical knowledge intended for personal use rather than institutional application.

While the creation of *Jiuhuang bencao* at the beginning of the fifteenth century may seem contingent on the personal interests and elite status of its compiler, Prince Zhu Su, the extensive historical records of numerous devastating crop failures and famines underlines systemic food supply vulnerabilities in premodern East Asian societies. This helps explain the prevailing and urgent interest across social strata in practically documenting accessible food resources, whether in imperial China where state interventionism was prioritized, or in Tokugawa Japan where relief responsibilities were largely shouldered to self-governing groups. My findings may not be surprising that the peaked compilation of famine plant manuals closely correlated with periods of severe subsistence crisis when food shortage problems became widespread and prominent or when governments lacked sufficient resources or effectiveness to implement comprehensive top-down relief campaigns. In the following chapter, we will take a closer look at the content and discourses within the manuals themselves to see how knowledge surrounding famine plants and their usage in times of crisis was unpacked and propagated.

3 The Conceptualization of Famine Plants

By closely examining the texts and images in Chinese and Japanese famine plant manuals from the fifteenth to nineteenth centuries, this chapter investigates the dynamic and changing understandings of "famine plants" in East Asian historical contexts. I argue that the categorization of plants as famine foods shaped and was shaped by shifting concepts of edibility, seasonality, toxicity and accessibility. First, I will analyze the selection of plants included in these manuals and scrutinize the qualifying criteria. Second, I will examine the composition and structure of the manuals to identify what types of information were considered relevant to constitute famine plant knowledge. Last, I will explore the visual representations of plants to address how images did or did not reinforce arguments about the utility of these edible plants as famine foods.

To provide a focused example before delving into general analysis, I will draw on representations of purslane across several manuals. A fast-growing annual succulent with fleshy leaves and stems, purslane was illustrated and recommended for emergency famine relief in manuals from both China and Japan, including the early fifteenth-century Chinese *Jiuhuang Bencao* and *Yecai pu,* and nineteenth-century Japanese *Bikō sōmoku zu* (see Figure 3-1, Figure 3-2 and Figure 3-3). Scrutinizing purslane's portrayal illuminates how specific plants were documented as "famine foods" in these historical works.

Figure 3-1 *Portulaca oleracea*, *Jiuhuang bencao* (1525). National Library of China

Jiuhuang bencao first presented a full-page image of purslane, making the typically low-lying plant appear disproportionately large. The painter-workers diligently depicted multiple clusters of leaves, replicating the lush greens likely found in the prince's garden. On the back of the page came a plain text description, identifying the plant as follows:

"The vegetable purslane

Also named *wuxingcao* (five-phase plant). The place of origin was not recorded in the past, now it grows everywhere. Because of its green leaves, red stalks, yellow flowers, white roots and black seeds, it is named *wuxingcao*. Its flavor is sweet, its nature is cold and slippery.

Processing: Collect sprouts and leaves, scald and dry, fry thoroughly, add oil and salt, stir and enjoy.

Remedy: See the text in the vegetable section, *Zhenglei bencao.*"

Jiuhuang bencao described plants in a precise, straightforward way commonly seen in *bencao* texts. In fact, the first part directly paraphrased a passage from the earlier *Tujing bencao*. Listing alternative names, distribution, morphological details, flavors, and medicinal

uses, this descriptive style was shared by other Chinese and Japanese famine manuals influenced by the *bencao* tradition, including the seventeenth-century *Yecai bolu* and the nineteenth-century *Kyūkō benran*, *Kyūki shokuhin kō* and *Shūikyūki shokuhin kō*. Notably, the preparation instruction was recorded separately, indicating its essentialness to famine food knowledge.

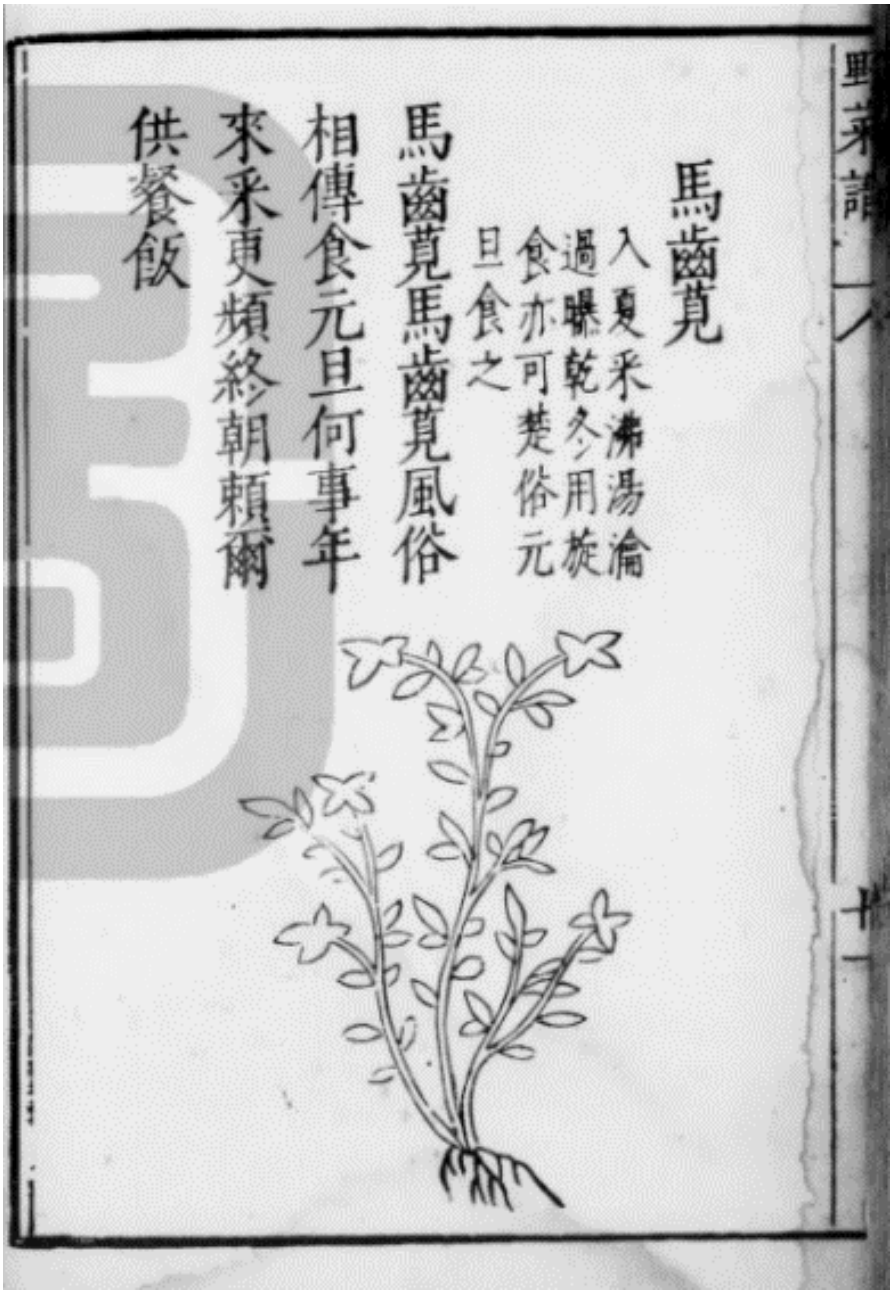

Figure 3-2 *Portulaca oleracea*, *Yecai pu* (late sixteenth century). National Library of China

The plant was presented differently in *Yecai pu*, with the image in the lower part of the page and the text in the upper part as follows:

"Purslane

When summer arrives, collect (the plant), boil it with boiling water, dry it in the sun, and consume it in the winter. Also good for immediate consumption. According to the customs in Chu (today's Hubei), it is eaten on the first day of the year.

Purslane, Purslane,

On the first day to be eaten.

Why more of you over the years

Be my grains and be my meals."

The text was divided into two sections, a descriptive part in smaller font, and a lyrical ballad. The descriptive part downplayed extensive plant details, only including brief preparation instructions and noting the proper times for collection and consumption. In fact, most entries contained some preparation guidance, while few described formal botanical features. This exemplified how, unlike *bencao* texts, this manual emphasized edible uses over plant morphology.

However, the ballad itself composed by author Wang Pan drew more focus than famine plant knowledge. Written in vernacular language, it imagined a scene where purslane, typically eaten on special occasions, became a regular food source during hardship. Although providing little additional plant information, ballads like this often depicted devastated landscapes and desperate people eating the plant to survive. The rhyming compositions and situational framing made them far more engaging and highly memorable.[252] Compared to the neutral, factual style of *Jiuhuang Bencao*, *Yecai Pu* expressed more sympathy for suffering people by contextualizing plants in plight scenarios.

In contrast, the purslane image in the lower half seemed hastily sketched, with clustered simple leaves integrated randomly without full leaf margins on some stems. The author did not appear to have invested as much effort in the illustration as in the ballad.

[252] Ballads were meant to be sung. However, by Wang Pan's time, written ballads were meant for reading, not for singing.

Figure 3-3 *Portulaca oleracea*. *Bikō sōmoku zu* (1833). National Diet Library.

The Japanese manual that came out three centuries later, *Bikō sōmoku zu*, shifted the focus even further. While the image was placed at the centre to draw readers' attention, the concise text was squeezed in the corner, focusing on dietary guidelines:

"Purslane

Scald the leaves, soak in water, season with salt or miso and eat. Pregnant women and children should not eat it. In addition, mixing it with bracken powder and eat is not good."

The text highlighted edible uses even more than *Jiuhuang bencao* and *Yecai pu* by removing all information irrelevant to serving suggestions. This becomes clear when compared with the more extensive purslane entry by the same author in the earlier relief manual *Minkan bikō roku*:

"Purslane

Its taste is sour, its nature is cold and slippery, it is not poisonous. Between the knot and the leave there is mercury.

According to Katsuki Gyūzan 香月牛山 (1656-1740), in Japan it is said that there is mercury, so pregnant women, women and children should not eat it. According to *Kyūkō yafu*, (man can) eat stems and leaves. There are two kinds: the red and the white. When summer arrives, collect (the plant), boil it with boiling water, dry it in the sun, and consume it in the winter. Also good for immediate consumption. According to the customs in Chu (today's Hubei), it is eaten on the first day of the year.

To relieve hunger, boil thoroughly, if there is no miso, add salt and eat it. To mix it with bracken powder and eat it is not good."[253] (The text is underlined by me)

Bikō sōmoku zu eliminated the pharmaceutical properties, formal features and Ming cooking instructions, only retaining and recombining the dietary recommendations and prohibitions.

Meanwhile, the image was disconnected from the text and bore no relation to the recipe. Featuring the plant's erect roots and horizontal stems in a T-shape structure, it reflected deliberate layout choices by scholar-painter Udagawa Yōan. The obovate leaves were largely depicted singly rather than in clusters, possibly for better observation or visual balance.

As illustrated through the purslane example, Chinese and Japanese famine plant manuals adopted differing approaches in their documentation and depiction of edible plants. Works like *Jiuhuang Bencao* aligned closely with empirical *bencao* traditions, while *Yecai Pu* foregrounded imaginative ballads over pragmatic details. In *Bikō Sōmoku Zu*, the focus of the text narrowed exclusively to food preparation guidance, with the image occupying primary epistemic and artistic importance.

[253] *Nihon nōsho zenshū* 日本農書全集, vol. 18 (Tokyo: Nōsan Gyoson Bunka Kyōkai, 1983), 138.

However, despite these divergent rhetorical emphases, comparison across the manuals also reveals certain commonalities underlying the construction of famine plant knowledge. All selectively incorporated ingredients considered edible and accessible during shortages, even as the specific rationales shifted over time and place. Certain knowledge categories like identification, seasonality, and processing methods recurred as well, even where descriptive details were abbreviated. Finally, images visually reinforced utility arguments, whether through idealized naturalism, memory-based sketching, or deliberate artistic arrangement.

In subsequent sections, I will expand this analysis by systematically examining the selection principles, textual categories, and visual representations that structured famine plant manuals from China and Japan. Tracking both continuity and change in these knowledge construction practices will further elucidate how dynamic cultural understandings shaped the perception and promotion of edible plants for survival across historical East Asian contexts.

3.1 An Edible Plant World

What plants could be considered "famine plants" and therefore merit inclusion as useful entries included in a relief manual? Although clear-cut definitions delineating the boundaries of the famine plant category were rarely supplied explicitly, the strategic selection and descriptive portral of the individual plant in these manuals often subtly betrayed certain underlying criteria and agendas held by the compilers, including factors like spatial abundance and accessibility, seasonal temporal availability, toxicity risks, levels of existing background cultural familiarity and cultivation.

Of all these influential but often unspoken selection criteria, arguably the two concerns that seem to have consistenly held the most weight and occupied the foremost considerations were immediate, practical factors of local abundance and accessibility on one hand, and potential toxicity risks posed by the plant on the other.

Quite a few of the manuals openly highlighted the overarching importance of promoting plants that represented readily accessible, reliably prolific food resources that hungry commoners could realistically forage and collect with minimal hardship, especially when reproducing plant knowledge transplanted from a different regional context.

For example, when *Jiuhuang bencao*, which had originally recorded 414 plants available in Henan, was reprinted in Sichuan, the editor Hu Cheng made the decision to significantly reduce the number of plants down to 112 carefully selected ones. Hu Cheng explained his

abridgement by stating he had only "selected the plants that are easily recognized by sight and smell, and grow in strategic as well as remote regions", indicating that any plant originally described which were not practically and reliably accessible in the new local context of Sichuan had been selectively eliminated from the reprinted edition as not relevant.[254]

Similar examples of this strategic prioritization of local availability and abundance over comprehensive general coverage can be seen in the publication choices in Tokugawa Japan as well. For example, *Kyūkō sōhin zufu*, published within the Tsu Domain, had directly drawn its knowledge from first-hand field work conducted around Kyoto by the herbalist Hiramatsu Rakusai. Hiramatsu's surveys had yielded notes on approximately 60 famine plants. However, the compiler Oka Yasusada, after consulting directly with Hiramatsu, made the decision to include only 18 of those plants in the manual. As rationale for this abridgement, Oka Yasusada explicitly stressed that he had selectively chosen to print only the subset of plants which could be confirmed to have been readily found growing nearby within the Tsu Domain.[255] This choice demonstrated the overriding priority given to practical immedicay and efficacy for the local audience over any merits of comprehensive inclusion or general plant knowledge.

Not only were famine plants expected to be accessible in the local areas, but equally importantly, the edible plants required abundance, the ability to realiably occur in large, prolific numbers, in order actually to be capable of sustainably catering to and feeding the needs of a significant population of common people suffering under conditions of food shortage.

After reviewing the entries describing hundreds of plants in relief manuals including *Jiuhuang bencao, Yecai pu* and *Jiuhuang yepu buyi,* the thoughtful compiler(s) behind *Kyūkō honzō bassui* decided to selectively include and highlight primarily "the herbs and plants that grow in our regions (i.e. Komatsu) in large numbers".[256] In other words, not only were plants excluded if they could not be found growing nearby, but also any plant that existed only in extremely small numbers were judged to fail the pragmatic criteria of supplying sufficient, stable volumes of food and likewise rejected from inclusion. The compiler(s) emphasized that "(We) only record plants that exist in large numbers and can provide comparable volumes of

[254] Hu Cheng, "Preface."; Zhu Kun, "Preface."
[255] Oka Yasusada, "Preface."
[256] "preface."

nourishment equivalent to staple grains at scale".[257] This detailed consideration and calculation of feasible food supply volumes further confirmed the practical needs-based orientation that defined the selective content choices of famine plant manuals.

In addition to local accessibility, famine plant manuals also took seasonal accessibility into consideration, recognizing that cycles of food scarcity and famine often followed predictable temporal patterns across the annual calendar. Therefore, thoughtful compilers made a point to selectively prioritize and highlight plants that would be accessible and available to forage during the most difficult lean seasons when hunger peaked.

For instance, through sustained empirical observation over successive years, the learned in the Komatsu Domain came to recognize that local famines tended to last from the second month of the year until the first relief provided by the eventual harvest of early grains like barley and wheat. Therefore, they made the logical decision to be highly selective, and only delibrately include plants in their manual that were known to be readily consumable during the spring and summer months leading up to the cereal grain harvests.[258]

Oka Yasusada also astutely opined from experience that the highest number of starvation deaths directly attributable to extreme scarcity predictably tended to occur in the vulnerable transitional period spanning from late winter through the early spring, roughly the first three months of the new year.[259] This was because not only was less food in general available during the cold weather season, but human bodies were also significantly more susceptible to debilitating and potentially fatal illnesses during this period of seasonal change. Therefore, Oka intentionally focused his selections on plants that were accessible primarily during these most crucial high-risk winter and early spring months. At the same time, Oka made a point to concentrate on profiling plants that were relatively uncommon, under-utilized or even largely unknown, as they could provide alternative nourishment precisely when common food items like radishes, root vegetables and sweet potatoes were also in short supply prior to spring.

Practical concerns of potential toxicity also factored heavily into the selective inclusion criteria for famine plant manuals. It was widely acknowledged that during famines, many tragic deaths often resulted from desperate starving people unwittingly consuming poisonous plants in their quest for any available food.[260] To help prevent such needless tragedies,

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[257] "preface."
[258] "Editorial principles," in *Kyūkō honzō bassui* 救荒本草抜粋 (Komatsu: Shasō, 1828).
[259] Oka Yasusada, "Preface."
[260] Wang Pan, "Preface."

compilers of famine plant manuals often concentrated their efforts on promoting plants that were harmless to human beings when properly prepared. For instance, the Japanese botanist Itō Keisuke clearly stated in his *Kyūkō shokubutsu shūsetsu* that only harmless and poisonless plants could be deemed appropriate for consideration as famine foods.[261]

While earlier compilers did not always openly limit the scope of famine plants only to those proven harmless, a marked preference towards harmless edible can be read between the lines. For example, when the domain physician Sasaki Bokuan set about compiling *Kyūkō ryaku,* he selectively drew his plant catalog only from well-known edibles already growing in the northeastern region of Japan, or from entries excerpted from trusted reference works such as *Jiuhuang bencao, Yecai pu* and *Jiuhuang yepu buyi.*[262] In both cases, Sasaki filtered out and excluded any plant with hints of potential toxicity or poisonous properties, only allowing the safest options into his manual's pages. Indeed, Sasaki was so deeply concerned about the very real dangers of desperate famine victims unwittingly consuming harmful plants that he even included a special herbal antidote recipe at the very end of his manual, intended as a lifesaving emergency measure.

While modern studies often perceive famine foods as wild resources, compilers of famine plant manuals did not limit their scope to wild plants.[263] Except Shirai Mitsutarō who devoted his *Kyūkō shokubutsu* to plants growing in the fields and mountains, most authors did not insist upon any clear-cut division categorically separating wild and cultivated plants in their manuals.[264] In fact, careful examination reveals that a good number of the plants profiled in the manuals had actually been cultivated for centuries, although not necessarily with the primary purpose of eating the plants as food crops. For example, *Jiuhuang bencao* clearly stated that 50 out of the 414 plants covered had been cultivated in agricultural fields and household gardens.[265] Furthermore, dozens of plants were recorded as cultivated plants in earlier agricultural writings, such as *Qimin yaoshu.* The Japanese manual *Bikō sōmuku zu*

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[261] Itō Keisuke 伊藤圭介 and Kaku Hika 賀来飛霞, "Yūdoku shokubutsu shūsetsu 有毒植物集説," *Kanpō*, February 7, 1885.
[262] Sasaki Bokuan, *Kyūkō ryaku*.
[263] Joseph Needham highlighted wilderness of famine foods by translating *Jiuhuang bencao* into Treatise on Wild Food Plants for Use in Emergencies and named the section devoted to famine-related applied botany in the late imperial China "Studies on Wild (Emergency) Food Plants". See Needham, *Science and Civilisation in China: Biology and Biological Technology*, 6:328–55.
[264] Shirai Mitsutarō, "Foreword."
[265] Cultivated plants were marked with phrases such as "人家園中多種之 (being often cultivated in gardens)". Those that were not marked with such phrases, however, did not indicate that they had not been cultivated. In fact, some of the plants such as turnip which even had been incorporated into the crop rotation system according to *Qimin yaoshu* could have been too familiar to mention their status as cultivars.

provides another illustrative example, listing 16 domesticated cultivars out of the total 104 plants, while also confirming that a further substantial score of entries were known to grow abundantly in both wild and cultivated settings.[266]

Rather than a binary wild vs cultivated distinction, the compilers of famine plant manuals seemed to place more emphasis on distinguishing between plants that were already widely known to the general public to be perfectly edible and had already been commonly incorporated into the daily culinary diet versus more obscure plants that had up until that point rarely if ever been consumed for food. For instance, the Japanese manual *Kyūkō ryaku* intentionally only documented uncommon, little known plants that would be unfamiliar to average readers at the time and had not previously often been exploited for food purposes.[267] Similarly, *Kyūkō shokubutsu* strategically excluded and left out any plants that were already staple food items in the period, even if some parts originated from wild plants.[268]

When famine plant manuals did cover both more common household food plants alongside uncommon edible ones in a single volume, the compilers usually visually differentiated the two categories by providing concise streamlined listings for the common foods that needed no elaborate introduction, while penning far more detailed descriptive passages for the less familiar edibles to educate readers. For example, the illustrated guide *Kyūkō sōhin zufu* simply listed the names of plants that were already regular food items consumed by Japanese households of the time, yet vividly illustrated the less commonly exploited species with colorful ink paintings. This selective marginalization and backgrounding of plants already commonly appreciated as foods subtly indicates that the compilers were creating these manuals with the pragmatic intention of expanding knowledge boundaries to help readers prepare for progressively worsening food scarcity crises ahead.

Given the general underlying preference expressed by most compilers of famine plant manuals for selectively profiling and highlighting edible plants that were relatively unfamiliar, demonstrably harmless, and naturally abundant or cultivated specifically in the local area, the total number of individual plants documented and described in each manual exhibited substantial variation across the genre, ranging diversely from just a few dozen

[266] *Nihon nōsho zenshū* 日本農書全集, vol. 68 (Tokyo: Nōsan Gyoson Bunka Kyōkai, 1996), 231.
[267] Sasaki Bokuan, *Kyūkō ryaku*.
[268] Shirai Mitsutarō, "Foreword."

plants in the most minimal pamphlets to several hundred catalogued in the most comprehensive tomes (see Table 3-1).[269]

Yet even in the most expansive manuals, these plant totals remained relatively modest in raw numerical terms compared with the sheer breadth of plant substances catalogued and documented within monumental pharmaceutical compendia of the *bencao* textual tradition. These sprawling *bencao* texts sought to catalog knowledge exhaustively, routinely listing well over one thousand individual items derived from the plant, mineral, and animal worlds combined.[270] Impressively, more than half of the total substances documented in a large *bencao* often comprised individual plants alone, dwarfing the plant diversity coverage of famine manuals. The massive *bencao* tomes embodied encyclopedic ambitions to represent the known natural world in its entirety, drawing from vast networks of scholarly correspondence and collecting reports from far-flung regions to aggregate knowledge. Yet for urgent needs like famine relief, the manuals' emphasis on plants close at hand proved more practical than the *bencao*'s comprehensive breadth.

[269] It is not easy to count the number of plants, as one entry may refer to multiple plants, and different entries may refer to the same plant. In addition, whether the plants mentioned in passing should be counted remains questionable. For convenience, I will not distinguish the number of plants and the number of entries. Where necessary I will specify the difference.

[270] For example, *Zhenglei bencao* included 1746 items, *Bencao gangmu* 1892, *Yamato honzō* 1362 and *Zhiwu mingshi tukao* 1714. See Tang Shenwei 唐慎微, "Foreword," in *Zhenglei bencao* 証類本草, ed. Shang Zhijun et al. 尚志鈞 (Beijing: Huaxia chubanshe, 1993); Li Shizhen 李時珍, "Table of Contents," in *Bencao gangmu* 本草綱目 (Beijing: Zhongyi guji chubanshe, 1994); Kaibara Ekiken 貝原益軒, "Table of Contents," in *Yamato honzō* 大和本草 (Kyoto: Nagata Chōbei, 1709); Wu Qijun 吳其濬, "Table of Contents," in *Zhiwu mingshi tukao* 植物名實圖考, XXSKQS, vol. 7, 1848.

Table 3-1 Number of Plants in Famine Plant Manuals

Title	Number of plants (entries)
Jiuhuang bencao (1406, 1525, 1555, 1586, 1856)	414
Jiuhuang bencao (1562, 1566, 1593)	112
Yecai pu	60
Yecai bolu	435
Yecai zan	44
Jiuhuang yepu buyi	60
Kate mono	79 (82)
Kyūkō honzō bassui	155
Kyūkō ryaku	203
Bikō sōmoku zu	104
Kyūkō zasshoku shū	26[271]
Kyūkō shokumotsu benran	123
Kyūga roku	95
Kyūki shokuhin kō	37
Shūi kyūki shokuhin kō	36
Kyūkū sōhin zufu	18
Kyūkō shokubutsu shūsetsu	121

Source: Numbers by my account.

The total number of individual plants covered within a given famine plant manual was influenced by both the material format of the work, as well as intellectual choices made by the compiler.

Single-sheet prints and short pamphlet-style manualss imposed inherent constrainst on the potential amount of content and number of plants that could practically be included, due to their modest physical space. For instance, the small *hanshibon*-size of the Japanese illustrated *Kyūkō sōhin zufu*, approximately 24 by 17 centimeters, meant its total of 8 leaves, 3 of which

[271] Different plants that could be processed in the same way were sometimes grouped together in one entry in *Kyūkō zasshoku shū.* 26 is the number of plants, not the number of entries.

devoted to prefatory writings, could present coloured illustrations and notes on a mere 18 plants.

Meanwhile, the even more constrained Japanese single-sheet *Kyūkō shokumotsu benran*, measuring approximately 83 by 32 centimeters, managed to ingeniously squeeze in abbreviated notes on as many as 87 edible plants, through utilizing tiny fonts and incredibly sparse detailing for each entry. The compiler Itō Keisuke's intellectual aim in cramming in so many plants was to promote the study of native Japanese nature, not just import traditions from China or the West, by ambitiously consolidating diverse edible plants gathered from across the entire nation onto one single-page format.[272]

At the other end of the spectrum, book-length manuals that had fewer space constraints exhibited a tendency to contain expanded documentation covering significantly more plants. For instance, the compiler Zhu Su was motivated by a belief that everything in nature held potentially valuable uses that deserved fulfillment. This intellectual stance drove him to strive to be as comprehensive as possible, collecting observational notes on as many different plants as he could access and meticulously marking them all down in his expansive manuscript. This encyclopedic pursuit of reasonably attainable completeness manifested in Zhu Su's unprecedentedly lengthy catalog documenting 414 unique plants, a figure considered excessive and in need of abridgement by the more practical-minded patron who sponsored the manual's reprinted edition. In essence, decisions on the number of plants covered involved balancing compilers' desire for expansive knowledge with realistic constraints of format and utility.

When a famine plant manual contained documentation on only a very small number of edible plants, such as the 18 species in *Kyūkō sōhin zu* or 15 in *Kyūkō zasshoku shū*, employing an overt system of classification and categorization for organizing the entries did not seem entirely necessary to compilers. Since the limited selection of plants already shared the common utilitarian trait of edibility during food shortages, and locating any singular plant of interest within such a narrow list would be quite easy for readers, explicit classification may have appeared superfluous.

However, in the majority of famine plant manuals, especially those documenting dozens or hundreds of plants, implementing some form of classification system and conceptual order

[272] Itō emphasized the distinction between knowledge produced in "our great empire" and in "foreign countries". See Itō Keisuke, "Preface," in *Kyūkō shokumotsu benran* (Nishio and Matsusaki, 1837).

for organizing the entries was considered an essential structural component by most compilers, even if the actual categorical divisions were not always explicitly marked or delineated through written labels.

The particular methods of classification deployed could provide insight into how the compilers themselves understood relationships within the natural world, as well as subtly indicate their own envisioned functional use of the manuals. For instance, what specific criteria were prioritized when grouping sets of plants together in categories, and how were the boundaries between one rcategory and another negotiated and defined? Did the compiler intend the manual to be read straight through from beginning to end in a linear fashion, or to serve more as a reference source which readers could easily search for specific plant information? How were readers expected to efficiently locate details on a certain plant of interest amidst the catalog? How did categorization change across time and space? Exploring the organizational and classification systems implemented across the diverse array of famine plant manuals can potentially provide answers to all of these key questions. Table 3-2 summarized the explicit classification systems used to organize plants in famine plant manuals.

Table 3-2 Classification in Famine Plant Manuals

Title	Herbaceous plants	Woody plants	Cereals and legumes	Fruits	Vegetables	Total
Jiuhuang bencao	245	80	20	23	46	414
Yecai bolu	216	119				435
Jiuhuang yepu buyi	45	15				60
Kyūkō honzō bassui	96	47			12	155
Kyūkō ryaku	144	59				203
Kyūkō shokumotsu benran	68	19				87
Kyūki shokuhin kō	38					38
Shūi kyūki shokuhin kō	26	10				36

Source: Prepared based on the categories in the manuals and my account.

As shown in the table, most manuals adopted the fairly convenient organizational strategy of overtly dividing documented plants into two primary categories of either herbaceous or woody. This classification according to basic formal features made intuitive sense, as attributes like a plant's growth habit as an herb, shrub, vine, or tree could be easily and reliably detected during practical searches for edible plants. However, while a useful grouping, bifurcating plants simply along herbaceous versus woody lines revealed relatively little about the inherent nature or origins of the famine relief manuals themselves. After all, a similar binary differentiation could be readily observed in a wide array of texts covering plants more generally, ranging from literary works to agricultural treatises to medicinal writings.[273]

[273] For example, in the dictionary *Erya* 爾雅 (Near Correctness), lexemes concerning herbaceous and woody plants were discussed in different chapters. See Guo Pu 郭璞, *Erya* 爾雅 (Shanghai: Shanghai guji chubanshe, 2015), 125–59.

However, a small subset of two manuals within the corpus exhibited noticeably more intricate classification systems that provided clearer insight into the particular influences shaping their approach. Specifically, the most conspicuously complex and *bencao*-indebted examples were the Ming *Jiuhuang bencao* and the Edo-period Japanese manual *Kyūga roku*.

Jiuhuang bencao, containing the most plant entries, implemented a sophisticated multi-layered classification system. It first divided all plants into five overarching categories: herbaceous plants, woody plants, cereals and legumes, fruits, and vegetables. Each of these categories was then further subdivided based on the particular edible plant parts, such as roots, stems, leaves, flowers or seeds. Within these edible part subcategories, the compiler made distinctions between plants already documented in earlier *bencao* literature versus those that were newly included in *Jiuhuang bencao* as previously unrecorded objects of knowledge.

The classification system in *Jiuhuang bencao* drew influence from earlier *bencao* literature. Its initial five categories mirrored the taxonomic divisions seen in the Song *Bencao tujing*. That work had classified medicinal substances into inorganic materials, herbaceous plants, woody plants, beasts and birds, creeping and swimming animals, fruits, vegetables, and grains. Tracing further back in time, the *Bencao tujing*'s own schema was itself adpated from the seventh-century Tang *Xinxiu bencao*. *Xinxiu bencao* organized medicines into the *Bencao tujing*'s eight groups, plus an additional category for substances whose uses were still unidentified. Establishing the foundational principle even earlier, the sixth-century-or-so Sui *Bencao jing jizhu* first pioneered dividing materia medica into categories of: inorganic materials, herbaceous and woody plants, insects and animals, fruits, vegetables, grains, and untested substances.[274]

The specific ordered sequence of the five primary classification categories in *Jiuhuang bencao* also subtly reflected certain priorities, while simultaneously being partially constrained by conventions established in past *bencao* literature that the compiler drew upon.

Most notably, the categorical grouping of cereal and legume grains was conspicuously moved up to precede fruits and vegetables in the order, when previous *bencao* works had placed grains later. This shift highlighted the relatively greater importance ascribed to staple

[274] In Ming and Qing *bencao,* form and structure became the governing principle for classification. *Bencao gangmu* divided medicinal plants into herbs, grains, vegetables, fruits and woods. Each category was further divided into subcategories according to, e.g. the locales or growth habits. *Zhiwu mingshi tukao* basically followed the classification in *Bencao gangmu.* For the classification of plants in *Bencao gangmu*, see Nappi, *The Monkey and the Inkpot*, 83–84; 157.

cereal crops for their ability to provide superior feelings of satiety per volume during periods of shortage. Yet intriguingly, grains were still not elevated all the way to the very beginning opening spot in the sequence, which was reserved for the initial dual groupings of herbs and woody plants. This indicated that cereal crops were not actually considered the outright primary options for urgent famine relief, compared with supplementary foods.

Instead, the herbaceous and woody plants in the first two categories were clearly presented as foraged supplementary options that could reduce dependence on grain consumption as a last resort when shortfalls intensified. The grains, fruits, and vegetables in the latter three groupings were perceived as foods more readily incorporated into a regular diet, and therefore likely to have already been consumed before reaching the most dire stages of famine.

However, the compiler's ability to freely rearrange all five of the major categories was also partially constrained by the weight of conventions established in previous *bencao* treatises spanning centuries. In most older works, herbaceous medicinal plants and woody trees were always placed together sequentially, while being physically separated and distanced from the fruits, vegetables and grains categories by the intervening insertion of multiple other taxonomic groupings. This ingrained structure served to embody and reinforce an intellectual conceptual separation that implicitly esteemed the pharmaceutical merits and values of the first two categories far above the more mundane nutritional purposes of the latter three groups.

The 1593 reprinted abridgement of *Jiuhuang bencao* made further telling modifications to the original categorical order, reflecting a differing temporal perspective on famine relief foods. In the earlier editions, plant categories perceived as unfamiliar emergency options like herbs and trees were placed ahead of more common ones. This highlighted their role as obscure plants of last resort during the worst shortfalls. However, the 1593 reprint arranged the five groups in a new sequence: grains, vegetables, fruits, woody plants, and herbaceous plants. This ordered them from most commonly consumed in regular diets, to least eaten and only accessed later in deepening scarcity.[275] Reading the manual cover-to-cover now mirrored progressively changing diets over a famine's worsening course. Depending on judged

[275] Hu Wenhuan, "Editorial principles." Hu somehow reduced the connection between herbs and trees by putting all herbs in the second *juan* and all the other plants in the first *juan.* The division of *juan* was out of practical reasons to balance the volumes, as the number of plants in the herb category was roughly the same as the sum of the plants in the other categories.

severity, readers could selectively focus on the most immediately useful sections for their circumstances.

While *Jiuhuang bencao* followed the *bencao* tradition in its general high-level categorization, it notably departed from convention when sub-classifying entries within each category. Earlier seminal works like the sixth-century *Jizhu* had developed a two-layer classification system that classified materia medica into superior, mediocre, and inferior grades based on assessed pharmaceutical merits.[276] This approach was widely adopted in later *bencao* texts including *Xinxiu bencao* and *Bencao tujing*. However, as a specialized famine relief manual, *Jiuhuang bencao* eschewed the medicinal evaluation lens, instead introducing the new principle of sub-dividing plants based on their edible parts including roots, stems, leaves, flowers, and seeds. This emphasis on edibility was innovative even compared with dietary focused materia medica like the seventh century *Qianjin shizhi* 千金食治 (Invaluable Dietetic Therapies), where items followed formal features and cooking methods rather than edible components.[277]

Although most famine plant manuals did not use edible parts as a classifying principle, many highlighted edibility information, reflecting its central importance. For instance, *Jiuhuang yepu*, *Jiuhuang yepu buyi*, and *Kyūkō shokumotsu benran* listed edible plant components on dedicated lines after plant names. This prominent positioning prevented overlooking these vital details, unlike lengthy passages that could obscure them.

The contrast between the original *Yecai pu* and its later reworked version *Jiuhuang yepu* reveals how compiler Yao Kecheng deliberately amplified the prominence of edibility details under influence from the classification approach in *Jiuhuang bencao*.

In the initial *Yecai pu* manual, notes on which plant parts were consumable were not specially highlighted or marked. Any mentions were brief, buried within textual instructions on preparation methods. However, when converting *Yecai pu* into the revised *Jiuhuang yepu* and its supplemental expansion, Yao Kecheng took care to distinctly call out edible components in dedicated lines for each and every plant entry.

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[276] Three grades of effectiveness were first used as a classification principle in the earliest known *bencao* text *Shennong bencao jing* which classified traditional medicine solely according to their medicinal effects. In later *bencao*, three grades of effectivess were usually combined with formal features for drug classification.

[277] Items were divided into fruits, vegetables, grains and birds and beasts. See Sun Simiao 孫思邈, *Qianjin Fang* 千金方 (Beijing: Zhongguo zhongyiyao chubanshe, 1998), chap. 26.

Yao Kecheng also tallied up statistics on the total numbers of plants with each edible part across the entire manual, creating summaries absent in the original. This further underscored the utility of highlighting consumptive uses.

The impetus for these conspicuous editorial interventions likely came from *Jiuhuang bencao*, which Yao Kecheng cited as a source. Its intricate classification system based on edible plant parts likely inspired him to newly prioritize edibility in adapting *Yecai pu*.

Itō Keisuke also likely foregrounded edible plant components in *Kyūkō shokumotsu benran* due to influence from *Jiuhuang bencao*, which he extensively annotated.[278] Considering the single-sheet format sought to maximize plant inclusions by minimizing non-essential details, the conspicuous inclusion of edible parts underscores their perceived importance to famine food knowledge. The highlighting illustrates how practical utility around consumption consistently took priority over conceptual approaches like classification in these specialized famine manuals. Even when drawing inspiration from medicinal-focused work, compilers consciously adapted the information to serve urgent needs during shortages.

The third layer of *Jiuhuang bencao*'st multi-layered classification system made distinctions between plants already documented in earlier *bencao* literature versus those not previously recorded. This aspect indicates that the compiler consciously situated his work within the scholarly pharmaceutical tradition, while also extending its frontiers of knowledge.

Jiuhuang bencao stood out as exceptional among famine plant manuals for implementing a relatively sophisticated layered classification system. This provided a conceptual framework that situated each plant in a unique position within the natural world envisioned by the book. The approach also enabled conveniently expanding the content within the existing structure.[279]

The rationale behind introducing such a complex organizational schema was likely both practical and intellectual. On a practical level, the large number of plant entries made systematic classification necessary. But conceptually, it also aligned with the work's ambitious vision to document the comprehensive utility of all plants under heaven.[280]

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[278] Itō Keisuke, "Kyūkō honzō shikō 救荒本草私考" (1833).

[279] As the plants in *Jiuhuang bencao* were all collected from Kaifeng and nearby places, expectations were expressed to incorporate new plants from other places, if there were any. Supplements never came out, though. While it could have been merely rhetorical convention to claim the incompleteness of the knowledge scope, restrictions on the reach of the prince's human and material resources could have prevented him from expansion of the work. See Bian Tong, "Preface."

[280] Bian Tong.

However, due to its intricacy drawing more focus to theoretical classification than practical use, the model did not find supporters among later manuals that prioritized pragmatic values over conceptual frameworks. The sophisticated system's shortcomings highlight the ultimate importance of utility for knowledge on famine foods.

The plant taxonomy implemented in *Kyūga roku* demonstrates an alternative to *Jiuhuang bencao*'s multi-layered classification. Rather than a hierarchical system, *Kyūga roku* introduced intricate categories based on criteria like growing environment, functional uses and growth habits. Plants were divided into sections on vegetables, medicinal herbs, flowering herbs, garden herbs, ferns, creeping herbs, fragrant herbs, aquatic herbs, miscellaneous herbs, trees, and poisonous herbs.

This detailed classifications enabled readers to more readily pinpoint and navigate to entries for their desired target plant based on habitat and utility. Yet individual categories were intentionally capped at around 20 plants or fewer to maintain brevity and concision. The limited selections and succinct descriptive texts facilitated rapid scanning within each section.

The taxonomic categories implemented in *Kyūga roku* drew inspiration from the earlier work *Yamato honzō* 大和本草 (Japanese Materia Medica), which had categorized plants into herbaceous and woody groups, and further intricately subdivided the herbaceous plants into additional sections on vegetables, medicinal herbs, civil use herbs, flowering herbs, garden herbs, fruitful herbs, creeping herbs, fragrant herbs, aquatic herbs, sea herbs, miscellaneous herbs, mushrooms, and bamboos. This subclassification schema from *Yamato honzō* was largely adapted from the approach seen in the Chinese *Bencao gangmu*. But Yamato honzō modified it by devising several new subcategories to accommodate Japanese flora. In turn, *Kyūga roku* inherited this classification framework from *Yamato honzō*, illustrating how the conceptual influence flowed from earlier Chinese pharmaceutical texts, to Japanese materia medica compilations, finally down into practical Japanese plant manuals.

Not only did *Kyūga roku* adopt the categories from *Yamato honzō*, but it also maintained the strategic sequence in which these categories were arranged. The order progressed from plant groups most familiar in everyday life to those less commonly encountered. It began with vegetables already regularly consumed in diets, followed by well-known medicinal plants. Next came flowering and garden herbs often cultivated for aesthetic appreciation, which were not as routinely eaten but still frequently seen. Finally, the miscellaneous subcategory at the end contained obscurer plants that did not easily fit into natural or daily life contexts, making

them hard to categorize. This ordering from most to least familiarity with the plants provided an intuitive structure for readers scanning the manual. It illustrates how *Kyūga roku* retained beneficial organizing principles from pharmaceutical texts, while streamlining them for more user-friendly practical application during food shortages.

The practical orientation of *Kyūga roku* as a relief manual, in contrast to earlier materia medica texts, is further evidenced in its invention and use of the category "poisonous herbs". As discussed earlier, toxicity was a central concern when delimiting appropriate plants to consume during food shortages. *Kyūga roku* underlined this by devoting a separate section to harmful plants, an approach not seen in the foundational *Yamato honzō* that inspired its classification structure. If adhering strictly to *Yamato honzō*'s formal scheme, poisonous herbs should have been grouped with other herbs before the trees. However, *Kyūga roku* conspicuously excluded toxic plants from ideal famine food categories by isolating them, both physically and conceptually. The poisonous herbs section was separated from other herb categories, and strategically placed last, after the trees. This conscious arrangement reveals how, despite drawing from earlier pharmaceutical texts, *Kyūga roku* followed different organizational logic tailored for its practical aims.

While some famine plant manuals like *Jiuhuang bencao* and *Kyūga roku* drew inspiration from *bencao* classification, others like *Kate mono* departed entirely from that tradition in their organization schemes. *Kate mono* undermined the importance of formal plant features and instead arranged entries simply in *iroha* phonetic order based on the first syllable of plant names.[281] This told little about the plants themselves, but provided an accessible lookup method for readers. With plants ordered systematically this way, readers did not need

[281] Arranging entries in phonetic order was a common practice that could be observed in various genres in premodern times. One genre that often employed the *iroha* order was dictionaries. *Iroha jiruishō* 色葉字類抄 (Characters Classified in Iroha Order), the first dictionary in *iroha* order, compiled in the twelfth century, grouped the entries together according to their first syllables into sections that were further divided according to the meanings of the words. It was first in the seventeenth century that *Nippo jisho* 日葡辞書 (The Japanese-Portuguese Dictionary, 1603) classified the entries according to all the syllables in the order of *iroha*. The Japanese script was written in Latin alphabet, though. For examples of classification according to syllables, see Don Clifford Bailey, "Early Japanese Lexicography," *Monumenta Nipponica* 16, no. 1/2 (1960): 1–52.There were indeed examples of medicinal treatises that arranged entries in syllabic order, though. One example was *Honzō iroha shō* 本草色葉抄 (Materia Medica in Iroha Order) , a selection of 590 entries from the Chinese pharmacopeia *Daguan jingshi zhenglei beiyao bencao* 大觀經史証類備要本草 (Classified and Consolidated Materia Medica of the Daguan reign, compiled in 1108) rearranged in *iroha* order by the court physician Koremune Tomotoshi 惟宗具俊 (fl. the late thirteenth century) for easier use in 1284. See Koremune Tomotoshi 惟宗具俊, *Honzō iroha shō* 本草色葉抄 (Tokyo: Naikaku Bunko, 1968).

existing plant knowledge to locate a specific plant. As long as they knew the name, they could easily search for that entry.

The likely rationale was that the manual's target readership of lower officials and village heads would be familiar with the *iroha* order from basic education. Many attended *terakoya* private schools teaching literacy using *iroha* ordering.[282] The sequence was also commonly memorized through popular songs. Even those without formal schooling may have recognized *iroha* ordering, enabling the manul to effectively share knowledge on edible plants with the wider community during shortages. The choice of this familiar and intuitive organizational scheme reflects *Kate mono*'s practical focus.

Intriguingly, even in those instances where overt written indicators of classification systems were conspicuously missing from a manual, closer examination often reveals that a certain mode of classification, whether consciously intended or not, still subtly structured the content order.

One possibility is that compilers already performed a certain degree of filtering categorization regarding which plants they deemed appropriate to include during the initial selection process. As an illustration, in his *Yecai pu*, Wang Pan strictly included only herbaceous edible plant entries, completely leaving out any woody trees, cereal grains, or common fruits. This narrow specialization hints that Wang held a particular conception that useful "famine plants" constituted primarily herbaceous weeds and wild vegetables.

Another way classification manifested implicitly was through the careful arrangement and ordering of the cataloged entries themselves. For instance, although *Bikō sōmoku zu* contained no words overtly differentiating between herbaceous and woody plants, its entries were largely organized by clustering most woody trees and shrubs together in one extended section, and then placing this group further down the list after documenting the majority of herbaceous plants, showing a conscious intention by the physician-compilers to distinguish between the two plant growth forms.[283]

Therefore, while on one hand, elements of classification and categorization still managed to prevail even in the absence of explicitly marked organizational systems, on the other hand, the lack of clear overt categories articulated in some manuals may also subtly suggest that the

[282] For an introduction to *terakoya* as educational institutions in Tokugawa Japan and their educational activities, see Ronald Dore, *Education in Tokugawa Japan* (London and New York: Routledge, 2010), chaps. 8–9.
[283] *Nihon nōsho zenshū*, 1996, 68:232. However, it was not clear whether it was the author Takebe Seian or the compilers such as Sugita Hakugen and Sugita Ryūkei who decided the order of the plants.

pragmatic compilers did not regard imposing a strict classification scheme to be truly necessary or functionally useful information for a famine relief manual. From this practical standpoint, as long as a given plant could effectively satisfy hunger and prevent starvation, aspects like whether it happened to be a herbaceous or woody plant mattered little compared with its edibility.

While conceptual distinctions based on a plant's formal features were of little practical consequence for the urgent needs of famine relief, carefully considering the temporal seasonal availability and accessibility of edible species was crucially important. This priority was emphasized not only in the selective criteria compilers used to determine which plants to include, but also consciously incorporated into the organizational ordering of entries within the manuals.

For example, the Japanese compilation *Minkan bikō roku* purposefully organized its documented edible plants according to their seasonal availability throughout the year, first listing plants that could be obtained during the winter months, followed by those accessible in springtime.[284] This deliberate chronological sequencing suggested that the compiler envisioned and intended the contents to be read through in the same order, progressing synchronously over time along with the imagined gradual worsening of food shortages over the year.

The temporal ordering aligned with the unique context in which this specific manual was compiled: it was penned by the domain physician Takebe Seian at the very onset of winter in 1755, in the midst of the devastating Hōreki Famine which persisted for months afterwards. With deep immediate concerns about accessible food in the coming days and weeks of scarcity, Takebe's chronological compilation of edible plants helped create an immersive, practically applicable reading experience for audiences facing similar circumstances.

Yet remarkably, just a few years later, successors of the original work abandoned the useful chronological order when assembling the sequel edition *Bikō sōmoku zu*. Instead they adopted a more conceptually driven organizational scheme, clustering entries into an implicit distinction between herbaceous and woody plants.

Regardless of whether this categorical reformatting was an intentional choice by the primary author or introduced by later editors and publishers, the conspicuous shift in classification priorities signaled how differing purposes aligned with different stages of an

[284] Takebe Seian, "Editorial principle."

ongoing disaster. In the throes of an acute crisis, pragmatism and a sense of urgent applicability justifiably took precedence in organizing principles. But afterward, during periods of reflection, imposing a sense of epistemic order that associated the work with established domains of scholarly knowledge gained importance. In this case, linking the famine relief manual with the model of pharmacological *bencao* texts through shared classification logic.

The selection and classification of famine plants underlined practical efficacy as the primary concern during shortages. Selection prioritized availability and edibility over formal properties. Classification schemes were designed for straightforward usability rather than of metaphysical complexity. Through this approach, readers were presented an intelligible edible world where the myriad potential famine foods would reveal their secrets through texts and images.

3.2 Consolidating Plant Knowledge in Texts

Now that the kinds of plants were determined and arranged in order, what information was considered relevant when they were presented? Compilers held divergent opinions on the information to be included and how detailed it should be, resulting in texts of varied length. They did, however, share emphasis on the names and recipes, best illustrated in *Kyūkō honzō bassui* and *Kyūkō ryaku* which when adapting their entries and texts from *Jiuhuang bencao* and *Yecai pu* retained names and recipes only in their presentation.

All famine plant manuals included names of plants that could appear in different parts of the book for multiple times: in the table of contents, in the entry title and in the main body of the text. The occasional discrepancies between those names, although sometimes could be attributed to carelessness, indicated that uniformity was not essential.

While a universally accepted nominal system was yet to come, *bencao* literature, especially state-commissioned pharmacopeia encouraged standardization in the naming of plants. Yet rather than the names in *bencao* literature, vernacular names, especially local names were adopted in famine plant manuals. When discussing creeping tistle which had been early on treated as an object of *bencao* study, *Jiuhuang bencao* recorded the plant name cum entry title to be *cijicai* which was most probably originated from the vernacular name *qingciji* that was mentioned in the text. In addition, the northern name *qianzhencao* was recorded as

well, confirming Xu Guangqi's statement that *Jiuhuang bencao* recorded names used in northern China when he supplemented southern names. Although the *bencao* name *xiaoji* was also included in the text, it was presented as merely one of the three alternative names and not prioritized over the others. The decision to highlight vernacular names reinforced the practical orientation of the manuals.

In the Japanese case, the practical orientation in the selection and presentation of names took a somewhat different form, namely by prioritizing *kana* over *kanji* names: in *Kate mono*, only *kana* names were included; in *Kyūkō shokubutsu benran* and *Kyūkō sōhin zu*, *kana* names were placed before *kanji* names; in *Kyūkō shokubutsu benran*, *kana* names were much bigger thus more noticeable than *kanji* names. The emphasis on *kana* names distanced famine plant manuals from *honzōgaku* literature which usually retained *kanji* names from the Chinese sources with small *kana* on the right to the *kanji* to indicate pronunciation.

As important as, if not more important than names were recipes that were included in nearly all famine plant manuals.[285] While recipes were also indispensable to *bencao* literature, famine plant manuals featured culinary rather than medicinal ones.[286] Concerning the necessity of culinary recipes, *Kate mono* explained that without the proper knowledge of food making, life would be put into danger.

Compilers highlighted the importance of recipes in various ways. *Jiuhuang bencao* invented a separate category called "hunger relief" to record processing instructions in each entry, and *Kyūkō honzō bassui* and *Tenpō kikin surimono utsushi* used processing methods as a classification principle to group certain plants together.

The recipes were generally concise, not requiring complicated cooking techniques: plants were supposed to be steamed, boiled, blanched over boiling water, fried or dried, in addition to being eaten raw.[287] By removing harmful ingredients from the plant and making it edible, processing constituted an essential part in defining famine plants.

Processing methods confirmed that famine plants were not necessarily substitute foods but more often served as supplementary food to reduce the consumption of staple food which

[285] On recipes as a textual form to record and transmit knowledge, see Totelin, *Hippocratic Recipes*; Carla Nappi, "Bolatu's Pharmacy Theriac in Early Modern China," *Early Science and Medicine* 14, no. 6 (2009): 737–64; Marta Hanson and Gianna Pomata, "Medicinal Formulas and Experiential Knowledge in the Seventeenth-Century Epistemic Exchange between China and Europe," *Isis* 108, no. 1 (March 1, 2017): 1–25; Elaine Leong, *Recipes and Everyday Knowledge: Medicine, Science, and the Household in Early Modern England* (Chicago: University of Chicago Press, 2018).
[286] Nappi, "Bolatu's Pharmacy Theriac in Early Modern China," 757.
[287] Sometimes processing could take several days and seemed to be somehow troublesome.

more effectively satisfied hunger and provided energy, as in many cases, the plants were supposed to be mixed with rice and eaten together, or to make rice cake or rice dumpling. Eating plants with rice was also believed to reduce the risk of toxication. In *Hanrō shū,* it was claimed that inferior plants would be harmless to the human body if mixed with rice and in comparison, even superior plants would be harmful if not mixed with rice.

The use of seasoners was also intended for detoxification rather than for delicate taste. Japanese famine manuals claimed that regularly consuming miso and salt would not hurt the stomach or cause any harmful effects, which partially explained the prevalent use of the two seasoners in Japanese famine plant manuals.[288]

A comparison between famine plant manuals and culinary manuals revealed that the former was quite restraint about the use of seasoners. *Yecai pu* and *Yesu pin* had at least 26 entries in common and shared similarities in the explanatory text, and yet while the former seldom specified seasoners and at best mentioned oil and salt, the latter elaborated on the processing methods, instructing the readers to use sesame oil, cooking wine and vinegar to add flavor.

The problem, however, was that even widely available seasoners could be difficult to access in times of food shortage. At the end of the Ming dynasty, oil could be more expensive than pork.[289] In 1652, Gu Jingxing lamented that he had no access to salt for several months.[290]

In addition to names and recipes that were indispensable to famine plant knowledge, the manuals sometimes also included valuable information detailing the optimal temporal availability and geographic distribution of certain plants, as well as their morphological descriptions. The inclusion of such supplemental practical details was likely inspired by *bencao* literature, and yet reoriented towards a different focus on maximizing the immediate consumption utility value of the plants.

Time is an especially important dynamic element to consider in any book describing uses of plants across seasons, as different points along a plant's their life cycle will witness diverging stages of growth and maturation. As a result, the specific parts that a certain plant

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[288] *Hanrō shū* 飯粮集 (Yonezawa, 1783).
[289] See Chen Baoliang 陳寶良, "Mingdai de wujia bodong yu xiaofei zhichu: Jianji mingchaoren de shenghuo zhiliang 明代的物價波動與消費支出——兼及明朝人的生活質量," *Zhejiang xuekan*, no. 2 (2016): 90–91.
[290] *Qingdai shiwenji huibian* bianzuan weiyuanhui 《清代詩文集匯編》編纂委員會, ed., *Qingdai shiwenji huibian* 清代詩文集匯編 (Shanghai: Shanghai guji chubanshe, 2010), 678.

can provide as resources can significantly vary and transform in potency and abundance from one time period to another over the course of a year. For example, both the *bencao* and famine plant genres distinguished how Chinese wolfberry could offer people distinct sources depending on the time of collection: tender sprouts in spring and summer, ripe fruits in autumn, and starchy roots in winter.[291]

Bencao literature were usually detailed about meticulously documenting the optimal seasonality and phenology of each plant, such as noting exactly when a certain plant would begin sprouting fresh shoots, coming into full blossom, bearing ripe fruits, and finally shedding leaves or dying back entirely. The texts would then pair this timeline with instructive guidance on what was considered the most suitable timing window to collect or harvest certain parts, in order to be able to obtain material of the highest pharmaceutical quality and potency. For example, the root of sweet flag was frequently dried to produce a valued medicinal product, and *Bencao tujing* advised that these roots should be harvested in the fifth and twelfth months in order to maximize medicinal virtues.

The compilers of Chinese famine plant manuals similarly placed great emphasis on recording seasonal timing, but motivated by somewhat different reasons ultimately related to practical consumption suitability. For instance, *Yecai pu* suggested that grey field-speedwell should be collected in the first and second months, otherwise if left to overgrow, the plant would toughen and become too fibrous and unpalatable to eat. The overarching focus here was maximizing edibility. Furthermore, owing to the seasonality of food shortages, which tended to occur during the winter and spring months, selectively documenting and spotlighting food sources that happened to be available during that specific high-risk period was logically prioritized privileged in the manuals.[292]

In addition to temporal availability, famine plant manuals also showed a divergent focus on spatial availability. *Bencao* literature usually records meticulous information about the origin and distribution of medicines. In *Bencao tujing*, most medicines are recorded with information on growing areas. For example, "*Achyranthes bidentate* Blume grows in river valleys in Henei (in today's Henan) and in Linqu (in today's Shandong), nowadays also exists in Jianghuai, Minyue and Guanzhong, but those are not as authentic as the one from Huaizhou

[291] Su Song et al., *Bencao tujing*, 362–63; Wang Pan, *Yecai pu*, 1551.
[292] Sometimes the seasonality of the plants was not spelled out in the text but achieved in the selecting process. For example, plants included in *Bikō sōmoku zu* as well as *Minkan bikō roku* were all available in winter and spring, indicating the author's attentiveness to the practical applicability of the manuals.

(in today's Henan)", and "*Acros* grows in pools and ponds, lakes and mashes in Shangluo (in today's Shangzhou, Shaanxi) and in Yandao, Shujun (in today's Yingjing, Sichuan), nowadays exists everywhere, but the one from Chizhou (in today's Anhui) or Rongzhou (in Today's Sichuan) is the best". The compilers enumerated a number of places where the plant was available, only to underline certain regions as the best place of production. While the detailed records were enabled by the reports and specimens gathered from local administration, the emphasis on places of production lay in the pursuit of authenticity, as medicines from certain areas were believed to have specific characteristics and better effects.[293] In comparison, famine plant manuals did not place so much emphasis on authenticity. *Jiuhuang bencao* usually combined information about growing areas from different *bencao*. In the case of *Acros,* it combined the record in *Bencao tujing* and *Bencao jing jizhu,* saying that "*Acros* grows in pools and ponds, lakes and mashes in Shangluo and in Yandao, Shujun, on rocks in shallow waters in Rongzhou, Weizhou, Hengzhou and Mt. Song, nowadays exists everywhere" with the claim about the best production place missing. While in many cases, *Jiuhuang bencao* simply retained the place information from earlier works, the occasional elimination of the essential information about authenticity implied that authenticity was not of central concern to famine plant manuals. Instead, they valued local availability more. In the case of *Achyranthes bidentate*, after a combined record from *Bencao tujing* and *Bencaojing jizhu* about growing areas, *Jiuhuang bencao* supplied information about local availability, suggesting that "nowadays (it) also exists in the mountains and champions in Junzhou (in today's Henan)". For 174 plants out the total 414, information about the availability in Henan was recorded.[294] The collection of such information was enabled by the field survey, but the decision to record and include such information shows that local distribution was highlighted. The description of the growing environment such as "in water", "near water", "along the ridges" in *Yecai pu* facilitated foraging as well.

While the inclusion of information about distribution in famine plant manuals enabled readers to find their food and rescue, a few authors did not give details about distribution. The reasons can be twofold. In terms of plants, if they were common and familiar, it was not necessary to specify their distribution. In terms of authors, those who employed a textual

[293] On the notion of placed-based authenticity, see Bian, *Know Your Remedies: Pharmacy and Culture in Early Modern China*, 104–7.
[294] On local availability in Henan, see Zhu Su 朱橚, *Jiuhuang bencao jiaoshi yu yanjiu* 救荒本草校釋與研究, trans. Wang Jiakui 王家葵 (Beijing: Zhongyi guji chubanshe, 2007), 15–17.

approach to plant investigation and downplayed the importance of actual experience with plants were more likely to exclude distribution information.[295]

Morphological information contributed to the identification of plants, which could be encoded in either textual or pictoral forms, the latter being discussed in the third section in this chapter.[296] Yet morphology was not essential to famine plant manuals. When physical space was limited and the length of text was restricted, e.g. in the single-sheet *Kyūkō shokubutsu benran* and *Tenpō kikin surimono utsushi*, the compilers decided to give up morphological description rather than processing instructions. Their decision was partially justified by the fact that many of their selected plants were commonly seen and used and thus familiar to people. Still, the absence of morphology indicated the priority of consumption over identification of famine plants, at least in written record. To make up for the missing morphology, Itō Keisuke pointed to the oral tradition of knowledge transfer by asking learned readers to teach others about the outlook of the plants.

While crucial elements like plant names, recipes, optimal seasonal availability, geographic distribution and physical morphological descriptions all directly contributed in tangible ways to the overarching goals of identifying edible plants and guiding their practical consumption, the very focus and purpose of famine plant manuals, curiously some of the early works in this genre, especially pioneering ones like *Jiuhuang bencao*, also chose to incorporate discussions of medicinal natures and therapeutic effects that were only peripherally related at best to the pressing task of famine alleviation. For instance, whenever the *Jiuhuang bencao* directly quoted excerpted passages about plants from earlier authoritative *bencao* texts, the borrowed sections almost invariably chose to faithfully retain the original source text discussions explaining the intrinsic medicinal nature, ascribed flavor profiles, and known pharmaceutical applications of the plant. *Jiuhuang bencao* even went so far as to invent an entirely separate new category heading specifically labeled “therapy” within the main entry for each plant, doubling down on medicinal utility.

The most likely explanation for the inclusion of such tangential medicinal content was that the early compilers were heavily influenced by the longstanding, prominent pharmaceutical approach that had been firmly entrenched in traditional medicinal writings.

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[295] Intellectuals who had travelled around and noticed the variety of plants in different places would have noted down regional resources, just as Satō Chūryō supplemented his findings in Tohoku, Kantō and Kyūshū in *Kyūkō honzō yakusetsu*. See Satō Chūryō 佐藤中陵, “Kyūkō honzō yakusetsu 救荒本草訳説” (1796).
[296] Li Lian, “Preface.”

These texts contained dedicated sections describing and analyzing the fundamental five flavours and four core natures ascribed to each substance, conceptually laying the groundwork for subsequent passages elaborating on their potential therapeutic effects and actions upon the human body when administered as medicines.

Yet the editors and compilers of later famine plant manuals did not hesitate to eliminate the majority of this content detailing medicinal knowledge that was not directly and unambiguously relevant to the practical edible applications of famine foods. Works including *Yecai bolu*, *Nongzheng quanshu*, and *Kyūkō honzō bassui*, all of which had directly based their core plant passages on content borrowed and condensed from *Jiuhuang bencao*, immediately did away with the majority of sections describing medicinal qualities in their simplified presentations. *Bikō sōmoku* zu took a similar approach of selectively and strategically excluding the majority of extraneous medicinal details when distilling its content down from the more expansive *Minkan bikō roku* source text. By intentionally leaving out the bulk of discussions about therapeutic aspects and uses, the editors of these late manuals sought to firmly distance their straightforward food-oriented texts from earlier herbals and pharmaceutical compendia.

While Zhu Su probably found it difficult to find a new format to write about famine plants, latecomers did not hesitate to eliminate the part that has little relevance to edible uses and make the book more concise. *Yecai bolu*, *Nongzheng quanshu*, and *Kyūkō honzō bassui* which all based their texts on *Jiuhuang bencao* eliminated medicinal qualities immediately. Similarly, *Bikō sōmoku zu* also eliminated such texts from *Minkan bikō roku*. Famine plant manuals thus intentionally left out discussions about medicinal aspects of plants and distanced themselves from herbal books.

While the *bencao* literature had clearly provided useful structure and language to organize information and effectively encode plant knowledge that could be creatively applied even to the description of unfamiliar famine plants, through strategic marginalization and elimination of details concerning medicinal efficacy, the new focused famine plant manuals carved out space to differentiate themselves from the traditional medical worldview found in earlier works. Instead, they shifted attention towards providing pragmatic instructions exclusively aimed at aiding identification and consumption of useful edible plants, rendered in accessible common vernacular language. This approach prioritized simplicity, convenience,

and ease of comprehension for the common reader over complex accuracy or refined culinary technique.

3.3 Foraging with Images

Were visual images truly necessary in famine plant manuals? Quite a few authors gave a negative answer. During the compilation of *Kate mono*, the major contributor Nozoki seemingly never considered illustrating the work. He suggested that the key knowledge to convey was which plants could be consumed and how to prepare them, information best communicated textually. In other words, the intended audience already knew these plants; they just lacked awareness of their edibility and processing methods. In Hiramatsu Rakusai's free imprint, only textual information was included. Similarly, the single-sheet *Kyūkō shokumotsu benran* devoted its limited space solely to text. In these two cases, the absence of images could have also stemmed from physical constraints. Yet when Itō Keisuke, author of *Kyūkō shokumotsu benran*, produced a much more detailed governmental report on famine plants to the Ministry of Education five decades later, he again relied entirely on textual elaboration, likely conforming to bureaucratic conventions. Whether for material or intellectual reasons, excluding images implied that they were not seen as essential components of famine food knowledge by some authors.

Those who included images in famine plant manuals argued for their usefulness in facilitating plant identification. Li Lian distinguished the textual and visual elements in *Jiuhuang bencao*, noting that while texts elucidated preparation methods, images vividly captured key morphological features and overall physical appearance.[297] Since pictorial representations closely resembled living plants, he contended that people could reliably recognize depicted specimens during poor harvests by matching mental images to real-world specimens.[298]

This rhetorical framing of illustrations as critical visual aids for plant recognition was widely shared by Chinese and Japanese promoters of famine food adoption. Wang Pan expected that any reader would be able to easily identify plants from provided illustrations.[299] Hu Cheng and Zhu Kun were confident that commoners could match frozen images to living

[297] Li Lian.
[298] Li Lian.
[299] Wang Pan, "Preface."

plants and independently locate substitute foods in times of emergency.[300] Sugita Ryūkei suggested that even individuals unfamiliar with specific local plant names could still accurately distinguish between plant types visually. In his view, images offered more universal plant knowledge than specialized verbal descriptions alone.[301]

Morever, the cognitive value of images was especially touted for illiterates. Bao Shan claimed that both undereducated elders and youths could gain visual literacy to forage edible plants.[302] Likewise, Japanese scholars deemed images far more useful than texts when conveying knowledge to non-elite groups. Concerned that illiterates could not utilize the text-only *Minkan bikōroku*, Takebe Seian created the image-focused *Bikō sōmoku zu* specifically for "commoners unable to read at all", hoping that they could identify the plants at the sight of their shapes.[303]

The practice of including images in famine plant manuals could be traced back to the long tradition of illustrated *bencao* texts. As early as the seventh century, *Xinxiu bencao* featured drawings in rich colour. Later, to replace missing illustrations from *Xinxiu bencao*, *Tujing bencao* incorporated over 900 images, which were preserved in *Zhenglei bencao*.[304] Compiled in the spirit of *Tujing bencao* and intended to be transmitted together, how could *Jiuhuang bencao* not contain visuals as well?[305] Japanese relief manuals were also influenced by illustrated *bencao* works. When Takebe Seian textualized famine food knowledge textually, he drew references from *Bencao gangmu* and *Yamato honzō* among others, both with dedicated illustration volumes.[306]

Having committed to including images, authors faced key decisions regarding what and how to depict. To differentiate edible palnts from toxic lookalikes and enable identification, most authors agreed that images should visualize key morphological features. Li Lian examined the images in *Jiuhuang bencao* and concluded that they effectively conveyed plant

[300] Hu Cheng, "Preface"; Zhu Kun, "Preface."
[301] Sugita Ryūkei 杉田立卿, "Additional remarks," in *Bikō sōmoku zu* 備考草木図, 1833.
[302] Bao Shan, "Preface."
[303] Sugita Hakugen, "Preface"; Kitagō Mototaka 北郷元喬, "Postface," in *Bikō sōmoku zu* 備考草木図, 1833.
[304] The last state-commissioned pharmacopeia *Bencao pinhui jingyao* contained 1358 coloured illustrations. Beyond those state-commissioned pharmacopeia, illustrations became common in *bencao* texts compiled by individuals, especially in late Ming, partially driven by the flourishing printing industry and book market where images were used to attract readers. *Bencao gangmu* included more than 1000 illustrations and *Bencao yuanshi* 315. See Li Ang 李昂 and Chen Yue 陳悅, "Zhongwen guji zhong zhiwu tuxiang biaoda tedian chuyi 中文古籍中植物圖像表達特點芻議," *Ziran kexueshi yanjiu* 34, no. 2 (2015): 167.
[305] On the pairing of *Jiuhuang bencao* with *Bencao tujing*, see Bian Tong, "Preface."
[306] *Nihon nōsho zenshū*, 1983, 18:216–19. *Yamato honzō* consisted of two volumes of illustrations in addition to the sixteen-volume text and two-volume appendix.

morphological details.[307] Wang Pan claimed to have "drawn the shapes of the plants" directly.[308] Likewise, Sugita Ryūkei described *Bikō sōmoku zu* as containing over 100 plant illustrations that accurately "drew the shape" of specimens.[309]

Indeed, nearly all images in famine plant manuals focused solely on representing plants themselves in isolation, providing minimal ecological context besides basic terrestrial versus aquatic habitat distinctions. Images of land plants often included simple horizontal lines indicating the ground plane, while aquatic plants featured stylized waves to denote their watery environments (see Figure 3-4, Figure 3-5 and Figure 3-6). This ground-marking practice mirrored styles found in *bencao* works such as *Tujing bencao* and *Bencao pinhui jingyao* 本草品匯精要 (Essentials of Assorted and Collected Materia Medica). Although simple, including such subtle habitat cues could have aided search efforts by narrowing growth location.

[307] Li Lian, "Preface."
[308] Wang Pan, "Preface."
[309] Ishisaka Sōtetsu 石坂宗哲, "Preface," in *Bikō sōmoku zu* 備考草木図, 1833.

Figure 3-4 The aquatic threeleaf arrowhead, *Jiuhuang bencao* (1525). National Library of China.

Figure 3-5 The Manchurian wild rice growing in waters, *Yecai pu* (1551). National Library of China.

Figure 3-6 *Nymphoides peltata* floating on the water, *Bikō sōmoku zu* (1833). National Diet Library.

The plants themselves were presented either intact, though often omitting underground roots, or as fragmented parts resembling "broken branch" paintings.[310] Both approaches had

[310] The broken branch painting was at the latest formed during the Six Dynasties, came to mature under the influence of Bian Luan 邊鸞 (fl. late eighth century and early ninth century) in the Tang Dynasty, and became

precedents in *bencao* literature, likely reflecting different sample collection methods and aesthetic choices.[311] *Jiuhuang bencao* and *Yecai pu* supposedly painted from live specimens in gardens or fields, capturing whole plants as objects of study.[312] The unknown professional painter-workers behind *Jiuhuang bencao* closely studied living plants, achieving highly detailed, occasionally excessive representations that overwhelmed pages with branches and leaves that would be reduced in later versions.[313] This spoke to direct observation and scientific precision. In contrast, *Yecai pu*'s plant images completed by the renowned author-paintet Wang Pan were far simpler, raising questions about their practical utility for foraging. For example, Wang frequently omitted detailing leaf veins, conveying a generalized impression over morphological accuracy (see Figure 3-2 above). Meanwhile, despite efforts of transplanting wild speicimens, Takebe Seian more often gathered disassociated roots and leaves.[314] This field collection approach may explain *Bikō sōmoku zu*'s frequent fragmented images of plants. When the images were revised for the 1833 printed edition, the plants were still drawn in separate parts, now rendered by Yamatoe painter Takashima Chiharu 高嶋千春 (1777-1859), painter Ishikawa Tairō 石川大浪 (1765-1817)[315] and *rangaku* scholar Udagawa Yōan 宇田川榕庵 (1798-1846)[316] who all received some form of training in traditional or western painting.[317] The two forms could have had different impacts on the reception of

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one of the four major categories of composition of flower paintings. See Zhu Jingyuan 朱景元, *Tangchao minghua lu* 唐朝名畫錄, early ninth century.

[311] On the types of illustrations in *bencao* literature, see Peng Huasheng 彭華勝 and Huang Luqi 黃璐琦, "*Bencao tujing* guobu, caibu, mubu yaotu fenxi 《本草圖經》果部、菜部、木部藥圖分析," *Zhongguo zhongyao zazhi* 45, no. 24 (2020): 6065–71; Zheng Xiaowen 鄭曉雯 et al., "Bencao tujing caobu mubu de yaotu leixing chutan 《本草圖經》草部、木部的藥圖類型初探," *Zhonghua yishi zazhi* 52, no. 1 (2022): 41–47.

[312] Bian Tong, "Preface"; Wang Pan, "Preface."

[313] The repetitive plant features were simplified in *Nongzheng quanshu.* For a comparison between the images in *Jiuhuang bencao* and *Nongzheng quanshu*, see Zhu Su, *Jiuhuang bencao jiaoshi yu yanjiu*, 432–37.

[314] Takebe Seian, "Prefatory words."

[315] The son of a shogunate retainer. Learned about the Kanō school 狩野派 and the western painting techniques. Had an intimate relationship with Ōtsuki Gentaku and Sugita Genpaku. In 1810 and 1812, on Sugita Hakugen's request Ishikawa painted Sugita Genpaku's portrait twice, the earlier of which was included in *Keiei yawa* 形影夜話 (Evening Conversation with the Reflected Figure). He also made illustrations for Ōtsuki Gentaku's *En roku* 蔫録 (On Tobacco) and Sugita Ryūkei's *Ganka xinsho* 眼科新書 (New Book on Ophtalmology). On Ishikawa's biography and his interest in European painting, see Isozaki Yasuhiko 磯崎康彦, "'Taisei gahō' no shi Ishikawa Tairō 「泰西画法」の師石川大浪," *Ningen hattatsu bunka gakurui ronshū*, no. 24 (2016): 45–60; Ivo Smits, "A Forgotten Aesop: Shiba Kōkan, European Emblems, and Aesopian Fable Reception in Late Edo Japan," *Studies in Japanese Literature and Culture* 3 (March 31, 2020): 39–40.

[316] A Dutch study scholar. Born in Edo as the eldest son of Ezawa Yōju 江沢養樹, a doctor serving the Ōgaki Domain, and then became adopted by Udagawa Genshin 宇田川玄真 (1770-1835) who was the disciple of Ōtsuki Gentaku. He was also once adopted by Sugita Genpaku, maintaining an intimate relationship with the Ōtsuki family and the Udagawa family. In 1826, he was assigned by the shogunate to be a translator (*bansho wage goyō gakari* 蛮書和解御用掛). On Yōan's adoption of western science and reformation of nature studies, see Marcon, *The Knowledge of Nature and the Nature of Knowledge in Early Modern Japan*, 256–61.

[317] Sugita Ryūkei, "Additional remarks."

visual knowledge. Whole plant images provided readers a general overview of the living specimen, thus better facilitating identification during foraging efforts. However, partial plant images necessarily narrowed focus to specific parts, which could have hindered recognition of the overall organism for those lacking extensive botanical familiarity. On the other hand, highlighting edible fragments aligned with the practical aims of famine food knowledge, underscoring which parts offered survival utility.

As with texts, visual representations in famine plant manuals also emphasized edible parts through strategic compositional choices. In *Jiuhuang bencao,* usually only visible above-ground structures like leaves, stems and flowers were drawn. However, for plants with edible roots, the whole organism was depicted (see Figure 3-7). As integral plant components though, such roots did not necessarily draw focused attention.

Later manuals highlighted edible parts more explicitly by isolating detachable plant parts. In the nineteenth-century *Bikō sōmoku zu*, an obscure painter Toharu 富春 (fl. 1833) strategically split his depiction of *Atractylodes japonica* into two distinct sections (see Figure 3-8). The central part occupying half the frame showed an erect summery stem with leaves and flowers, reflecting the seasonality critical for identification. Meanwhile, the edible rhizome stood alone in the lower left, severed from the main plant body. Similarly, in *Kyūkō benran* three years later, the edible root of *Scabiosa comosa* was visibly lying behind the rest of the plant composition (see Figure 3-9). Flowers, leaves and shoots connected to the primary stem were left intact. Unbound by demands of biological accuracy, painters felt free to creatively disassemble and reframe plant elements to more powerfully spotlight edible and usable parts critical for survival.

Figure 3-7 *Scabiosa comosa* with the edible roots, in the 1988 reprint of *Jiuhuang bencao* (1525).

Figure 3-8 Edible roots of *Atractylodes japonica* separated from its leaves and flowers. *Bikō sōmoku zu* (1833). National Diet Library.

Figure 3-9 Edible roots of *Scabiosa comosa* separated from its flowers, *Kyūkō benran* (1836). National Diet Library.

In a few cases, however, images lacked edible parts mentioned in accompanying texts, revealing potential epistemic discrepancies between modalities. Figure 3-10 provides an example of this discrepancy in the depiction of *Calystegia hederacea* from *Jiuhuang yepu buyi.* As discussed previously, Yao Kecheng's text highlighted edible parts, in this case the roots, and yet the illustration only depicted leaves, flowers and stems. This implies readers were intended to glean visible morphological features from the image, but edibility information only from the text. The omission of root depictions despite textual emphasis underscores that illustrations were not always expected to comprehensively convey all survival knowledge dimensions.

Figure 3-10 Edible roots of *Calystegia hederacea* described in the text missing in the image, *Kyūkō yafu* (1716). National Diet Library.

Despite innovative efforts to provide novel plant representations, quite a few manuals merely reproduced existing illustrations to save time, materials, and labor. For instance, despite minor alterations, *Yecai bolu* largely preserved images directly from earlier works like *Jiuhuang bencao* and *Yecai pu*.[318] Similarly, the Japanese *Kyūga Roku* replicated illustrations wholesale from the earlier *Sōmoku keijō roku* 草木形状録 (Record on the Form of Plants). While perhaps expedient, such recycling represented a missed opportunity to build upon previous knowledge depictions.

Most of the images in relief manuals were in black and white. While colour printing was technologically feasible in late Ming China and Tokugawa Japan, the costs in time, materials and labor were prohibitive for most printed books.[319] Until the mid-nineteenth century, even major illustrated plant books such as Li Shizhen's *Bencao gangmu* and Wu Qijun's *Zhiwu mingshi tukao* contained only black-and-white images. Colour appeared primarily in handwritten copies like the state-commissioned pharmacopeia *Bencao pinhui jingyao*. This is also the case with famine plant manuals, as colour illustrations only appear occasionally in manuscripts like *Kyūki shokuhin kō* and its supplement (see Figure 3-11). Their author Sakamoto Kōnen likely exploited colour owing to his experience with coloured painting – he had compiled coloured plant albums like *Kinfu* 菌譜 (A Record on Fungi) and illustrated *Kyūkō benran* vividly in colour.[320] Colour served both epistemic and attraction functions – facilitating plant identification while engaging readers. Thus pamphlets like *Kyūki shokuhin kō* may have intentionally used pleasing colors to prevent discarding.[321]

[318] For comparisons between images in *Yecai bolu* and its references, see Zhu Su, *Jiuhuang bencao jiaoshi yu yanjiu*, 452–64.

[319] The earliest extant Chinese coloured imprints colour were *Jingangjing zhu* from 1341, with the title page illustration in red and black. See Zhang Xiumin 張秀民, *Zhongguo yinshua shi* 中國印刷史 (Zhejiang: Zhejiang guji chubanshe, 2006), 231. In the early seventeenth century, a number of publications came out in colour, with evolving printing techniques: at first, different colours were applied to the same woodblock, but as the colours turned out to be blended in the prints, later different colours were applied to different woodblocks respectively for better prints. See Zhang Xiumin, 314–20. To produce a printed colour image comparable to a painting, tens of woodblocks were needed.

[320] In Tang dynasty and before, when printing was still in its early stage and not widely used, most *bencao* illustrations were coloured by hand. While printed pharmacopeia usually had black and white images, handwritten ones had coloured images: the Ming handwritten copy of *Lüchanyan bencao* had 206 colour illustrations, and *Bencao pinhui jingyao* had 1367 colour illustrations.

[321] In this sense, they played a quite similar role to calendars printed on free prints. Calendars of course worked in a slightly different way as they were not quite relevant to famine plants. But they were useful in everyday life, and may be preserved (so that the free prints themselves were also preserved) by the readers.

Figure 3-11 The colour illustration of *Scabiosa comosa*, *Kyūki shokuhin kō* (first half of the nineteenth century). Tokyo National Museum.

With images in hand, authors faced decisions regarding manual layout, especially the relationship between illustrations and texts. By the seventeenth century in China, many medicinal images appeared in separate volumes from texts.[322] To connect them required juxtaposing the image volume on the left with the text volume on the right, as the Song scholar Zheng Qiao 鄭樵 (1104-1162) suggested.[323] This physical separation had multiple origins: local artisans often created the illustrations apart from the texts, and separate image volumes aided organization and portability, especially for expansive compendia.[324]

[322] An early attempt to combine text and image together was *Tianbao danfang yaotu* 天寶單方藥圖 (Illustrations of Single-Ingredient Remedies of the Tianbao Era), which was completed in the mid-eighth century but had long been lost by the mid-eleventh century. See Su Song, "Preface," in *Bencao tujing jijiaoben* (Beijing: Xueyuan chubanshe, 2017); Wang Shumin and Gabriel Fuentes, "Chinese Medical Illustration: Chronologies and Categories," in *Imagining Chinese Medicine*, ed. Vivienne Lo and Penelope Barrett (Leiden: Brill, 2018), 34.
[323] Zheng Qiao 鄭樵, "Tupu Lüe 圖譜略," in *Tongzhi* 通志, n.d.
[324] For territorial organization of state-commissioned pharmacopeia, see Bian, *Know Your Remedies: Pharmacy and Culture in Early Modern China*, 18–20. For woodblock illustrations in Song and Ming, see Zhang Xiumin, *Zhongguo yinshua shi*, 114–15; 314–20.

However, most famine plant manuals were concise and did not devote distinct volumes to images.[325] Instead, they paired each explanatory text with a corresponding plant illustration, tightly integrating the two forms.[326] Layout did vary though in the size of the image and positioning between text and image. These structural choices impacted the tactical viewing sequence and implicit prioritization of information modes. In *Jiuhuang bencao* (see Figure 3-1)*, Kyūki shokuhin kō* (see Figure 3-12) and its supplement *Shūi kyūki shokuhin kō* (see Figure 3-13)*,* images preceded texts, offering readers an intuitive visual impression of the plant's physical form before reflecting on its properties. With images on front pages and the texts on back, readers had to view images first before they could turn over the page and examine the text. Such deliberate sequencing emphasized the primacy of images in fostering initial botanical recognition and familiarity.

The epistemic value of leading with images was recognized by learned elites like Lu Jian, who intentionally moved Yecai Pu's original layout of "text above, image below" to prioritize "image first, text second" (see Figure 3-2 and Figure 3-14). Creative layout was seen as a potent tool to direct reader attention.

Figure 3-12 The image of *Nymphoides peltata* preceding the text*, Kyūki shokuhin kō* (mid-nineteenth century). Tokyo National Museum.

[325] One exception was *Kyūga roku*. Although the one-volume manual did not separate images into another volume, it gathered all the images together and placed them after the texts. The physical separation seemed to be an indication of the intellectual gap, as the texts was based on *Yamato honzō* and *Minkan bikō roku* while the images were based on *Sōmoku keijō roku*. Shōshi Kensai 庄司健斎, "Afterword," in *Kyūga roku* 救餓録, Tenpō era.

[326] Many famine plant writings have one image for each plant: *Jiuhuang bencao, Yecai pu, Yecai bolu, Jiuhuang yepu buyi, Bikō sōmoku zu* and *Shūi kyūki shokuhin.* Some have fewer images. *Kyūga roku* listed 84 herbs and 11 trees but only had 46 images: 39 for herbs and 7 for toxic herbs. This is because Shōshi Kensai did not create images for plants but simply copied existing ones from his reference. *Kyūkō sōhin zu* selected 18 plants from Hiramatsu Rakusai's sein to draw and left the more well-known plants merely listed by names.

Figure 3-13 The image of *raenji* 螺厴兒/inubiyu イヌビユ (probably *Amaranthus blitum*) preceding the text, *Shūi kyūki shokuhin kō* (mid-nineteenth century). Tokyo National Museum.

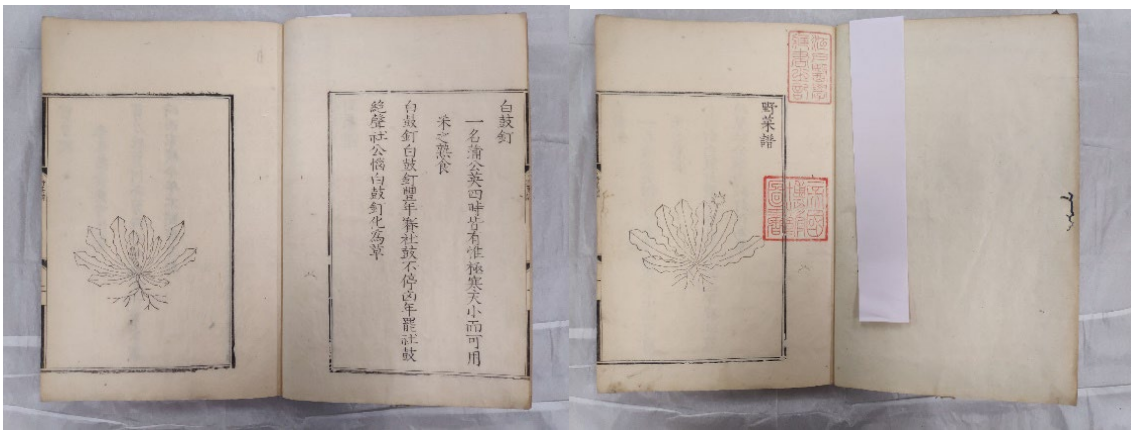

Figure 3-14 The image of dandelion preceding the text, in the 1848 handcopy of *Yecai pu* (1555). Tokyo National Museum.

However, commercial publisher Hu Wenhuan criticized that the "image first, text second" layout was inconvenient for readers. He noted that constant page flipping back and forth was required to consult both modalities, preventing consulting image and text simultaneously (Figure 3-15). As a market-driven merchant, Hu prioritized catering to his readers and improving their experience. Thus in his 1593 edition of *Jiuhuang bencao*, Hu intentionally shifted the layout so that image and text for each plant appeared side-by-side on opposing pages (Figure 3-16). This allowed readers to take in the illustration on the right alongside its explanatory text on the left in tandem. While more convenient for reading, this design arguably dampened the visual impact and spontaneity of encountering the image first.

Figure 3-15 The image of China pink on the front page and the text on the back page, in the 1988 reprint of *Jiuhuang bencao* (1525).

Figure 3-16 The text and image of China pink at a glance, *Jiuhuang bencao* (1593). Tōyō Bunko.

In manuals like *Yecai pu* (Figure 3-2 and Figure 3-5)*, Jiuhuang yepu buyi* (Figure 3-10) and *Kyūkō benran* (Figure 3-9), text and image were integrated onto the same page, with text and image below, each occupying about half the space.[327] This roughly equal division of space suggested that compilers viewed both modalities as bearing comparable epistemic importance. The substantial physical space devoted to images aligned with their growing visual presence by the mid-late Ming China and late Tokugawa Japan.[328]

Such integrated layout differed, however, from the limited space constraints of single-sheet imprints and pamphlets. These transient forms seldom included illustrations, but when they did, compilers made efforts to compress and condense images to conserve precious space. As seen in the Japanese pamphlet *Kyūkō sōhin zu* (Figure 3-17), two small plant images were listed together on one page to maximize content density.

[327] In a few cases in *Kyūkō benran,* the text exceeded one page and the image was placed at the end of the text.
[328] For a general picture of the visual culture in Ming China, see Craig Clunas, *Pictures and Visuality in Early Modern China* (London: Reaktion Books, 1997).

Figure 3-17 Two images on one page, *Kyūkō sōhin zu* (1851). National Diet Library

Among manuals, *Bikō sōmoku zu* demonstrated the most artful integration of text and image (Figure 3-3, Figure 3-6 and Figure 3-8). Resembling a literati painting, the explanatory text was carefully sealed within the picture framework, placed in the margin with deliberation. The marginalized text subtly acknowledged the continued, if more secondary, role of verbal knowledge for plant identification. Occupying the entire page, the prominent image underscored the importance of visual information for less literate audiences.

While different compilers varied in their layout philosophies, they all recognized page layout's power to direct attention. Optimal manual design required balancing priorities of reading experience, epistemic roles of text versus image, and accessibility of survival knowledge.

Yet across examples, texts and images generally maintained separation and distance. They either existed on discrete pages or, when sharing a page, stayed confined within implicit frame without crossing into the other's territory.

Despite physical proximity, texts and images often lacked substantial intellectual interaction. Little explanatory guidance occurred in texts about which visual features to focus

on or how to observe them. Meanwhile, image did not comprehensively present all formal plant attributes described textually.

While texts and images made complementary knowledge claims in famine plant manuals, and images were especially emphasized for plant identification, the dominant textual knowledge culture, which regarded images as supplemental rather than integral sources of knowledge still impacted the circulation and valuation of visual knowledge. The marginalization of images was evidenced by their convenient removal when *Jiuhuang bencao* was condensed into minimalist texts like *Kyūkō honzō bassui* and *Kyūkō ryaku*. Compilers saw images as ultimately disposable rather than fully indispensable. For literati compilers, pictorial reproduction was also less prestigious than composing original texts. While Hua Hao falsely claimed authorship of *Yecai Pu*'s poems, he tellingly chose to reproduce only the text, not the images.This suggests that images offered insufficient erudite prestige and were seen as a less respectable endeavour for scholars.

3.4 Conclusion

In this chapter, I have analyzed the historical understandings of famine plants conveyed in manuals by examining how they were collected, classified, described, and depicted. I argue that while these manuals drew heavily on *bencao* literature, they also creatively adapted and reframed the *bencao* tradition to suit the practical purpose of famine relief. The knowledge orientation in manuals reveals a pronounced emphasis on pragmatic applicability in three primary aspects. First, selection prioritized non-toxic, locally available plants accessible to the common population. Second, manuals extensively documented vernacular plant names alongside detailed culinary recipes, aiming to translate esoteric knowledge into accessible survival skills. Third, the inclusion of illustrations functionally link plants' physical forms to textual knowledge to improve identification. This adaptation is evident even in the first monograph *Jiuhuang bencao,* despite its immersion in *bencao* conventions. Later manuals continued this emphasis on applicability by integrating diverse intellectual resources. In Ming China, the *pulu* approach to flora competed with the medical frameworks to shape compilation. In Tokugawa Japan, the transformation of nature studies from pharmaceutical *bencao* to natural history shaped a de-medicalized rhetoric of famine plants. Before examining the reception of these manuals that problematized *bencao* traditions, we must first

determine who actually accessed them. The dissemination and circulation will be addressed in the next chapter.

4 The Circulation of Famine Plant Manuals

A native of Xiangfu, Henan, Lu Jian acquired a 1525 governmental reprint of *Jiuhuang bencao* as a gift from his townsman Li Lian. The two likely became acquainted in their hometown when Li devoted himself to literature after being removed from office in 1526 and Lu was preparing for the civil examinations. Having obtained the prestigious *jinshi* degree in 1550, Lu was first stationed in Nanchang, Jiangxi, and in 1553 was transferred to Wei county (today's Hebei). There in 1555, while serving as county magistrate, Lu sponsored a joint publication of *Jiuhuang bencao* and *Yecai pu.* Though he claimed to have the manuals printed for the common people, these governmental prints seemed to circulate primarily among officials.[329]

One such offical reader was Li Wen who launched another reprinting project of *Jiuhuang bencao* in 1586 when he served as Governor of Shaanxi. As the book trade between China and Japan blossomed, the 1555 edition further found its way in 1662 to the Momijiyama Bunko, the shogunal library in Edo Castle. Founded in 1602, the library had been transformed from Tokugawa Ieyasu's book collection into a repository of references for administration. It was accessible to a limited number of authorized elites including high officials and scholars, in addition to the shoguns themselves. In 1847, the pupils of the shogunate physician Taki Motoaki 多紀元昕 (1805-1857) were asked to copy the 1555 edition of *Jiuhuang bencao* and *Yecai pu*, to facilitate circulation among physicians.

The circulation of the 1555 edition illustrates the printing and distribution modes of famine plant manuals, which are the focus of this chapter.[330] Only with knowledge of circulation can further questions about reception and appropriation be raised in a meaningful way. By examining the production and transmission of the different material forms of the manuals, I aim to analyze the motivations for preferences regarding certain forms and multiplication techniques, investigate the varying distribution channels and identify the ideal and actual readers targeted through these channels.

Therefore, the chapter is structured according to the physical forms of the manuals. The first section is devoted to manuscripts. I underline the persistence of manuscript culture in an

[329] Lu Jian, "Preface."
[330] I follow Kornicki's conceptual distinction between publishing and printing. Publishing denotes placing what has hitherto been private into the public domain and is applicable equally to scribal and print culture. Printing is applicable only to print culture. See Kornicki, "Manuscript, Not Print: Scribal Culture in the Edo Period," 24. Unless otherwise specified, printing refers to xylography or woodblock printing in this chapter.

age of print, showing that hand-copying remained economical and efficient for accessing and circulating books. The second section is devoted to imprints, and is further divided into subsections on different printing modes: official printing, *sein* (print and give), and commercial printing. By problematizing the definition of each printing mode, I demonstrate that printing projects were usually accomplished via a combination of resources and networks from diverse circles. Shifting the focus from generalization to concrete processes, I highlight that the production of famine plant manuals features a non-profit character, reflecting the understanding of famine relief as a benevolent and charitable cause, regardless of whether initiated by virtuous individuals, societies or governments.

4.1 Hand-copying: Accessibility, Efficiency and Secrecy

A rich manuscript culture persisted in China and Japan for centuries. Inoue Susumu points out that texts were normally transmitted by hand-copying until the printing industry flourished in the late Ming.[331] Peter Kornicki directs our attention to the fact that all books in Japanese circulated solely in the form of manuscripts until the Kamakura and Muromachi periods.[332] Despite the boom of printing in late Ming China and mid- to late Tokugawa Japan, the scribal tradition survived and manuscripts were produced and circulated in large number.[333] The existence of a few hand-copies of famine plant manuals indicated that scribing played an indispensable role in producing and transmitting famine food knowledge in an age dominated by imprints.

Despite the proliferation of imprints, books were not widely available or easily accessible to all. The scholar Gu Yanwu 顧炎武 (1613-1682) observed that by the early sixteenth century, woodblocks were produced by a limited number of publishers including princely households, governments, and Jianning commercial publishers, and the titles circulated in printed forms were primarily classics such as the Four Books and the Five Classics.[334] The type and number of imprints increased enormously in the following decades because of the

[331] Inoue Susumu 井上進, *Chūgoku shuppan bunkashi: shomotsu to chi no fūkei* 中国出版文化史 : 書物世界と知の風景 (Nagoya: Nagoya daigaku, 2002), 165–77.
[332] Kornicki, "Manuscript, Not Print: Scribal Culture in the Edo Period," 25.
[333] For the manuscript culture in the late Ming, see Lin Hang, "Intersecting Boundaries: Manuscript, Printing, and Book Culture in Late Ming China," *Oriens Extremus* 52 (2013): 263–303. For the scribal tradition in Tokugawa Japan, see Kornicki, "Manuscript, Not Print: Scribal Culture in the Edo Period."
[334] Gu Yanwu 顧炎武, "Chaoshu zixu 抄書自序," in *Gu Tinglin shiwen ji* 顧亭林詩文集 (Beijing: Zhonghua shuju, 1983), 29.

ascendance of commercial publishing, and yet the learned lamented their inability to find and acquire books.[335]

By the end of the sixteenth century, *Jiuhuang bencao* had been reprinted at least seven times by governments at various levels, and yet the imprints seemed to have circulated only among officials, as shall be discussed in the following section. Obscure literati like Pan Zhichun could only acquire handwritten copies from the princely household in the central plain.[336] Little is known of Pan except that he seemed to have participated in a certain circle of literati. He was likely to have failed the civil examinations or never sat for them at all, and had little connection with official networks. Pan showed the hand-copy to his friend Bao Shan of the same circle, confirming that the private libraries of friends were one of the most common ways to access knowledge.

The restricted availability of Ming titles proved to be a problem for readers in Japan as well. Importation of Chinese books to Tokugawa Japan largely depended on the Nagasaki book trade, a marginalized part of the overall commerce between nations.[337] Ono Ranzan underlined that although *Jiuhuang bencao* was imported to Japan, it did not circulate widely.[338] Historical records confirm the transmission of two copies of *Jiuhuang bencao* by the end of the eighteenth century. One was the 1555 edition together with *Yecai pu*, imported in the mid-seventeenth century, and the other was a four-*juan* edition imported between 1716 and 1799.[339] The seventeenth-century import was purchased by the shogun and preserved in the shogunal library since 1662.[340] In principle, apart from the shoguns themselves, the book

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[335] For comprehensive studies on commercial printing, see Lucille Chia, *Printing for Profit: The Commercial Publishers of Jianyang, Fujian (11th-17th Centuries)* (Cambridge, Mass.: Harvard University Asia Center, 2002); Cynthia J. Brokaw, *Commerce in Culture: The Sibao Book Trade in the Qing and Republican Periods* (Harvard University Asia Center, 2007).

[336] Bao Shan, "Preface."

[337] For the book trade between the Qing Dynasty and the Edo shogunate, see Ōba Osamu, *Nichū kōryū shiwa: Edo jidai no nichū kankei o yomu*. For a historical study of the circulation of Chinese books in Japan, see Yan Shaodang 嚴紹盪, *Hanji zai riben de liubu yanjiu* 漢籍在日本的流佈研究 (Jiangsu: Jiangsu guji chubanshe, 2000).

[338] Ono Ranzan, "Postface."

[339] The year of the introduction of the 1555 edition to the shogunal library was recorded in a library book catalogue that was compiled in the eighteenth century and summarized the existing books in the library until the Kyōhō period (1716-1736). See the reprint in Ōba Osamu, "Tōhoku daigaku kano bunko kazō no gobunko mokuroku," 71. In Ono Ranzan's teaching notes was mentioned that a two-volume *Jiuhuang bencao* was imported to Japan after 1716. Divided into four *juan,* this edition included more than four hundred plants, the first volume containing 245, which was the exact number of herbaceous plants, and the second fewer than 200. Without further information, it could be a 1525, 1555 or 1586 edition.

[340] It was not clear whether the shogun ordered the book in advance or selected it from a range of books carried by boat. For examples of both possibilities, see Ōba Osamu, *Nichū kōryū shiwa: Edo jidai no nichū kankei o yomu*.

collections could be read by and lent to domains such as Owari and Kaga, as well as to scholars and retainers affiliated with institutions of the shogunate, upon their request.[341] Yet access was restricted; to make use of the collected books, authorized persons had to make their own copies which could then benefit a larger group of readers. The shogunate physician Taki Motoaki was devoted to collecting and distributing medical knowledge, and participated in the reprinting project of Chinese and Japanese medical classics including *Qianjin fang* 千金方 (Recipes Worth a Thousand in Gold), *Qianjin yifang* 千金翼方 (Supplement to Recipes Worth a Thousand in Gold), *Zhujie shanghanlun* 注解傷寒論 (Annotated Treatise on Febrile Diseases), and *Ishin pō* 醫心方 (Essential Medical Recipes).[342] In 1847, he instructed his pupils to copy the 1555 edition of *Jiuhuang bencao* and *Yecai pu*. With this hand-written copy, physicians who have previously no access to the shogunal library could now consult the facsimile rare edition for their referential uses.

These two examples show how the copying practice facilitated access to books and expanded readership. In those cases, hand-copying seemed largely a forced choice due to the overall shortage of imprints, but it was also deliberately chosen over printing for political, economic and intellectual reasons, as we shall see.

Despite the reduced time and cost of printing, copying proved to be more time- and cost-effective, especially for small runs. While a skilled carver could but produce 150 characters a day, a proficient copyist could write about 10,000 characters.[343] Not to mention printing and binding cost yet more time. For quick production, hand-copying was more efficient by far. When Takebe Seian presented his *Minkan bikō roku* to the domain court in 1755/6 during the Hōreki Famine, the chief retainers appreciated its role in agricultural administration so greatly that they "did not ask for the lord's permission or inquire among the commoners, but straightway on that day gave orders and circulated the title within the domain".[344] Having

[341] For examples of consulting requests, see Kamijō Shizuka 上條静香, "Momijiyama bunko: Yoshimune seikenki o chūshin ni 徳川将軍家のアーカイブズ、紅葉山文庫：吉宗政権期を中心に," *Gakushin historical review*, no. 55 (2017): 51–58. Kornicki points out that students of *shōheikō* also had privileged access to the shogunal library, see Kornicki, "Manuscript, Not Print: Scribal Culture in the Edo Period," 30. For study on the Momijiyama Bunko, see Mori Junzaburō 森潤三郎, *Momijiyama Bunko to shomotsu bugyō* 紅葉山文庫と書物奉行 (Tokyo: Shōwa shobō, 1933); Fukui Tamotsu 福井保, *Momijiyama Bunko: Edo bakufu no sankō toshokan* 紅葉山文庫：江戸幕府の参考図書館 (Tokyo: Kyōgakusha, 1980).

[342] Taki Motoaki is the son of Taki Mototane 多紀元胤 (1789-1827) and the grandson of Taki Motoyasu 多紀元簡 (1755-1810) . The Taki family served as shogunate physicians and took charge of the bakufu's medical bureau for decades. They attributed values to textual research in the transmission of medical texts and took an active role in collecting and collating fine editions of medical classics.

[343] Lin Hang, "Intersecting Boundaries: Manuscript, Printing, and Book Culture in Late Ming China," 277.

[344] Shimo Itsugun 志茂逸群, "Preface," in *Minkan bikō roku* 民間備荒録, by Takebe Seian 建部清庵, 1833.

decided in favor of immediate multiplication and distribution of the work, they did not consider producing woodblocks and making imprints, but rather ordered scores of handwritten copies to be distributed to towns and villages instead.[345] Considering the domain held only 37 villages in total, 35 in Iwai District and 2 in Kurihara District, the number of copies to be made was modest and could be conveniently achieved by hand. These copies were intended for the village heads, who were literate and experienced in agricultural practices, and were supposed to apply the written methods themselves and instruct the peasants to follow their lead.[346] Copying proved most efficient to deliver urgent messages.

Apart from economic reasons, intellectual considerations also played an important role in choosing manuscripts over printing. *Kyūki shokuhin kō* and *Shūi kyūki shokuhin kō* were never published and remained Sakamoto Konen's research notes for personal use. They were not meant for a large audience and resisted wide circulation.[347] Except Sakamoto himself, possible readers included his family, students, peer herbalists and educated intellectuals. Manuscripts were used to control access to knowledge, preventing laymen, amateurs or any others whom the authors did not want to share their knowledge with from entering their intellectual worlds.

Though the genre of famine plant manuals was created and developed in an age of print, the circulation of the individual titles owed much to manuscripts. Handwritten copies continued to be made well into the twentieth century.[348] Having illustrated the various reasons why the manuscript form was chosen, I suggest that manuscripts and imprints were rather complimentary to than competing with each other.[349]

4.2 Printing: Duty, Merit and Profit

Historians of the Chinese book conventionally adopt a tripartition of printing activities, theorized by Ye Dehui 葉德輝 (1864-1927): that is *guanke* 官刻 (official printing), *sike* 私刻

[345] Shimo Itsugun.
[346] Shimo Itsugun; Takebe Seian, "Editorial principle."
[347] Ono Ranzan's private academy was only for paid students and variants of notes of his teaching on *Jiuhuang bencao* remained in handwritten copies. Examples of the teaching notes can be found in the National Diet Library and National Archives of Japan.
[348] Two hand-copies of *Jiuhuang bencao* can be found in the National Library of China.
[349] Kornicki and Lin have summarized reasons for preferences for manuscripts. Apart from what has been discussed above, they mention scribing as scholarly devotion, pursuit of artistic and aesthetic values, and censorship circumvention. See Kornicki, "Manuscript, Not Print: Scribal Culture in the Edo Period"; Lin Hang, "Intersecting Boundaries: Manuscript, Printing, and Book Culture in Late Ming China."

(private printing) and *fangke* 坊刻 (commercial printing).[350] These printing modes are defined by their patrons or initiators: governments, individuals or book stores. The same rationale of classification also applies to premodern Japanese printing, featuring woodblock printing divided into official, private and commercial spheres.[351]

However, these three basic categories are neither easily distinguishable nor mutually exclusive. For example, it has been contested whether *fanfuben* 藩府本 (princely imprints) should count as official or private printing.[352] The ground for these disputes lies in the different understandings of the socio-political significance of princely households, which went through historical changes. While Song and Yuan princes could hold government offices, Ming princes were deprived of that opportunity for political participation. Also, *fanfuben*, when analyzed in differing perspectives, may fall into different categories: their financial support owed to princes' allowances which ultimately came from the government budget, but the choice of text and organization of printing was the princes's own. Adherence to traditional categories does not help clarify the nature of princely imprints but rather distracts attention from investigating the imprints themselves, leading to an obsession with their classification.

Moreover, this distinction emphasizes differences between types of imprints but obscures that their creation is the result of collaboration between social groups. For example, Kornicki shows that private publishing may make use of the human and material resources of commercial publishers, and their distribution networks.[353]

Having acknowledged the limits of using printing classification as mere typology, I instead draw attention to the differing distribution channels through which the manuals reached their various readers. Although the division of the subsections seems to largely coincide with the familiar categories, I will problematize the definitions by examining the

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[350] Ye Dehui 葉德輝, *Shulin qinghua* 書林清話 (Shanghai: Shanghai guji chubanshe, 2012). The classification is widely used in e.g. the Chinese textbook on the history of publishing Xiao Dongfa 肖東發 and Yang Hu 楊虎, *Zhongguo chuban shi* 中國出版史 (Beijing: Beijing daxue chubanshe, 2017).

[351] Peter F. Kornicki, *The Book in Japan: A Cultural History from the Beginnings to the Nineteenth Century* (Leiden: Brill, 1998), chap. 4. The printing world is further complicated by terms denoting specific types of imprints such as *jianben* 監本 (imprints by imperial academies), *jiashuben* 家塾本 (imprints by the private academy), *jiinban* 寺院版 (temple editions) and *chokuhan* 勅版 (imperial editions).

[352] Chen Qinghui has summarized the different opinions on the nature of princely imprints. See Chen Qinghui 陳清慧, "Mingdai fanfu keshu yanjiu 明代藩府刻書研究" (PhD Diss., Nanjing University, 2011), chap. 6. See also Jérôme Kerlouégan, "Printing for Prestige? Publishing and Publications by Ming Princes," *East Asian Publishing and Society* 1, no. 1 (2011): 50.

[353] Kornicki, *The Book in Japan: A Cultural History from the Beginnings to the Nineteenth Century*, 1998, 149–53.

processes of production and transmission, and by underlining the joined efforts of diverse parties.

4.2.1 By the Official, for the Official

This subsection discusses the so-called official imprints that were produced under the decree of officials or feudal retainers and funded by central or local governments (see Table 4-1). This type of imprints includes what were usually referred to, in the Chinese context, as *guanke*, and in the Japanese context, as *kanpan* 官版 (official imprints) or *hanpan* 藩版 (domain imprints).[354]

[354] In the Edo period, *kanpan* customarily referred to imprints by the bakufu, including those by institutions such as the bakufu's school *Shōhei zaka gakumon jo* 昌平坂学問所. They often had the phrase *kanpan* in the title. *Hanpan* referred to imprints by domains and domain schools. But different from *kanpan*, *hanpan* was seldom clearly stated in the imprint and could be easily mistaken for *machihan* 町版 (commercial imprints), as 1) domains often outsourced printing to commercial publishers, and 2) domains' woodblocks were often lent or sold to commercial publishers for further printing. *Hanpan* includes reprints of Chinese books, school textbooks, and works of domain lords, feudal retainers or other intellectuals. For a list of domain prints, see Tōjō Kindai 東条琴台, "Shohan zōhan shomoku hikki 諸藩蔵板書目筆記" (n.d.). For the definition and features, see Takahashi Akihiko 高橋明彦, "Kinse shuppan kikō niokeru hanpan no mondai: Edo jidai no jōhōka 近世出版機構における藩版の問題 : 江戸時代の情報化," *Nihon bungaku* 50, no. 4 (2001): 16–29; Takahashi Akihiko 高橋明彦, "Nani o hanpan toshite mitomeru noka: Zōhan no imi suru mono 何を藩版として認めるのか—蔵版の意味するもの," in *Shoseki no uchū: Hirogari to taikei* 書籍の宇宙 : 広がりと体系, ed. Suzuki Toshiyuki 鈴木俊幸 (Tokyo: Heibonsha, 2015). For a study on domain schools' publications, see Kasai Sukeharu 笠井助治, *Kinsei hankō niokeru shuppansho no kenkyū* 近世藩校における出版書の研究 (Tokyo: Yoshikawa kōbunkan, 1962).

Table 4-1 Official Imprints of Famine Plant Manuals[355]

Year	Title	Place
1525	*Jiuhuang bencao*	Taiyuan, Shanxi
1534	*Jiuhuang bencao*	unknown
1555	*Jiuhuang bencao*	Wei county
1555	*Yecai pu*	Wei county
1562	*Jiuhuang bencao*	Sichuan
1566	*Jiuhuang bencao*	Unknown
1586	*Jiuhuang bencao*	Shaanxi
1802	*Kate mono*	Yonezawa Domain

The frequent reprinting of *Jiuhuang bencao* should be understood as part of the booming trend of local official printing in the Ming.[356] From prefecture to county, officials of all ranks were involved in book publishing.[357] The sixteenth century saw the peak of this activity. The philosopher Li Zhi 李贄 (1527-1602) observed that "it is routine that (people who wear) black gauze hats carve their anthologies".[358] Ye Dehui suggested that Ming officials' interest in book publishing could be traced back to their Song predecessors.[359] Generally, printing projects were seen as desirable ways to highlight one's achievements in office.[360] Major local official imprints included local gazetteers, administrative manuals, medical books as well as anthologies of the officials themselves, their teachers, friends and relatives, and local celebrities. The classics had a relatively small share in these endeaors.

Officials could be engaged in printing projects in various ways, initiating and/or patronizing printing projects, but seldom getting their hands dirty or participating in the actual

[355] As mentioned above, there have been controversies about the nature of princely imprints, one of which is the 1406 edition of *Jiuhuang bencao*. This edition seemed to have only traveled within Henan or even Kaifeng, and failed to make use of a circulation network of officials. The feature of its circulation distinguished this edition from the other examples in the table. Therefore, I exclude it from "official imprints". I suggest that Ming princely printing resembles more private printing than official printing in various ways 1) the political status of Ming princes: they did not have much political power, their residence did not serve as government offices; 2) the funding of printing: allowances which though coming from the government were incomes for private expenses; 3) personal choice of the text; and 4) the organization of the printing project.
[356] For an overall study of local official printing in Ming China, see Liu Jiaojiao 劉嬌嬌, "Mingdai difang guanfu keshu yanjiu 明代地方官府刻書研究" (MA thesis, Shandong University, 2016).
[357] Ye Dehui, *Shulin qinghua*, 148.
[358] Zhang Xiumin, *Zhongguo yinshua shi*, 240.
[359] Ye Dehui, *Shulin qinghua*, 149.
[360] Wang Zhongmin 王仲民, *Zhongguo shanbenshu tiyao* 中國善本書提要 (Shanghai: Shanghai guji chubanshe, 1983), 127–28.

printing work itself. The 1525 reprint of *Jiuhuang bencao* was proposed by Shanxi Judge Cai Tianyou and commissioned by Shanxi governor Bi Zhao. The 1555, 1562 and 1566 reprints were initiated and patronized by the county magistrates Lu Jian, Hu Cheng and Zhu Kun respectively. The names of the carvers, printers and binders were not mentioned at all, but usually such menial work was completed by artisans hired locally, as most governments had no printing workshops of their own.[361]

In the Ming, local governments did not allocate money specifically for printing.[362] Various budgets could be used for book production, and government funding was often but a minor part of total costs. Joseph Dennis shows that the financial sources for publishing local gazetteers were multiple, and government funding was not always the major source.[363] Donations from officials constituted an important funding stream.[364] Lu Jian, Hu Cheng, and Zhu Kun all claimed to have donated their salaries for reprinting, suggesting they "*juanfeng kezi* 捐俸刻梓 (donate salary for woodblock carving)". The prevalence of this phrase in Ming official imprints, however, makes this sound more like rhetoric than reality. Even if they did sponsor printing from their salaries, it remians unclear how much they paid and what costs

[361] Dennis examined local gazetteers compiled in the Yuan, Ming and early Qing and concluded that carvers, printers and binders were usually recruited by the government for specific printing projects. In fact, even in departments where official artisans were available, it became customary to hire private artisans since the mid-Ming. Similarly in Japan, although some governments and domains did have printing workshops, most domain prints were produced by commercial publishers.

[362] From the Song to the Qing, official printing was carried out in different modes. In the Song, although there was no specific publishing department within the local government, certain departments such as the *gongshi ku* 公使庫 (treasury for envoys) routinely published books using *gongshi qian* 公使錢 (funding for envoys). In the Yuan Dynasty, local printing projects needed to be approved by the central government before being implemented. In the late Qing after the Taiping Rebellion, book bureaus were established in various places. For government funding for Song official imprints, see Ye Ye 葉燁 and Liu Xue 劉學, "'Gongshikuben' gainian ji 'gongshiqian keshu' wenti bianxi '公使庫本'概念及'公使錢刻書'問題辨析," *Wenxian*, no. 5 (2013): 8–16. For late Qing official printing, see Wang Xiaoxia 王曉霞, "Wanqing guankeshu liutong tedian ji chengyin 晚清官刻書流通特點及成因," *Wuling xuekan* 41, no. 4 (2016): 105–9.

[363] See Joseph Dennis, *Writing, Publishing, and Reading Local Gazetteers in Imperial China, 1100-1700*, Harvard East Asian Monographs 379 (Cambridge, Massachusetts: Harvard University Asia Center ; Distributed by Harvard University Press, 2015), chap. 5.

[364] Dennis shows that donations from salary were also the most often mentioned financing method to publish local gazetteers. See Dennis, 220–21.

were covered.[365] Dennis suggests that in many cases, a magistrate's donation did not cover the entire production costs.[366]

It is not clear how much the production of official imprints of famine plant manuals cost. Acquisition of the master copy of *Jiuhuang bencao* and *Yecai pu* seemed to be free, as officials either received the copy as a gift or borrowed it from acquaintances. Other production costs remain vague.[367] In general, financial data concerning book production is rare in East Asian book history, unlike in the European context. Chow argues that production costs dropped in the late sixteenth century due to cheap bamboo paper and the universally adopted craftsman's script.[368] While the lack of materials on production costs makes it difficult to examine officials' actual financial contributions officials, through their acts (or rhetoric) of donation, they performed their support for the printing project as well as care for the people.

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[365] Received opinion is that the salary of Ming official was quite low. According to MSL*,* the salary system was established in 1371, modified in 1380 and 1387, and remained unchanged ever since. First rank officials were entitled 87 *dan* 石, sub-first 74, second 61, sub-second 48, third 35, sub-third 26, fourth 24, sub-fourth 21, fifth 16, sub-fifth 14, sixth 10, sub-sixth 8, seventh 7 *dan* and 5 *dou,* sub-seventh 7 *dan,* eighth 6 *dan* and 5 *dou,* sub-eighth 6 *dan,* ninth 5 *dan* 5 *dou* and sub-ninth 5 *dan.* From the Yongle era on, salaries were paid partially in things other than rice, first in paper money, then in cloth and later in silver. The proportion of salaries paid in rice and in non-rice, and the rate of rice to silver changed constantly. According to *Daming huidian* 大明會典 (Collected Statues of the Ming, 1587), for the supposed-to-be-paid-in-rice part, each *dan* equals 0.7 *liang* 兩, for the supposed-to-be-paid-in-non-rice part, each *dan* equals 0.03 *liang.* For local governors, they had other institutional incomes in addition to salary. In addition, they may have agricultural income. Hu Tieqiu calculates that the income of a county magistrate was 126.88 *liang* based on the figures in *Daming huidian.* See Hu Tieqiu 胡鐵球, "Mingdai guanfeng goucheng biandong yu junyaofa de qidong 明代官俸構成變動與均徭法的啓動," *Shixue yuekan*, no. 11 (2012): 22–42.

[366] See Dennis, *Writing, Publishing, and Reading Local Gazetteers in Imperial China, 1100-1700*, 222.

[367] Production costs can be divided into material and labour costs. Examples from commercial and private publishing show that they could be quite low in the late Ming. For scribal costs, scribers for *Fangce zang* 方冊藏 (Booklet Edition of the Buddhist Tripitaka) produced in 1601 were paid 4 *li* 厘 for every 100 characters. See Zhang Xiumin, *Zhongguo yinshua shi*, 668. For block-cutter costs, workers were paid 24 *liang* to block-cut *Yuzhang luoxiansheng wenji* 豫章羅先生文集 (Anthology of Luo Congyan's Works, 1554) which was probably printed in Fujian with 83 woodblocks in total for 161 *ye* 叶 (leaf). Per *ye* costed around 0.15 *liang.* See Ye Dehui, *Shulin qinghua*, 153. In the Wanli era in Jiangnan region, a block-cutter earned 0.03 *liang* per day. See Hu Tieqiu, "Mingdai guanfeng goucheng biandong yu junyaofa de qidong," 33. In late Ming Jiangnan, workers' wages varied between 0.02 and 0.04 *liang* per day and block-cutters fell within the range. For *Fangce zang* produced in 1601, block-cutters were paid 3 *fen* and 5 *li* for every 100 characters. An experienced block-cutter could cut a little more than 100 characters per day. Between 1591 and 1600, 3 *fen* and 5 *li* could buy 9 kilograms of rice. See Zhang Xiumin, *Zhongguo yinshua shi*, 668. Zhang Xiuyu, 2014, 105. At the end of the Chongzhen era when Mao Jin 毛晉 (1599-1659), based in Changshu, Jiangsu, hired workers, he paid 0.3 *liang* for every 100 characters. At that time, 1 *liang* equaled less than 700 *wen* 文. Those figures did not break down the costs of wages and board. But generally, woodblock cutting was relatively cheap.

[368] Kai-wing Chow, *Publishing, Culture, and Power in Early Modern China* (Stanford University Press, 2004), chap. 1. Dennis collected scattered financial data for the production of local gazetteers and found production costs varied dramatically. See Dennis, *Writing, Publishing, and Reading Local Gazetteers in Imperial China, 1100-1700*, chap. 5.

Concrete evidence of the number of copies produced is also lacking. Dennis highlights that for official printing, more emphasis was placed on getting the blocks cut than on making large print runs. In the reprints of *Jiuhuang bencao,* officials underlined block-cutting as important for disseminating knowledge, but seldom mentioned distribution of copies as a way of transmitting knowledge. The largest print runs were likely for the first run, when imprints were made for people related to the printing project and interested elites. The scholar-official Lu Rong 陸容 (1436-1494) claimed that officials often printed up to 100 copies in the second half of the fifteenth century.[369] He might have exaggerated, as he criticized wasteful printing of low quality books, but he implied that print runs rarely exceeded 100.

Gift-giving played a central role in distributing official imprints.[370] A specific term *shupaben* 書帕本 was even coined for official imprints customarily gifted alonside handkerchiefs when an official completed his term or returned from travels.[371] To produce such gifts, printing projects were often implemented at the end of officials' terms, spending budgets meant for other costs.[372] As we have seen, magistrate Lu Jian received a 1525 copy as a gift from the former official Li Lian. It was likely that magistrate Hu Cheng's superior (owner of the master copy of the 1562 edition), Zhu Kun (publisher of the 1566 edition), and Shaanxi governor Li Wen (publisher of the 1586 edition) all acquired their copies similarly. Official imprints were usually given to superior magistrates, preface authors, and government offices, but largely circulated within official networks.[373]

That official imprints were usually disseminated in officialdom through governmental or private channels was not particular to Ming China, but also applied to Tokugawa Japan. By analyzing a detailed record of the distribution of *Kate mono*, which was rare in East Asian book history, I will in addition show the urban-rural difference in the circulation of famine relief knowledge.

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[369] Lu Rong 陸容, *Shuyuan zaji* 菽園雜記, SKQS edition, n.d., vol. 10.
[370] For a study of book gift in Song and Ming, see Joseph Peter McDermott, *A Social History of the Chinese Book: Books and Literati Culture in Late Imperial China*, Collection Understanding China (Hongkong: Hong Kong University Press, 2006), chap. 3.
[371] Ye Dehui, *Shulin qinghua*, 148–49.
[372] Hai Rui 海瑞 (1514-1587) criticized the huge waste of money on the printing projects. See Hai Rui 海瑞, *Hai Rui ji* 海瑞集, trans. Li Jinquan 李錦全 and Chen Xianyou 陳憲猷 (Hainan: Hainan chubanshe, 2003), 246–47.
[373] It was not clear whether Ming official imprints were intended for commercial circulation or not. In comparison, evidence can be found about the commercial circulation of official imprints in Song and Qing China and Tokugawa Japan. For the sale of Song official imprints, see Ye Dehui, *Shulin qinghua*, 119–21, 123. For the sale of late Qing official imprints, see Wang Xiaoxia, "Wanqing guankeshu liutong tedian ji chengyin."

Famines are disasters with strongly differential effects depending on age, class, region, and so forth. They affect the poor rather than the rich, the countryside far more than the cities, some regions much more acutely than others. Scholars have analyzed the urban-rural differences in famine relief policies and institutions, and have shown that resources concentrated in urban areas. For example, it has been observed that relief granaries were primarily established in towns and cities, being not only larger in number, but also more substantial in volumes and types of grains stored. Maren Ehlers has explained that on the one hand, governments were eager to prevent unrest around their seats of power, and on the other hand, towns were also centres of commerce and home to diverse nonagricultural livelihoods.[374] These differences are also manifest in the types of famine relief knowledge that were essential in various localities, as the knowledge vital in rural areas like wild food sourcing differed from urban centers' needs.

Kate mono was one famine relief text specifically aimed at imperiled village populations. It recorded about 80 plants that could be used as famine foods, with supplementary information including instructions for village heads, suggestions on the cultivation of plants, information about dried food and advice on non-plant food. The manual's contents suggest an intention to convey practical rural famine relief knowledge.

The book project was initiated by the Yonezawa magistrate Nozoki Yoshimasa, whose interest in circulating famine food knowledge was likely to have been raised by the former domain lord Uesugi Yōzan. Yōzan commissioned the court physicians to compile *Hanrō shū*, a list of grain supplements to mitigate food shortages, in 1783 during the Tenmei Famine, and despite seclusion since 1785, he continuously exerted influence on local politics. In addition to Nozoki Yoshimasa, various domain officials and samurai participated in the book projects, with Ōmetsuke 大目付 (chief inspector) Maruyama Heiroku 丸山平六 (1753－?) responsible for making the clean copy, and inspector Ishiguchi Motome 石口求馬 (fl. 1802) in charge of carving and printing.[375]

[374] For urban-rural difference in famine relief in Song China, see Zhang Wen 張文, "Zhongguo songdai xiangcun shehui baozhang moshi de sanceng jiegou 中國宋代鄉村社會保障模式的三層結構," *Xueshu yuekan* 44, no. 4 (2012): 122–28. For relief schemes for townspeople, see Ehlers, *Give and Take*, chap. 5. For relief schemes for villagers, see Saitō Hiroko 齊藤紘子, "Kinsei izumi no sonraku shakai niokeru kikin to 'konkyūjin': Kansei-bunka ki no ikegamimura o chūshin ni 近世和泉の村落社会における「困窮人」救済—泉郡池上村を中心に—," *Shi dainihon shi*, no. 17 (2014): 40–58.

[375] Sugihara Ken 杉原謙, *Nozoki Taika ō* 莅戸太華翁 (Tokyo: Sugihara Ken, 1898), 748–51.

Kate mono shows how expensive a printing project could be. The book is 19 cm in length and 14.5 cm in width, a so called *yochūhon* 横中本 (horizontal medium-sized book) which was usually the format of picture books. This one-volume text-only book contains 27 *chō* 丁 with 8 lines per page. The printing cost 140 *kan* 貫 and 898 *mon* 文, or 22 *ryō* 両 1 *bu* 分 and 314 *mon* in total.[376]

Paper represented the major cost: 68 *kan* and 70 *mon*, nearly half of the total.[377] This high paper percentage reflects the substantial print run of 1,575 copies. Although some contemporary commercial books sold thousands, most sold in the tens or hundreds at first printing.[378] In comparison, official printing could make larger print runs, as profit was not a concern.[379]

The remaining costs, amounting to 72 *kan* and 828 *mon*, likely covered woodblocks, binding strings, and carvers', printers' and binders' wages.[380] For comparison, a carpenter's

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[376] During the Edo period, the Tokugawa Shogunate government employed a tri-metallic monetary system based on gold, silver, and copper coins. Gold coins had face values based on the quaternary system, with the denomination of one Koban gold coin being set at 1 *ryō*, equivalent to 4 *bu* 分 (歩) and to 16 *shu* 朱, while silver coins were traded by weight with *monme* 匁 used as the basic unit of 1 *monme*, equivalent to 3.75 grams. One copper coin had the denomination of 1 *mon* (1,000 *mon* = 1 *kanmon*). The three currencies were all exchangeable. The official rate was set in 1609 at one *ryō* equal to 50 *monme* (approx 187 grams) of silver, or 4000 brass coins. In 1700 the official exchange rate was adjusted to 1 *ryō* equal to 60 *monme* silver (225 grams) or 4000 brass coins. However, in reality the relative values between gold, silver and brass currencies fluctuated on an almost daily basis throughout the Edo period. According to the appendix to *Nihon nōsho zenshū*, in 1801, 1 *ryō* equaled 63 *monme* and in 1802, 1 *ryō* equaled 62.9 *monme.* For reference, in 1801, the price of one *koku* of rice varied between 68 and 70 *monme,* and in 1802 between 60.3 and 74.1 *monme*.

[377] Sugihara Ken, *Nozoki Taika ō*, 754. For examples of paper costs taking up 40 to 50 percent of the total production costs, see Hashiguchi Kōnosuke 橋口侯之介, *Zoku wahon nyūmon: Edo no honya to honzukuri* 続和本入門—江戸の本屋と本づくり (Tokyo: Heibonsha, 2007), 105–6. It is likely that paper costs included printing paper but excluded covers, title slippers, etc. The reasons are, first, that printing paper, covers and title slips differed in size and, second, that they were used in different stages of production—printers using printing papers to make imprints, and binders using covers and title slips to wrap up books. Covers and title slips were often calculated with binders' labour costs. In *Ibuki no ya nikki*, printing paper costs were also listed separately from cover paper costs. It is not clear what kind of printing paper was used for *Kate mono*. A bale of paper containing 12,000 sheets of *hanshi* 半紙 (24.3 x 33.4), for example, could sell for a factory price of 70 to 94 *monme*. The *kokugaku* scholar Hirata Atsutane 平田篤胤 (1776-1843) mentioned that 1 *shime* 〆(= 1/6 *maru* 丸 = 2000 sheets) of *ōhanshi* 大半紙 (large-sized *hanshi*-paper) was sold for a price of 32 *monme*. Hashiguchi Kōnosuke 橋口侯之介, *Zoku wahon nyūmon: Edo no honya to honzukuri* 続和本入門—江戸の本屋と本づくり (Tokyo: Heibonsha, 2007), 104–6.

[378] Beststellers could reach 5000 or even more copies, see Hashiguchi Kōnosuke, *Zoku wahon nyūmon: Edo no honya to honzukuri*, 134.

[379] This is true not only for official prints, but also for other non-profit ventures such as free prints to be discussed below.

[380] Sugihara Ken, *Nozoki Taika ō*, 754. Woodblocks could be relatively cheap. Carving was probably the most tiresome work concerning book production. Yet woodblock plus carver costs were relatively cheap. For commercial printing, the publisher Zeniya Sōshirō 銭屋惣四郎 (1764-1819) paid 3.47 *monme* per *chō* for the *chūhon* (18/19 x 12/13)-size publications. Private printing was usually more expensive than commercial printing. Japanese boxwood was also more expensive than cherry tress. See Hashiguchi Kōnosuke, *Zoku wahon nyūmon: Edo no honya to honzukuri*, 102–4. For costs of covers, title slippers, binding strings and binders, *Rikunyoan shishō* 六如庵詩抄 (A Selection of Poems by Rikunyoan, first published in 1783 and a sequel published in 1797

monthly income in the Bunsei period (1818-1831) was about 14 *kanmon*.[381] The production costs of official imprints were likely lower than commercial ones, as there was no need to pay fees to publishers' guilds or governors. Labour costs could be reduced, either by appointing officials to work or by paying lower wages.[382] Discount on materials could also be available.[383]

Kate mono's considerable expense would not have been possible if not for the improvement of financial situation in the Yonezawa Domain. The Domain used to be poor, indebted and corrupted. The Uesugi family originally had a territory worth 1,200,000 *koku* (a unit of volumeused to measure rice production and thus evaluate the magnitude of evaluate a feudal domain's magnitude, approximately 180 litres). It was reduced to 300,000 *koku* by Tokugawa Ieyasu, as the Uesugi had opposed him in the Sekigahara Campaign. It was further reduced to 150,000 *koku* when the third *daimyō* died without an heir. Despite the sharp decrease in income, the Uesugi were obliged by the first *daimyō* Kagekatsu to keep their 6,000 retainers, the same number of retainers the Uesugi had when owning 1,200,000 *koku*. The large number of retainers to support and the financial obligations imposed by the shogunate resulted in severe financial difficulties. By the mid-eighteenth century, the Uesugi had a debt of 200,000 *ryō.* Thanks to the ninth daimyō Harunori's reforms, the debt was reduced to 30,000 *ryō* by 1771. In 1791, Nozoki Masayoshi planned to use half of the yearly income to pay back debt and clear it all in 16 years, though this was not accomplished until 1823. Although the domain still had debt in 1802, it was able to fund a famine plant book in a time of relative abundance.

Of the 1525 copies printed, most were distributed to towns and villages, as shown in Table 4-2.[384] This excluded copies given as gifts to the Uesugi family, high officials, physicians and others who contributed to the compilation and production of the book, as well as those directly sent to village officials, town magistrates and government offices. The 48 town and 1,392 village copies show intent to extend knowledge geographically.

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in Kyoto, Osaka and Edo), 25cm in length, larger than *Kate mono*, cost 7 *fun* 分 and 5 *rin* 厘 per copy. See Hashiguchi Kōnosuke, 109.

[381] Ono Takeo 小野武雄, *Edo bukka jiten* 江戸物価事典 (Tokyo: Tenbōsha, 2009), 212.

[382] The high official Maruyama may have not charged extra for making the clean copy.

[383] With the same amount of funding, fewer copies would have been made if published commercially. See Hashiguchi Kōnosuke, *Zoku wahon nyūmon: Edo no honya to honzukuri*, 119.

[384] For detailed distribution, see Sugihara Ken, *Nozoki Taika ō*, 750–52.

Table 4-2 Distribution of *Kate mono* in the Yonezawa Domain

Type of villages/towns	Size of villages/towns	Number of villages/towns	Number of copies per village/town	Total number of copies
Daikan (deputy)-administerd villages		213	5	1065
Not *daikan*-administered villages	Number of people: under 18	11	2	22
	Number of people: above 18	61	5	305
Castle town		16	3	48

Source: Based on the figures in Sugihara's *Nozoki Taika ō.*

In assessing the circulation of *Kate mono,* we must attend to literacy. Scholars concur that already in the early Tokugawa period, village heads and provincial literati were highly literate.[385] They should not have had problems reading the manual that was intentionally written in a *wabun* style with few *kanji.*

To gauge per capita access, let us consider Yonezawa's population composition in 1802. In that year, the total population in the Yonezawa Domain was 108,998.[386] Although populations of individual villages and cities were unknown, figures from earlier and later periods may help us understand the proportion to some extent. In 1692, the total population was 133,259, with village population making up 88,525, a 66%, and city population making up 12,129, a 9%.[387] In 1840, the total population was 112,968, 70.7% of which was village

[385] For literacy in Tokugawa Japan, see Richard Rubinger, *Popular Literacy in Early Modern Japan* (Hawaii: University of Hawaii Press, 2007).
[386] Yoshida Yoshinobu 吉田義信, *Okitama minshū seikatsu shi* 置賜民衆生活史 (Tokyo: Kokusho kankō kai, 1973), 116. Data from *Hiko sonsho* 秘庫存書 (lit. Extant Books in the Privy Treasury), a rare comprehensive record that recorded population in the Yonezawa Domain from 1692 to 1867, with only one year missing. However, whether the figures are reliable remains controversial, as changes in population seems to be too subtle to be natural. For discussions on the population figures, see Takagi Masao 高木正朗 and Shin'ya Hitoshi 新屋均, "Kinsei kokka no jinkō to sono sōsei: Sendaihan kōri gata, ichinosekihan murakata jinkō no fukugen, 1668-1870 近世国家の人口とその趨勢 - 仙台藩郡方・一関藩村方人口の復元 : 1668-1870-," *Ritsumeikan daigaku jinbun kagaku kenkyūjo kiyō*, no. 87 (2006): 12.
[387] Yoshida Yoshinobu, *Okitama minshū seikatsu shi*, 118–19. Data from *Beifu kanoko* 米府鹿子 (Gazetteer of the Yonezawa Domain).

population and 5.9% of which was city population.[388] The decline in the proportion of city population was explained as a result of the financial deterioration in Yonezawa. Supposedly, the above figures were reliable and the proportion in 1802 was somewhere in between. In 1802, village population would vary from 72,342 to 77,062 and city population from 9,921 to 6,431. In either case, villagers would have had more copies per person than townspeople.

The assumption is partially confirmed by the distribution figures. To the eleven villages that each had fewer than eighteen people, two copies were distributed respectively, so that at least every nine persons had access to one copy. This could be a cmuch higher proportion than the above calculation suggests.

The extensive village distribution suggests rural populations were seen as more in need of famine plant knowledge. This could reflect villagers' inadequate access to relief, yet familiarity with wild edibles, whereas town markets offered purchase options. Urban dwellers, reliant on commercial rice, suffered from shortages of rice mainly due to high price. To make up for rice shortages, they added commonly consumed staple foods and vegetables. In comparison, villagers' diets already encompassed diverse consumable plants which were more familiar and readily available to them.

In addition, the town population could access *Kate mono* via the commercial imprints made afterwards. In order to more widely circulate the book, Nozoki proposed that the *kendan* 検断 (investigator) of Ōmachi 大町 should use the woodblocks to make more copies for sale. To encourage him to do so, Nozoki suggested that he could make profits from the venture. This again indicates the blurring line between official printing and commercial printing. In fact, it was quite common that after print runs, woodblocks of domain imprints were given to the commercial publishers who had done the printing for their own uses.[389]

4.2.2 The Wider the Circulation, the More Merits

Official imprints were often distributed for free, but free imprints were not necessarily official imprints. This subsection examines a particular form of free printing rooted in religious printing, itself the very origin of printed books within East Asia. The multiplification of Buddhist texts and images, above all of sutras, was driven by diverse religious motivations, not least the accumulation of karma. The advent of printing technology accelerated the

[388] For total population, see Yoshida Yoshinobu, 117. For the size of village and city population, see Takagaki Jūnko, *Yonezawahan kankō no kyūkōsho* Kate mono *o tazuneru: "Kate mono", "kate mono" soshite "kate mono,"* 20.
[389] Takahashi Akihiko, "Kinse shuppan kikō niokeru hanpan no mondai: Edo jidai no jōhōka," 22–24.

production of such texts. Donors acquired karma by sponsoring the production and distribution of these texts free of charge. This practice was often termed *shiyin*/*sein* 施印, *yinshi*/ *inse* 印施 and *kanshi* 刊施, literally "print and give as charity", denoting printing and disseminating something freely. In Ming-Qing China and Tokugawa Japan, these terms became used more broadly, referring to a specific printing and distribution mode that applied not solely to religious texts but diverse topics as well.

The following discussion rests primarily upon Japanese free imprints of famine plant manuals. The lack of Chinese sources, however, should not suggest that free printing in general played only a minor role in Ming-Qing China, as quite a few scholars have elucidated the sponsorship by donors across strata of the production of morality books as well as Buddhist canons.[390]

Despite being a familiar issue in Edo-period literature, *sein* has not been adequately addressed as a distinct production and distribution mode. Van Steenpaal adopts a practical definition that classifies imprints with so-called *sein* marks or statements as free imprints.[391] As no other sources indicated whether the famine plant manuals in question were *sein* or not, I also follow van Steenpaal's identification criteria (Table 4-3).

[390] For Buddhist printing, see Lucille Chia, "Printing for Merit: A Premilinary Study of the Role of Donors in Buddhist Printing, Song to Ming," in *Imprimer sans Profit?: Le Livre Non Commercial Dans La Chine Impériale*, ed. Michaela Bussotti and Jean-Pierre Drège (Geneva: Librairie Droz S.A., 2015). For Qing morality books, see Zhang Yichen 張禕琛, "Qingdai shanshu de kanke yu chuanbo 清代善書的刊刻與傳播" (PhD Diss., Fudan University, 2010).

[391] Niels van Steenpaal, "Sein Toiu Media: Kinsei Kōki Kyōto 'Kōgakusho' Sein No Ryūtsū to Imi," *Shomotsu Shuppan to Shakai Henyō*, no. 22 (2019): 37–38. Van Steenpaal carefully distinguishes the meanings of different *sein* marks: *sein* and *inse* are basically the same, indicating the person in question sponsored both printing and distribution; *seshu* 施主 may have only patronized the printing; *sehan* 施板 probably suggests that the person in question only patronized the production of the woodblock. Yet he points out that the difference may merely represent variations of formulations.

Table 4-3 Free Imprints of Famine Plant Manuals

Year	Title	Donor	Number of *chō*	Size
1828	*Kyūkō honzō bassui*	Komatsu granary	29	23 cm
1836	*Kyūkō zasshoku shū*	Katō Sanyotei	6	25 cm
1836	*Tenpō kikin surimono utsushi*	Hiramatsu Masayoshi	4	23.8 x 17 cm
1837	*Kikin doshi no shokumotsu*	Motōri	2	25 cm
1837	*Kikin no toki no shokumotsu no tairyaku*	Nakayama Umashi	13	23 cm
1851	*Kyūkū sōhin zufu*	Oka Yasusada	8	23 cm

Source: Number of *chō* by my account, size figures from the National Diet Library and Iwase Bunko.

As Figure 4-1, Figure 4-2 and Figure 4-3 illustrates, the *sein* marks or statements were typically situated in prominent locations, whether upon the inside page of the front or back cover, or at the end of the text. This indicates that the donors were cognizant of the nature of their publishing activities and eager to inform readers thereof.

Figure 4-1 *Sein* mark on the front page, *Kyūkō honzō bassui* (1828). National Diet Library.

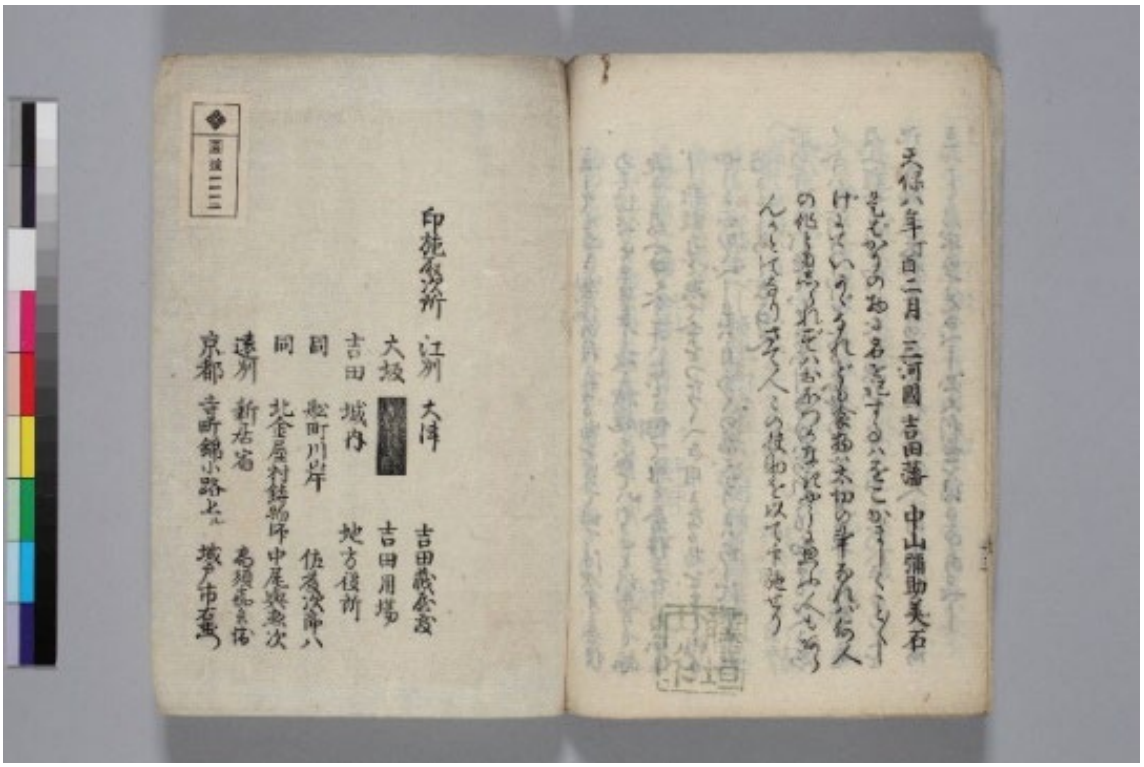

Figure 4-2 *Sein* mark on the back page, *Kikin no toki no shokubutsu no dairyaku* (1837). National Diet Library

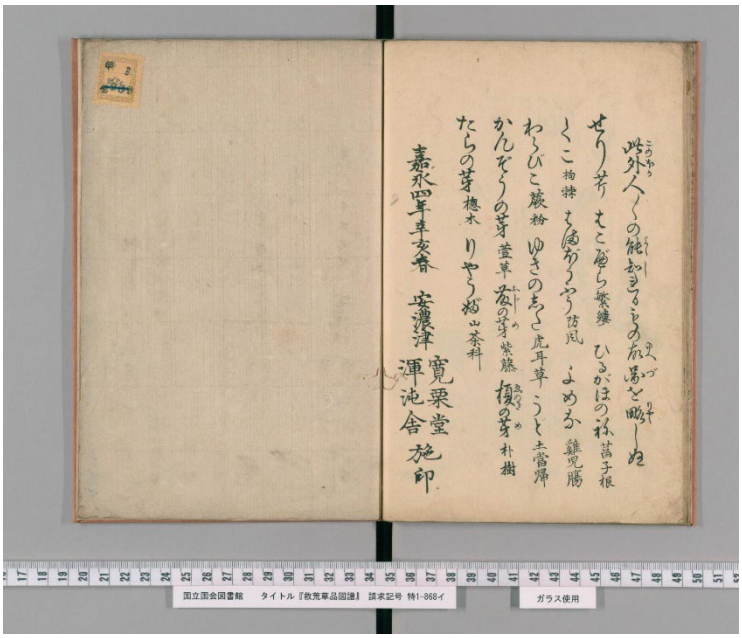

Figure 4-3 *Sein* mark at the end of the text, *Kyūkō sōhin zufu* (1851). National Diet Library.

The publishers of such free imprints could be either individuals or institutions. How they financed these printing projects remains unclear. Case studies of other *sein* works suggest that apart from their own pockets, donors might also raise funds from their friends and like-

minded people, whose contributions were usually money but sometimes printing materials as well.[392]

Publishers chose free printing for various reasons. They migh lack connections to commercial publishing, wish to evade censorship, or seek to collect karma and earn fame.[393] Famine relief books were especially favoured for this last motive.[394] Circulating such books equaled practicing virtue. With the books transcending time and space, the publishers became memoralized across temporal and spatial boundaries, not as book traders, but as selfless promoters of benevolence.[395]

Free imprints were intended for extensive circulation, for the greater the number of copies, the larger the audience that could receive their message and benefit, redounding to the donors themselves. With budget limits, invest in quantity proved more efficient than quality. As summarized in Table 4-3, free famine plant manuals tended to be small and slim in size. Their modest physical form rendered reproduction in large numbers more affordable. While exact copy numbers are not always traceable, some 1500 copies of *Tenpō kikin surimono utsushi* were made and distributed, a seemingly reasonable number.[396]

These imprints were obtainable in places where people congregated, often sites of commerce and exchange.[397] *Kikin no toki no shokumotsu no tairyaku* could be acquired in the Yoshida Domain's storehouse in Ōtsu, Ōmi; its governmental office in Yoshida Castle and in Osaka; from one Satō Jirohachi 佐藤次郎八 (fl. 1837) in Funamachi in the Yoshida Domain;

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[392] The craftsman Izumiya Gen'enmon 和泉屋源右衛門 (1740-?) collected ten *ryō* with help from his friend Naonage and Naonage's friend Yukawa to carve the woodblock of anti-Fire Horse pamphlet and make imprints. Paper and woodblocks for printing were provided by the Osaka merchant Kamiya Ichiemon 紙屋市右衛門 (fl. 1786) who was introduced to Izumiya through the Confucian scholar Sugiura Muneyuki 杉浦宗之 (fl. 1786). See van Steenpaal, "Taming the Fire Horse: The Free Distribution of Anti-Supersition Pamphlets in Early Modern Japan," 196–98.

[393] Free prints were not regulated by publishing laws which applied primarily to commercial publications, whether in manuscript form or print. On the restrictions on publishing in Tokugawa Japan, see Yamamoto Hideki 山本秀樹, *Edo jidai santo shuppanhō taigai: Bunkashi shuppanshi no tameni* 江戸時代三都出版法大概 : 文学史・出版史のために (Okayama: Okayama daigaku bungakubu, 2010); Satō Yukiko 佐藤至子, *Edo no shuppan tōsei: Danatsu ni honrō sareta gesakushatachi* 江戸の出版統制 : 弾圧に翻弄された戯作者たち (Tokyo: Yoshikawa kōbunkan, 2017).

[394] Recurring topics in free imprints included infanticide and famine relief. See van Steenpaal, "Taming the Fire Horse: The Free Distribution of Anti-Supersition Pamphlets in Early Modern Japan," 185.

[395] One problem was that, as free prints were usually thin pamphlets, they easily got lost.

[396] The Osaka merchants Kamiya, Oya Yaichibei 苧屋弥市兵衛 (fl. 1786) and Yamatoya Risuke 大和屋利助 (fl. 1786) claimed to have disseminated several tens of thousands of free copies of *Kishoku matsukawa seihō* 飢食松皮制法 (A Recipe for Pine Barks as Famine Food, 1784). They may be exaggerating, but considering their extensive commercial network in Satsuma, Kawachi, Yamato and Iga, they may actually have disseminated quite a large number of free prints. See van Steenpaal, "Taming the Fire Horse: The Free Distribution of Anti-Supersition Pamphlets in Early Modern Japan," 198.

[397] Steenpaal mentions that free prints may be posted on doors, or put up at places such as barbershops, bathhouses and soba eateries.

at a caster's establishment in Kitakanayamura 北金屋村, Yoshida Domain[398]; in Wakabayashiya 若林屋, an oil shop run by Takasu Kahei 高須嘉兵衛 (1790-1860)[399] near araijuku in Tōtōmi (present-day arai, arai chō, Kosai, Shizuoka); and at the Ebisuya bookshop managed by Kido Chitate 城戸千楯 (1778-1845) in Muromachi, Kyoto[400]. Many such spots were trading places, ideal for disseminating pamphlets. In particular, the oil shop sat near the thirty-first of the fifty-three stations of Tōkaidō, the major road connecting Edo to Kyoto where travellers from across the land crossed paths. Messages could thus reach a diverse crowd. The free imprints were also available at the Yoshida Domain's government office, perhaps because famine relief was deemed an administrative matter, subject to political intervention, or the author Nakayama Umashi 中山美石 (1775-1843), as a feudal retainer of the Yoshida Domain, had personal ties to officials, or the book was produced and distributed on domain orders, in which case it would qualify as an official imprint as well.[401]

Despite their *sein* statements, whether the imprints actually circulated for free remains questionable. Publishers made efforts to prevent their resale for profit. Figure 4-4 shows "no sale" remarks on the opening page of *Kyūkō zasshoku shū*. But these remarks' presence indicates free imprints did risk being sold for profit.[402]

[398] Little is known about the caster Nakao Sōji 中尾与惣次 (fl. 1837).
[399] This is the sixth Takasu Kahei named Motonao 元尚. He was a wealthy merchant and lent thousands of *ryō* to the domain when it struggled with financial difficulty. He was interested in *kokugaku* and exchanged letters with *kokugaku* scholar. His son, the seventh Takasu Kahei (1827-Meiji) was a disciple of Nakayama Umashi.
[400] Ebisuya was in business between the Kansei era (1789-1801) and the Bunkyū era (1861-1864), run by Kido Chitate and his son. Kido Chitate became a disciple of Motri Norinaga 本居宣長 (1730-1801) in 1797.
[401] In 1817, Nakayama (1775-1843) became a teacher at the domain school *jishūkan* 時習館. He also taught *kokugaku* to daimyō Matsudaira Nobuyori 松平信順 (1793-1844). For a biography of Nakayama, see Ōmura Shigeyoshi 大村重由, *Nakayama Umashi shōden* 中山美石小伝, ed. 東三文化研究會 Tōsan bunka kenkyuukai (Toyohashi: Tōsan bunka kenkyuukai, 1935).
[402] However, there remains the possibility that the publishers merely kept the "no sale" seal from a previous woodblock and the "no sale" warning had nothing to do with the nature of free prints. In any case, the "no sale" seal had no legal power and only suggested that if the book went for sale, it was not the original publisher's intention or responsibility.

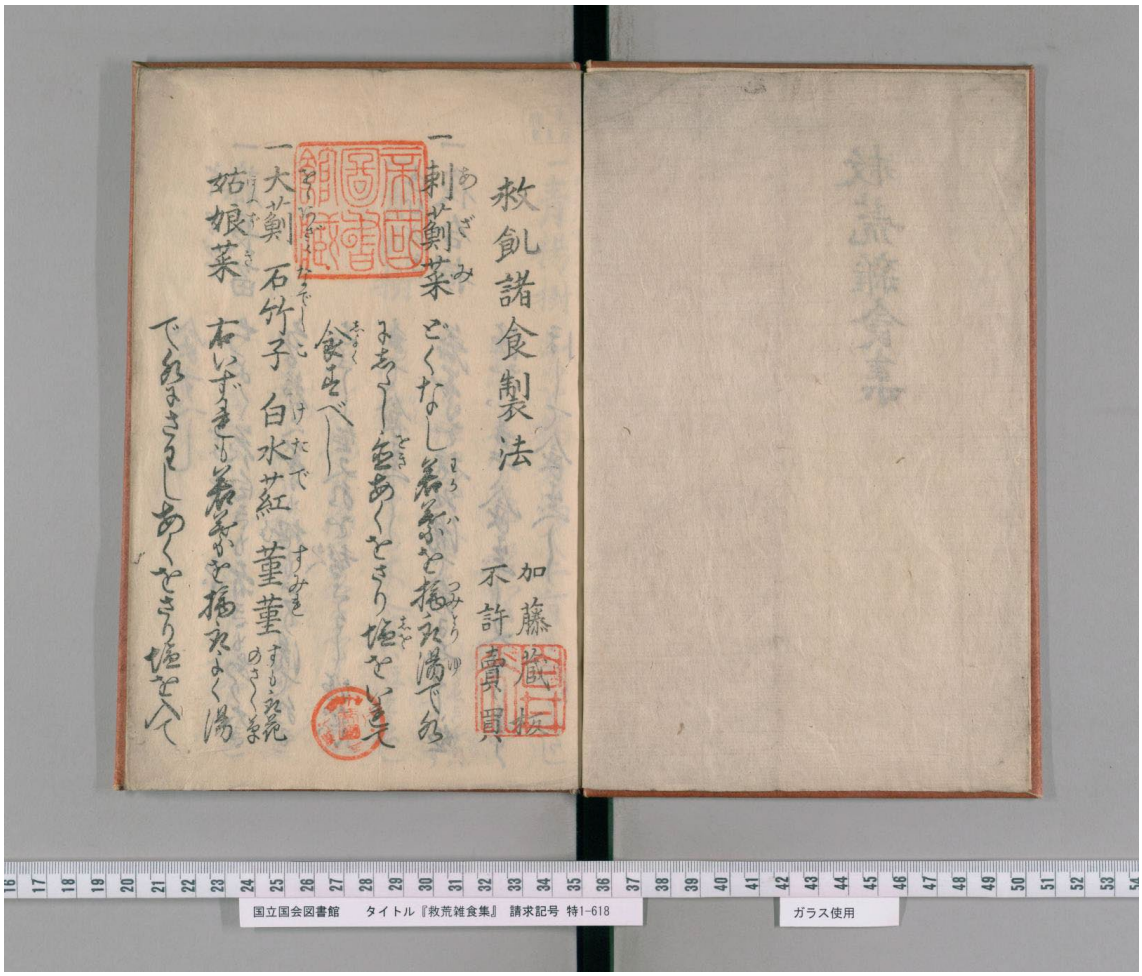

Figure 4-4 “No sale” seal on the first page, *Kyūkō zasshoku shū* (1836). National Diet Library.

Although the data are scattered, these free imprints were able to travel far beyond their original places of publication, attaining wide circulation. Yet the extent to which they shaped social practices remains dubious.[403]

Official and free printing were not mutually exclusive. As the example of *Kikin no toki no shokumotsu* shows, free imprints could harness governmental distribution networks. For famine plant manuals, both production and distribution modes featured a moral rhetoric of charity and benevolence. What distinguished them was their distribution network and actual readers. Free imprints generally reached an anonymous audience across social strata, while official imprints mainly targeted governmental officials. Those who chanced upon free

[403] In the campaign against the superstition that women born in the year of the Fire Horse were a curse upon their husbands, the distribution of free pamphlets failed to prevent a marked decline in newborns in the Fire Horse year. In this case, circulation of imprints did not transform social reality. See van Steenpaal, “Taming the Fire Horse: The Free Distribution of Anti-Supersition Pamphlets in Early Modern Japan,” 201.

imprints could freely retain or discard them, but those who were bestowed with official imprints were obliged to preserve them in reverence.

4.2.3 In a Flourishing Book Market

Famine plant manuals often debuted as non-profit imprints, but their potential as cultural commodities was soon discovered by commercial publishers in an age of thriving commercial printing. I argue that commercial publishing propelled the production and reproduction of these manuals, facilitating cross-regional and cross-strata circulation, thereby transforming the understanding of famine plants. Individual Chinese and Japanese cases will highlight their respective significances.

The late Ming was a golden age for producing book series as well as *leishu* 類書 (reference encyclopedias) and *riyong leishu* 日用類書 (daily-use compendia).[404] Unlike their Song counterparts that focused on classical texts, late Ming collections displayed greater interest in practical knowledge such as agricultural practices and health prevention, targeting a wider readership spanning highbrow and lowbrow elites.[405]

Famine plant manuals were incorporated into book series in several commercial publishing centers.[406] The 1586 edition of *Yecai pu* was reprinted in the book series *Shanju zazhi* 山居雜志 (Miscellaneous Notes on Dwelling in the Mountains) by the Hui Zhou publisher Wang Shixian's 汪士賢 (fl. late sixteenth century) in the Wanli era.[407] The same edition appeared in the 120-*juan Shuofu* 說郛 (Purlieus of Exposition), and a text-only version of *Yecai pu* attributed to Hua Hao in *Shuofu xu* 說郛續 (Sequel to *Shuofu*) in Hangzhou in the Chongzhen era.[408] Also in Hangzhou, the 1566 edition of *Jiuhuang bencao*

[404] There were three waves of the production of encyclopedias and compendia: in Song, late Ming and late Qing.
[405] For the study of Ming *leishu,* see Elman, "Collecting and Classifying."
[406] According to Zhang Xiumin, commercial publishing houses clustered in Nanjing, Jianning, Hangzhou, Suzhou and Huizhou. See Zhang Xiumin, *Zhongguo yinshua shi*, 239. In fact, it is difficult to decide where exactly the imprints were made, as publishers may have operated publishing houses in various places, and woodblocks often circulated between publishing centres including Nanjing, Hangzhou, Suzhou and Huizhou.
[407] Wang Shixian, son of Wang Wenhui (*jinshi* 1565), originated from Wuyuan, and is said to have served as *xiancheng* (assistant magistrate) of Qianshan. Known as an editor-publisher active during Wanli er, Wang specialized in literary publications and published among others anthologies the *Hanwei mingjia ji* 漢魏名家集 (Collections of Famous Literati from the Han and Wei Dynasties, 21 titles, 123 *juan,* in collaboration with others). For a detailed description of Wang's publishing activities, see Xu Xuelin 徐學林, *Huizhou keshushi changbian* 徽州刻書史長編, vol. 3 (Hefei: Anhui jiaoyu chubanshe, 2014), 1023–31.
[408] *Shuofu* circulated as manuscripts and in print in a wide variety of versions differing in length and organization. Scholars have disputed about the interrelationship between different versions. *Shuofu* was first compiled by Tao Zongyi 陶宗儀 (1329-1410) in the Yuan-Ming transition period, and organized into 100 *juan* by different hands. It was first in the 120-*juan* edition printed in the last decades of the Ming Dynasty that *Yecai pu* was included. See Chang Bide 昌彼得, *Shuofu kao* 說郛考 (Taipei: Wenshizhe chubanshe, 1979);

was reprinted in scholar-merchant Hu Wenhuan's book series *Gezhi congshu* 格致叢書 (Collectanea for Investigating Things and Extending Knowledge).[409] While Wang Shixian seemed to straddle private and commercial publishing, the Hangzhou book series were clearly market-driven, profit-seeking commodities. Encyclopedic in scope, they included knowledge ranging from classics and literature to daily life and practical learning, expecting to draw diverse readers with disparate interest.[410]

The classification of famine plant manuals within these expansive book series already hints at contemporary readings that diverged from their original intentions. The 120-*juan* *Shuofu* contained over 1360 titles, while *Shuofu xu* had 44~47 *juan* with more than 540 titles.[411] Lacking explicit categories, both seemed to organize titles by topic and genre, clustering works with the same indicative words such as *ji* 記 (memoirs) and *hua* 話 (talks), while juxtaposing topically related titles ending in different indicative characters. In comparison, chronology played little role in arrangement. In vol. 106 of *Shuofu*, *Yecai pu* was listed among Southern Song literati food treatises: preceding it were *Jun pu* 菌譜 (List of Mushrooms, 1245) by Chen Renyü 陳仁玉 (1212-?), describing the growing places, harvest time and appearances of 11 kinds of mushrooms with an appendix on treatment of persons poisoned by a mushroom, and *Shushi pu* 蔬（疏）食譜 (List of Coarse Diet) by Chen Dasou 陳達叟 (dates unknown), listing twenty recipes of dishes plus odes; following it was *Rucao jishi* 茹草紀事 (Record of a Vegetarian Diet) by Lin Hong 林洪 (fl. first half of the thirteenth century), which recorded various anecdotes concerning plant consumption. In vol. 41 of

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Christopher P. Atwood, "The Textual History of Tao Zongyi's Shuofu: Preliminary Results of Stemmatic Research on the Shengwu Qinzheng Lu," *Sino-Platonic Papers*, no. 271 (2017): 1–70. This 120-*juan* edition was published along with *Shuofu xu* which was similar in format. Both were claimed to be edited by Tao Ting, but Wang Yuchao's study on *Shuofu xu* shows that Tao Ting and his friends never claimed his participation in the editorial work, and *Shuofu xu* differed from his other compilations in format. In fact, *Shuofu xu* shared the same woodblocks with other Hangzhou-published book series, and should have been materialized by a collective of Hangzhou commercial publishers. The 120-*juan Shuofu* is also likely to have been the joint effort of multiple Hangzhou-based publishers. See Wang Yuchao 王玉超, "*Shuofu xu* bianzuanzhe kao 《說郛續》編纂者考," *Guji zhengli yanjiu xuekan*, no. 6 (2018): 12–19.

[409] In fact, Hu Wenhuan had publishing houses in both Nanjing and Hangzhou. Although most of the titles are believed to be published in Hangzhou, the possibility remains that parts of *Gezhi congshu* were published in Nanjing. It is difficult to know the exact number of titles in Gezhi congshu, as each time a few new publications came out, Hu Wenhuan created a new catalogue of Gezhi congshu, to arouse curiosity and sell more copies.

[410] *Siku quanshu* editors criticized the miscellanousness.

[411] Different printed editions had different numbers of titles. According to Chang, in the Chongzhen era, in the first printing, *Shuofu* had 1360 titles, 124 of which were labeled as missing, and *Shuofu xu* had 44 *juan* and 544 titles, 6 of which were labeled as missing; in the second printing, *Shuofu* had 1364 titles, 13 of which were labeled as missing and *Shuofu xu* had 542 titles, 8 of which were labeled as missing. See Chang Bide, *Shuofu kao*, 30–31. The edition I am consulting is the one printed in *Shuofu sanzhong*, which has the same content and the arrangement of the text as the first printing in the Chongzhen era.

Shuofu xu, Yecai pu was placed after the Ming scholar-official Tu Benjun's 屠本畯 (1542-1622) *Yecai jian* 野菜箋 (Notes on Wild Herbs), a list of 22 plants from Siming, Zhejiang with explanatory texts.[412] These placements indicate that *Yecai pu* was seen appealing to literati interest in plants broadly, stripped of its original famine relief context. In fact, both series included few treatises on famine, likely indicating scant interest in commercializing such knowledge.

The book series also served as a repertoire of knowledge, preserving easily-lost works like famine plant manuals that were relatively small to circulate independently. Without its inclusion in *Gezhi congshu,* the 1562 and 1566 abridged editions of *Jiuhuang bencao* would have left little historical trace. And without *Shuofu xu*, it would not have been known that Hua Hao falsely claimed the text of *Yecai pu* as his own work.[413]

Through a Hangzhou-centered commercial distribution network, famine plant manuals likely reached lower-class readers.[414] *Gezhi congshu* travelled beyond the local market, found even in Japan.[415] While initially intended as elite charitable texts, commercial reprinting disseminated these practical manuals more widely. Market motives unwittingly aided their benevolent aims.

A temporal gap existed between the flourishing of commercial publishing in China and Japan. While the Jiangnan printing industry boomed in the late sixteenth and early seventeenth centuries, rapid development in Kyoto and Osaka did not occurr in the seventeenth century, with Edo gradually assuming dominance by the nineteenth century.[416]

As discussed previously, Chinese titles remained scarce in Tokugawa Japan. Beyond hand-copying, commercial (re)printing also played an important role in expanding availability

[412] In some editions, the title following *Yecai jian* was *Yesu pin* by Gao Lian 高濂 (fl. late sixteenth century).
[413] The sixty ballads of *Yecai pu* were also credited to Hua Hao in the encyclopedic *Gujin tushu jicheng* 古今圖書集成 (Complete Collection of Images and Texts Past and Present), which seemed to have cited from *Shuofu xu.*
[414] On the non-elite readers of popular encyclopedias in the late Ming, see Elman, "Collecting and Classifying."
[415] Now *Jiuhuang bencao* (*Gezhi congshu* edition) can be found in Tōyō Bunko.
[416] Scholarship on commercial publishing in Tokugawa Japan used to concentrate on the three capitals, but in recent years, provinces are also acknowledged to have played an active role in publication in the late Tokugawa period. See Peter F. Kornicki, "Obiya Ihei, a Japanese Provincial Publisher," *The British Library Journal* 11, no. 2 (1985): 131–42; Kornicki, *The Book in Japan: A Cultural History from the Beginnings to the Nineteenth Century*, 1998, 205–7.

and satisfying intellectual demands.[417] Kyoto publishers issued *Jiuhuang bencao* and *Yecai pu* twice, in 1716 and 1799 respectively. Little is known about the 1716 publishers *Shiramatsudō* 白松堂 and *Gansuiken* 含翠軒 or the 1799 publisher *nagamatsudō* 長松堂. Fortunately, *Ryūshiken* 柳枝軒, the main publisher of the 1716 edition, has been well-studied. Opened in the 1680s in Kyoto, it printed texts by herbalists such as Kaibara Ekiken, explaining its publication of *Jiuhuang bencao*.[418] The Edo-based herbalist Ōta Chōgen 太田澄元 (1721-1795) observed that "(since) the Chinese editions are rare, people all use the Japanese edition", thus basing his teachings on the 1716 imprint, indicating its wide circulation among herbalists then.[419]

In the eighteenth century, commercial imprints of famine plant manuals were still modest in type and seemed to be targeted at a distinctive audience that pursued specialized knowledge. The expansion of the printing industry in the nineteenth century, combined with practical needs, however, encouraged an increase in titles on famine plants.

Amidst the great Tenpō Famine, famine relief became a frequent topic in commercial publications.[420] In 1833, *Minkan bikō roku* was reprinted in Osaka, and *Kyūkō benran* was published in Edo. Food shortages created a market for famine relief knowledge and the commercial publishers grasped the opportunity to offer intellectual commodities to their readers.

One such commodity was *Sojiki oshiegusa*, somewhat peculiar among famine plant manuals for circulating as a commercial imprint from inception. Commercial publishing was the preferred choice for the prolific agriculture writer Ōkura Nagatsune, who wrote for profit his entire life. He compiled at least 35 titles, 30 of which came to print, beginning with *Nōgu benri ron* 農具便利論 (Treatise on the Utility of Farm Tools, 1822) and ending with *Kōeki kokusan kō* 広益国産考 (Investigation into the Far-Reaching Benefits of National Products, 1859).[421] Through commercial publishing, he aimed to profit both financially, via

[417] For a list of Japanese imprints of Chinese titles, see Nagasawa Kikuya 長澤規矩也, *Wakokubon kanseki bunrui mokuroku* 和刻本漢籍分類目録, ed. Nagasawa Kōzo 長澤孝三, revised and enlarged (Tokyo: Kyūko shoin, 2006).

[418] In addition, it also completed quite a few printing projects for the Mito domain, and published many Buddhist texts of the Sōtō School, the largest of the three traditional sects of Zen in Japanese Buddhism. For the history of *Ryūshiken*, see Yokota Fuyuhiko 横田冬彦, *Nihon kinsei shomotsu bunka shi no kenkyū* 日本近世書物文化史の研究 (Tokyo: Iwanami shoten, 2018), 441–43.

[419] Ōta Chōgen, *Kyūkō kimon*.

[420] In seemingly noncommercial publications as well, e.g. *Kyūkō ryaku* (1833), *Nibutsu kō* 二物考 (Investigation on Two Objects, 1836), *Kyūkō mago no tsue* 救荒孫之杖 (Famine Relief Guide, 1837), etc.

[421] Many of his treatises are collected in *Nihon nōsho zenshū*. See *Nihon nōsho zenshū* vol.14, 15, 45, 50, 62, 68, 69 and 70. Yet none of his famine relief manuals including *Sojiki oshiegusa* is included.

advertisements for his bud and tree business to spur sales, and intellectually, by building his scholarship to attain official status and elevate his cultural standing.

Well-versed in commercial publishing, Ōkura maintained an extensive publishing and distribution network linking major publishing centres including Edo, Kyoto, Osaka and Owari. The printing project of *Sojiki oshiegusa* was implemented by 12 Edo publishers, who also produced Ōkura's two other famine relief manuals *Kamado no nigiwai* 竈の賑ひ (The Prospertiy of Life) and *Tokuyō shokkan* 徳用食鏡 (Examples of Economical Food Consumption).[422] Cross-advertisements in the three manuals aimed to boost sales and reach wider audiences. The author and the publishers made concerted efforts to achieve broad circulation.

Whether printed commercially or not, famine plant manuals often circulated through commercial distribution networks. In the seventeenth century, the shogun acquired *Jiuhuang bencao* via the Nagasaki book trade for his private library. Two centuries later, a student from the Tokyo School for Agricultural and Forest Studies (tōkyō nōrin gakkō 東京農林学校, predecessor to the present Faculty of Agriculture, Tokyo University) purchased a 1833 *Bikō sōmoku zu* from a bookshop near the Pure Land Sect temple Dentsūin 伝通院 in Tokyo.[423] In the same nineteenth century, across the East China Sea, the Ding family obtained a Japanese edition of *Jiuhuang bencao*, likely via brokers rather than through overseas travel as the bibliophile Yang Shoujing 杨守敬 (1839-1915) did.[424] Through these commercial channels, practical knowledge was transmitted across time and space, reaching diverse readers.

4.3 Conclusion

Whether a manual went for print depended on its funding, number of copies, size, content and target readers. In small quantities, handwritten copies were cheaper and quicker to produce, while printed editions incurred greater costs and time. However, for wide

[422] Five of the twelve publishers printed *Kamado no nigiwai* while another publisher plus the twelve printed *Tokuyō shokukagami.*

[423] The student recorded the purchase date (September 25, 1887) and place next to the colophon of one digitalized copy in the possession of the National Diet Library.

[424] The Ding family purchased quite a few Japanese and Korean books. They were said to have made every effort to collect books, from hidden treatises in royal palaces to foreign collections. Sun Jun 孫峻, "Preface," in *Baqianjuanlou shumu* 八千卷樓書目, ed. Ding Bing 丁丙 and Ding Lizhong 丁立中, Reprint, vol. 921, XXSKQS (Shanghai: Shanghai guji chubanshe, 2012). A diplomat in Japan between 1880 and 1884, Yang searched for ancient Chinese books there. For a list of the books he saw and bought, see Yang Shoujing 楊守敬, *Riben fangshu zhi* 日本訪書志 (Shenyang: Liaoning jiaoyu chubanshe, 2003).

circulation, printing was more efficient. Therefore, to reach a broader audience, printing was typically preferred, while for a limited readership, manuscripts could still preserve knowledge and constrain undesirable circulation. In either format, books with fewer pages and smaller sizes cost less.

Non-profit publishing played an important role in the circulation of famine plant manuals as famine relief was seen as a benevolent cause. Governments and officials were trusted with the responsibility of famine prevention and relief. They had privileged access to the financial and human resources required to produce famine plant manuals that were distributed to officials as administrative manuals. Meanwhile, institutions and individuals found it rewarding to disseminate such potentially life-saving knowledge, which could earn fame and status in this life, or good karma for the afterlife. The positive association between merit and copy number encouraged wide circulation of free imprints.

The benevolent cause could also became a money-making opportunity. By framing famine plants as curiosities for literati, foreign knowledge in scarcity, and recipes with moral values, commercial publishers expanded the readership for famine plant manuals.

5 The Reception of Famine Plant Manuals

When Ming famine plant manuals *Jiuhuang bencao*, *Yecai pu* and *Jiuhuangyepu buyi* were reprinted in Kyoto in 1716, the herbalist Matsuoka Gentatsu argued in the preface that these texts held relevance beyond their original purpose of famine relief:

"All plants with existence but without names, with names but without use, and not yet examined and differentiated by ancient people, can often be immediately recognized and identified (if the reader) looks for information according to pictures (in *Jiuhuangbencao, Jiuhuang yepu* and *Jiuhuang yepu buyi*) , and those treatises are also sufficient to solve century-old problems! Patients can benefit from food-medicine, scholars can expand their knowledge, agronomists can select appropriate species to grow, although titled *jiuhuang* (famine relief), they actually have a wide use, not merely a counterpart of unofficial histories that disseminate unwarranted teachings and boast of sophisticated talks."

"凡有物無名，有名未用，古人欠稽未辨者，往往按圖查說，立得辨識之，亦足以解千古之疑滯矣。病者以弘藥食之資，學者以取多識之益，農者以擇樹藝之種，雖曰救荒，而其用實博哉！非汎汎稗官野乘駕浮浪之説、夸葛藤之譚者比也。"[425]

Matsuoka asserted that the applicability and utility of the titles was much wider in scope. He underscored how, while created for famine relief, the reprinted manuals offered manifold value to heterogeneous readers and interest. By informing medicine and diet, expanding scholarly knowledge, and guiding agricultural practice, they could serve physicians, literati, officials and more based on specific needs and agendas. This strategic highlighting of diverse uses reflected a marketing awareness, but also spoke to the manuals' underlying versatility.

Building on these insignts, this chapter investigates the reception and application of famine plant manuals, especially with regard to famine administration and nature studies. It identifies officials, literati, herbalists, and physicians as key readers. Their interest derived from specific political, social, and cultural circumstances that made the manuals appealing. The analysis examines how these groups' priorities shaped their evaluation and use of the manuals.

[425] Matsuoka Gentatsu, "Preface."

5.1 Famine Administration

From the autumn of the third year of Kaei (1850) on, people in western Japan were suffering from food shortages.[426] The Shimabara Domain was also affected, probably due to damages caused by "heavy winds" in the seventh and eighth months.[427] The domain physician Kaku Sukeyuki's 賀来佐之 (1799-1857) younger brother Kaku Hika 賀来飛霞 (1816-1894), later known as one of the three most important herbalists in the late Edo Period, was ordered to investigate the famine foods recorded in *Kyūkō honzō* 救荒本草 (Materia Medica for Famine Relief) and *Kyūkō yafu* 救荒野譜 (An Album of Wild Herbs for Famine Relief).[428] He excluded plants that were cultivated in gardens and widely known to be edible by local people, as well as those not available within the domain. For the rest, he listed Japanese names, characterized their physical appearances, and specified processing methods. His works were completed in the fourth year (1851) and subsequently named *Kyūkō honzō ryakusetsu* and *Kyūkō yafu ryakusetsu*.

It was not clear whether and how Hika's works were used by domain officials. The investigation of local famine foods was likely intended to produce practical manuals that would circulate knowledge and promote consumption of edible plants in times of scarcity. This case showed that famine plant manuals were a source of bureaucratic knowledge that could play important roles in organizing hunger relief.

While a few titles such as *Kate mono* were compiled, published, and distributed as governmental efforts to combat food crises from the beginning, most famine plant manuals were created independently of state management. They became incorporated into famine administration through reproduction and negotiation in administrative discourse and practice. In addition to reprinting famine plant manuals as state-governing tools that has been discussed in chapter one and chapter three, this section investigates two administrative usages: incorporating edible plants in famine relief writings as a last resort, and discussing famine foods as an integral part of disaster relief in examinations. This demonstrates the integration

[426] Kaku Hika, "Editorial principles."
[427] Hirakawa Tsuyoshi 平川毅, "Kaku Hika cho *Kyūkō honzō ryakusetsu* no shōkai 賀来飛霞著「救荒本草略説」の紹介," *Ōita kenritsu rekishihakubutsukan kenkyū kiyō*, no. 12 (2011): 110.
[428] It was not clear why it was not Sukeyuki who undertook the task. Probably because he was occupied with the establishment of the domain's medicinal garden, which was sanctioned after he was appointed domain physician in 1842 and almost completed in 1853. Sukeyuki may have recommended his brother who at that time was practicing medicine in Sada Village to take over the job of researching famine foods, as together with him Hika learned herbalism from the prominent herbalist Yamamoto Bōyō in Kyoto and had a good command of plant knowledge. See Hirakawa Tsuyoshi, 115.

of famine plant knowledge into expanding bureaucratic relief schemes. As in Tokugawa Japan the responsibility of famine relief was often shouldered to various self-governing groups, this section will mainly focus on China.

5.1.1 Incorporation into Texts of Famine Administration

Discussions about famine administration proliferated in Ming-Qing China, as illustrated by numerous famine relief books compiled from the seventeenth to nineteenth centuries.[429] While scholars debate the definition and scope of the genre, they agree that late imperial China saw unprecedented efforts to produce and reproduce famine relief discourses.[430]

This section examines how scholar-officials discussed and incorporated information from famine plant manuals in Ming-Qing statecraft writings. These writings were part of the intellectual movement of *shixue* 實學 (pratical learning) and *jingshi*, which advocated concrete knowledge for governance. I argue that their approach prioritized cultivating grain-supplementary crops over directly consuming plants during crises.

The earliest known incorporation of famine plants into an administrative text was in *Huangzheng yaolan*, a collection of Ming documents on statecraft such as granary systems and water management, compiled by Yu Ruwei (*jinshi* 1571) in the later stage of his official career. In the final section of the book, Yu selected 55 plants from *Jiuhuang bencao*. In his introduction to this section, Yu stated: "Without five grains man can not live, when man exhausts five grains, man consumes chaffs, when man exhausts chaffs, man consumes roots of grass and leaves of trees, this is the strategy in an extremely helpless situation, (I) record it here for the sake of the region." The positioning of the famine plants at the end signifies their marginal diet role, and lower status in relief measures.

Yet pioneering incorporation of edible plants as famine foods into a famine relief book also pointed to a bureaucratic interest in cataloging and mobilizing natural resources for governance purposes.[431] Included were 31 herbs, 14 trees, 5 grains, 2 fruits, and 3 vegetables.

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[429] By Xia Mingfang's count, the number of known famine relief books amounted to 476, with 79 Ming titles and 368 Qing titles. Xia Mingfang, "Xuyan: qingmo minchu yiqian zhongguo huangzhengshu kaolun 序言：清末民初以前中國荒政書考論," 9. Ju Mingku's research showed that except a few titles such as *Huangzheng congyan* (1529), most of the Ming famine relief books were compiled in the seventeenth century. Ju Mingku 鞠明庫, "Shilun mingdai huangzheng shiji de jiazhi 試論明代的荒政史籍及其價值," *Tianfu xinlun*, no. 6 (2008): 127–31.

[430] Xia Mingfang, "Xuyan: qingmo minchu yiqian zhongguo huangzhengshu kaolun 序言：清末民初以前中國荒政書考論."

[431] Francesca Bray, "Instructive and Nourishing Lanscapes: Natural Resources, People, and the State in Late Imperial China," in *A History of Natural Resources in Asia: The Wealth of Nature*, ed. Greg Bankoff and Peter Boomgaard (New York: Palgrave Macmillan, 2007).

As the introduction indicated, emphasis lay on herbaceous plants and woody trees. Only 14 of the selected plants were new additions in *Jiuhuang bencao*, disproportionately few considering that 276 of its 414 plants were novel. This implies a preference for augmenting existing knowledge over investigating new plants. The original order was largely kept, except that *yanmai* was moved from before to after *baizi*, likely an accidental displacement without epistemological intent. While original texts were retained, phonetic notations, references to medicinal uses and all images were excluded. Framing edible plants for famine administration focused on their edible uses and excluded irrelevant philological and medicinal information. The texts alone were thought to contain all other essential information, reflecting a dominant textual culture in statecraft writings.

Huangzheng yaolan's abridgement and incorporation of *Jiuhuang bencao* inspired the Japanese physician Takebe Seian to compile his own famine plant manuals *Minkan bikōroku* and *Bikō sōmoku zu*. This contributed to circulating famine plant manuals and developing the genre. However, the comprehensive integration of both *Jiuhuang bencao* and *Yecai pu* into the influential encyclopedia *Nongzheng quanshu* proved even more impactful in expanding the readership of famine plant manuals and establishing famine plants as part of famine administration.

The conern for famine relief in *Nongzheng quanshu* reflected and aligned with the broader *shixue* intellectual movement surging to prominence in the seventeenth century.[432] *Shixue* emerged as a self-conscious scholastic movement among literati elites in response to the mounting political crises, economica instability, and social upheaval faced by late Ming China. This pragmatic intellectual trend had at its core the urgent aim of advancing useful, practical knowledge across spheres that could provide substantive solutions to the myriad pressing problems of the times, rather than indulging in further abstract philosophical discourse or metaphysical inquiries see as ultimately inconsequential to strengthening governance over society and relieving the suffering of common people.

Thus, *shixue* adherents like Xu Guangqi focused intently on expanding empirical investigations into applied knowledge surrounding statecraft, science, and technology.[433] In

[432] For an overview of the *shixue* intellectual movement, see Ge Rongjin 葛荣晋, ed., *Zhongguo shixue sixiangshi* 中國實學思想史 (Beijing: Shoudu shifan daxue chubanshe, 1994).
[433] On Xu Guangqi's association with *shixue*, see Catherine Jami, Engelfriet, and Gregory Blue, eds., *Statecraft and Intellectual Renewal in Late Ming China: The Cross-Cultural Synthesis of Xu Guangqi (1562-1633)* (Leiden: Brill, 2021).

particular, Xu extensively compiled writings expounding on agricultural technologies. After his death in 1633, these writings were edited, revised, and compiled into *Nongzheng quanshu* by a group of scholars headed by Chen Zilong 陳子龍 (1608-1647).[434] The incorporation of two famine plant manuals reflected shared priorities among Xu's intellectual circle.[435] More than just personal interest, mobilizing practical plant knowledge for famine relief resonated with *shixue*'s wider mission to advocate welfare and social harmony through scholarship grounded in veriable evidence.

Spanning 60 *juan*, *Nongzheng quanshu* dealt extensively with agricultural administration, with *huangzheng* (famine administration) comprising the largest section from *juan* 43 to *juan* 60, indicating its perceived importance. After 3 *juan* of general discussions on famine relief, 14 *juan* were dedicated to *Jiuhuang bencao* while 1 *juan* to *Yecai pu.* The inclusion of both works, likely influenced by their joint reproduction in the 1555 edition which seemed to be the master copy of *Nongzheng quanshu*, reflected a continuing attempt to comprehensively include knowledge on both northern and southern famine plants.

The original two-*juan Jiuhuang bencao* was fragmented into 14 *juan.* This rearrangement may have aimed to balance the lengths of sections for publishing convenience, at the expense of disrupting the original order and connections. Morever, the sequence of individual plants saw significant reshuffling, especially at the starts of new *juan*. For instance, the very first entry in *Jiuhuang bencao* was changed from *cijicai* to *yeshengjiang*.[436] The adjustment of the entry order did have consequences. The originally no.318 *lameihua* was inserted between the no.313 *qingtanshu* and the no. 315 *tenghuacai*, resulting in the omission of the no.314 *shanqingshu.* While the rationale is unclear, this obscured the original differentiation between existing and newly documented plants. It was difficult to determine who made the rearrangement and why. But even if Xu himself intentionally caused deficiencies in the classification, it would not have concerned him, as he prioritized practical application over preserving *Jiuhuang bencao*'s knowledge system.

The concern about famine administration was rooted in the ever-present threat of hunger that hunted late Ming China, a combined result of high population density, pervasive

[434] Francesca Bray and Métailié George, "Who Was the Author of *Nongzheng Quanshu*?," in *Statecraft and Intellectual Renewal in Late Ming China: The Cross-Cultural Synthesis of Xu Guangqi (1562-1633)*, ed. Catherine Jami, Peter Engelfriet, and Gregory Blue (Leiden: Brill, 2001), 322–23.
[435] Bray and George, 323.
[436] For a detailed comparison of the order of the plants, see Zhu Su, *Jiuhuang bencao jiaoshi yu yanjiu*, 428–29.

commercialization, and increasing disasters.[437] However, Xu Guangqi was not merely writing on this topic as a humanitarian motivated by compassion. He was also approaching the subject from his vantage point as a devoted state servant, endeavoring to investigate practical solutions to help avert disasters and famines, and restore social stability and imperial order.

Regarding famine administration, Xu Guangqi belived that "prevention (of disastrous conditions) is the best strategy, preparation (against disasters) is (only) second-best, and (disaster) relief is a last resort."[438] While he recognized that it was virtually impossible to completely eradicate food shortages, he worked hard to introduce new famine crops such as sweet potatoes and turnips to Shanghai.[439] In a similar pragmatic spirit, he proposed "selecting superior plants from *Jiuhuang bencao* to plant in barren mountains, large marshes, and open fields in order to prepare for future years of food shortage."

To investigate which edible plants were most deserving of state promotion and cultivation, Xu read through *Jiuhuang bencao* closely and critically, making extensive comments and critiques on 55 entries based on his own empirical experience and hands-on experiments growing and consuming the plants under evaluation.[440] For example, in the entry of *xuancaohua* 萱草花 (*Hemerocallis fulva* L., commonly known as orange daylily) which was categorized as an herb with edible leaves, he made the following comments:

"Mr. Xuanhu says: its flowers, leaves and sprouts are all fine vegetables and not necessarily used for famine relief. Its roots can also be ground into powder in the same way as processing ferns. In recent years, there has frequently been hunger, mountain people often live on the plant, the people in the capital eat the tender shoots in the soil named *bianchuan.* I have tasted the flowers, leaves as well as sprouts."

"玄扈先生曰：花葉芽俱嘉蔬，不必救荒。根亦可作粉，如治蕨法。邇歲洊飢，山民多賴之。京師人食其土中嫩芽，名扁穿。花葉芽俱嘗過。"[441]

Xu drew from actual famine experience of subsisting on alternative plants to confirm the edibility of the plant in question. In particular, he took an empirical approach towards evidence, tasting plants himself rather than relying on secondhand accounts. This allowed him

[437] Bray and George, "Who Was the Author of *Nongzheng Quanshu*?," 357.
[438] Translation by Bray and Métailié, see Catherine Jami, Engelfriet, and Gregory Blue, eds., *Statecraft and Intellectual Renewal in Late Ming China: The Cross-Cultural Synthesis of Xu Guangqi (1562-1633)* (Leiden: Brill, 2021), 338.
[439] Bray and George, "Who Was the Author of *Nongzheng Quanshu*?," 333–34, 340–51.
[440] Probably in his Shanghai garden and Tianjin estate.
[441] Xu Guangqi 徐光啓, *Nongzheng quanshu jiaozhu* 農政全書校注, ed. Shi Shenghan 石聲漢 (Shanghai: Shanghai guji chubanshe, 1979), 1342.

to directly examine the accuracy and reliability of the records documented in the book, as well as investigate additional edible parts of plants that may not have been covered in the original text.[442]

According to Xu's comments, he personally tasted at least 32 different plants. Given the substantial number and wide range of plants he sampled, it seems reasonable to infer that Xu did not simply taste plants at random. Rather, he likely strategically chose to taste specific plants that were rumoured to have been consumed and successfully used to save lives during historical famines.

After direct experience ingesting the plants, Xu provided assessments of their suitability for consumption. Some of them were evaluated as good medicines or fine vegetables, thus "not necessarily just for famine relief". Yet he also deemed some plants inappropriate for consumption after tasting them himself.

In addition to assessing edibility, Xu Guangqi also took care to recorded alternative or regional names for the plants described in *Jiuhuang bencao.* But unlike scholars and herbalists who researched plant names through philological and lexicographical analysis, Xu preferred to learn these popular names from empirical experience and open-ended inquiries with commoners. Having been born and spent his first thirty years living in Shanghai, Xu possessed an intimate familiarity with the local dialects and terminology of his native region. He then travelled the country extensively as an official, relentlessly questioning peasants about specifics and details of plant names and properties. This was crucial because the existing names recorded in *Jiuhuang bencao* skewed heavily toward northern vernacular usages. To balance this bias and capture a fuller picture, Xu took pains to append the popular southern folk names alongside each entry based on the knowledge he absorbed during his travels and investigations (see Table 5-1).

Table 5-1 Xu Guangqi's Supplements of Southern Plant Names

Plant name in *Jiuhuang bencao*	Alternative name in *Nongzheng quanshu*	Scientific name
fuzigen 菖子根	*yangzigen* 秧子根	*Calystegia*
zhujiecai 竹節菜	*danzhuye* 淡竹葉	*Commelina communis*

[442] Xu noted some results of his tests also in *juan* 25. For example, the only edible bark was that of elms, and the only edible dried leaves were those of the Japanese pagoda tree.

dusaomiao 獨掃苗	*luozhou* 落帚	*Kochia scoparia*
meierdoumiao 眉兒豆苗	*biandou* 扁豆	*Lablab purpureus*
bobodingcai 孛孛丁菜	*huanghua* 黃花	*Taraxacum mongolicum*

Source: Based on Xu Guangqi's *Nongzheng quanshu.*

Xu Guangqi realized that not only did plant names vary widely between different regions of China, but the very properties and uses of the same species could dramatically change across geography. For example, he noticed that the *lusun* 蘆筍 (asparagus) grown in the north was edible while the southern variety of *lusun* was not. This led Xu to conclude that successfully applying knowledge about edible plants required a nuanced, localized understanding of growing conditions.

Through his extensive travels, Xu took interest in studying and documenting the different customs surrounding consumption of edible plants in regions beyond Henan where *Jiuhuang bencao* was originally compiled. The original text recorded that the pulp of bitter melon was edible once it riped to a yellow colour. But likely during his stay in Guangdong and Guangxi around 1596, Xu observed that southerners did not merely eat the ripe pulp, but also commonly consumed the raw fruit itself. As a tropical plant, bitter melon should have been more widely available in the warmer south and actually more often consumed by the southerners. Xu's discovery of this additional preparation method meaningfully expanded the known edible uses of the plant.

In Xu's vision, strategically planting famine crops was just one component of an integrated and diversified model of agriculture he promoted. Staple grains and cash crops still formed the crux of the cultivated field crops. However, Xu advised that any marginal or border lands around farms be productively utilized to cultivate supplemental plants that could serve as famine foods in times of shortage, or alternatively be harvested as commodities or additional foods in years with abundant harvests.[443] This approach of mixed farming had been raised by earlier agriculture writers such as Jia Sixie as well. Yet while previous authors had aimed to maximize economic profits through diversification, Xu had the more humanitarian goals of alleviating poverty and hardship amongst the peasantry. He understood that hunger

[443] Bray and George, "Who Was the Author of *Nongzheng Quanshu*?," 351.

and desperation could lead to societal instability, weakened defense against foreign incursion, internal rebellion, and even collapse of the dynasty itself.[444]

Unfortunately, despite Xu Guangqi's vigorous efforts to promote meaningful agricultural reforms, the entrenched crisis of the late Ming dynasty made systemic implementation impossible before its eventual downfall. Yet Xu's insights on strategically planting edible plants found influential supporters in later generations. His ideas would continue to shape Chinese strategies for maintaining food security.

The interest in the utilitarian and instrumental use of scholarship declined in the eighteenth century. As the Qing court turned more authoritarian and orthodox, many scholars turned to evidential studies that focused narrowly on philology and textual criticism. Yet in the early nineteenth century, practical statecraft took off again in late Qing. A group of statecraft thinkers, with Wei Yuan as one of the prominent figures, elaborated on the political, social and economic realities confronting them and searched for practical solutions. Building on previous famine relief treatises, scholar-official Yang Jingren 楊景仁 (1768-1828) reevaluated the role of famine plants in disaster prevention and preparation.

In 1823, one of the most devastating floods in the history of the Qing dynasty hit large parts of China. Starting from the second month, lasting rains saturated the middle and lower reaches of the Yangtze River. The areas hardest hit by the relentless downpours included the economically vital and densely populated Shanghai, the northern part of Zhejiang and the southern part of Jiangsu. Then in the sixth and seventh months, northern China endured similarly traumatic inundations, including the important political centre of *zhili*. In total, over 340 counties were at least partially submerged under floodwaters, with 172 counties officially declared disaster zones. The widespread devastation of land and loss of life from the 1823 floods has been considered by historians as a potential triggering cause of the "Daoguang Depression", a prolonged period of economic stagnation.[445]

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[444] Bray and George, 344.

[445] For the causes of the Daoguang Depression, see William T. Rowe, "Money, Economy, and Polity in the Daoguang-Era Paper Currency Debates," *Late Imperial China* 31, no. 2 (2010): 69–96. On the relation between the climatic cataclysm and the economy decline, see Li Bozhong, "The 'Daoguang Depression' and the 'Guiwei Great Flood': Economic Decline and Climatic Cataclysm in Early Nineteenth-Century Songjiang in a New Perspective," *Études Chinoises* 34, no. 2 (2015): 89–119. On the causes and socioeconomic effects of the flood, see Zhang Jiacheng 張家誠, "1823 nian (qing daoguang sannian) woguo teda shuizai ji yingxiang 1823 年（清道光三年）我國特大水災及影響," *Yingyong qixiang xuebao* 4, no. 3 (1993): 379–84. For the governmental disaster relief, see Yuping Ni and Martin Uebele, "Size and Structure of Disaster Relief When State Capacity Is Limited: China's 1823 Flood," *Australian Economic History Review* 59, no. 1 (March 2019): 24–54.

Motivated by the disastrous situation, Yang Jingren, serving in the Ministry of Justice in Beijing at the time, began investigating both ancient and contemporary writings on famine relief in early summer. He continued this investigation after resigning from office that winter and returning to his hometown Changshu, Jiangsu, where “all farmlands were flooded”. Members of the younger generation of his family assisted him in collecting and hand-copying useful information from miscellaneous writings. After months of research, Yang Jingren compiled and collated his findings into a 32-*juan* work titled *Chouji bian* 籌濟編 (Planning and Preparing for Famine Relief). He hoped that officials might learn disaster prevention strategies and famine relief measures from it, applying the lessons in times of need.

Yang Jingren began with the emperor’s decrees to set the tone, then provided a broad overview of famine relief principles, followed by sections outlining concrete relief measures in detail. Several *juan* were devoted to important supplementary topick like conducting rituals, moral education campaigns, and eliminating swarms of harmful insects and animals. Altogether thses sections constituted the substantial 25-*juan* core of famine administration. The next 5 *juan* focused on disaster prevention, including initiating water management and irrigation projects, advocating agriculture, and stockpiling surplus grains in granaries. The second last *juan* coverd secondary expediencies, specifically the cultivation and preparation of *zaliang* 雜糧 (literally miscellaneous grains, especially those beyond the standard “five grains”, but in the text referring to everything that satisfied hunger and could help sustain life). It was in this section that Yang discussed famine plants extensively. Finally, the work culminated with a *juan* conceptually linking famine relief efforst to firefighting, both ultimately meant to urgently preserve human life.

Within this meticulously constructed hierarchy, preparations involving famine plants ranked relatively low in importance, just as they had in Yu’s earlier *Huangzheng yaolan*. Cultivating and consuming *zaliang* was characterized as a mere “trivial” measure and “foolish thought” within the idealized administration system. Over the centuries, the notion of relying on emergency famine plants had remained secondary and supplementary, even as famines continued..

However, Yang Jingren’s work went a step beyond Yu’s in emphasizing that making alternative edible plants readily available was an essential minimum prevention measure, since preparation could never be enough for all contingencies. By pragmatically allowing that centralized relief efforts might fail to reach everyone in dire need during catastrophic famines,

Yang insisted that local supplemental foods must be prepared in advance as a safety net. To legitimize the value of specialized famine plant manuals, Yang deliberately collated excerpts on consuming edible plants into a meticulous chronological order.

He also carefully differentiated the passive act of simply identifying an edible plant from the active step of purposefully cultivating said plant. Yang further clarified that this particular *juan*'s purpose was to spur readers toward the latter. While existing manuals helped distinguish edible plants, *Chouji bian* exhorted its readers to take initiative in planting them.

Unlike Xu Guangqi, who had personally verified edible plants through direct empirical tasting and field investigations, Yang Jingren relied solely on scholarly textual research to select appropriate famine plants for his compilation. Interestingly, Yang drew his source information two manuals *Jiuhuang bencao* and *Yecai pu* which were both contained in *Nongzheng quanshu.* From *Jiuhuang bencao*, Yang culled a total of 86 plants: 33 herbs, 25 trees, 20 grains, 4 fruits, and 4 vegetables. From *Yecai pu*, Yang extracted 14 plants, 6 of which overlapped with selections from *Jiuhuang bencao.*

In selecting which plants to include, Yang placed emphasis on grains by retaining all 20 grains from *Jiuhuang bencao.* He also favoured plants that could supplement staple grains in some way, whether by mixing directly with rice, adding into congee, or grinding into a flour to make pancakes. For Yang, the idea of cosuming famine plants entirely on their own seemed rather unappealing. In hiw view, their value and palatability depended on properly supplementing the staple grains that comprised the core of the diet. Moreover, promoting sole reliance on substitute plants might encourage neglecting the all-important cultivation of grains themselves, which Yang understood as essential for eliminating food shortages.

To maximize the practical usefulness and universality of his compiled knowledge, Yang consicously omitted any plants that seemed peculiar to Henan or difficult to widely obtain. Instead, he gave preference to plants that were easy to pick and pluck by ordinary people.[446]

This pragmatic approach differentiated Yang's applied context of famine plant usage from the more technical realm of *bencao* studies. To this end, Yang deliberately eliminated storied medicinal plants with long pedigrees in *bencao* literature, including recurring prescriptions like *huangqi* 黃芪 (*Astragalus membranaceus* (Fisch.) Bunge and *A. membranaceus* (Fisch.) Bunge var. *mongholicus* (Bunge) Hsiao) and *jiegeng* 桔梗

[446] Yang Jingren 楊景仁, "Chouji bian 籌濟編," in *Zhongguo huangzheng quanshu* 中國荒政全書, ed. Li Wenhai 李文海 and Xia Mingfang 夏明方, vol. 4 (Beijing: Beijing guji chubanshe, 2004), 450.

(*Platycodon grandifloras* (Jacq.) A. DC.). He also removed any direct references to *bencao* altogether while adapting the content.

Later, the influential scholars Wei Yuan and He Changling collected and reprinted Yang's *Chouji bian* within their expansive work *Huangchao jingshi wenbian*, confirming that interest in famine plants aligned with the contemporary intellectual trend prioritizing practical statecraft. Then in 1879, amidst the devastating "Incredible Famine", Yang Jingren's grandson Yang Enhai 楊恩海 (fl. late nineteenth century) and great-grandson Yang Chongyi 楊崇伊 (1850-1909) presented *Chouji bian* to Emperor Guangxu. Recognizing its importance, the emperor issued decrees to reprint and distribute the treatise across the country as an official manual on administering famine relief.

This section showed that famine plant knowledge became integrated into famine administration discourses, especially in the late Ming and late Qing when governments struggled to mitigate food shortages through regular relief schemes. This integration transformed the vision of the famine plant manuals from instructing proper edible plant consumption to advising officials on diversifying agriculture and emergency preparation by cultivating certain supplemental crops. Yet across centuries, these famine plants persisted as secondary in relief schemes.

5.1.2 Articulating Famine Relief in Examinations

In late imperial China's stratified society, elite literati had limited opportunities to improve their social status and upward mobility outside the imperial examination system.[447] Performing well on the exams was thus critically important for ambitious candidates seeking prestige and official appointments. One of the major topics consistently tested in examinations was the vitally important government responsibility of administering effective disaster relief to alleviate famines and food shortages.

This was especially prominent during the third and final stage of the examinations known as the palace examination. The palace exam texted the examinee's competence to analyze policy problems and propose governance solutions, making famine response a frequent subject. The specific policy questions were carefully formulated and proposed by serving officials from the imperial court. However, the reigning emperor himself was alaso intimately

[447] Benjamin A. Elman, *Civil Examinations and Meritocracy in Late Imperial China* (Cambridge, Massachusetts ; London, England: Harvard University Press, 2013).

involved in scrutinizing the questions and selecting the final versions to be used for testing.[448] Thus the content of the examinations reflected not just the priorities of ministers, but more crucially, the direct intellectual and governance priorities of the ruler as well.

Throughout the Qing dynasty from 1646 to 1904, a total of 112 palace examinations were held. On each palace exam, examinees had to write extensive essays responding to a series of 3-6 policy questions.[449] Thorough analysis of the question contents reveals that a substantial proportion focused on matters related to famine prevention and preparation (see Table 5-2). This consistent preoccupation illustrates that both Qing emperors and their advisors considered sophisticated famine response to be a fundamental responsibility and marker of good governance.

[448] On the changing typology of policy questions in the Ming and Qing dynasties, see Elman, chap. 7.
[449] Liu Zhengwu 劉正武, "Qingdai dianshi cewen de fenqi jiqi yu xueshu de hudong 清代殿試策問的分期及其與學術的互動," *Zhejiang xuekan*, no. 3 (2020): 195–98.

Table 5-2 Qing Dynasty Policy Questions Pertaining to Famine in the Palace Examination, 1646-1904

Year	Topic
1673	Grain storage
1706	Grain storage
1742	Ever-normal granary
1748	Agricultural and sericulture; disaster relief
1760	Food supply
1763	Food supply
1771	Grain purchase and storage
1772	Grain storage
1775	Food policy
1780	Grain storage
1784	Grain storage
1787	Grain storage
1809	Grain storage
1832	Grain storage
1838	Grain storage
1845	Grain storage
1847	Grain storage
1856	Grain storage
1889	Famine relief

Source: Based on Liu Zhengwu's compilation of the palace examination topics. See Liu Zhengwu 劉正武, "Qingdai dianshi cewen de fenqi jiqi yu xueshu de hudong 清代殿試策問的分期及其與學術的互動," *Zhejiang xuekan*, no. 3 (2020): 195–202.

The majority of famine-related examination questions focused on the granary system, which was crucial for disaster relief. Analysis reveals highly repetitive topics, frequent appearance, and similarly worded questions across exams, indicating standardized question

patterns rather than responses to current events or policies.[450] For example, abuse and mismanagement of the ever-normal granary system was a recurring issue of concern for emperors. In the 1780 exam, the Qianlong Emperor raised doubts about officials compelling local populations into buying aged reserves when grain prices were low and selling new grains when grain prices were high.[451] Similarly in 1838, the Daoguang Emperor questioned the practice of imposing compulsory grain transactions on locals.[452] Both emperors asked for suggestions to maintain granary functioning without unduly burdening the people.

However, the famine questions posed on the 1889 palace examination diverged from the repetitive norm by responding directly to recent calamities. In that year, the court's priority concerns were providing disaster relief, securing fiscal resources, protecting border security, and promoting sericulture.

The prominence of disaster relief in 1889 reflected the succession of tragic catastrophes facing the Qing Empire in preceding years. Starting in 1882, annual flooding along the Yellow River occurred, wreaking havoc on communities along its banks. Then in 1888, flooding along the Lugou River reached unprecedented severity, with floodwaters drowning over 20,000 people were drowned in the northern regions.[453] That same year, incessant heavy rains in Shenyang led to the flooding of over 3.5 million *mu*, leaving great multitudes of refugees starving without food or shelter.[454]

On the twenty-first day of the fourth month in the fifteenth year (1889) of the Guangxu Emperor's reign, in *baohe dian* (Hall of Preserving Harmony) within the imperial palace, the emperor posed questions to the exmination candidates asking them to demonstrate and elaborate on their knowledge of famine administration principles and history.[455]

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[450] On the pattern of policy questions in the Song, see Fang Xiaoyi 方笑一, "Huangdi zhi wen: Songdai dianshi cewen jiqi moshihua jiaolü 皇帝之問：宋代殿試策問及其模式化焦慮," *Huadong shifan daxue xuebao*, no. 5 (2014): 1–9.

[451] QSL, Qianlong, 45/5/10, 1160: 803.

[452] QSL, Daoguang, 18/4/21, 380: 17-18.

[453] Shuili shuidian kexue yanjiuyuan 水利水電科學研究院, *Qingdai haihe luanhe dang'an honglao shiliao* 清代海河灤河檔案洪澇史料 (Beijing: Zhonghua shuju, 1981), 546.

[454] On an overview of the disasters and famines in the Guangxu reign, see Zhang Gaochen 張高臣, "Guangxuchao (1875-1908) zaihuang yanjiu 光緒朝（1875-1908）災荒研究" (PhD Diss., Shandong University, 2010).

[455] The date and place of the palace examination went through several changes during the Qing Dynasty. In early Qing, the palace examination was held in the third or fourth month. In a few cases it was held in the tenth month, e.g. in 1723 and 1724. In the Qinglong reign, attempts were made to standardize the date. In 1745, the date was changed to the twenty-sixth day of the fourth month, but it was finally settled on the twenty-first of the fourth month in 1761. From then on, the palace examination was held on that date except for a few times until the abolition of the civil examination in 1905. See Yu Aihua 于愛華, "Qingchao dianshi shijian kao 清朝殿試時間

"*Hongfan* lists food and commodities as the first two of the eight fundemental policies. In periods of peace and prosperity, harvest is good and seldom bad. Therefore, in *Wangzhi* (in the *Book of Rites*) there is the policy of saving three years' of grains, in Confucianism (*Mencius*) there are details about postponing the collection of two taxes (out of three). *Jiuhuang huomin shu*, who is the author and who does the supplement? *Jiuhuang bencao*, *Zhenghuang shilūe, Jiuhuang shiyi, Jiuhuang cehui, Zhuzhou canyi, Yecai pu*, and *Yecai bolu*, which is detailed and which is concise? Can you quote the most important points and list the easily distinguishable views?"

"洪範八政，食貨為先；平世三登，豐穰偶歉。故王制有餘三之政，儒家詳緩二之文。救荒活民書，撰者何人，補者何氏。救荒本草、拯荒事略、救荒事宜、救荒策會、煮粥參議、野菜譜、野菜博錄諸書，孰詳孰略。能援其最要之說，舉其易辨之條歟。"[456]

Candidates were expected to draw upon classical texts and historical sources to demonstrate problem-solving skills applied to practical governance issues. Regarding the specific issue of disaster relief, candidate were prompted to reflect on and analyze several key famine relief books compiled between the Song and Ming dynasties. Notably, this authoritative list included important famine plant manuals such as *Jiuhuang bencao*, *Yecai pu* and *Yecai bolu*. The expectation that candidates should demonstrate expertise on the details and evaluations of these manuals signaled their integration into essential statecraft knowledge.

The top three essays displayed substantive knowledge of the manuals.[457] The principle graduate Zhang Jianxun 張建勛 (1848-1913) critiqued *Yecai pu* as being too brief and concise to provide sufficient guidance, and *Yecai bolu* being overly broad in scope for practical application. The second-place graduate Li Shengduo 李盛鐸 (1859-1937) purposefully grouped together the three famine plant manuals, which were originally separated out among a range of other famine relief writings. He argued that collectively they expanded the

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考," *Qingshi luncong*, no. 1 (2015): 364–71. Similarly, it was in 1789, also during the Qianlong reign, that it was established to hold the palace examination in *baohedian.*

[456] QSL, Guangxu, 15/4/21, 269: 14. *Jiuhuang huomin shu* by Dong Wei in the Southern Song Dynasty (1127-1279), *Zhenghuang shilüe* by Ouyang Xuan in the Yuan Dynasty (1271-1368), *Jiuhuang shiyi* 救荒事宜 (Famine Relief Schemes) by Zhou Kongjiao 周孔教 (1548-1613) and another eponymous work by Zhang Bi 張陛 (fl. 1640), *Jiuhuang cehui* 救荒策會 (Collected Strategies for Coping with Famine) by Chen Longzheng 陳龍正 (1585-1645), and *Zhuzhou canyi* 煮粥參議 (Advice on Gruel Making) by Chen Jiru 陳繼儒 (1558-1639) in the Ming Dynasty. All the famine relief books were listed in a chronological order, except that *Jiuhuang bencao* was placed before the Yuan book.

[457] Zhong Guangjun 仲光軍 et al., eds., *Lidai jindian dianshi dingjia zhujuan* 歷代金殿殿試鼎甲朱卷, vol. 2 (Hebei: Huashan wenyi chubanshe, 1995), 1010–18.

conceptual range and depth of famine relief options. The third-place graduate Liu Shi'an 劉世安 (1852-?) gave a short introduction overviewing each specified manual and provided details on their respective authors. He then managed to compare and contrast the key contents among the three plant-focused works.

The demonstrated familiarity with famine plant manuals across all three top examination essays suggests that actionable knowledge circulated among educated people who aimed to pursue bureaucratic careers through the civil service examinations. One likely study method for candidates to gain this expertise was relying on specialized reference materials produced for examination preparation. Although most preparation aids focused narrowly on crafting the rigid eight-legged essay structure or composing examination poetry, a small number of titles provided guidance for handling policy topic questions, as would be encountered on the palace exam. These targeted preparation manuals had increased in availability during the Guangxu era, owing especially to the growing accessibility of lithographic printing technology.[458] The famine plant manuals were likely listed under the larger category of agricultural administration when covered in exam preparation materials.[459]

In the late nineteenth century, discussions and essays on famine relief and preparation extended beyond just the civil examinations into contests held by *gezhi shuyuan* 格致書院 (Academy for the Investigation of Things and Extension of Knowledge). This academy was officially founded in 1876 under the initiative of Sir Walter Henry Medhurst (1822-1885), the then British consul stationed in Shanghai.

Beginning in 1885, essay contest were initiated by John Fryer (1839-1928) and Wang Tao 王韜 (1828-1897). The goal was to attract classically educated literati and provide incentive for them to apply their scholarly talents to analyzing foreign issues outside the traditional examination themes.

In 1889, the same year as the palace examination discussed previously, Zeng Guoquan 曾國荃 (1824-1890), Nanyang Minister and Viceroy of Liangjiang, prepared three essay topics for the academy's special autumn contest.[460] Under the category of *shiwu* 時務 (current

[458] Cao Nanping 曹南屏, *Yuedu bianqian yu zhishi zhuanxing: Wanqing keju kaoshi yongshu yanjiu* 閱讀變遷與知識轉型：晚清科舉考試用書研究 (Beijing: Shehui kexue wenxian chubanshe, 2018), 90–92. For an overview of materials on policy questions, see Liu Haifeng 劉海峰, "'Cexue' yu kejuxue '策學'與科舉學," *Jiaoyu xuebao* 5, no. 6 (2009): 117–19; Cao Nanping, *Yuedu bianqian yu zhishi zhuanxing: Wanqing keju kaoshi yongshu yanjiu*, 91.
[459] Liu Haifeng, "'Cexue' yu kejuxue," 118.
[460] The special contest was held twice a year from 1889 to 1893 and topics in the autumn contest were always assigned by Nanyang Minister.

affairs), Zeng specifically prompted candidates to elaborate in detail their proposals for proper measures to prepare for and relieve famines.[461] The inclusion of this famine relief topic clearly indicated that famine featured as an urgent issue demanding attention from contemporary officials.

The second prize winner Yang Yuhui 楊毓煇 (fl. late nineteenth century), a native of Dapu, Guangdong who held the *xiucai* degree, made specific mention of *Jiuhuang bencao* as part of his proposed schemes. After describing recent disasters and famines and summarizing historical relief measures, Yang argued that a key preparation scheme against future famines was promoting increased land productivity. To that end, he proposed that the widespread cultivation of plants should be encouraged and popularized.[462] He specifically cited *Jiuhuang bencao* to advocate for the cultivation of plants that could serve as famine food sources.[463] Building on this, he then advocated that non-arable lands should be made full use of by being planted with extensively with useful herbs and trees, under the planning and supervision of the government.[464] Yang's promotion of expanding plant cultivation closely echoed the agricultural reform proposals of Xu Guangqi.

Indeed, Yang was likely introduced to *Jiuhuang bencao* through the mediation of *Nongzheng quanshu*, as evidenced by his mistaken attribution of the work's authorship to Prince Xian of Zhou. This mirrored the same error made by Xu Guangqi, again confirming the pivotal role of *Nongzheng quanshu* in disseminating famine plant knowledge.

Controversies over the actual usefulness and limitations of famine plant manuals persisted since their initial emergence.

In the late sixteenth century, while the commercial publisher Hu Wenhuan was reprinting and disseminating *Jiuhuang bencao* in the Jiangnan region, he underlined the significant limits of famine plant manuals for readers. Hu pointed out that potential readers may find themselves unable to accurately recognize the plants described, successfully collect edible plants, or properly process the plants according to the manual's instructions.[465] Therefore, the

[461] Shanghai Library, ed., *Gezhi shuyuan keyi* 格致書院課藝, vol. 1 (Shanghai: Shanghai kexue jishu wenxian chubanshe, 2016), 29.
[462] Shanghai Library, ed., *Gezhi shuyuan keyi* 格致書院課藝, vol. 2 (Shanghai: Shanghai kexue jishu wenxian chubanshe, 2016), 188, 193–94.
[463] Shanghai Library, 2:194.
[464] Shanghai Library, 2:194.
[465] Hu Wenhuan, "Preface."

ultimate usefulness of such plant-focused famine relief books inherently depended on individual readers' abilities to correctly match actual plants with textual descriptions and pictorial representations, the physical accessibility of plants in their local environments, and the material availability of necessary food processing tools and equipment. In other words, the usefulness of famine plant manuals was not rooted as an intrinsic quality contained in the content of the books themselves. Rather, their utility represented only a potential that waited to be realized through active efforts by the readers seeking to apply the knowledge.

However, not many literati found this specialized potential particularly appealing. Even Hu Wenhuan himself clearly indicated that merely equipping oneself with textual knowledge on edible plants was only marginally better than waiting helplessly for death by starvation, or accidentally dying from consuming poisonous plants out of desperation.[466] The scholar-official Qi Junzao 祁雋藻(1793-1866) represented a commonly held view that ranked famine plant manuals as a last resort within a hierarchy of famine prevention and preparation approches. Qi argued that only when no other alternatives could be found should consulting and attempting to apply the practical knowledge contained in manuals such as *Jiuhuang bencao* and *Yecai bolu* be considered.[467] In his view, this was only slightly better than turning to recipes of wholly abstaining from eating grains. While Qi strongly prioritized the promotion of mutual community assistance and relief efforts on the local level over reliance on centralized state intervention and distribution of relief.[468] This diminished view of governmental famine relief should be understood within the broader context of the Qing state's declining capacities and credibility in providing adquate disaster relief by the late eighteenth century. This mounting ineffectiveness foreshadowed the eventual collapse of imperial famine relief schemes by the mid-nineteenth century, as both internal and external threats forced the state to shift attention and resources away from famine relief policies.[469]

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[466] Hu Wenhuan.

[467] Qi Junzao 祁雋藻, *Mashou nongyan* 馬首農言, XXSKQS, 1855. Qi Junzao was born in Shouyang, Shanxi. When his mother passed away in 1834, he returned to Shouyang to observe a mourning period where he compiled *Mashou nongyan* in 1836. For a brief introduction to *Mashou nongyan*, see Gao Enguang 高恩廣 and Hu Fuhua 胡輔華, "*Mashou nongyan* pingjie 《馬首農言》評介," *Shanxi nongye kexue*, no. 3 (1987): 36–39; Miao Qiyu 繆啓愉, "*Mashou nongyan* de zhongzhi tedian he mingwu kaosuo 《馬首農言》的種植特點和名物考索," *Zhongguo nongshi* 17, no. 1 (1998): 89–98.

[468] Qi Junzao, *Mashou nongyan*.

[469] On the decline of the granary system in late Qing, see R. Bin Wong, "Decline and Its Opposition, 1781-1850," in *Nourish the People: The State Civilian Granary System in China, 1650-1850*, ed. Plerre-Etienne Will and R Bin Wong (Ann Arbor: University of Michigan Press, 1991), 75–92; Wu Siwu 吳四伍, *Qingdai cangchu de zhidu kunjing yu jiuzai shijian* 清代倉儲的制度困境與救災實踐 (Beijing: Shehui kexue wenxian chubanshe, 2018).

Furthermore, extensive reliance on famine plant survival strategies in times of crisis could serve to highlight failures of preventative and relief measures, indirectly challenging state credibility. As a form of counteraction, the editors of *Shoushi tongkao* 授時通考 (Compendium of Works and Days) intentionally eliminated the entire section concerning *Jiuhuang bencao* when they incorporated *Nongzheng quanshu* into their imperial commissioned work in 1742. They explained the elimination by claiming that that famine plants were of absolutely no practical importance within a well-governed state:

"*Nongzheng quanshu* recorded as many as more than four hundred plants from *Jiuhuang bencao* by Ming Prince of Xian, originally with benevolent intention, but if the state is well managed, there will be no worry of starvation. If (people) can not be full with chaffs and husks and only linger on with last breaths of life, how can they have time to investigate illustrations and texts about the qualities, tastes and plucking and processing methods (of edible plants)? This is like ringing the bell when saving people from being burned and drowned and discussing meat when netting birds and digging for rats. Also eliminated."

"又農政全書載明周憲王救荒本草多至四百餘種，固仁者之用心，然使政事克修，自可無憂捐瘠，若令糠覈不飽，延喘須臾，何暇按圖考傳今日性味若何，烹茇若何，是鳴和鸞於救焚拯溺之時而論殽胾於羅雀掘鼠之日也，亦從刪省。"[470]

This omission was quite symbolic and political in nature. The editors imagined two extreme circumstances to make their case. They argued that if famine plant manuals were useless both wen the state was perfectly well-run, and when the populace was so severely reduced in desperation that they lacked time and energy to study plant traits and processing techniques in any detail, then such manuals must be fundamentally useless under any circumstances. This rhetoric of simplification willfully ignored the complex and dynamic realities of how famines develop over time. However, it did strongly underscore an ideal of perfect governance that could completely prevent food supply crises from arising at all, diverging starkly from the views of many literati.[471]

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[470] Ortai 鄂爾泰 and Zhang Tingyü 張廷玉, eds., "Editorial Principle," in *Shoushi tongkao* 授時通考, 1742. *Shoushi tongkao* did not wipe out *Jiuhuang bencao* completely, though. In the entry *yiyiren* 薏苡仁 (*Coix lacryma-jobi* L. var. *ma-yuen* Stapf), an excerpt from *Bencao gangmu* cited *Jiuhuang bencao* for alternative names. In another entry *li* 藜 (*Chenobodium album* L.), another excerpt from *Bencao gangmu* cited *Jiuhuang bencao* for the different tastes of the different kinds of the plant. Interestingly, *Shoushi tongkao* did not exclude *Yecai pu,* probably because *Yecai pu* did not have *jiuhuang* in the title or specify the edible use for famine relief in the description part.

[471] For example, Shen Sui argued that the best situation was when poor harvest did not result in disaster, the second best was when there was famine but it was relieved and the worst was when there was famine despite good harvest. See Shen Sui, "Preface."

This divergence of perspectives emerged most evidently between officials writing practical governance instructions meant to address technical statecraft problems, versus those writing more symbolically to present agriculture as an idealized metaphor for a well-run state. *Shoushi tongkao*, which was commissioned by the Qianlong Emperor in 1737 and then formally presented to the imperial throne in 1742, serves as a prime example. This expansive work was explicitly devoted to glorifying the wise reign and achievements of the Qianlong Emperor. Accordingly, propagandistic symbols representing good governance can be most easily discerned throughout the sections dealing with agricultural administration and grain supplies. Any contents that may more realistically challenge or undermine the supposed capacities of the imperial state apparatus to prevent crises found no place in such a selectively optimized work.

For famine plant manuals to be effective as practical relief measures accessible to the general populace, the core knowledge they presented needed to be usable in equipping people already in danger of starvation with actionable information about recognizing, collecting, and processing edible plants. Thus, despite the varied symbolic uses of agriculture in political rhetoric, famine plant manuals ultimately functioned by encouraging self-reliance at the individual level when centralized governance failed. Therefore, their very existence as a knowledge genre intended for famine relief could suggest deficiencies of official policies, regardless of whether such works were notionally meant for commoners or officials.

In this context, the willingness of the *Shoushi tongkao* editors to eliminate famine plants reveals the imperative to uphold propagandistic representations of state efficacy over acknowledging practical deficiencies. This removal allowed agriculture to be positioned more symbolically, rather than technically, within politically optimized works.

5.2 Nature Studies

While relatively little concrete evidence has been left about the actual use of famine plant manuals among commoners, quite a few sources have suggested that naturalists showed keen interest in consulting and studying thses manuals. By naturalists, I refer specifically to people who had developed or acquired extensive knowledge, be it pharmaceutical, agronomical, or geographical, about natural or artificial things. Ming scholar Jiao Hong 焦竑 (1540-1620) exclusively singled out naturalists as a group that actively consulted *Jiuhuang* bencao, without

mentioning other types of readers.[472] Later, scholar-official Zhou Lianggong 周亮工 (1612-1672) also notably underlined the special prominence of naturalists by prioritizing their role as users of *Jiuhuang bencao* over direct use by famished people.[473]

This section will further investigate the elaboration on famine plants by herbalists, focusing in particular on two prominent figures in the development of materia medica studies in premodern China and Japan. These two individuals are Li Shizhen and Ono Ranzan. Li Shizhen, hailed by Joseph Needham as the greatest naturalist in Chinese history, left an indelible mark on the pharmaceutical landscape through his *Bencao gangmu,* widely considered the crowning culmination of the Chinese pharmaceutical tradition, not only in late imperial China, but also in Tokugawa Japan. Ono Ranzan dominated the intellectual field of natural studies in the eighteenth- and nineteenth-century Japan through his active participation in diverse cultural circles and his extensive network of *honzōgaku* scholars.[474] I argue that they both played pivotal roles in the circulation of famine plant knowledge, as their elaborations and commentaries authorized and promoted the incorporation of knowledge on famine plants into medicinal literature. Their scholarly assessments also crucially influenced the understanding of famine plants within contemporary and later nature studies.

5.2.1 Famine Plants in *Bencao* Studies

Born into a family of medical practitioners in Qizhou (now in Hubei Province), Li Shizhen received a classical education in preparation for civil examinations, with the hope of building a career in officialdom which would in turn raise the social status and prestige of himself and his family.[475] However, this hope was never realized, as he never managed to

[472] Jiao Hong 焦竑, *Guochao xianzheng lu* 國朝獻征錄, 1616. *Guochao xianzheng lu* is a 120-*juan* compilation of biographies of Ming figures printed in 1616. It depicts around 3500 figures who were active between Hongwu and Wanli and of different political and social status, and collects historical materials from various sources, including epitaphs, imperial annals, local gazetteers and unofficial histories. It was a major source of *Ming shi*. *Xianzheng lu* was banned during Qianlong era.

[473] Zhou Lianggong 周亮工, *Laigutang ji* 賴古堂集, 1675. Although Zhou intended to emphasize that *Jiuhuang bencao* was useful for famished people as well as for *bowuzhe*, his expression betrayed that *Jiuhuang bencao* was, first, a reading for the latter and second, a lifesaver for the former. Zhou's knowledge about *Jiuhuang bencao* may be partially explained by the fact that he was a native from Xiangfu (in current Kaifeng), Henan, where the compiler Zhu Su lived and published the work.

[474] Needham, *Science and Civilisation in China: Biology and Biological Technology*, 6:308–29; Federico Marcon, "Nature in Cultural Circles," in *The Knowledge of Nature and the Nature of Knowledge in Early Modern Japan* (Chicago: University Of Chicago Press, 2015), 179–206.

[475] On Li's life, see Carla Nappi, "Conception: Birth of a Naturalist," in *The Monkey and the Inkpot: Natural History and Its Transformations in Early Modern China* (Cambridge, Mass.: Harvard University Press, 2010), 12–32.

advance beyond the lowest *xiucai* degree in the examination system.[476] After this disappointment, he chose to abandon his civial service examination studies altogether. Instead, he decided totake up the family trade of practicing medicine. Li briefly served in the court of Prince Chu and later at the Imperial Academy of Medicine in Beijing, before returning to his hometown to devote himself to practicing medicine and writing treatises on various aspects of pharmaceutical knowledge. Unfortunately, most of Li's writings on medical subjecs ended up lost to history, with only a scant few pieces on pulse diagnosis managing to survive.

Fortunately however, Li Shizhen's masterpiece *Bencao gangmu* survived as a posthumous publication printed in 1596. It reportedly took Li Shizhen over thirty years of tireless reading, directly observing, collecting specimens, interviewing farmers and folk healers, and extensively travelling across much of southern China in order to compile the tremendously detailed and meticulously organized information contained within this great work. The compendium ultimately contained a staggering 1,892 medicinal drugs, with each entry detailing the substance's morphology, geographic habitat and distribution, lifecycle, pharmaceutical properties, and practical utilizations. This expansive work was hailed as the crowning achievement in Chinese pharmaceutical natural history, marking a turning point in the Chinese *bencao* tradition.[477] This is true not only because it surpassed all previous *bencao* literature in breadth and sophistication, but also because the majority of *bencao* literature in produced during the seventeenth and eighteenth centuries derived from the knowledge compiled in Li's work, underscoring its unprecedented influence.[478] This widespread circulation of excerptd and commentaries on *Bencao gangmu* in turn served to expand discussions of famine plants and their uses within later medical discourses.

In compiling his magnum opus, Li drew upon over 10,000 reference works, including *Jiuhuang bencao* and *Yecai pu*, the only two famine plant manuals produced by that point.[479]

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[476] On the low pass rate in the civil examinations in late imperial China, see Benjamin A. Elman, "Circulation of Ming-Qing Elites," in *Civil Examinations and Meritocracy in Late Imperial China* (Cambridge, Massachusetts ; London, England: Harvard University Press, 2013), 95–125.

[477] Needham, *Science and Civilisation in China: Biology and Biological Technology*, 6:321.

[478] Needham, 6:321; Nappi, "Conception: Birth of a Naturalist," 14; Bian, *Know Your Remedies: Pharmacy and Culture in Early Modern China*, 20.

[479] In the preface of *Bencao gangmu*, it was claimed that Li had examined more than eight hundred works to compile *Bencao gangmu*. See Wang Shizhen 王世貞, "Preface," in *Bencao gangmu* 本草綱目, by Li Shizhen 李時珍 (Beijing: Zhongyi guji chubanshe, 1994). Recent studies on the citations show that more than one thousand treatises were cited. For detailed analysis, see Hou Youjuan 侯酉娟, "Jiyu *Bencao Gangmu* yinwen de suyuan yu fenxi yanjiu 基於《本草綱目》引文的溯源與分析研究" (PhD Diss., Chinese Academy of Chinese Medical Sciences, 2019).

This illustrates that he fully acknowledged these particular works as established reliable sources, and his decision to disseminate key selections in his own enormously influential work served to further enhance the credibility and visibility of plant knowledge derived from these famine relief manuals.

Although Li seems to have cited the two works from a joint 1555 reproduction, he interestingly categorized them differently. While Li listed *Jiuhuang bencao* under *bencao*, which comprised around eighty-percent of his source references, demonstrating the pharmacological focus, he categorized *Yecai pu* under the different heading of hundred schools of thought. This reflects Li's discernment of a divergence between the two works in terms of their primary composition and emphasis of knowledge.[480]

Upon examining the entries in *Yecai pu* in detail, Li discovered that it in fact contained relatively sparse substantive information about plants themselves, recording only four localized plant names in total (see Table 5-3).

Table 5-3 Reproduction of *Yecai pu* in *Bencao gangmu*

Entry in *Bencao gangmu*	Alternative name from *Yecai pu*
Puruo 蒲弱	*Puergen* 蒲兒根
Xingcai 荇菜	*Yezicai* 靨子菜
Fanbaicao 翻白草	*Tianou* 天藕
Luhuo 鹿藿	*Yelüdou* 野綠豆

Source: Based on Li Shizhen's *Bencao gangmu.*

In comparison, Li Shizhen found that *Jiuhuang bencao* contained significantly richer and more extensive botanical information.[481] For at least 35 plants covered in his compendium, Li referred to *Jiuhuang bencao* for their popular names, botanical descriptions and preparation methods. He seldom quoted word for word, instead tending to paraphrase and synthesize the original text into his own writing style and structure. He also pointed out mistakes in *Jiuhuang bencao*, claiming that Zhu Su had mistaken *jingtian* 景天 for *fojiacao* 佛甲草 and *yangshizao* 羊矢棗 for *junqianzi* 君遷子.[482]

[480] Li seemed to have also accessed an abridged edition of *Jiuhuang bencao* and considered the huge amount of deletion unreasonable. Li Shizhen 李時珍, "Editorial Principle," in *Bencao gangmu* 本草綱目 (Beijing: Zhongyi guji chubanshe, 1994), 5.
[481] Nappi, *The Monkey and the Inkpot*, 31.
[482] Li Shizhen 李時珍, *Bencao gangmu* 本草綱目 (Beijing: Zhongyi guji chubanshe, 1994), 595, 756.

Perhaps most tellingly, Li Shizhen's *Bencao gangmu* contains 4 entries that were created solely by comprehensively summarizing content directly from *Jiuhuang bencao*, with few substantive additions from other sources. These four entries covered pot marigold in the herbs section, barnyard grass in the grains section, and *Potentilla discolor* and bitter melon in the vegetables section. The common thread between all four plants is that they were new additions in *Jiuhuang bencao*, barely covered or carefully investigated in any other previous pharmacological writings.[483] Therefore, for each of these four entries, Li Shizhen used an exceptionally limited selection of additional references beyond directly citing *Jiuhuang bencao*. For both the entries on barnyard grass and bitter melon, he relied exclusively on *Jiuhuang bencao*.[484] For *Potentilla discolor*, he made just one additional citation to *Yecai pu* besides *Jiuhuang bencao*. Only for pot marigold did he make a citation to one existing pharmacopeia, namely *Tujing bencao*. Yet what is most revealing in the pot marigold example is that Li specifically chose to create the entry by extracting from *Jiuhuang bencao*, despite the fact that *Tujing bencao* represented a much older, longer established, and traditionally authoritative *bencao* text. This clear preference for *Jiuhuang bencao* thus seems to further demonstrate that Li considered this specialized famine relief work contained crucial original knowledge that was irreplaceable by other sources.

However, it is also notable that Li Shizhen only relied upon *Jiuhuang bencao* so heavily as an undisputed primary source when all other previous pharmacological writings clearly could not offer highly substantive, relevant information on the plant in question. There were certainly many examples of plant entries covered in his compendium that had also been described in *Jiuhuang bencao*, and yet Li chose not to cite or defer to the famine manual at all for those particular entries, instead likely finding better botanical descriptions and details in earlier materia medica.

Li Shizhen intentionally rectified the original entry names of these four plants, which were popular names often based on descriptive characteristics, replacing them with new names he considered more sophisticated, standardized, and scientifically appropriate.[485] For

[483] For *Potentilla discolor*, *Jiuhuang bencao* seemed to be the earliest record. For bitter melon, *Jiuhuang bencao* was the earliest to record its plant properties. In Song, the name *kugua* was mentioned in several Buddhist texts such as *Jingde chuandenglu* 景德傳燈錄 (Jingde Record of the Transmission of the Lamp). In Yuan, *putu* 蒲荼, the alternative name for bitter melon was listed in *Nanhai zhi*. But without descriptions about plant properties, it was difficult to identify whether they were referring to bitter melon.

[484] Li also discussed whether a plant recorded in *Xingcha shenglan* was bitter melon or not. But the book did not identify the plant and thus the descriptions could not be used to increase knowledge on bitter melon.

[485] Li Shizhen, "Editorial Principle."

example, the original entry name of *Potentilla discolor* in *Jiuhuang bencao* was *jituier* 鷄腿兒, comparing the tast of the plant's edible root to chicken legs. Li Shizhen pointed out that this name had limited usefulness, only being recognized in regional dialects rather than having broader currency. Thus he changed the name to *fanbaicao* 翻白草, more common in *bencao* literature.

Li also deliberately reclassified these plants, which may imply that he considered their roles and places in the contemporary material and intellectual worlds to be shifting over time. Both *Potentilla discolor* and bitter melon had originally been categorized as herbaceous plants in *Jiuhuang bencao*, but were recategorized as vegetables in *Bencao gangmu*. This likely reflects gradual changes in the practical culinary usages and food status of these plants, as they moved from obscure famine foods to more mainstream vegetable crops integrated into Chinese diet and cuisine over the intervening centuries between the two texts.

Bencao gangmu's classification of *Potentilla discolor* specifically as a vegetable seems particularly telling when contrasted with the simultaneous contemporary categorization of the same plant as a medicinal drug material in many local gazetteers of Li's era.[486] The gazetteers followed established materia medica traditions of recording medicinal plants as part of the valued tribute resources of that region.[487] Yet Li Shizhen emphasized documenting the genuine practical utilizations and consumption habits surrounding each plant. Beyond discussing *Potentilla discolor*'s roots as a supplement to stretch scarce grains during famine, Li notably also recorded the common edible everyday usage of its shoots and leaves as a vegetable, which local children would casually pick and eat raw as a snack.[488] This demonstrates Li's broadened scope of interest.

The shuffling classification of bitter melon tells a more interesting story about changing practices and knowledge. Li was not the first to categorize bitter melon as a vegetable rather than herb. In fact, in the early fourteenth century, *Nanhai zhi* 南海志 (Gazetteer of Nanhai) had

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[486] Mei Shoude 梅守德 and Ren Zilong 任子龍, eds., *Xuzhou zhi* 徐州志, vol. 5, Jiajing, 21; *Pingliang fu zhi* 平涼府志, vol. 5, Jiajing, 10–11; *Pingliang fu zhi* 平涼府志, vol. 8, Jiajing, 3–4; Fan Shen 樊深, ed., *Hejian fu zhi* 河間府志, vol. 7, Jiajing, 11–12; Du Yingfang 杜應芳, Chen Shiyan 陳士彥, and Zhang Wende 張文德, eds., *Hejian fu zhi* 河間府志, vol. 4, 1615, 32. *Potentilla discolor* was still classified as drug in the nineteenth century. See Pan Rongxiu 潘鎔秀, Shen Xueyuan 沈學淵, and Gu Han 顧瀚, eds., *Xiao xian zhi* 蕭縣志, vol. 5, 1815, 14.

[487] On the approaches to medicine as local material sources in the Ming Dynasty, see He Bian, "Converting Tribute," in *Know Your Remedies: Pharmacy and Culture in Early Modern China* (Princeton: Princeton University Press, 2020), 49–73.

[488] Li Shizhen, *Bencao gangmu*, 705.

already classified bitter melon under the vegetables section.[489] Even more tellingly, in the early fifteenth century, right before the publication of *Jiuhuang bencao*, the influential local gazetteer *Guangzhoufu Tujingzhi* 廣州府圖經志 (Illustrated Gazetteer of Guangzhou Prefecture) had vividly recorded that common people around Guangzhou often boiled bitter melon together with meat and clams to create a mixed side dish.[490] This suggests bitter melon was already a known edible ingredient integrated into local Cantonese cuisine and food culture by that time period.

However, such culinary usages and familiarity with bitter melon as a vegetable were still predominantly localized knowledge, remaining popular mainly in China's southern provinces, especially Fujian and Guangdong. Given bitter melon's origins as a tropical Asian plant likely first introduced from South Asia, it makes sense that it would have initially spread through cultivation and gradually gained popularity in South China before northern regions.[491]

The ingestion knowledge about bitter melon did not seem to significantly circulate or disseminate to broader regions beyond the south by the early Ming period. In Henan, which was the home region of *Jiuhuang bencao*, it seems unlikely that bitter melon had been grown there on any significant commercial scale, and even less likely it had become commonly incorporated into the average household's daily diet and cuisine. *Jiuhuang bencao* suggested that only the pulp of ripe bitter melon should be consumed as famine food.[492] This helps explain why Zhu Su chose not to categorize bitter melon as an edible vegetable in his famine relief manual, since it did not yet represent a usual food source for common people in early Ming Henan.

Even in late Ming, bitter melon consumption continued to be specifically associated with and noted among southern Chinese. The late Ming official Wang Shimao 王世懋 (1536-1588) recorded that the residents of Guangdong frequently grew bitter melon for personal household consumption and use, while in contrast, he observed that people from the Jiangsu region of east

[489] Chen Dazhen 陳大震 and Lü Guisun 呂桂孫, eds., *Nanhai zhi* 南海志, 1304, vol. 7. Bitter melon was recorded as *putu* 蒲突.
[490] *Yongle dadian* 永樂大典, vol. 11970, n.d., 75. Note that the phrase *turen* 土人 (local people) suggests that only original inhabitants had such practice while people of origins beyond the region did not.
[491] Lack of historical and archaeological evidence makes it difficult to determine when and how bitter melon was been introduced to China.
[492] Zhu Su 朱橚, *Jiuhuang bencao yizhu* 救荒本草譯注, trans. Wang Jinxiu 王錦秀 and Tang Yancheng 湯彥承 (Shanghai: Shanghai guji chubanshe, 2015), 214.

China generally disliked the bitter plant and did not eat it.[493] Xu Guangqi noted that the native peoples of Fujian and Guangdong often ate raw bitter melon.[494]

However, Li Shizhen intentionally recategorized bitter melon under vegetables in his *Bencao gangmu*, reflecting the fact it had been popularized as a regular food and culinary ingredient by the late Ming period, at least among Chinese southerners. He mentioned that southerners had developed practices of boiling the green skin of bitter melons with meat into soups, or mixing it with sauces into a vegetable dish.

The constrast between Zhu's and Li's classifications seems to indicate that Zhu Su's work focused more narrowly on cataloguing local botanical knowledge, while Li Shizhen took a broader territorialized approach in his materia medica, intentionally ordering and compiling extensive worldwide knowledge according to his contemporary understanding.[495]

It is notable that in compiling his seminal *Bencao gangmu*, Li Shizhen chose not to make any usage or incorporation of the original illustrations that had been specially prepared to accompany the two earlier famine relief manuals. This omission was certainly not due to any general lack of interest or belief in the value of pictorial knowledge on Li Shizhen's part. In fact, Li demonstrated great concern with thoroughly evaluating the quality and accuracy of plant illustrations, as well as closely examining the relationship between image and text in *bencao* works. For instance, Li praised and appreciated that the tenth-century regional *bencao* work *Shu bencao* 蜀本草 (Materia Medica Compiled in the Later Shu Dynasty (934-965)) contained illustrations that captured plants in superb detail.[496] However, in contrast, he severely *Tujing bencao*, complaining that its images often failed to properly match up with or illustrate the textual plant descriptions.[497]

Yet despite recognizing the utility of quality illustrations for representation and identification purposes, Li Shizhen did not seem to have intended for visual images to occupy any significant place within his own magnum opus. Nowhere within the compendium did he make plans to incorporate any original illustrations, let alone consider adapting existing woodblock pictures of famine plants from the two earlier manuals. This likely indicates that by

[493] Wang Shimao 王世懋, *Xuepu zashu* 學圃雜蔬, 1587.
[494] Xu Guangqi, *Nongzheng quanshu jiaozhu*, 1547.
[495] Bian, *Know Your Remedies: Pharmacy and Culture in Early Modern China*, 61. For the effort of centralizing knowledge and decentralizing cultural trends in the end of the sixteenth century, see He Bian, "The Last Pharmacopeia," in *Know Your Remedies: Pharmacy and Culture in Early Modern China* (Princeton: Princeton University Press, 2020), 23–48.
[496] Li Shizhen, "Editorial Principle."
[497] Li Shizhen.

the late Ming era, images were still not considered truly integral or indispensable components of authoritative pharmaceutical plant knowledge.[498] In fact, the relatively crude woodblock printed images that were hastily prepared and appended to the first edition of the compendium seem to have been primarily commercially driven additions insisted upon by Li Shizhen's literati sons, or perhaps the publishers.[499] The illustrations were largely just rough reproductions of some pictures copied from earlier *bencao* literature, rather than original art commissioned specially for the work.

Depiste exceptionally mentioning famine manuals, Li's work generally used records extracted from the early famine plant manuals in a selective and supplementary fashion, folding this information into the compendium's expansive materia medica catalog simply to provide additional enriching plant data, rather than studying the manuals comprehensively in their own right, leaving the issue of famine relief unaddressed.

Bencao gangmu's approach to utilizing knowledge from famine plant manuals also largely shaped the *bencao* literature produced over the succeeding centuries. Following its initial publication and through multiple republications in both the Ming and subsequent Qing dynasties, Li Shizhen's *Bencao gangmu* quickly became established as essential reading for professional doctors, herbalists, and scholars all across China.[500]

Its supreme authoritative status greatly advanced the further reproduction, transmission, and visibility of plant knowledge from famine manuals within later pharmaceutical literature of the early modern period. For instance, in his 1695 work *Benjing fengyuan* 本經逢原 (Encountering the Origin of the Divine Farmer's Canon), the physician Zhang Lu 張璐 (1617-1699) quoted excerpted passages from Li's compendium discussing how the edible herb *Potentilla discolor* had been very first recorded and described in the old famine relief manual *Jiuhuang bencao*.[501] Later in the mid-eighteenth century, the influential doctor and writer Wu Yiluo's 吳儀洛 (1704-1766) work *Bencao congxin* 本草從新 (Following New Knowledge of *Bencao*) also quoted directly from Li Shizhen's text, reproducing Li's own paraphrased summation regarding the plant description and proper preparation instructions for barnyard

[498] Nappi, *The Monkey and the Inkpot*, 18.
[499] Nappi, 18–19.
[500] For editions of *Bencao gangmu,* see He Guangyi 何廣益, Zhang Shihan 張詩晗, and Li Liangsong 李良松, "*Bencao gangmu* mingqing banben shuyao 《本草綱目》明清版本述要," *Tianjin zhongyiyao* 34, no. 7 (2017): 461–63..
[501] Zhang Lu 張璐, *Benjing fengyuan* 本經逢原, XXSKQS, vol. 3 (Suzhou, 1695), 25.

millet, as originally outlined in *Jiuhuang bencao*.[502] In his *Bencao gangmu shiyi* 本草綱目拾遺 (Supplement to *Bencao gangmu*), the marginal scholar-official Zhao Xuemin 趙學敏 (1719-1805) quoted from *Bencao gangmu*, identifying a plant originally recorded as *shanbiandou* 山扁豆 (seemingly *Senna nomame*) from *Jiuhuang bencao* as *jiangmangjueming* 茳芒决明.[503]

However, despite the enormous influence and impact of Li Shizhen's *Bencao gangmu*, pharmaceutical literature and botanical scholarship within the Qing dynasty overall demonstrated relatively little interest in or initiative towards pursuing further in-depth investigation of additional famine relief crops and plants beyond what Li had already covered.[504]

Exceptionally, scholar-official Wu Qijun 吳其濬 (1789-1846) valued both the textual descriptions and pictorial illustrations contained within *Jiuhuang bencao*.[505] In 1848, his *Zhiwu mingshi tukao* 植物名實圖考 (Illustrated Investigation on the Names and Realities of Plants) was published posthumously. This expansive illustrated encyclopedia differed from traditional *bencao* literature in that it focused solely on plants, aiming for comprehensive encyclopedic coverage of flora knowledge.

Out of the total 1714 individual plant entries covered in Wu's encyclopedia, *Jiuhuang bencao* was extensively cited a remarkable 340 times across 324 separate entries, making it the most frequently referenced work among the entirety of over 450 different source texts Wu consulted.[506] He often directly quoted lengthy full passages from *Jiuhuang bencao*, reproducing detailed information on popular names, distributions, morphological descriptions, and preparation instructions. For many of the obscure plants that had been newly recorded and

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[502] *Bencao congxin* was a revision of Wang Ang's 汪昂 (1615-1694) *Bencao beiyao* 本草备要 (Complete Essentials of *Materia Medica*) which was largely based on *Bencao gangmu.*

[503] Zhao Xuemin 趙學敏, *Bencao gangmu shiyi* 本草綱目拾遺, XXSKQS, vol. 4, 1871, 1. *Bencao gangmu shiyi* was first completed in 1765 and first published in 1864. It cited *Bencao fengyuan* forty-seven times and *Bencao congxin* twenty-two times. See He Bian, "An Ever-Expanding Pharmacy: Zhao Xuemin and the Conditions for New Knowledge in Eighteenth-Century China," *Harvard Journal of Asiatic Studies* 77, no. 2 (2017): 287–319.

[504] Likewise, *Bencao gangmu* also played an intermediary role in transmitting knowledge from *Jiuhuang bencao* in local gazetteers. While *Xingyi fuzhi* 興義府志 (Prefectual Gazetteer of Xingyi, 1854), *Zhijiang xianzhi* 芷江縣志 (County Gazetteer of Zhijiang, 1870) and *Yuanzhou fuzhi* 沅州府志 (Prefectual Gazetteer of Yuanzhou, 1873) all referred to *Jiuhuang bencao* for barnyard grass, their texts were exactly the same as Li Shizhen's paraphrase.

[505] On Wu's life, see Zhang Ruixian 張瑞賢, "*Zhiwu mingshi tukao* de zuozhe Wu Qijun 《植物名實圖考》的作者吳其濬," *Zhongyiyao wenhua*, no. 4 (2008): 34–37.

[506] By Zhang Wei and Zhang Ruixian's count, 322 citations out of a total number of 2672 were from *Jiuhuang bencao*. See Zhang, Wei 張衛 and Zhang Ruixian 張瑞賢, "*Zhiwu mingshi tukao* yinshu kaoxi 《植物名實圖考》引述考析," *Zhongyi wenxian zazhi*, no. 04 (2007): 11–12. Despite the different count, *Jiuhuang bencao* was without doubt the most often cited title.

introduced to readers in *Jiuhuang bencao* centuries prior, the old Ming famine manual remained the sole authoritative reference still available for Wu to consult by the mid-nineteenth century.

In particular, Wu Qijun placed great emphasis on highlighting and validating the epistemological value embodied in the illustrations that had accompanied *Jiuhuang bencao*.[507] He recurrently praised the abundance of fine details captured in the images of plants, stating that the images of the Japanese brome and wild soybean were clear.[508] He leveraged these subtleties to assist in identifying actual live specimens. For example, while travelling through Jiangxi and Hunan, Wu Qijun found a living plant commonly called *bajiaowu* 八角烏 by local people which perfectly matched the original illustrated depiction of a plant labeled *kuandong hua* 款冬花 (*Tussilago farfara* L., or coltsfoot) in *Jiuhuang bencao*.[509] Thanks to the detailed drawing, Wu was able to conclusively identify the living *bajiaowu* as coltsfoot, proving the illustration's worth. Also, through a careful exmination of the image of *shuju* 鼠菊 in *Jiuhuang bencao*, Wu Qijun concluded that it resembled *mabiancao* 馬鞭草 (*Verbena officinalis*, the common vervain).[510]

Moreover, Wu took care to reproduce and publish a selective subset of the plant drawings *Jiuhuang bencao* within his own encyclopedia, making slight modifications to better suit his scholarly purposes.[511] For example, he reproduced the images of red sage and siler (*Saposhnikovia divaricata*) from *Jiuhuang bencao*. Notably, Wu often deliberately simplified some repetitive visual details in the original Ming woodblock prints which he deemed non-essential.[512] For instance, he reduced the number of individual *Adenophora trachelioides*

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[507] On Wu's concern with images, see Georges Métailié, "The Representation of Plants: Engravings and Paintings," in *Graphics and Text in the Production of Technical Knowledge in China: The Warp and the Weft*, ed. Francesca Bray, Vera Dorofeeva-Lichtmann, and Georges Métailié (Leiden: Brill, 2007), 487–520. For the comparison of the drawings in *Jiuhuang bencao* and those in *Zhiwu mingshi tukao*, I use the 1988 reprint of the 1525 edition of *Jiuhuang bencao* and the reprint of the 1848 edition of *Zhiwu mingshi tukao* in *Xuxiu siku quanshu.* The 1848 edition was the first edition and should be the most possibly faithful to Wu's original drawings. It is, however, difficult to identify the edition of *Jiuhuang bencao* that was consulted by Wu. Judging by the quoted text and drawing, Wu is most likely to have consulted a 1525, 1555 or 1586 edition. The 1555 was a reprint of 1525 and 1586 a reprint of 1555 and thus the drawings should be the same except for difference in clarity.

[508] Wu Qijun 吳其濬, *Zhiwu mingshi tukao* 植物名實圖考, XXSKQS, vol. 1, 1848, 31; Wu Qijun 吳其濬, *Zhiwu mingshi tukao* 植物名實圖考, XXSKQS, vol. 3, 1848, 45.

[509] Wu Qijun 吳其濬, *Zhiwu mingshi tukao* 植物名實圖考, XXSKQS, vol. 11, 1848, 44.

[510] Wu Qijun 吳其濬, *Zhiwu mingshi tukao* 植物名實圖考, XXSKQS, vol. 14, 1848, 12.

[511] Wu Qijun 吳其濬, *Zhiwu mingshi tukao* 植物名實圖考, XXSKQS, vol. 4, 1848, 8; Wu Qijun 吳其濬, *Zhiwu mingshi tukao* 植物名實圖考, XXSKQS, vol. 7, 1848, 23.

[512] Such simplification can also be found in *Nongzheng quanshu.* See Zhu Su, *Jiuhuang bencao jiaoshi yu yanjiu*, 431–37.

plants depicted from three down to just two, and cut out a few of the abundant rendered leaves, thereby illuminating the most pertinent key identification features (compare Figure 5-1 and Figure 5-2).

Figure 5-1 *Adenophora trachelioides*, in the 1988 reprint of *Jiuhuang bencao* (1525)

Figure 5-2 *Adenophora trachelioides*, the XXSKQS reprint of *Zhiwu mingshi tukao* (1848).

Wu Qijun also enlarged certain features of the original illustrations for better observation. For example, he enlarged the depictions of leaves and roots of *Scabiosa comosa* in his work to make them more prominent and easier to examine compared with the originals (compare Figure 5-3 and Figure 5-4).

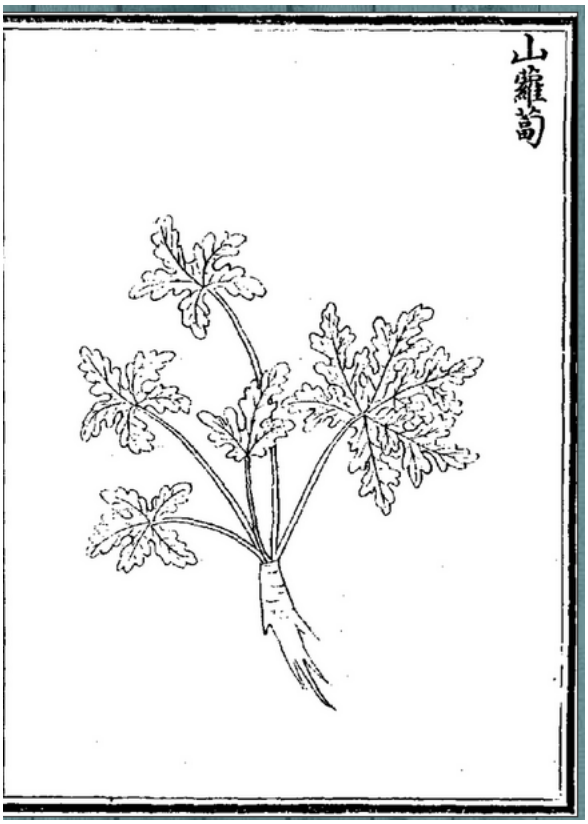

Figure 5-3 *Scabiosa comosa*, in the 1988 reprint of *Jiuhuang bencao* (1525).

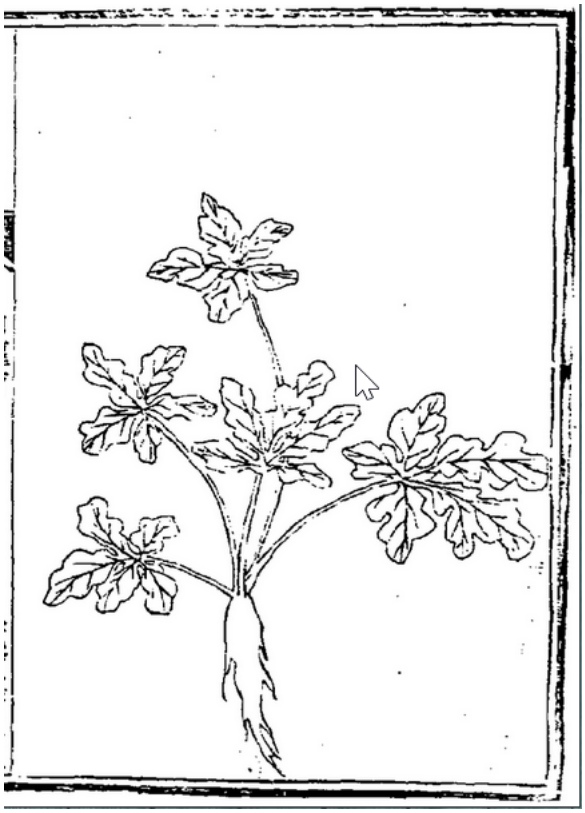

Figure 5-4 *Scabiosa comosa*, in the XXSKQS reprint of *Zhiwu mingshi tukao* (1848).

In a few cases, he changed the composition of illustrations to highlight morphological features and aesthetic value. Originally *Scorzonera albicaulis* was centered erect, but Wu Qijun positioned its stem leftwards with leaves stretched right to exhibit their length and thinness (compare Figure 5-5 and Figure 5-6).

Figure 5-5 *Scorzonera albicaulis*, in the 1988 reprint of *Jiuhuang bencao* (1525).

Figure 5-6 *Scorzonera albicaulis*, in the XXSKQS reprint of *Zhiwu mingshi tukao* (1848).

For many trees, Wu added a trunk against which the plant leaned (compare Figure 5-7 and Figure 5-8). The trunk alerted readers that despite disproportional sizing, the plant was a tree, not a herb. The juxtaposition of the symbolic trunk and lively plant implied that Wu drew from books, not nature. Although utilizing the knowledge in images, the object of study for Wu was the image itself, not the plant.

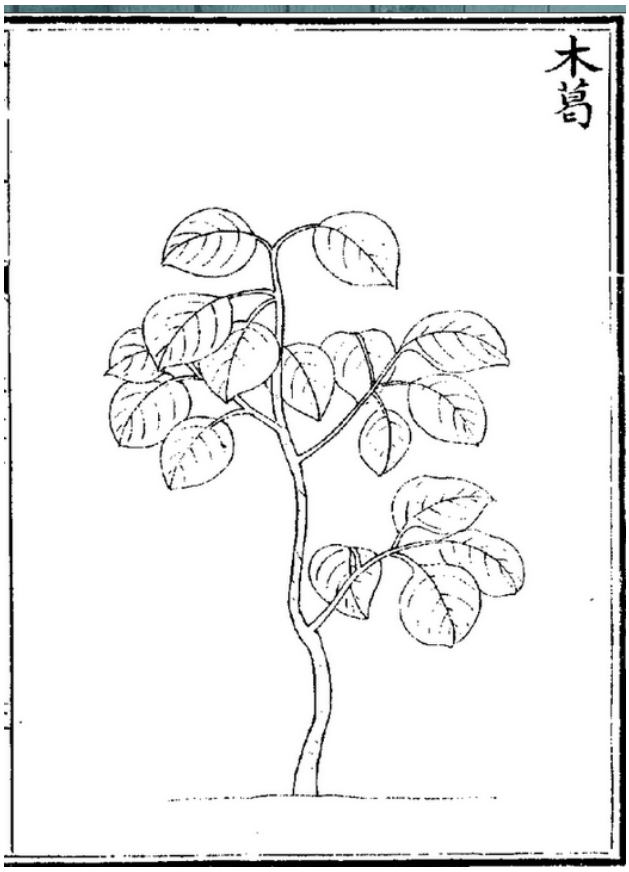

Figure 5-7 *Pseudocydonia sinensis*, in the 1988 reprint of *Jiuhuang bencao* (1525).

Figure 5-8 *Pseudocydonia sinensis*, in the XXSKQS reprint of *Zhiwu mingshi tukao* (1848).

Zhiwu mingshi tukao heavily relied on and frequently referenced *Jiuhuang bencao* for plant knowledge. This demonstrated Wu's particular scholarly interest in studying and validating the descriptive representations of plants contained within famine manuals. However, like previous herbalists, Wu showed little concern for the specific edible use of these plants during famines, despite unprecedented reliance on the famine manual.

In comparison with late imperial China's limited engagement with the famine plant manuals primarily through the lens of *Bencao gangmu*, we will now examine how the manuals were approached and interpreted in Tokugawa Japan. There, the foundational influence of Li Shizhen's compendium had also endured since the work's initial introduction to Japan in the early seventeenth century, profoundly shaping the development of the field of *honzōgaku*. However, Japanese scholars' specific reading and application of information sourced from the antique Chinese famine manuals potentially evolved along a different trajectory, as they operated in a different sociopolitical and intelectual environment.

5.2.2 Famine Plants in *Honzōgaku* Studies

Ono Ranzan, recognized as one of the most celebrated and influential naturalists in Japanese history, displayed a deep scholarly passion for the field of natural history from a remarkably early age. Born in 1729 as the second son of a low-ranking official serving in the Imperial Court at Kyoto, Ranzan demonstrated his budding dedication by producing handwritten copies of the six-volume Qing horticultural treatise *Hiden hakyō* 秘伝花鏡 (Secretly Transmitted Treatise on Flora) when he was eleven years old.[513] After studying herbalism with the famous Kyoto scholar Matsuoka Joan from the age of thirteen to eighteen, Ranzan spent the majority of his life immersed in teaching and researching materia medica while based in Kyoto. His prolific Kyoto years laid the groundwork for his magnum opus to come. In 1798, Ranzan was summoned to Edo by the shogunate to serve at *igakukan* 医学館, the shogunal Institute of Medicine.[514] There he lectured extensively on diverse topics related

[513] Shirai Mitsutarō 白井光太郎, "Ono Ranzan: Written on the Occasion of His Centennial," *The Botanical Magazine* 23, no. 269 (1909): 109. For a detailed biography of Ono Ranzan, see Shirai Mitsutarō, "Ono Ranzan: Written on the Occasion of His Centennial"; 磯野直秀 Isono Naohide, "Ono Ranzan nenpu 小野蘭山年譜," *Keiōgijuku daigaku hiyoshi kenkyū kiyō*, no. 46 (2009): 71–94.

[514] *Igakukan* was transformed from *seijyukan* 躋寿館, the private academy of *okuishi* 奥医師 (in-house doctor for the shogunate) Taki Mototaka 多紀元孝 (1695-1766) established in 1765. The academy was designed for the descendants of doctors. *Seijyukan* was burned down in 1772 and rebuilt afterwards. In 1791, the shogunate took charge of *seijyukan* and renamed it *igakukan*. For the history of *igakukan*, see Endō Shōji 遠藤正治, *Honzōgaku to yōgaku: Ono Ranzan gakutō no kenkyū* 本草学と洋学—小野蘭山学統の研究 (Tokyo: Shibunkaku shuppan, 2003), 74–78..

to natural history and *honzōgaku*. He also conducted several official excursions to study the natural objects in regions surrounding Edo.

The life-long devotion to natural history ultimately culminated in the publication of his masterpiece, titled *Honzō kōmoku keimō* 本草綱目啓蒙 (An Outline of *Honzō kōmoku*, or *Jiuhuang bencao*), over 1803-1806. This monumental work was edited by Ranzan's nephew Ono Motokata and represented the pinnacle of his prolific career. Although Ranzan's *Honzō kōmoku keimō* closely followed the taxonomical organizational structure originally laid out in Li Shizhen's *Bencao gangmu*, Ranzan deliberately prioritized rich descriptive attention to each substance's morphology and life cycle details over an emphasis on medicinal usages. This creative choice distanced Ranzan from the classic Neo-Confucian principles and pharmaceutical vision of the natural world that had predominated in *honzōgaku* up until that point.[515] Moreover, despite insisting on a lexicographical and semasiological approach to *honzōgaku* study that remained grounded in canonical Chinese texts, Ranzan greatly enriched his descriptions of plants, animals, and other natural objects by incorporating extensive personal observations of live specimens in Japan as well as assimilating selected information from contemporary Western texts. Thereby, Ranzan's work represented an innovative expansion that moved beyond the classic Chinese pharmaceutical perspective that had previously defined *honzōgaku* discourse.[516]

During his teaching and researching, Ranzan extracted and circulated plant knowledge drawn from famine manuals. At the age of twenty-five in 1754, Ranzan established his own academy *shūhōken* 衆芳軒, originally located in Kawaramachi but relocated to Ainomachi after being burnt down in the Great Fire of 1788. Among the wide-ranging works that Ranzan is known to have frequently lectured on are recognized epoch-making encyclopedias like *Bencao gangmu* and *Yamato Honzō*. Ranzan also lectured enthusiastically on his personal favorite past work *Hiden hakyō*. Curiously though, Ranzan additionally gave lectures dedicated specifically to discussing content from the trio of key Chinese famine relief manuals: *Jiuhuang bencao*, *Yecai pu*, and *Jiuhuang yepu buyi*. Ranzan's particular academic interest in incorporating these obscure famine-focused manuals into his curriculum was likely originally triggered by the influence of his own mentor Matsuoka Joan. Back in 1716,

[515] Marcon, *The Knowledge of Nature and the Nature of Knowledge in Early Modern Japan*, 209–10.
[516] Marcon, 210.

Matsuoka had specially reprinted editions of all three of the rare famine manuals in Kyoto, adding his own scholarly annotations.

While it remains unclear from the scarce records whether and how Matsuoka taught direct content from the famine manuals to students like Ranzan during their studies, as he was known for secretive teaching methods and left few documents about his pedagogy, Matsuoka's annotated reprint was pivotal in introducing the manuals and facilitating their further investigation and research by later scholars. The reprinted editions served as handy textbooks referenced by Ranzan and various other herbal academies in Kyoto and beyond.[517] For instance, Ōta Chōgen 太田澄元 (1721-1795), who learned herbalism from his father Iwanaga Genko 岩永玄浩 (fl. 1734), one of Matsuoka's pupils, lectured about the three famine plant manuals, probably when he was lecturing in *seijukan*, drawing on the Japanese reprints. Tamura Ransui 田村藍水 (1718-1776) taught lessons about the three famine plant manuals in his own house, and his pupil Sō Senshun 曽占春 (1758-1834) collected and compiled plant names from the famine manuals alongside other sources in his 1796 *Shuteiou Kyuko honzo wamei sen* 周定王救荒本草和名選 (A Selection of the Japanese Names (of The Plants) in *Kyūkō honzō* by Prince Ding of Zhou).

While quite a few herbalists contributed to circulating famine plant manuals through delivering lectures and teachings, Ono Ranzan excelled in influence through his extensive scholar network. In his hometown of Kyoto, the number of students eager to study under Ranzan at his private academy grew so large that he had to relocate the school to a bigger venue in the 1750s to accommodate demand. In total, more than one thousand students attended Ranzan's lectures over the years, coming from diverse domains all over Japan. Among Ranzan's many renowned students were figures like the scholar-connoisseur Kimura Kenkadō (1736-1802), the scholar-farmer Muramatsu Hyōzaemon (1762-1841), and the physician and herbalist Yamamoto Bōyō 山本亡羊 (1778-1859), who later went on to deliver his own lectures featuring content about Chinese famine plant manuals, likely inspired by Ranzan's curriculuml.[518]

When Ranzan relocated to Edo in 1799 to start a new phase of his career, he succeeded in further extending his already substantial professional and scholarly network across the country. At that time, the lectures delivered in *igakukan*, which was intended to cultivate

[517] Ōta Chōgen, *Kyūkō kimon*.
[518] Marcon, *The Knowledge of Nature and the Nature of Knowledge in Early Modern Japan*, 157.

medical talents serving *bakufu* and only open to descendants of official doctors, focused heavily on medieval Chinese medical classics like *Shanghan lun* 傷寒論 (On Cold Damage) alongside the exception of *Bencao gangmu* on herbalism.[519] Although Ranzan himself did not lecture about famine plant manuals in the governmental medical school, his grandson-heir Ono Keiho 小野蕙畝 (1774-1852), who took over Ranzan's teaching duties at the institution after his passing in 1810, made efforts to introduce content from the manuals through his own lecture sessions and scholarly discussions hosted for students, at least documented in 1827, 1836-1838, and 1846.[520] The fact that these famine plant manual sessions were scheduled on calendar days reserved for *honzōgaku* indicated that these manuals gained acknowledgement as holding valid knowledge belonging within the Japanese *honzōgaku* tradition stemming from Chinese precedents.[521]

Moreover, Keiho's friend Iguchi Eitatsu 井口栄達 (fl. mid-nineteenth century), a doctor serving the Kishiwada Domain who had assisted with the revision of *Honzō kōmoku keimō* prior to its publication, held special sessions open to daimyo's doctors and *machii* physicians in addition to regular students focused on *Jiuhuang bencao* between 1848 and 1850.[522] This novel introduction of targeted famine plant manual study sessions formally into the *igakukan*'s educational framework may have been an immediate response to provide practical agro-ecological knowledge to cope with the contemporary pressures of widespread crop failures and natural disasters occurring in Japan.

In addition to the *igakukan*, Ranzan also commonly held more informal home lectures and hosted scholarly discussions on a diverse range of topics with his expansive network of students and colleagues at his own Edo residence, as well as at the homes of friends like the scholar Hotta Masaatsu 堀田正敦 (1755-1832).[523] This was likely how the herbalist Iwasaki Kan'en 岩崎灌園 (1786-1842), who later went on to discuss and teach content from *Jiuhuang*

[519] Endō Shōji, *Honzōgaku to yōgaku: Ono Ranzan gakutō no kenkyū*, 78–79.
[520] Endō Shōji, 144–47. Ono Keiho was adopted by Ranzan at the suggestion of Hotta Masaatsu and Taki Motonori 多紀元徳 (1732-1801) in 1800. Originally named Hasegawa Saichiro 長谷川佐一郎, Keiho was born as the second son of Hasegawa Ariyoshi 長谷川有義 (1746-?), originally Ranzan's son but adopted by Hasegawa family in 1759. See Endō Shōji, 114–15; Isono Naohide, "Ono Ranzan nenpu."
[521] When Keiho did the first known round of *Jiuhuang bencao*, he taught at days ending at three and nine which were saved for *honzōgaku* teaching since Ranzan's days. Later *honzōgaku* teaching was rescheduled several times, in 1838 and 1846 on days ending at four and nine, for example. See Endō Shōji, *Honzōgaku to yōgaku: Ono Ranzan gakutō no kenkyū*, 144–47.
[522] Endō Shōji, 148–49.
[523] Evidence has shown that he taught about *Bencao gangmu* in those places. See.Isono Naohide, "Ono Ranzan nenpu," 81.

Bencao at his own private academy, first came to study directly under Ranzan during his Edo period.[524]

Ranzan's teachings about famine plant manuals were recorded and revised by his heir Keiho, then finally published as *Kyūkō honzō keimō* 救荒本草啓蒙 (An Outline of *Kyūkō honzō*, or *Jiuhuang bencao*) in Edo in 1842/3. This work provided a unique glimpse into how this distinguished late-eighteenth-century Japanese scholar apprehended, represented, analyzed, and questioned the natural world, based on specialized famine plant knowledge.

In his lexicographical and encyclopedic treatment of famine plant manuals, Ono Ranzan demonstrated his command over a broad body of East Asian literature. Throughout *Kyūkō honzō keimō*, Ranzan cited many Chinese books, alongside limited Japanese and Korean works as well. The wide-ranging titles he referenced touched upon diverse subject areas and spanned numerous genres, including: pharmaceutical compendia, artistic albums, regional gazetteers, dictionaries, encyclopedias, literary works, personal jottings, and more. Ranzan's extensive reading and access to such a variety of sources was likely facilitated by the flourishing maritime book trade between Ming-Qing China and Tokugawa Japan during this time, which greatly increased availability of Chinese books in Japan as encouraged by the shogun Tokugawa Yoshimune's 徳川吉宗 (1716-1745) policies.

For instance, Ranzan frequently quoted from several Chinese local gazetteers to find alternate regional names for plants, such as: *Huilai xianzhi* 惠来县志 (Gazetteer of Huilai County), *Dantu xianzhi* 丹徒县志 (Gazetteer of Dantu County) and *Shengjing tongzhi* 盛京通志 (Gazetteer of Shengjing) for *Vigna unguiculata*, *Bamin tongzhi* 八闽通志 (Gazetteer of Fujian) for pear, *Shandong tongzhi* 山東通志 (Gazetteer of Shandong) for pomegranate, *Changshu xianzhi* 常熟縣志 (Gazetteer of Changshu County) for jujube, *Yuyao xianzhi* 余姚县志 (Gazetter of Yuyao County) for *Brassica rapa*.[525] He also extensively cited from the proliferation of new *bencao* texts compiled in the seventeenth- and eighteenth-century China, when growing literati interest in the natural world led to increased plant documentation. Remarkably, Ranzan even managed to occasionally access some special rare sources, like the

[524] Yabe Munetomo 矢部致知, "Kyūkō honzō setsuben shō 救荒本草説弁抄" (Edo, 1818).
[525] By Ba Zhaoxiang's count, between 1600 and 1850, 1245 Chinese local gazetteers were imported to Japan. Yoshimune exihibited special interest in Chinese local gazetteers for acquiring detailed knowledge of the land and the people in his neighbouring empire. The shogunate made regular orders for local gazetteers and collected them in the shogunate library. Booksellers also bid for local gazetteers and intended for resale. For an overview of Chinese local gazetteers in Japan, see Ba Zhaoxiang 巴兆祥, *Zhongguo difangzhi liubo riben yanjiu* 中國地方志流播日本研究 (Shanghai: Shanghai renmin chubanshe, 2007).

banned Qing anthology *Koubozhai zuan xingchuji* 叩鉢齋纂行厨集 (Anthology of Koubo zhai).[526]

Of all his many referenced works, Ranzan relied most intensively on Li Shizhen's *Bencao gangmu*. For each plant entry, Ranzan meticulously tried to identify its corresponding listing in Li's text, highlighting its classification status, which showed how Ranzan firmly situated even obscure famine relief plants within Li's comprehensive vision of the natural world.

Despite bookish references, Ranzan actually acquired much of his knowledge from marketplaces and field trips. Alongside noting plant names found in classics such as *Shijing* 詩經 (Book of Poetry) and *Man'yōshū* 万葉集 (Anthology of Ten Thousand Leaves), Ranzan also meticulously recorded popular names used in contemporary flower shops. For example, he noted that what flower shops referred to as *rankōhoku* was in fact *Viburnum schensianum*. He also observed that a certain variety of *Cirsium japonicum* could commonly be found sold in flower shops, promoted under romantic poetic names like "snow on Mt. Fuji" that conjured beautiful imagery to better provoke customer interest and promote sales.

More importantly, Ranzan enriched his plant descriptions by prioritizing details learned through real-life encounters with specimens, rather than simply rewriting previous texts. He specifically recorded cultivation properties and growth habits that he had investigated first-hand during his surveying trips to areas like Nikkō, Mount Ibuki, and Mount Kiyosumi.[527]

For Ranzan, accurately identifying each plant was his major concern. He strongly acknowledged the epistemic value of visual imagery for proper identification. He praised the illustrations in *Jiuhuang bencao* for aiding identification through their accuracy. For example, he described how the *Potentilla discolor* image showed seven distinctive leaves growing on the same single stem, which perfectly matched its key diagnostic features. He also referred to the image of *Barnardia japonica* to elucidate its blossom shape. Due to such reliability, Ranzan investigated images of plants like *Euonymus verrucosoides*, *Berchemia floribunda*, *shuichajiu* 水茶臼 (possibly from the family Rosaceae) and *Allium*

[526] Siku jinhuishu congkan bianzuan weiyuanhui 四庫禁毀書叢刊編纂委員會, ed., *Siku jinhuishu congkan bubian* 四庫禁毀書叢刊補編 (Beijing: Beijing chubanshe, 2005), vols. 38–39. Governor-general of Hu-guang Sanbao discovered Lü Liuliang's and Qian Qianyi's writings in *Koubozhai zuan xingchuji* and proposed banning the book, which was approved on third day of the second month in 1778. See Wang Bin 王彬, *Qingdai jinshu zongshu* 清代禁書總述 (Beijing: Zhongguo shudian, 1999), 482.

[527] Ranzan was sent on surveys by the shogunate six times between 1801 and 1805. Isono Naohide, "Ono Ranzan nenpu," 80–85.

paepalanthoides when analyzing them, and successfully concluded that they were likely the plants *kihagi* きはぎ, *mayanagi* まやなぎ, *kinginboku* 金銀木, and *toki* とき respectively.

By Ranzan's time, many of the plants documeted in *Jiuhuang bencao* could be found cultivated within Japan. Some had been only recently introduced and successfully imported into Japan during the Kyōhō period (1716-1736), including plants like *Coix lacryma-jobi* L. var. *ma-yuen* Stapf, *Fallopia multiflora, Vitex negundo* L., *Cornus officinalis* Sieb. Et Zucc., and papaya. Quite a few of them were being intentionally cultivated in specialized medicinal gardens under the supervision of the Tokugawa shogunal supervision. This was part of an official nationwide project to increase domestic production of medicinal herbs, which allowed once rare plants to become widely available within Japan.

Yet despite increasing prevalence, many of the plants still could not be easily accessed by commoners. This scarcity unfortunately resulted in some cheating practices arising in commercial marketplaces, where opportunistic pharmacies would sell substitute or fake products under the guise of true rare imports. For example, fruits of *Cerasus japonica* were sold and disguised as the exotic import *Prinsepia uniflora*, while fruits of *Cydonia oblonga* and barks of *Kalopanax septemlobus* were passed off as papaya and *Aralia chinensis*.

In Ranzan's encyclopedic treatment of plants, he did not show any particular interest in investigating and recording their edible value for famine relief. While he did note down edible uses in passing, he granted these culinary properties equal importance and epistemic value as the assorted medicinal, commercial, and other uses of each plant. Unlike the original *Jiuhuang bencao*, where lengthy instructions were provided on how to process and prepare each plant for consumption, with many quite repetitive across entries, Ranzan only selectively recorded if a plant had any localized or uncommon edible uses. For instance, he documented how *Smilax riparia* was consumed locally by people in Nikkō, *Clematis kirilowii* was eaten in Kyūshū consumed, the fruits of *Smilax scobinicaulis* were used by mountain dwellers to quench thirst, and *Adenophora stricta* was utilized as a vegetable by commoners.

In essence, Ranzan approached reading and analyzing the Chinese famine relief manuals through a similar scholarly lens as he did the pharmaceutical literature he was more familiar with. His wider epistemic community and students likewise read and circulated the manuals as expansive encyclopedias encompassing knowledge of the natural world, rather than purely as practical survival manuals for famine prevention. This resembled contemporary Ming-Qing reception in China, with one key difference. Japanese herbalists showed greater interest in the

famine manuals, evaluating them all as valuable plant knowledge despite their diverging format, while Chinese herbalists paid little attention to *Yecai pu* and *Jiuhuang yepu buyi*. Lacking morphological and medicinal details, these were deemed of little use for expanding plant knowledge and excluded from the *bencao* tradition.

5.3 Conclusion

This chapter has examined two major fields where famine plant manuals were analyzed, interpreted, and applied by scholarly communities in the early modern period: famine administration and nature studies.

While encouraging commoners to rely on plants for sustenance could be considered an admission of failure of governance, Chinese officials framed the strategic cultivation of famine crops as an indispensable and wise element of mixed farming that would strengthen food security and improve famine prevention.

Although titles such as *Jiuhuang bencao* were granted some degree of esteem in prominent Chinese pharmaceutical compendia, overall the famine plant manuals remained marginalized in nature studies in late imperial China. In comparison, Ming famine plant manuals were cherished by networks of Japanese herbalists and physicians as valuable repositories of specialized agricultural, medical, and culinary knowledge. Through building extensive intellectual communities, Japanese scholars succeeded in integrating the content on Chinese famine plants into the wider canon of natural historical knowledge in Tokugawa Japan.

The fluid, ambiguous nature of the famine plant manuals, a genre that straddled statecraft and nature studies, while not yet firmly established by the twentieth century, opened up diverse possibilities for the manuals to be flexibly utilized across various epistemic fields by transnational literati communities in Asia and beyond.

6 Epilogue

"14.30. 灰菜 HUI TS'AI

Chenopodium album, L. (M. H. BN.). Porter 56. Bailey 249. BN. 1488.

GOOSE FOOT. LAMB'S QUARTERS. PIGWEED.

It is cultivated for its starchy seed in Burma and Annam. Dried seed: — 16.1 protein, 6.87 fat, 48.85 cbhyd, and 5.88% ash (Winton *1*, 323), Leafy stems: —3.9 protein, 0.76 fat, 8.93 cbhyd, and 3.0% ash. Cf. 12.20.

The wild plant is regularly collected for food in India, especially for its seed, Watt."[528]

In 1946, amid the aftermath of the Second Sino-Japanese War (1937-1945) and the dawn of the Civil War (1945-1949), the British pharmacologist Bernard Emms Read (1887-1949), at that time serving as the director of the Henry Lester Institute of Medical Research located in Shanghai, edited and compiled his years of investigation and analysis of edible plants potentially usable as famine foods into a reference book titled *Famine Foods List in the Chiu Huang Pen Ts'ao*.[529] Rather than providing a comprehensive English translation of the fifteenth-century Chinese manual, Read's volume represented a modern botanical, chemical, and pharmaceutical reference list cataloging and assessing the properties of hundreds of plant species selected and excerpted from the premodern manual. For 358 plants culled from *Jiuhuang bencao*, Read ensured that each entry provided scientific Linnaean names paired

[528] Bernard Emms Read, *Famine Foods Listed in the Chiu Huang Pen Ts'ao* (Taipei: Southern Materials Center, 1982), 61. In the entry Read cited quite a few contemporary botanical studies in different languages for plant identity, description and additional information: "M" refers to *Shokubutsu meii* 植物名彙 (Chinese Names of Plants, Tokyo, 1915) by the Japanese botanist Matsumura Jinzō 松村任三 (1856-1928), "H" to *Notes on the economic botany of China* (1893) by the Irish plantsman and sinologist Augustine Henry (1857-1930), "Porter" to *Wayside Plants and Weeds of Shanghai* (Shanghai, 1933) by Willard Merritt Porterfield (1893-1966), "Bailey" to *Manual of Cultivated Plants* by the American horticulturist and botanist Liberty Hyde Bailey (1858-1954), "BN." to *Zhiwuxue dacidian* 植物學大辭典 (Botanical Nomenclature, Shanghai, 1920), "Winton" to *The Structure and Composition of Foods* (New York, 1932) by Andrew Lincoln Winton (1864-1946), and "Watt" refers to *Dictionary of the Economic Products of India* (Calcutta, 1889) by the Scottish physician and botanist George Watt.

[529] The food shortages arising from the Second World War were reported worldwide, and led to the production and reproduction of famine food knowledge in many places. In Japan, *Kate mono* was reprinted in Yonezawa by the municipal office in 1940 and 1941, in Tokyo in 1943 and 1944, and in Nagano by the Food Administration in 1944. In colonial Taiwan in March and April, 1945, the Taiwan Agriculture Society published altogether 6000 copies of *Taiwan yasei shokuyō shokubutsu zufu* 台湾野生食用植物図譜 (An Illustrated List of Taiwan Wild Edible Plants). In the Netherlands, the Dutch government distributed the so-called "wartime cookbooks" and pamphlets such as *Verzamel eikels - beukenootjes en kastanjes* (Collect Acorns: Beechnuts and Chestnuts, Den Haag, 1944) to provide information on food resources.

with English vernacular names. In addition, he assessed their nutritional composition, particularly concentrations of proteins, fat, and carbohydrates. Read also referred to any known current or historical uses of the given plant as an edible food source during times of famine in other countries beyond China, based on his synthesis of global ethnobotanical literature.

Bernard Read's modern scientific approach to evaluating and analyzing the baseline food value present in each individual edible plant species provides an intriguing point of comparison when juxtaposed with the original form of plant description and discussion contained within *Jiuhuang bencao*. Both texts shared the same urgent, pragmatic goal to identify and disseminate practical knowledge of plants that could function as immediate food remedies providing life-saving nourishment to millions suffering from near starvation at times of acute famine and food shortage. Yet despite these similarities in motivation, the two works can be seen as establishing fundamentally divergent implicit hierarchies categorizing available foodstuffs based on their relative value and importance. Furthermore, Read's modern pharmacological perspective foregrounded very different conceptual relationships between humans and the natural world they rely upon for sustenance.

The original *Jiuhuang bencao* featured a classification scheme that placed cereal grains unambiguously at the centre of the common household diet and consumption patterns. Then fruits and vegetables were categorized as supplemental parts of an acceptable diet. Meanwhile, most herbs and woody plants were framed as optional, temporary supplementary or fallback foods to be relied upon largely in periods of dire necessity during famine times, rather than staple components of everyday meals. By contrast, Read's twentieth-century reference work featuring detailed statistics on nutrients implicitly forwarded a strict rhetoric of scientific nutrition that, in practice, strongly recommended concentrating consumption primarily on energy-dense plant parts like starchy roots, grains, and seeds that could provide ample calories and high quantities of essential vitamins and minerals lacking in a deficient famine diet. For Read, the core problem of starvation diets was understood as not just an absolute quantitative lack of whatever abundant foods might be available, but rather the

dangerous imbalances in nutritional inputs that could lead to the emergence of malnutrition along with diseases. In this sense, Read's presentation of plants ultimately epitomized the profound influence of emerging modern scientific knowledge frameworks surrounding nutriology and an ideology of rational nutritionism which were rapidly reorganizing global understandings of foods and recalibrating practical hierarchies categorizing the relative value of edible plants.[530]

In the preceding chapters, I have traced the emergence and development of a specialized epistemic genre focused on identifying, documenting, and circulating practical knowledge related to edible plants as famine foods in imperial China and Tokugawa Japan. This examination has highlighted the continual processes of shuffling, recalibration and transformation in the contingent categorical boundaries and conceptual hiearchies underpinning different forms of knowledge across both time and space.

I began by discussing how fragmentary information and empirical concerns related to supplementary and alternative food resources that could provide sustenance in times of scarcity were intially scattered across a diverse array of ancient and medieval writing traditions, including agricultural treatises, *bencao* literature, and famine relief writings. This illustrated how focused engagement with plants as famine foods was first tailored to serve a variety of context-specific purposes and framed within distinct epistemic fields, rather than an independent focus of study. I then detailed the particular conditions and negotiations surrounding the gradual textual consolidation of these scattered early attempts to distinguish and catalog famine plants as a unique object of knowledge object into the pioneering work *Jiuhuang bencao* in the fourteenth century. This work creatively adopted the literary form and approach to investigating and depicting flora already solidified in *bencao* literature, yet

[530] For the history of nutritional studies in China, see Michael Shiyung Liu, "Eating Well for Survival: Chinese Nutrition Experiments during World War II," in *Moral Foods: The Construction of Nutrition and Health in Modern Asia*, ed. Angela Ki Che Leung and Melissa L. Caldwell (Honolulu: University of Hawaii Press, 2019), 89–108. For the history of nutritional studies in general, see Kenneth J. Carpenter, "A Short History of Nutritional Science: Part 1 (1785–1885)," *The Journal of Nutrition* 133, no. 3 (March 2003): 638–45; Kenneth J. Carpenter, "A Short History of Nutritional Science: Part 2 (1885–1912)," *The Journal of Nutrition* 133, no. 4 (April 2003): 975–84; Kenneth J. Carpenter, "A Short History of Nutritional Science: Part 3 (1912–1944)," *The Journal of Nutrition* 133, no. 10 (October 2003): 3023–32; Kenneth J. Carpenter, "A Short History of Nutritional Science: Part 4 (1945–1985)," *The Journal of Nutrition* 133, no. 11 (November 2003): 3331–42.

explicitly reformulated the content and organization to better serve a non-medical purpose for the benefit of the sarving commoners. I explicated how *Jiuhuang bencao*'s inspiration combined with convergence of historical conditions, pressing material concerns, and cultural motivations catalyzed the rise of famine plant manuals coalesced into a unique genre.

The intrinsic tension between two divergent frameworks for conceptualizing famine plant knowledge, one emergent from classical traditions of statecraft concerned with governance, policy, and social order versus the other informed by longtime scholarly traditions of investigating the natural world, can be seen as a central thread that ran through the continued development and shifting understandings of famine plant manuals. Tracing out manifestations of this complex negotiation in both directions provides illuminating insights.

Focusing first on examining discourse within the manuals themselves demonstrates how both the practical significance attributed to plants as famine foods as well as the methods used to identify, select, and describe them remained caught in a continual process of shaping yet simultaneously being shaped by the enduring influence of *bencao* literature on the one hand and the urgent empirical realities surrounding societal responses to famine crisis on the other. While the specialized language and investigative techniques of *bencao* texts equipped authors with an essential lexicon to express concepts related to the natural environment and individual species, the manuals also reveal subtle challenges to *bencao* orthodoxy as compilers consciously worked to prioritize considerations of edibility for the starving over concerns with medical efficacy that dominated elite materia medica.

Despite the concurrent rise of commercial printing, famine plant manuals largely circulated through official and philanthropic channels rather than profit-driven markets, upholding perceived humanitarian obligations. Although benefiting from resources of the flourishing publishing industry, manual production and distribution operated independently of commercial motivations. Manuals spread through governmental networks and charitable donation targeting vulnerable commoners in need. Officials commissioned gazetteers containing manuals distributed to regional magistrates. Philanthropists funded free editions for famine-stricken areas. Bypassing commercial motives enabled unrestricted dissemination

of potentially life-saving knowledge during famines, fulfilling humanitarian obligations to the commoners.

Furthermore, tracing the circulation of famine plant manuals to different locales also reveals intriguing insights into the influential roles played by state officials, literati scholars, educated physicians, and professional herbalists in mediating the processes of transforming famine plant knowledge, as interpretations were reframed to resonate with new audiences. Careful examination of famine relief discourses in the late Ming and late Qing demonstrated how state servants remained reluctant to directly validate or promote the notion of foraging plants, instead articulating famine plant knowledge largely in terms of the potential utility of proactively cultivating certain species as supplementary food crops for broader agricultural and economic purposes. This strategic framing ultimately served to marginalize plants as practical famine foods within official relief schemes, even as the works spread. In contrast, for the community of Japanese scholars and educated physicians immersed in the study of *honzōgaku* during the Edo period, famine plants highlighted in the Chinese manuals represented intriguing and novel additions to the catalog of useful plants worthy of investigation as objects of natural knowledge. This engagement proved essential for justifying and reinforcing the cultural authority and expertise of herbalists in Tokugawa Japan.

Methodologically, this dissertation seeks to make an innovative contribution by creatively and integratively applying key principles drawn from three significant historiographical traditions, the history of books, the history of knowledge, and global history approaches, to construct a novel comprehensive framework for rigorously scrutinizing and contextualizing the specialized genre of famine plant manuals, which constitute the primary objects of analysis at the core of this research.

By devoting extensive attention to unpacking the concrete details surrounding the persistence and continued circulation of handwritten manuscripts alongside increasingly available printed books, as well as closely examining the diverse and at times competing roles embodied by various modes of textual production and dissemination, from officially sponsored government publications to small-scale charitable printing initiatives and profit-

seeking commercial publishing ventures, this study aims to significantly expand our academic understanding of the true complexity and contingency underlying processes of knowledge circulation operating within the premodern world. Meticulous reconstruction of manuscript and print transmission illuminates the myriad interconnected avenues through which ideas and information were gathered, compiled, and ultimately consumed by readers near and far, lending critical insight into the dynamic, multilayered realities that governed premodern dynamics of knowledge transfer long before the modern advent of rapid communication technologies and the internet age.

Moreover, this dissertation research endeavors to embark on a rigorous and meticulous journey through time in order to trace out, analyze, contextualize and interpret the subtle yet salient transformations in the social, cultural, political, economic, and intellectual frames of reference that profoundly shaped and reshaped discussions in the manuals relating to edible plants as practical famine foods as well as approaches to governance policy surrounding societal disaster relief and famine mitigation over the course of several centuries, from the fifteenth through the nineteenth. This long-term, processual approach over an extensive chronological timescale is thus not merely descriptive and narrowly chronological in structure, but more crucially also conceptual and analytical. It aims to uncover, elucidate, and explain both the significant elements of strong continuity and the impactful instances of stark transformation across decades and centuries in the complex pastoral, agricultural, bureaucratic, commercial, environmental, and epistemic landscapes that fundamentally informed perceptions on the intersecting subjects of flora and statecraft throughout this pivotal era leading into global modernity. The analytical lens reveals how understandings encapsulated in the manuals surrounding famine, relief policy, and plants gradually evolved, shifted, adapted, and were reconfigured over time in dynamic response to the changing material realities, political exigencies, commercial forces, and intellectual trends that unfolded over this extensive time period of imperial transition.

Furthermore, this dissertation employs a deliberate comparative analytical lens to closely examine and contextualize the corpus of manuscripts and imprints encompassed within the

famine plant manuals tradition not merely within one cultural or political context, but rather across the diverse geographical, sociological, linguistic, and intellectual landscapes of late imperial China and Tokugawa Japan. This stringent commitment to structured cross-cultural comparison is instrumental in exposing, elucidating, and explaining the webs of rich intellectual interconnection, chains of textual transmission, and strong elements of shared cultural heritage that were widely prevalent within the wider sphere of East Asia during this formative period, binding these regions together through flows of knowledge, ideas, practices, texts, and materiel objects despite political fragmentation. The approach carefully uncovers crucial instances of cross-cultural exchange, influence, borrowing, and syncretism, offering a richer, more interconnected perspective on the culmination of early modern intellectual history within China and Japan.

Finally, taking an expansive perspective that transcends narrow focus on the manuals as isolated artifacts, the dissertation research delves deeply into unpacking and elucidating the intricate processes of initial compilation, subsequent circulation and dissemination through both manuscript and print, and varied public, scholarly, and governmental reception that fundamentally characterized the genesis and progression of the practical famine plant manuals tradition. This multilayered analysis throws new light on the complex negotiations, reinforcing feedback loops, and discursive formations that arose as the practical empirical knowledge encapsulated within the manuals came into contact, intersection, and open conflict with several prominent fields of knowledge vital within Chinese and Japanese intellectual spheres, including classical political and ethical philosophy surrounding just governance, traditional botanical and zoological materia medica studies of natural historical phenomena, and the empirical investigation of agricultural, environmental, and economic conditions. By unraveling the cross-disciplinary implications and rhetorical tensions that emerged from juxtaposing knowledge derived from the vernacular famine plant manuals against the standards and conventions of classical statecraft, materia medica, and other scholarly traditions, the study opens illuminating analytical windows onto the intricate negotiations of epistemic authority and networks of expertise characteristic of East Asia's dynamic early

modern knowledge systems. This not only significantly enriches our academic understanding of the genesis and impact of the famine plant manuals themselves as artifacts, but also provides critical insight into reconstructing the broader contours of intellectual life in late imperial Chinese and Japanese societies.

Bibliography

Abbreviations

MSL. *Ming shilu* 明實錄. Academia Sinica, *Hanji quanwen ziliaoku* (*Scripta Sinica*) database.

QSL. *Qing shilu* 清實錄. Academia Sinica, *Hanji quanwen ziliaoku* (*Scripta Sinica*) database.

SKQS *Wenyuange Siku quanshu* 文淵閣四庫全書. Taipei: Commercial Press, 1983.

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