

原著論文

ミャンマー北部における伝統的作物の調査と収集 (3) (2011年)

山本 伸一¹⁾・Moe Kyaw Aung²⁾・渡邊 和男³⁾・
Wunna^{3), 4)}・河瀬 眞琴¹⁾

1) 農業生物資源研究所・ジーンバンク*

2) ミャンマー農業灌漑省・ミャンマー農業公社・ミャンマー稲研究所

3) 筑波大学大学院・生命環境科学研究科

4) ミャンマー農業灌漑省・ミャンマー農業公社・バイオテック研究所

Third Field Survey Collecting Traditionally Grown Crops in Northern Areas of Myanmar, 2011

Shinichi YAMAMOTO¹⁾, Moe Kyaw Aung²⁾, Kazuo WATANABE³⁾,
Wunna^{3), 4)} and Makoto KAWASE¹⁾

1) *Genebank, National Institute of Agrobiological Sciences, 2-1-2 Kan'nondai, Tsukuba, Ibaraki 305-8602, Japan**

2) *Rice Research Institute, Myanmar Agriculture Service, Hmawbi, Yangon, Myanmar*

3) *Graduate School of Life and Environment Sciences, Tsukuba University, 1-1-1 Ten'nodai, Tsukuba, Ibaraki 305-8572, Japan*

4) *Plant Biotechnology Center, Myanmar Agriculture Service, Shwe Nant Thar, Pale Myothit, Mingaladon T/S, Yangon, Myanmar*

Summary

We made the third joint field survey of Kachin state of Myanmar in March, 2011 after 2006 and 2009. The survey team was organized by Tsukuba University (TU), Japan, the National Institute of Agrobiological Sciences (NIAS), Japan, and the Myanmar Agricultural Service (MAS), Myanmar. The survey was partly funded by a Grand-in-Aid for Overseas Scientific Research of the Ministry of Education, Culture, Sports, Science and Technology (MEXT), Japan (Research Project No. 21405017, 2009-2011) in cooperation with the Genebank Project of the National Institute of Agrobiological Sciences. Myanmar has been suggested to harbor crop genetic diversity of traditionally cultivated plants and their wild relatives.

* Present affiliation: *Genetic Resources Center, National Institute of Agrobiological Sciences, 2-1-2, Kannondai, Tsukuba, Ibaraki 305-8602, Japan*

* 組織再編により、現在の所属は農業生物資源研究所遺伝資源センター

We surveyed the range between Putao and Myitkyina particularly around Sumprabum. Consequently, we collected 95 plant samples including rice (28 samples), maize (6), foxtail millet (5), leguminous crops (9), cucurbits (8), solanaceous plants (8), zingiberaceous plants (8). The collected materials were divided into two subsets for conservation: one in Myanmar and another in Japan. The former subset for Myanmar is preserved at the Seed Bank of Department of Agricultural Research (DAR). The latter subset is for introduction into Japan. The ginger and turmeric samples are temporally maintained at Tsukuba University, while others are conserved at NIAS Genebank. Those materials are to be characterized and evaluated, and to be used for research and development.

Introduction

Recent field studies on plant genetic resources for food and agriculture (PGRFA) in Myanmar have suggested that genetic diversity of traditionally utilized plants is well preserved there (Uga *et al.*, 2005; Uga *et al.*, 2006; Saito *et al.*, 2006, Watanabe *et al.*, 2007 and Watanabe *et al.*, 2011). Myanmar harbors genetic diversity of wild and cultivated rice as well as several other cultivated plants, which should be conserved and analyzed.

We planned and carried out the third joint field survey in Kachin state of Myanmar in March, 2011 as a team organized by Tsukuba University (TU), Japan, National Institute of Agrobiological Sciences (NIAS, Japan) and the Myanma Agricultural Service (MAS, Myanmar) to observe and collect landraces of upland rice, small millets, pulses, ginger and turmeric in the areas, where we studied insufficiently during our first and second explorations organized in October, 2006 and November, 2009.

We started survey around Myitkyina and flew north to Putao. Then, we surveyed southward from there to Sumprabum and finally returned to Myitkyina. We particularly focused on mountainous areas around Sumprabum this time.

This field study was planned and carried out as a part of a Grant-in-Aid Program for Overseas Academic Survey of Basic Research Type B (code No. 21405017, Program Leader: Prof. Dr. Kazuo Watanabe, Tsukuba University) financially supported by the Ministry of Education, Culture, Sports, Science and Technology (MEXT) of Japan in cooperation with the NIAS Genebank Project of the National Institute of Agrobiological Sciences of Japan, and partly supported by a research grant from Heiwa Nakajima Foundation.

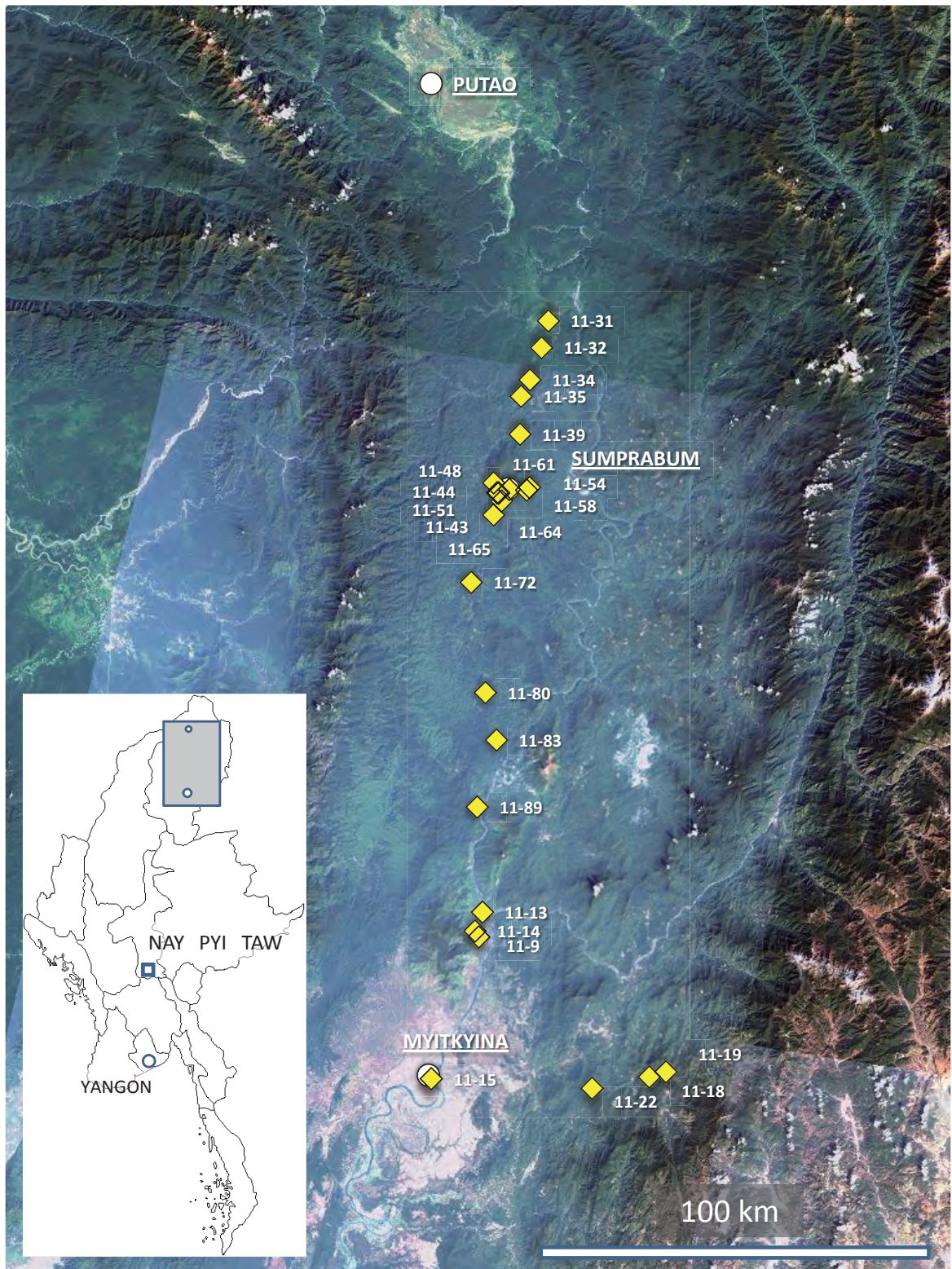


Fig. 1. Collection sites (waypoints) in Kachin state of Myanmar in 2011. Landsat image data were obtained from the Earth Science Data Interface (ESDI) at Global Land Cover Facility (GLCF) at University of Maryland (<http://glcfapp.glc.f.umd.edu:8080/esdi/index.jsp>) and processed with a landscape navigator software, Kashmir 3D (<http://www.kashmir3d.com/>) .

Table 1. Itinerary of the field study in Kachin state of Myanmar in 2011

Date	Itinerary	Stay	Places and activities
4 Mar Fri	W9-251 YGN — MYT arriving at MYITKYINA	MYITKYINA	All the member joined ¹⁾ . Field study at and around MYITKYINA
5 Mar Sat	around MYITKYINA (car)	MYITKYINA	field study started at and around MYITKYINA and MYIT-SONE
6 Mar Sun	around MYITKYINA (car)	MYITKYINA	field study at and around MYITKYINA and WAINEMAW
7 Mar Mon	UB822 MYT — PBU arriving at PUTAO PUTAO — SUMPIYAN	SUMPIYAN	field study from PUTAO to SUMPIYAN ²⁾
8 Mar Tue	SUMPIYAN — SUMPRABUM (4X4)	SUMPRABUM	field study along the route
9 Mar Wed	around SUMPRABUM	SUMPRABUM	field study at and around SUMPRABUM
10 Mar Thu	around SUMPRABUM	SUMPRABUM	field study at and around SUMPRABUM
11 Mar Fri	SUMPRABUM — DA-RU-KHA (4X4)	DA-RU-KHA	field study along the route
12 Mar Sat	DHA-RU-KHA — MYITKYINA (4X4)	MYITKYINA	field study along the route
13 Mar Sun	around MYITKYINA	MYITKYINA	field study at and around MYITKYINA tidy up collection
14 Mar Mon	W9-256 MYT — MDY MANDALEY — YEZIN (car)	YEZIN	courtesy visit to DAR ³⁾ HQs
15 Mar Tue	YEZIN — NAY-PYI-TAW — YEZIN (car)	YEZIN	courtesy visit to DAP ⁴⁾ HQs
16 Mar Wed	YEZIN — YANGON (car)	YANGON	visit MRRI ⁵⁾ plant quarantine
17 Mar Thu	YANGON	YANGON	plant quarantine
18 Mar Fri	leaving YANGON		

1) Watanabe arrived at Yangon on 2 March 2011 and Yamamoto and Kawase on 3 March 2011.

2) Watanabe and Wunna returned to Yangon on 7 March 2011.

3) DAR: Department of Agricultural Research, Ministry of Agriculture and Irrigation.

4) DAP: Department of Agricultural Planning, Ministry of Agriculture and Irrigation.

5) MRRI: Myanmar Rice Research Institute, Myanma Agriculture Service, Ministry of Agriculture and Irrigation.

Exploration Methods

We flew from Yangon to Myitkyina, the capital of Kachin state, and surveyed at and around Myitkyina. Then, we flew to Putao in the north of the state, and then moved south visiting Sumpiyan, Sumprabum, Dha-Ru-Kha and finally returned to Myitkyina.

We tried to ask local farmers about indigenous landraces traditionally grown there of rice, millets, pulses, and vegetables during the field survey. Visiting several villages, we interviewed villagers to understand what kinds of crops they grew, their cultivation practices and utilization. We focused on cereals like rice landraces (mainly upland rice varieties), sorghum, foxtail millet and finger millet, leguminous crops containing *Vigna* species, indigenous vegetables such as turmeric and ginger as same as the previous surveys in 2006 and 2009. Stand crops were rare, because we visited there in the dry but slack season on the farm. When we could collect plant materials, we also noted the geographical locations of the collection sites based on GPS and the ecological information of the circumferences together with local people's knowledge on the

cultivation practices and utilization of the plants.

The collected materials were divided into two subsets: one for Myanmar and another for Japan. The former subset for Myanmar is preserved at the Seed Bank of DAR. The latter subset was introduced into Japan with the Standard Material Transfer Agreement (SMTA) of the International Treaty on Plant Genetic Resources for Food and Agriculture (ITPGRFA) also in accordance with quarantine rules of the both countries. Rice grains are prohibited to introduce into Japan by the Plant Protection Act. In prior to the field survey, special permission had been granted by the Ministry of Agriculture, Forestry and Fisheries of Japan for introducing collected rice grains to Japan, which were tightly packed with yellow tags. The ginger and turmeric samples are stored at Tsukuba University, while others are conserved at the Genetic Resources Center, NIAS (NIAS Genebank) in Japan. Those materials are to be characterized and evaluated, and to be used for research and development.

Results and Discussion

Observation and Collection

We planned a survey of traditional crops in the areas between Putao and Myitkyina in northern Kachin state to fulfill the uncovered gaps in our previous surveys. We could visit several mountainous villages there, particularly at and around Sumprabum.

The visit was paid at the agricultural off-season when we could see very limited stand crops in the "*taung-ya*" (slash-and-burn) cultivation fields, that's why we spent more time for interviewing farmers. They kindly informed us about the diversity of traditional landraces of rice, millets, pulses, and vegetables they grow particularly on *taung-ya* fields and on backyard gardens in the surveyed area (Photo 1). We interviewed villagers on what kinds of crops they grow, how they grow and use. When farmers kindly provided a seed sample, we collected a small amount of it together with the GPS information of the collection sites and the ecological information of the circumferences.

We collected information on crop plants grown on a *taung-ya* field, for example, non-glutinous and glutinous rice, maize, sorghum, foxtail millet, finger millet, pearl millet, job's tear, rice bean, soy bean, yard long bean, cowpea, common bean, lablab bean, yam bean, potato, sweet potato, ginger, garlic, perennial sweet leek, turmeric, taro, yam, carrot, banana, tomato, egg plant, chili pepper, cucumber, melon, spinach, pumpkin and white gourd (Photos 2 & 3).

Local upland rice varieties are predominantly grown in all *taung-ya* observed. They cut down timbers and bush in January or February, burn them depending on climatic conditions, usually in May or April. They sow one basket (approximately 20 kg) of rice on one acre (approximately 40 a) of *taung-ya* field sometime from March to July, and usually harvest 10 to 20 baskets from August to December there. It was commonly observed that there were several local rice cultivars grown in a village (Photo 4). Several rice cultivars are clearly distinguished for morphology, growing duration, grain characters, usages, and so on. For example, N-HPAWO-MAM (two types), TUM-CHYANG-MAM, HPYI-KA-MAM and N-HKYENG-MAM were provided by the farmers at Grin-Du-Kong village near Sumprabum;

Collection No. 39 N-HPAWO-MAM

Short small grain, non-glutinous hard rice, 5-month variety.

Collection No. 40 TUM-CHYANG-MAM

Long large grain, black rice, glutinous, 3-month variety, low yield but good for cooking as well as brewery.

Collection No. 41 HPYI-KA-MAM

Round grain with dark stripes, non-glutinous, 4-month variety, easy threshing, good for cooking.

Collection No. 42 N-HKYENG-MAM

Round large grain, red rice, glutinous, 3-month variety, low yield but good for brewery, wide leaf blade. The collected sample contains another type of long grain, non-glutinous, white rice.

Collection No. 43 N-HPAWO-MAM

Long grain, glutinous, good for steamed rice cake (*khauk hnyin pone*)

Similarly, the villagers explained us about NA-CHYANG, ININ-BAW-CHYA-HPAUW, SHA-RE-MAM, TUM-CHYANG-MAM, HPI-UA-MAM and LA-MYI-CHYANG at an adjacent village, Pin-San, and BAU-SI-LEU-MAM, N-HPAWO-MAM, SHI-RAW-MAM and N-HKYENG-MAM at N-Ta-Galu village, south of Sumprabum. Farmers sow different varieties usually at the same time, but separately on different parts of a *taung-ya* field.

The sowing and harvest depend largely on climatic conditions there. Several farmers complained that they had achieved very poor yield, e.g. less than 10 baskets per acre, in 2010 due to extraordinarily much rain, pests, rats and plant diseases. Rats increased in number after bamboos had flowered according to their information. Therefore, many younger male farmers were leaving home to do hard labor for gold mining along with the Marikha river banks. Upland rice is always mix-cropped there with sesame, pumpkin, melon, bitter guard, ginger, rice bean, and so on, according to farmers' information.

We collected 95 plant samples including rice (28 samples), maize (6), foxtail millet (5), leguminous crops (9), cucurbits (8), solanaceous plants (8), zingiberaceous plants (8) listed in Table 2.

Crop species diversity observed in fields

Rice was commonly cultivated on paddy fields in plains and terraces near Myitkyina and Putao basin, and also predominantly cultivated on steep *taung-ya* fields in the mountains.

We realized that many traditional rice landraces were clearly distinguished from each other by local farmers. They were also used to brew a rice wine, which was sometimes distilled into liquor, in addition to cooking rice.

Looking back to the 2006, 2009 and 2011 field studies, it is interesting to note that there was different positioning of *taung-ya* fields in Kachin state;

- 1) *Taung-ya* fields were managed near a village in lower altitudinal place or basin near dwelling houses like in Myitkyina and Putao. They are not so steep but undulating and rather depend on rice.
- 2) Those in mountainous areas were in a certain distance from villages on the main road.
- 3) Remote villages not along with a main road were often located near the tops or ridges

of the mountains and their *taung-ya* fields were reclaimed on the adjacent slopes below the villages (Photo5).

Taung-ya fields of the second and third types seemed to harbor wider crop diversity in addition to rice.

Future prospect of the traditional mountain agriculture in Kachin state

Quick socio-economical change has recently been made in the region and will continue. A big dam is under construction at Myit-sone located about 45 km N from Myitkyina. There had been well managed *taung-ya* fields in 2009 but was none in 2011, because most villagers have been transferred in 2011. The dam might also give a side effect to traditional low input agriculture in the lower reaches of the Ayeyarwaddy River, since annual regular flooding has been providing water and fertilizer to agricultural fields. Gentle and quiet villagers at Pon-Kyan, a tiny village between Sumpiyan and Sumprabum had kindly given lodging and transportation to the survey team in trouble in 2006 were not there in 2011. They had moved out already, and Pon-Kyan became a “bustling” market place with many shops. Gold mining was seen at several places along with the Malikha River, one of the upper reaches of the Ayeyarwaddy River. We were often informed that vigorous men were engaged in gold mining for an income, while women and the aged keep at home cultivating *taung-ya* fields. The *taung-ya* cultivation in the areas, which was an essential part of self-supporting livelihood system for Kachin people for a long time, has been degenerating and disappearing. The plant materials collected may not be grown in near future.

Acknowledgements

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They deeply appreciate all local people's kindness, hospitality, and particularly providing their knowledge and information about agricultural practices and providing their plant

materials. “Chyeju kaba sai”

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和文摘要

ミャンマーは栽培稲や野生稲、そして多くの栽培植物の遺伝的多様性を有していると云われているが、組織的な植物遺伝資源のフィールド調査や収集は必ずしも十分とはいえず、未調査地域も多い。悪天候のため十分な調査に至らなかった2006年、2009年に引き続き、筑波大学、農業生物資源研究所およびミャンマー農業灌漑省との協力のもとカチン州においてイネ、雑穀、マメ類、ショウガ、ウコン等の遺伝資源の調査と収集を行った。本現地調査研究は文部科学省科学研究費助成 基盤研究 (B) 課題番号 21405017「国境を超越して生存する少数民族に関わる絶滅危惧植物遺伝資源と伝統知識の保全」代表者 渡邊 和男) によるものである。カチン州南部の州都のミッチーナ周辺の調査の後、北部の町プータオに飛び、四駆車でスンビエン、スンプラボン、ダルカを通過して南下し、再びミッチーナに至る経路で現地調査を行うことができた。乾季にあっても場所によって道は雨で泥濘と化し、特にスンプラボン東部の盆地は調査できなかったが、スンプラボン西部の山村等を新たに調査した。栽培時期では無かったので立毛を見ることはできなかったが、現地農家から話を聞き、保存している作物の提供を受け、植物遺伝資源95点を収集した。収集品には栽培稲28点、トウモロコシ6点、アワ5点、マメ類9点、ウリ類8点、ショウガ科8点などが含まれる。なお、収集品は、ミャンマー農業灌漑省農業研究局バイオテクノロジー・植物遺伝資源・植物保護課のシードバンクに保存することし、植物遺伝資源国際条約 (ITPGR) の標準移転契約 (SMTA) を交わして日本に導入した。

Table 2. A list of plant materials in Kachin state of Myanmar in 2011.

Sr. No.*	JP No.	Local variety name (local plant name)	English name	Scientific name	Date MM/DD	Country	State	Township	Village name and/or nearest town/village	Latitude				Longitude			
										o	'	"		o	'	"	
1	243031	(TAUNG-YA-PE)	rice bean	<i>Vigna umbellata</i> (THUNB.) OHWI et OHASHI	03/05	Myanmar	Kachin	MYITKYINA	MYITKYINA market	25	23	1.1	N	97	24	7.7	E
2	243032	(PARO-SI)	eggplant	<i>Solanaceae</i> sp.	03/05	Myanmar	Kachin	MYITKYINA	MYITKYINA market	25	23	1.1	N	97	24	7.7	E
3	243033	(KYAUK GYIN)	stone ginger	<i>Zingiberaceae</i> sp.	03/05	Myanmar	Kachin	MYITKYINA	MYITKYINA market	25	23	1.1	N	97	24	7.7	E
4	243034	(KYAUK GYIN)	stone ginger	<i>Zingiberaceae</i> sp.	03/05	Myanmar	Kachin	MYITKYINA	MYITKYINA market	25	23	1.1	N	97	24	7.7	E
5	243035	(HNIN-THI)	gooseberry	<i>Ribes</i> sp.	03/05	Myanmar	Kachin	MYITKYINA	MYITKYINA market	25	23	1.1	N	97	24	7.7	E
6	243036	(PE-TAUK-SHAE)	soybean	<i>Glycine max</i> (L.) MERRILL.	03/05	Myanmar	Kachin	MYITKYINA	MYITKYINA market	25	23	1.1	N	97	24	7.7	E
7	243037	-	erianthus	<i>Erianthus</i> sp.	03/05	Myanmar	Kachin	MYITKYINA		25	40	29.6	N	97	29	40.2	E
8	243038	(YA-GHI)	finger millet	<i>Eleusine coracana</i> (L.) GAERTN.	03/05	Myanmar	Kachin	MYITKYINA	MYIT-SONE	25	42	43.4	N	97	30	37.4	E
9	243039	(YA-GHI)	foxtail millet	<i>Setaria italica</i> (L.) P. BEAUV.	03/05	Myanmar	Kachin	MYITKYINA	MYIT-SONE	25	42	43.4	N	97	30	37.4	E
10	243040	(LAT-SAN)	sorghum	<i>Sorghum bicolor</i> (L.) MOENCH	03/05	Myanmar	Kachin	MYITKYINA	MYIT-SONE	25	42	43.4	N	97	30	37.4	E
11	240167	M-HEIN	rice	<i>Oryza sativa</i> L.	03/05	Myanmar	Kachin	MYITKYINA	CHYING HKRANG near MYITKYINA	25	39	46.8	N	97	30	8.8	E
12	240168	M-ZE	rice	<i>Oryza sativa</i> L.	03/05	Myanmar	Kachin	MYITKYINA	CHYING HKRANG near MYITKYINA	25	39	46.8	N	97	30	8.8	E
13	243041	(KYAUK GYIN)	stone ginger	<i>Zingiberaceae</i> sp.	03/06	Myanmar	Kachin	MYITKYINA	MYITKYINA market	25	23	1.1	N	97	24	7.7	E
14	240169	ZA-LU-LU	rice	<i>Oryza sativa</i> L.	03/06	Myanmar	Kachin	SADON	SA-NA	25	23	14.9	N	97	51	49.3	E
15	243042	(KYAUK GYIN)	stone ginger	<i>Zingiberaceae</i> sp.	03/06	Myanmar	Kachin	SADON	SA-DON	25	23	51.1	N	97	53	57.3	E
16	240170	JA-LU-LU	rice	<i>Oryza sativa</i> L.	03/06	Myanmar	Kachin	WAIHMOW	MA-KYAN	25	21	53.7	N	97	44	33.4	E
17	240171	ZA-THA-MA	rice	<i>Oryza sativa</i> L.	03/06	Myanmar	Kachin	WAIHMOW	MA-KYAN	25	21	53.7	N	97	44	33.4	E
18	240172	ZA-NON	rice	<i>Oryza sativa</i> L.	03/06	Myanmar	Kachin	WAIHMOW	MA-KYAN	25	21	53.7	N	97	44	33.4	E
19	243043	(ANON-NOO-KYU)	cowpea	<i>Vigna unguiculata</i> (L.) WALP.	03/06	Myanmar	Kachin	WAIHMOW	MA-KYAN	25	21	53.7	N	97	44	33.4	E
20	243044	(LO-GO)	job's tear, adley	<i>Coix lacryma-jobi</i> L. var. <i>ma-yuen</i> (ROMAN.) STAPP	03/06	Myanmar	Kachin	WAIHMOW	MA-KYAN	25	21	53.7	N	97	44	33.4	E
21	243045	(A-PUU)	cucumber	<i>Cucumis sativus</i> L.	03/06	Myanmar	Kachin	WAIHMOW	MA-KYAN	25	21	53.7	N	97	44	33.4	E
22	243046	(A-PUU-LULU)	melon	<i>Cucumis melo</i> L.	03/06	Myanmar	Kachin	WAIHMOW	MA-KYAN	25	21	53.7	N	97	44	33.4	E
23	243047	(A-PYI)	pumpkin	<i>Cucurbita maxima</i> DUCH. ex LAM.	03/06	Myanmar	Kachin	WAIHMOW	MA-KYAN	25	21	53.7	N	97	44	33.4	E
24	243048	(NAW KYW SI)	long yard bean	<i>Vigna unguiculata</i> (L.) WALP. cv. -gr. <i>Sesquipedalis</i> E. WESTPHAL	03/08	Myanmar	Kachin	PUTAO	SUMPIYAN	26	52	39.6	N	97	39	0.4	E
25	240173	(KHAUK-HNYIN-SABA)	rice	<i>Oryza sativa</i> L.	03/08	Myanmar	Kachin	SUMPRABUM	IN-SAI-YAN 8km from SUMPIYAN	26	49	28.8	N	97	38	8.5	E
26	243049	(KHINE-NON)	corn	<i>Zea mays</i> L.	03/08	Myanmar	Kachin	SUMPRABUM	IN-SAI-YAN 8km from SUMPIYAN	26	49	28.8	N	97	38	8.5	E
27	243050	(MA-GECT)	chili pepper	<i>Capsicum annuum</i> L.	03/08	Myanmar	Kachin	SUMPRABUM	IN-SAI-YAN 8km from SUMPIYAN	26	49	28.8	N	97	38	8.5	E
28	243051	(KYEIN-THI)	job's tear, wild	<i>Coix lacryma-jobi</i> L. var. <i>lacryma-jobi</i>	03/08	Myanmar	Kachin	SUMPRABUM		26	45	41	N	97	36	40	E
29	243052	(KYEIN-THI)	job's tear, wild	<i>Coix lacryma-jobi</i> L. var. <i>lacryma-jobi</i>	03/08	Myanmar	Kachin	SUMPRABUM		26	45	41	N	97	36	40	E
30	243053		wild taro	<i>Colocasia esculenta</i> (L.) SCHOTT	03/08	Myanmar	Kachin	SUMPRABUM		26	43	44.4	N	97	35	33.2	E
31	240174	(TAUNG-YA-ZABA)	rice	<i>Oryza sativa</i> L.	03/08	Myanmar	Kachin	SUMPRABUM	IN-GOMA (IN KAWMA)	26	39	14.6	N	97	55	24.2	E
32	243054	(YA-GHI)	finger millet	<i>Eleusine coracana</i> (L.) GAERTN.	03/08	Myanmar	Kachin	SUMPRABUM	IN-GOMA (IN KAWMA)	26	39	14.6	N	97	55	24.2	E
33	243055	(SEIN-ZA-U)	yam bean	<i>Pachirhizus erosus</i> (L.) URBAN.	03/08	Myanmar	Kachin	SUMPRABUM	IN-GOMA (IN KAWMA)	26	39	14.6	N	97	55	24.2	E
34	243056	(SHIP-PE)	cowpea	<i>Vigna unguiculata</i> (L.) WALP.	03/08	Myanmar	Kachin	SUMPRABUM	IN-GOMA (IN KAWMA)	26	39	14.6	N	97	55	24.2	E
35	243057	(WA-KHON-SE)	white gourd	<i>Benincasa hispida</i> (THUNB.) COGN.	03/08	Myanmar	Kachin	SUMPRABUM	IN-GOMA (IN KAWMA)	26	39	14.6	N	97	55	24.2	E
36	243058	(MA-GECT)	chilli pepper	<i>Capsicum annuum</i> L.	03/08	Myanmar	Kachin	SUMPRABUM	IN-GOMA (IN KAWMA)	26	39	14.6	N	97	55	24.2	E
37	243059	(GYIN)	ginger	<i>Zingiber officinale</i> ROSC.	03/08	Myanmar	Kachin	SUMPRABUM	IN-GOMA (IN KAWMA)	26	39	14.6	N	97	55	24.2	E
38	243060		angled loofah	<i>Luffa acutangula</i> (L.) ROXB.	03/09	Myanmar	Kachin	SUMPRABUM	GRIN-DU-KONG	26	32	17.7	N	97	32	39.3	E
39	240175	N-HPAWO-MAM	rice	<i>Oryza sativa</i> L.	03/09	Myanmar	Kachin	SUMPRABUM	GRIN-DU-KONG	26	32	19	N	97	32	30.2	E
40	240176	TUM-CHYANG-MAM	rice	<i>Oryza sativa</i> L.	03/09	Myanmar	Kachin	SUMPRABUM	GRIN-DU-KONG	26	32	19	N	97	32	30.2	E
41	240177	HPYI-KA-MAM	rice	<i>Oryza sativa</i> L.	03/09	Myanmar	Kachin	SUMPRABUM	GRIN-DU-KONG	26	32	19	N	97	32	30.2	E
42	240178	N-HKYENG-MAM	rice	<i>Oryza sativa</i> L.	03/09	Myanmar	Kachin	SUMPRABUM	GRIN-DU-KONG	26	32	19	N	97	32	30.2	E
43	240179	N-HPAWO-MAM	rice	<i>Oryza sativa</i> L.	03/09	Myanmar	Kachin	SUMPRABUM	GRIN-DU-KONG	26	32	19	N	97	32	30.2	E
44	243061	(HNAN-CHYING-NAM)	sesame	<i>Sesamum indicum</i> L.	03/09	Myanmar	Kachin	SUMPRABUM	GRIN-DU-KONG	26	32	19	N	97	32	30.2	E
45	243062	(NAM-WUM-CHYING-NAM)	Perilla	<i>Perilla frutescens</i> BRITT.	03/09	Myanmar	Kachin	SUMPRABUM	GRIN-DU-KONG	26	32	19	N	97	32	30.2	E
46	243063	(NAW-TAUNG-SHI)	cowpea	<i>Vigna unguiculata</i> (L.) WALP.	03/09	Myanmar	Kachin	SUMPRABUM	GRIN-DU-KONG	26	32	19	N	97	32	30.2	E

Altitude m	Source	Status	Status of plant sampled	Cultural practices	Sowing month	Harvest month	Topography	Site	Stoniness	Soil texture	Drainage	Other observations	Waypoint
146	commercial market	landrace	bulk	-	-	-	-	-	-	-	-	market	11-15
146	commercial market	landrace	bulk	-	-	-	-	-	-	-	-	called as "taung-ya" tomato, used like tomato, salad, source, kyetter hin, near by Mytkyina	11-15
146	commercial market	wild	bulk	-	-	-	-	-	-	-	-	(from Putao informed) Univ. Tsukuba ID: Z400	11-15
146	commercial market	wild	bulk	-	-	-	-	-	-	-	-	(from Bamo informed) Univ. Tsukuba ID: Z401	11-15
146	commercial market	landrace	bulk	-	-	-	-	-	-	-	-	for curry or juice at least 1 day fermentation,	11-15
146	commercial market	landrace	bulk	-	-	-	-	-	-	-	-	from Kachin	11-15
197	roadside	wild	a single plant	-	-	-	hilly	slope	medium	clay	moderate		11-14
170	farmstore	landrace	bulk	shifting	5	11/12	hilly	(slope)	(medium)	(sandy loam)	(good)	used for brewing "tsa pyi" and cooked with rice, grown at "taung-ya" fields	11-13
170	farmstore	landrace	a single plant	shifting	5	11	hilly	(slope)	(medium)	(sandy loam)	(good)	used for brewing "tsa pyi" and cooked with rice, grown at "taung-ya" fields	11-13
170	farmstore	landrace	a single plant	shifting	5	11	hilly	(slope)	(medium)	(sandy loam)	(good)	mostly used for brewing "tsa pyi", grown at "taung-ya" fields	11-13
162	farmland	landrace	bulk	shifting	6	10	hilly	(slope)	(low)	(clay)	(moderate)	glutinous	11-9
162	farmland	landrace	bulk	shifting	6	10	hilly	(slope)	(low)	(clay)	(moderate)	non-glutinous	11-9
146	commercial market	wild	bulk	-	-	-	-	-	-	-	-	(from Satone informed) Univ. Tsukuba ID: Z402	11-15
1030	farmland	landrace	bulk	-	-	-	mountainous	(slope)	(medium)	(clay)	(good)	for staple food, white rice	11-18
1080	others (from local SP)	wild	a single plant	-	-	-	-	-	-	-	-	from mountain near the villege Univ. Tsukuba ID: Z403. local SP gave us the tuber	11-19
582	farmland	landrace	bulk	shifting	5	11	hilly	(slope)	(medium)	(sandy loam)	(good)	glutinous, 26 miles from Waihnow for staple food	11-22
582	farmland	landrace	bulk	shifting	5	11	hilly	(slope)	(medium)	(sandy loam)	(good)	non-glutinous, for staple food and "Khaun Ghye"	11-22
582	farmland	landrace	bulk	shifting	5	11	hilly	(slope)	(medium)	(sandy loam)	(good)	for rice wine "Khaun Ghye"	11-22
582	farmland	landrace	bulk	shifting	5	11	hilly	(slope)	(medium)	(sandy loam)	(good)	cook with rice. Soup.	11-22
582	farmland	landrace	bulk	shifting	5	11	hilly	(slope)	(medium)	(sandy loam)	(good)	to use rice increasing material	11-22
582	farmland	landrace	bulk	shifting	5	11	hilly	(slope)	(medium)	(sandy loam)	(good)	used for salad	11-22
582	farmland	landrace	bulk	shifting	5	11	hilly	(slope)	(medium)	(sandy loam)	(good)	used for salad. LULU means small.	11-22
582	farmland	landrace	bulk	shifting	5	11	hilly	(slope)	(medium)	(sandy loam)	(good)	local name sound like "apfoo"	11-22
345	farmstore	landrace	a single plant	shifting	6-7	9-10	hilly	(level)	(low)	(clay)	(moderate)	young pod eaten as vegetable, backyard sow in Jan. in Myanmar lang. "PE TANK SHAE"	11-31
482	farmland	landrace	bulk	shifting	5-6	12	hilly	(slope)	(medium)	(sandy loam)	(moderate)	make alcohol "KHAUK AYE", terraced field, glutinous	11-32
482	farmland	landrace	a single plant	shifting	5-6	12	hilly	(slope)	(medium)	(sandy loam)	(good)	eat before fully ripening.	11-32
482	farmland	landrace	bulk	shifting	5-6	12	hilly	(slope)	(medium)	(sandy loam)	(moderate)		11-32
591	roadside	wild	a single plant	-	-	-	mountainous	slope	medium	sandy loam	moderate		11-34
591	roadside	wild	a single plant	-	-	-	mountainous	slope	medium	sandy loam	moderate		11-34
423	roadside	wild	6 plants	-	-	-	mountainous	slope	medium	silty loam	good	much water and sunlight,	11-35
624	farmland	landrace	bulk	shifting	6	10	hilly	(slope)	(low)	(sandy loam)	(moderate)	for cooking	11-39
624	farmland	landrace	bulk	shifting	6	12	hilly	(slope)	(low)	(sandy loam)	(moderate)	cooked with rice in powder. Tsa Pyi also	11-39
624	farmland	landrace	bulk	shifting	6	11	hilly	(slope)	(low)	(sandy loam)	(moderate)	"KA-SHIN-CHAR-NINE" in Kachin, same TAUN YA but separated from rice	11-39
624	farmland	landrace	bulk	shifting	6	10	hilly	(slope)	(low)	(sandy loam)	(moderate)	harvested after rice, fry, soup	11-39
624	farmland	landrace	bulk	shifting	4	any	hilly	(slope)	(low)	(sandy loam)	(moderate)	"Kyauk pay yong the"	11-39
624	farmland	landrace	bulk	shifting	4	11	hilly	(slope)	(low)	(sandy loam)	(moderate)	same field but separated from rice	11-39
624	farmland	landrace	a single plant	shifting	6	10	hilly	(slope)	(low)	(sandy loam)	(moderate)	same field but separated from rice	11-39
976	farmland	landrace	a single plant	(shifting)	-	-	mountainous	slope	medium	sandy loam	moderate	remained in "Taung-ya"	11-43
1011	farmland	landrace	bulk	shifting	3-6	11-12	mountainous	(slope)	(rocky)	(sandy loam)	(moderate)	4 feet, 5month, eating, hard	11-44
1011	farmland	landrace	bulk	shifting	5-7	8-10	mountainous	(slope)	(rocky)	(sandy loam)	(moderate)	Same field but separated from 39 "KAUK PYIW"	11-44
1011	farmland	landrace	bulk	shifting	5-7	9-11	mountainous	(slope)	(rocky)	(sandy loam)	(moderate)	Same field but separated from 39	11-44
1011	farmland	landrace	bulk	shifting	5-7	9-11	mountainous	(slope)	(rocky)	(sandy loam)	(moderate)	leaf brade wide	11-44
1011	farmland	landrace	bulk	shifting	5-7	9-11	mountainous	(slope)	(rocky)	(sandy loam)	(moderate)		11-44
1011	farmland	landrace	bulk	shifting	5-7	9-11	mountainous	(slope)	(rocky)	(sandy loam)	(moderate)	border of rice field	11-44
1011	farmland	landrace	bulk	shifting	5-7	9-11	mountainous	(slope)	(rocky)	(sandy loam)	(moderate)	"SHAN-NAN" same as NAN	11-44
1011	farmland	landrace	bulk	shifting	5-7	any	mountainous	(slope)	(rocky)	(sandy loam)	(moderate)	young pod for vegetables	11-44

Table 2. (Continued).

Sr. No.*	JP No.	Local variety name (local plant name)	English name	Scientific name	Date MM/DD	Country	State	Township	Village name and/or nearest town/village	Latitude			Longitude				
										°	'	"	°	'	"		
47	243064	N-GAWNG	corn	<i>Zea mays</i> L.	03/09	Myanmar	Kachin	SUMPRABUM	GRIN-DU-KONG	26	32	19	N	97	32	30.2	E
48	243065	N-GAWNG-N-GUZI	corn	<i>Zea mays</i> L.	03/09	Myanmar	Kachin	SUMPRABUM	GRIN-DU-KONG	26	32	19	N	97	32	30.2	E
49	243066	N-GAWNG-N-BAW	corn	<i>Zea mays</i> L.	03/09	Myanmar	Kachin	SUMPRABUM	GRIN-DU-KONG	26	32	19	N	97	32	30.2	E
50	240180	NA-CHYANG	rice	<i>Oryza sativa</i> L.	03/09	Myanmar	Kachin	SUMPRABUM	PIN-SAN	26	33	30.8	N	97	32	2.9	E
51	240181	ININ-BAW-CHYA-HPAUW	rice	<i>Oryza sativa</i> L.	03/09	Myanmar	Kachin	SUMPRABUM	PIN-SAN	26	33	30.8	N	97	32	2.9	E
52	240182	SHA-RE-MAM	rice	<i>Oryza sativa</i> L.	03/09	Myanmar	Kachin	SUMPRABUM	PIN-SAN	26	33	30.8	N	97	32	2.9	E
53	240183	TUM-CHYANG-MAM	rice	<i>Oryza sativa</i> L.	03/09	Myanmar	Kachin	SUMPRABUM	PIN-SAN	26	33	30.8	N	97	32	2.9	E
54	240184	HPI-UA-MAM	rice	<i>Oryza sativa</i> L.	03/09	Myanmar	Kachin	SUMPRABUM	PIN-SAN	26	33	30.8	N	97	32	2.9	E
55	240185	LA-MYI-CHYANG	rice	<i>Oryza sativa</i> L.	03/09	Myanmar	Kachin	SUMPRABUM	PIN-SAN	26	33	30.8	N	97	32	2.9	E
56	243067	(TAUNG-YA-PE)	rice bean	<i>Vigna umbellata</i> (THUNB.) OHWI et OHASHI	03/09	Myanmar	Kachin	SUMPRABUM	PIN-SAN	26	33	30.8	N	97	32	2.9	E
57	243068	(PYAUNG-BU)	corn	<i>Zea mays</i> L.	03/09	Myanmar	Kachin	SUMPRABUM	PIN-SAN	26	33	30.8	N	97	32	2.9	E
58	243069	(SHI-GHI)	foxtail millet	<i>Setaria italica</i> (L.) P. BEAUV.	03/09	Myanmar	Kachin	SUMPRABUM	PIN-SAN	26	33	30.8	N	97	32	2.9	E
59	243070		job's tear, adley	<i>Coix lacryma-jobi</i> L. var. <i>ma-yuen</i> (Roman.) STAFF	03/09	Myanmar	Kachin	SUMPRABUM	GRIN-DU-KONG	26	32	17.6	N	97	32	40.3	E
60	243071		job's tear, wild	<i>Coix lacryma-jobi</i> L. var. <i>lacryma-jobi</i>	03/09	Myanmar	Kachin	SUMPRABUM	GRIN-DU-KONG	26	32	17.6	N	97	32	40.3	E
61	243072		-	(<i>Zingiberaceae</i> sp.)	03/10	Myanmar	Kachin	SUMPRABUM		26	32	56.7	N	97	36	36.6	E
62	243073	(TAUNG-YA-KYET-THUN-PYU)		<i>Allium</i> sp.	03/10	Myanmar	Kachin	SUMPRABUM	DAIN-WA-RUNN	26	32	39.2	N	97	36	14.1	E
63	243074	SHANG-CHYI	-	<i>Arisaema</i> sp.	03/10	Myanmar	Kachin	SUMPRABUM	DAIN-WA-RUNN	26	32	39.2	N	97	36	14.1	E
64	243075	(PAN-WU)	-	<i>Kaemferia</i> sp.	03/10	Myanmar	Kachin	SUMPRABUM	SUMPRABUM	26	32	42.4	N	97	34	3.5	E
65	243076		wild banana	<i>Musa</i> sp.	03/11	Myanmar	Kachin	SUMPRABUM	-	26	31	21	N	97	33	4.1	E
66	240186	BAU-SI-LEU-MAM	rice	<i>Oryza sativa</i> L.	03/11	Myanmar	Kachin	SUMPRABUM	N-TA-GALU (INTA-KALU)	26	29	42.1	N	97	32	3	E
67	240187	N-HPAWO-MAM	rice	<i>Oryza sativa</i> L.	03/11	Myanmar	Kachin	SUMPRABUM	N-TA-GALU (INTA-KALU)	26	29	42.1	N	97	32	3	E
68	240188	SHI-RAW-MAM	rice	<i>Oryza sativa</i> L.	03/11	Myanmar	Kachin	SUMPRABUM	N-TA-GALU (INTA-KALU)	26	29	42.1	N	97	32	3	E
69	240189	N-HKYENG-MAM	rice	<i>Oryza sativa</i> L.	03/11	Myanmar	Kachin	SUMPRABUM	N-TA-GALU (INTA-KALU)	26	29	42.1	N	97	32	3	E
70	243077	(NAW-LEP-SI)	lablap	<i>Lablab purpureus</i> (L.) SWEET.	03/11	Myanmar	Kachin	SUMPRABUM	N-TA-GALU (INTA-KALU)	26	29	42.1	N	97	32	3	E
71	243078	(SHI-GHI)	foxtail millet	<i>Setaria italica</i> (L.) P. BEAUV.	03/11	Myanmar	Kachin	SUMPRABUM	N-TA-GALU (INTA-KALU)	26	29	42.1	N	97	32	3	E
72	243079		job's tear	<i>Coix lacryma-jobi</i> L. var. <i>ma-yuen</i> (Roman.) STAFF	03/11	Myanmar	Kachin	SUMPRABUM	N-TA-GALU (INTA-KALU)	26	29	42.1	N	97	32	3	E
73	243080		winged bean	<i>Psophocarpus tetragonolobus</i> (L.) DC.	03/11	Myanmar	Kachin	SUMPRABUM	N-TA-GALU (INTA-KALU)	26	29	42.1	N	97	32	3	E
74	243081		eggplant	<i>Solanum melongena</i> L.	03/11	Myanmar	Kachin	SUMPRABUM	N-TA-GALU (INTA-KALU)	26	29	42.1	N	97	32	3	E
75	243082	(HKUM-PANG-SI)	pumpkin	<i>Cucurbita maxima</i> DUCH. ex LAM.	03/11	Myanmar	Kachin	SUMPRABUM	N-TA-GALU (INTA-KALU)	26	29	42.1	N	97	32	3	E
76	243083	(WA-KHUN-SI)	white gourd	<i>Benincasa hispida</i> (THUNB.) COGN.	03/11	Myanmar	Kachin	SUMPRABUM	N-TA-GALU (INTA-KALU)	26	29	42.1	N	97	32	3	E
77	243084	(KUM-GYIN-SI)	cucumber	<i>Cucumis sativus</i> L.	03/11	Myanmar	Kachin	SUMPRABUM	N-TA-GALU (INTA-KALU)	26	29	42.1	N	97	32	3	E
78	243085	(BAN-NAK)	herb	<i>Labiataceae</i> sp.	03/11	Myanmar	Kachin	SUMPRABUM	N-TA-GALU (INTA-KALU)	26	29	42.1	N	97	32	3	E
79	243086	(BAN-TAWNG)	herb	<i>Labiataceae</i> sp.	03/11	Myanmar	Kachin	SUMPRABUM	N-TA-GALU (INTA-KALU)	26	29	42.1	N	97	32	3	E
80	243087	(BAN-DIN)	herb	<i>Labiataceae</i> sp.	03/11	Myanmar	Kachin	SUMPRABUM	N-TA-GALU (INTA-KALU)	26	29	42.1	N	97	32	3	E
81	243088	(KYAUK GYIN)	stone ginger	<i>Zingiberaceae</i> sp.	03/11	Myanmar	Kachin	SUMPRABUM	N-TA-GALU (INTA-KALU)	26	29	42.1	N	97	32	3	E
82	243089		corn	<i>Zea mays</i> L.	03/11	Myanmar	Kachin	SUMPRABUM	N-TA-GALU (INTA-KALU)	26	29	42.1	N	97	32	3	E
83	240190	(LAKHAUNG or KHAMA)	rice	<i>Oryza sativa</i> L.	03/11	Myanmar	Kachin	SUMPRABUM	MAIN-HTAUNG (MAL-TAU)	26	21	43.3	N	97	29	11.9	E
84	240191	KHUK-LAT	rice	<i>Oryza sativa</i> L.	03/11	Myanmar	Kachin	SUMPRABUM	MAIN-HTAUNG (MAL-TAU)	26	21	43.3	N	97	29	11.9	E
85	243090	(SHI-GHI)	foxtail millet	<i>Setaria italica</i> (L.) P. BEAUV.	03/12	Myanmar	Kachin	SUMPRABUM	DA-RU-KHA (DRU-KA)	26	8	41.1	N	97	31	0.6	E
86	240192		rice	<i>Oryza sativa</i> L.	03/12	Myanmar	Kachin	SUMPRABUM	DA-RU-KHA (DRU-KA)	26	8	41.1	N	97	31	0.6	E
87	243091	(GYI-DUNG)	pearl millet	<i>Pennisetum americanum</i> (L.) LEEKS	03/12	Myanmar	Kachin	SUMPRABUM	SU-KHA (SUP-KA)	26	3	4.4	N	97	32	24.6	E
88	243092	(SHI-GHI)	foxtail millet	<i>Setaria italica</i> (L.) P. BEAUV.	03/12	Myanmar	Kachin	SUMPRABUM	SU-KHA (SUP-KA)	26	3	4.4	N	97	32	24.6	E
89	243093	(YA-GHI)	finger millet	<i>Eleusine coracana</i> (L.) GAERTN.	03/12	Myanmar	Kachin	SUMPRABUM	SU-KHA (SUP-KA)	26	3	4.4	N	97	32	24.6	E
90	240193	NAM-SO-MAM	rice	<i>Oryza sativa</i> L.	03/12	Myanmar	Kachin	SUMPRABUM	SU-KHA (SUP-KA)	26	3	4.4	N	97	32	24.6	E
91	243094		eggplant	<i>Solanum melongena</i> L.	03/12	Myanmar	Kachin	SUMPRABUM	SU-KHA (SUP-KA)	26	3	4.4	N	97	32	24.6	E
92	243095	(MAGEP)	chilli pepper	<i>Capsicum annum</i> L.	03/12	Myanmar	Kachin	SUMPRABUM	SU-KHA (SUP-KA)	26	3	4.4	N	97	32	24.6	E
93	243096	(MAGEP)	chilli pepper	<i>Capsicum annum</i> L.	03/12	Myanmar	Kachin	SUMPRABUM	SU-KHA (SUP-KA)	26	3	4.4	N	97	32	24.6	E
94	240194	N-HKYEN-N-GU	rice	<i>Oryza sativa</i> L.	03/12	Myanmar	Kachin	SUMPRABUM	N-JIP (IN-JIS)	25	55	10.1	N	97	29	57.6	E
95	243097	(NGA-YOK)	chilli pepper	<i>Capsicum annum</i> L.	03/14	Myanmar	Mandalay	MEIKTILA		20	50	10.2	N	95	46	4.5	E

* Collection No. is designated as COL/MYANMAR/2011/UT-MAS-NIAS/(Sr. No.) for each. It's order is not always corresponding with that of collection date.

Altitude	Source	Status	Status of plant sampled	Cultural practices	Sowing month	Harvest month	Topography	Site	Stoniness	Soil texture	Drainage	Other observations	Waypoint
1011	farmland	landrace	bulk	shifting	5-7	9-11	mountainous	(slope)	(rocky)	(sandy loam)	(moderate)	Yellow, same field but separated from rice	11-44
1011	farmland	landrace	bulk	shifting	5-7	9-11	mountainous	(slope)	(rocky)	(sandy loam)	(moderate)	small and white, same field but separated from rice "Kauk Hnyin" Pyong Bu	11-44
1011	farmland	landrace	bulk	shifting	5-7	9-11	mountainous	(slope)	(rocky)	(sandy loam)	(moderate)	glutinous, same field but separated from rice	11-44
891	farmland	landrace	bulk	shifting	4-6	11	mountainous	(slope)	(low)	(sandy loam)	(moderate)	glutinous, outside red inside white	11-48
891	farmland	landrace	bulk	shifting	4-6	11	mountainous	(slope)	(low)	(sandy loam)	(moderate)		11-48
891	farmland	landrace	bulk	shifting	4-6	11	mountainous	(slope)	(low)	(sandy loam)	(moderate)		11-48
891	farmland	landrace	bulk	shifting	4-6	11	mountainous	(slope)	(low)	(sandy loam)	(moderate)		11-48
891	farmland	landrace	bulk	shifting	4-6	11	mountainous	(slope)	(low)	(sandy loam)	(moderate)		11-48
891	farmland	landrace	bulk	shifting	4-6	11	mountainous	(slope)	(low)	(sandy loam)	(moderate)	border of rice field	11-48
891	farmland	landrace	bulk	shifting	4-6	11	mountainous	(slope)	(low)	(sandy loam)	(moderate)		11-48
891	farmland	landrace	bulk	shifting	4-6	11	mountainous	(slope)	(low)	(sandy loam)	(moderate)		11-48
977	farmland	landrace	bulk	shifting	4-6	11	mountainous	(slope)	(low)	(sandy loam)	(moderate)		11-51
977	farmland	landrace	bulk	shifting	-	-	mountainous	slope	medium	sandy loam	moderate	remained in "Taung-ya"	11-51
717	farmland	landrace	bulk	shifting	-	-	mountainous	slope	medium	sandy loam	moderate	remained in "Taung-ya"	11-54
851	farmland	landrace	bulk	shifting			mountainous						11-58
851	farmland	wild	a single plant	-	-	-	mountainous	-	-	-	-		11-58
1036	commercial store	landrace	bulk	-	-	-	mountainous	-	-	-	-	at the commercial shop in Sumprabum town Univ. Tsukuba ID: Z404	11-61
929	roadside	wild	a single plant	-	-	-	mountainous	slope	medium	sandy loam	moderate		11-64
716	farmland	landrace	bulk	shifting	4-5	9	mountainous	(slope)	(low/medium)	(sandy loam)	(good)	WP065, harvested in Sep. in following order 67-69-66-68, different cultivar separately grown in same Taung-Ya	11-65
716	farmland	landrace	bulk	shifting	4-5	9	mountainous	(slope)	(low/medium)	(sandy loam)	(good)		11-65
716	farmland	landrace	bulk	shifting	4-5	9	mountainous	(slope)	(low/medium)	(sandy loam)	(good)		11-65
716	farmland	landrace	bulk	shifting	4-5	9	mountainous	(slope)	(low/medium)	(sandy loam)	(good)	Kachin name means RED RICE	11-65
716	farmland	landrace	bulk	shifting	4-5	9	mountainous	(slope)	(low/medium)	(sandy loam)	(good)		11-65
716	farmland	landrace	bulk	shifting	4-5	9	mountainous	(slope)	(low/medium)	(sandy loam)	(good)		11-65
716	farmland	landrace	bulk	shifting	4-5	9	mountainous	(slope)	(low/medium)	(sandy loam)	(good)	Taung-Ya roadside	11-65
716	farmland	landrace	bulk	shifting	4-5	9	mountainous	(slope)	(low/medium)	(sandy loam)	(good)		11-65
716	farmland	landrace	bulk	shifting	4-5	9	mountainous	(slope)	(low/medium)	(sandy loam)	(good)		11-65
716	farmland	landrace	bulk	shifting	4-5	9	mountainous	(slope)	(low/medium)	(sandy loam)	(good)		11-65
716	farmland	landrace	bulk	shifting	4-5	9	mountainous	(slope)	(low/medium)	(sandy loam)	(good)		11-65
716	farmland	landrace	bulk	shifting	4-5	9	mountainous	(slope)	(low/medium)	(sandy loam)	(good)	sown by broadcasting before rice, mix 78,79,80, smell like star aniss	11-65
716	farmland	landrace	bulk	shifting	4-5	9	mountainous	(slope)	(low/medium)	(sandy loam)	(good)	sown by broadcasting before rice, mix 78,79,80, inflorescence is dense, lemon grass like smell	11-65
716	farmland	landrace	bulk	shifting	4-5	9	mountainous	(slope)	(low/medium)	(sandy loam)	(good)	sown by broadcasting before rice, mix 78,79,80, smell like lemon grass	11-65
716	farmland	landrace	bulk	shifting	4-5	9	mountainous	(slope)	(low/medium)	(sandy loam)	(good)	Univ. Tsukuba ID: Z405	11-65
716	farmland	landrace	a single plant	shifting	4-5	9	mountainous	(slope)	(low/medium)	(sandy loam)	(good)		11-65
571	farmland	landrace	bulk	shifting	5	10-11	mountainous	(slope)	(low)	(sandy loam)	(good)	non-glutinous, for cooking	11-72
571	farmland	landrace	bulk	shifting	5	10-11	mountainous	(slope)	(low)	(sandy loam)	(good)	non-glutinous, for cooking	11-72
260	farmland	landrace	a single plant	shifting			mountainous					at the person next to the meeting house we stayed	11-80
260	farmland	landrace	bulk	shifting			mountainous						11-80
339	farmland	landrace	a single plant	shifting			mountainous	(slope)	(low)	(sandy loam)	(good)	making Tsa-Pyi with black KAUK HNYIN	11-83
339	farmland	landrace	bulk	shifting			mountainous	(slope)	(low)	(sandy loam)	(good)		11-83
339	farmland	landrace	bulk	shifting			mountainous	(slope)	(low)	(sandy loam)	(good)		11-83
339	farmland	landrace	bulk	shifting			mountainous	(slope)	(low)	(sandy loam)	(good)	SAN = non-glutinous	11-83
339	farmland	landrace	bulk	shifting			mountainous	(slope)	(low)	(sandy loam)	(good)		11-83
339	farmland	landrace	bulk	shifting			mountainous	(slope)	(low)	(sandy loam)	(good)	round shape	11-83
339	farmland	landrace	bulk	shifting			mountainous	(slope)	(low)	(sandy loam)	(good)	common shape	11-83
184	farmland	landrace	bulk	shifting	5-6	10	mountainous	(slope)	(medium)	(sandy loam)	(good)	red non-glutinous, different cultivars are separately cultivated.	11-89
246	commercial store	-	bulk	-	-	-	-	-	-	-	-	sold at a restaurant by a new highway	11-97



Photo 1. Local people kindly provided their crop varieties and related information.



Photo 2. There were different local varieties of maize.



Photo 3. Finger millet (upper), foxtail millet (middle) and pearl millet (lower) were traditional cereals in Kachin state of Myanmar. They could face extinction due to urbanization and socio-economic changes occurring there.



Photo 4. It was commonly observed that there were several traditional rice varieties grown in a village, which were clearly distinguished from each other by locals.



Photo 5. Remote villages were sometimes located near the tops or ridges of the mountains and their *Taung-ya* fields were reclaimed on the adjacent slopes below the villages.