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Blue Magpie TEAgriculture: Eco-tea cultivation and participatory farming in Pinglin Satoyama, Taiwan

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Abstract

The Blue Magpie TEAgriculture is the collaboration between the Chinese Wild Bird Federation and the Graduate Institute of Building and Planning at National Taiwan University. To challenge the mono-production tea cultivation landscape in Pinglin, since 2011, we apply the participatory farming and eco-tea cultivation to the Pinglin Satoyama. Satoyama refers to how people manage foothill ecosystems around their home villages. Up to date, the dominant satoyama actions are focusing on rice-paddy landscapes in small towns, peri-urban areas, and rural villages. Instead of rice-paddy satoyama, our Blue Magpie TEAgriculture experiment the equally critical Chinese cultural landscape, tea cultivations.

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1. Why Blue Magpie TEAgriculture?

Peri-urban areas are often over-looked places with depressed environmental quality and economic vitality. This paper examines the Pinglin area that is about 30 minute driving distance from the world-famous Taipei 101 skyscraper in Taiwan. It analyzes how could the Blue Magpie TEAgriculture, an agroecology based tea cultivation, could potentially revitalize the small town in the peri-urban Taipei. Pinglin locates only 38 km northeast of the Capital Taipei (Figure 1). Due to the surrounding

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mountainous landscape of Taipei basin, in old days, travelers had to meander through hilly mountains to get Pinglin and then its east neighbor county, Yilan. Therefore, Pinglin was the single most important stop to Yilan before the highway 5 and the 12.9-kilometer Hsueh-Shan tunnel constructed in 2006. Unfortunately, nowadays after the tunnel opening to traffic, travelers have bypassed Pinglin, so that the local tourism and tea economy has dramatically declined since then. In order to revitalize the local economy by restoring natural environments, our team initiated Blue Magpie TEAgriculture actions (henceforth, the Blue Magpie actions) to catalyze the depressing town. The participatory farming action has been applied. The actions consist of two phases. The Phase I was a collaboration between the Chinese Wild Bird Federation (CWBF) and the Graduate Institute of Building and Planning at National Taiwan University (BP) between 2011 and 2012. And then, in the beginning of the 2013, the Department of Agriculture of the New Taipei City got on board and the BP team took the lead to move to the second Phase. In brief, to challenge the mono-production tea cultivation landscape in Pinglin, since 2011, the CWBF and the BP apply the participatory farming and working holiday programs to the Pinglin Satoyama. The so-called Satoyama is a well known concept and practice to preserve and restore people's hometown landscape. Up to date, the dominant Satoyama actions are focusing on rice-paddy landscapes in small towns, peri-urban areas, as well as rural villages. Instead of rice-paddy Satoyama, our Blue Magpie TEAgriculture experiment put the effort on the equally critical Chinese cultural landscape, tea cultivations.



Fig. 1. (a) Map of Taiwan. Taipei basin is highlighted in a red circle; (b) The circled blue-circled area is the location of Pinglin

The participatory farming based Blue Magpie actions for the Pinglin Satoyama promote and experiment the environmental friendly and bio-diversity oriented tea cultivation (henceforth, eco-tea cultivation). Figure 2 illustrates the beautiful Blue profile. As the endemic species in Taiwan, this 2-foot long bird is well-loved by Taiwanese people and almost won the election of our national bird in 2000. Pinglin, part of the Feitsui Reservoir watershed, is the home base of our Blue Magpie TEAgriculture experimental station. Blue Magpies are fairly popular in Pinglin. We strategically labeled our tea as the Formosa Blue Magpie Tea to call for public attention for preserving Satoyama tea landscape via environmental friendly farming alternatives. We argue that Pinglin potentially should serve as the center of the environmental friendly TEAgriculture in Asia and the world, because 80% of the tea produced in Asia. Comparing to Napa Valley (USA) for the wine tasting and industries or Turin (Italy) for the international slow food movements and festivals, there has been no such center for the upcoming tea culture trend. We envision that Pinglin, as the preserved watershed for the Feitsui Reservoir, could be cultivated as the world center for the environmental friendly TEA-culture, TEAgriculture and TEArt.



Fig. 2. Image of Blue Magpie. (Photo taken by Mr. HongXiang Liu)

Tasting the Blue Magpie Tea; recalling our ancestors' path. Four hundred years ago, when they crossed the Taiwan Strait, how had the Pinglin looked like then? How many plants, trees, flowers and living creatures had habituated here? Satoyama tea cultivating; Blue Magpie bird nesting. How could we preserve the holistic chains to protect biodiversities for the incoming generations?

2. The dilemma of cultivating Wenshan Baozhong within the Feitsui Reservoir watershed

2.1. Wenshan Baozhong in Pinglin

When Taiwanese talk about Pinglin, the Feitcui reservoir and the Wenshan Baozhong tea terraces often associates with this quiet Satoyama landscape (Figure 3). Pinglin locates in the northeast forested and mountainous area (250 m to 800 m) of the Taipei Basin within a portion of the Taipei Water Special Area (TWSA). The Feitcui Reservoir has been providing fresh water for five million Taipei residents in the capital Taipei since 1970s. Because of the development of Feitcui Reservoir, Pinglin with three surrounding townships situate in the reservoir watershed and have been forbidden to develop any new buildings and industries ever since 1979. This new zoning control has been hard for people but good for the environment. The preservations of the natural environment have been successfully sustaining 316 animal species and healthy deciduous (broad-leaved) forest. Popular small size mammals include: Civet Cat, Formosan pangolin, Emerald Green Tree Frog, Muller's Barbet, Formosan Whistling Thrush, Alcedo (Kingfishers), and Formosan Blue Magpie. The most famous tree species is Taiwan Acacia. Ferns are also very famous in this region because of the rainy climate.

Taiwanese prefer oolong tea. According to Li (2012), nearly 70 percent of tea products consumed in Taiwan consist of oolong tea, of which of 80 percent is Pinglin Baozhong tea. The so-called Wenshan Baozhong tea (henceforth the Baozhong) baked from Qingxin oolong tea leaves and ranked as one of the top ten prominent teas in Taiwan. Dated back in Qing Dynasty around 1820s, the Qingxin oolong tea trees were transplanted from the southern region of China by Pinglin tea farmers' ancestors from Anxi in China (Niu 2004). Unlike usual ball-formed Chinese tea, Baozhong is known for its small spiraled-strip shape, the so-called little green dragon form. With its subtle honey taste, Wenshan Baozhong is popular within both Taiwanese and Japanese tea lovers. They appreciate the emerald leaf color with elegant smells plus the golden greenish tea soup.



Fig. 3. The relationship between tea traces and the Beishi Creek, the upper stream of the Feitsui Reservoir

2.2. *Fresh water for health or green tea for taste?*

While the reservoir has fundamentally limited Pinglin's developments and people's quality of lives, the popular Wenshan Baozhong has provided the reasonable incomes for Pinglinians. So far, 80 percent of Pinglinians worked as tea farmers in the area. The rest is also associated with tea productions and tea business. (Pinglin Township 2012) Due to its foggy and moist environment and hilly topography, Pinglin has been one of the best oolong tea cultivation areas in Taiwan. The so-called conventional tea cultivation depends on heavy applications of pesticides and fertilizers to keep the tea leaves with rich flavors. Therefore, even though the zoning control has restricted new buildings and industries to move into Pinglin, its tea cultivation has been ironically toxic and polluting to the Feitsui Reservoir.

Tea is hard to cultivate, especially to cultivate precious tea for picky Chinese tea lovers. Mr. Lin is an environmental friendly tea farmer whose family has been cultivating teas for eight generations. He explains that, to preserve the extraordinary flavor and taste, the best champion tea leaves have to be juicy without pest bites (Chang 2012). Yet, according to Akwai (1997), tea plants are the targets for more than one hundred pests to attack, especially the plucking surface areas. He declares that the perennial and evergreen tea plants habit in the "most complex and most stable" agro-ecosystems among Japanese agriculture environments. Most pests of tea plants complete their life cycles within the tea fields. To establish environmental friendly TEAgriculture has to study the ecological chains of tea fields thoroughly. Akwai also argues that excessive insecticide applications might not be able to control tea pests because of the polyphagous nature of these insects. Instead, farmers should consider and experiment the conservation and utilization of indigenous natural enemies in the control system of tea pests. He recommends tentative IPM systems to be applied in Japanese tea cultivations. The Food and Agriculture Organisation of the UN (US EPA 2012) defines IPM as the careful consideration of all available pest control techniques and subsequent integration of appropriate measures that discourage the development of pest populations and keep pesticides and other interventions to levels that are economically justified and reduce or minimize risks to human health and the environment.

Mr. Lin further explains that tea farmers usually prefer conventional way of cultivating teas, because organic or environmentally friendly tea leaves would be bite by bugs. Those bites not only damage tea flavor, but also the beauty of tea leaves. No organic tea brands could participate in local or national tea competitions. However, only competition teas can get high profits in Taiwanese and Chinese tea markets. In the case of Pinglin, among all tea farmers, only 6 percent of them are organic or/and environmental friendly tea farmers. Representing one of the six percent organic tea farmers, Mr. Lin only cultivates

chemical free teas after he was hurt by pesticide and hospitalized for a week. Lin says, “about three years ago, I only touched a very tiny amount of diluted pesticide; my whole body got reddish spots and unendurable itch. I stay in hospital for a week. I never want to apply chemical stuff in my tea cultivations anymore.”

In addition to pesticides, fertilizers also cause problems. Tea farmers apply substantial fertilizers to assure that they would harvest juicy tea leaves. Well-baked juicy tea leaves sustain good flavor even after serving several terms. Tea masters indicate that high quality tea leaves could serve as many as seven to eight terms. The Director of the Feitsui Reservoir claims, “Local tea farmers over fertilize their farms. Tea trees could not absorb so many nutrients. The extra nitrogen and Phosphorus would wash into the Feitsui Reservoir that cause the eutrophication in the Reservoir.” To address this issue, the Reservoir technicians have promoted the so-called “reasonable fertilization program” to tea farmers within the reservoir watershed. So far, dozens of tea farmers join the program. Tea farmers save money, while the reservoir reduces the level of eutrophication.

3. The Blue Magpie TEAgriculture as an alternative tea cultivation to promote biodiversity

3.1. Teaming up for eco-tea cultivation to balance economy and ecology

Obviously, the challenge that Pinglin has been confronting is how to balance the environmental quality and people’s everyday needs. Figure 4 illustrates the cycle of dilemma between Pinglin’s tea cultivation and Feitsui Reservoir water contamination. The New Taipei City government has been experimenting various ways to boost the economy without damage the environments, for example, “every town with its special products”, “low carbon eco-tourism for Pinglin”, “low carbon Pinglin communities”, etc. Pinglinians have been disappointed by the results, because these government-funded projects seldom succeed after the funding burned out.

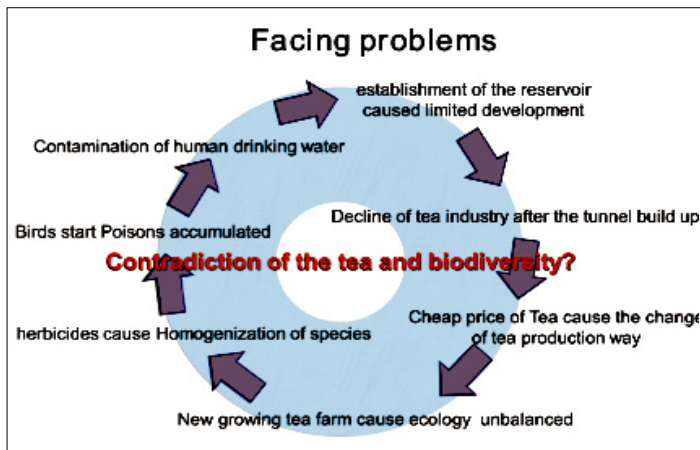


Fig. 4. A conceptual diagram for tea cultivation and ecological preservation in Pinglin

Source: The BP NTU Pinglin Studio

Under this circumstance, to revitalize the local economy of Pinglin by preserving its natural environments, our team initiated Blue Magpie TEAgriculture actions to catalyze the depressing township. As pointing out in the beginning of the paper, to date, the experimental actions have gone through two

phases since 2011. The Phase I was a collaboration between the Chinese Wild Bird Federation (CWBF) and the Graduate Institute of Building and Planning at National Taiwan University (BP) between 2011 and 2012. And then, in the beginning of the 2013, the Department of Agriculture of the New Taipei City got on board and the BP team took the lead to move to the second Phase.

The Blue Magpie tea action is an evolving experiment. The key players of the experiment consist of eco-tea farmers, the university (BP) and local governments. First of all, a few eco-tea farmers have joined as the cohort tea farmers who cultivate woolong tea and produce Wenshan Baozhong. That is the green tea of Blue Magpie Tea brand. Secondly, the New Ruralism Center at BP NTU has been facilitating the tea trade negotiating with dealers. The BP group also facilitates packaging design and conducts marketing study. Finally, local government agencies include the Department of Agriculture and the Tea Research and Extension Station. The former sponsors partial cost of organic fertilizers. The latter provides knowledge and technologies for eco-tea cultivation. Farmers, governments, and the academics form the golden triangle that aim to innovate the Blue Magpie TEAgriculture principles.

3.2. Four principles for the Blue Magpie TEAgriculture

No pesticides allowed; only organic fertilizers applied. The two are the fundamental rule for any organic farming systems in Taiwan and perhaps worldwide. So does the evolving Blue Magpie TEAgriculture (henceforth the magpie teagriculture). However, the magpie teagriculture more considers the harmony among the ecological chains than the health of each individual crop (Figure 5). Four environmental principles are highlighted for members of the magpie teagriculture. First, toxics free for birds' food chains. In other words, safe-pesticide and reasonable-organic-fertilizer applications are allowed in the magpie tea cultivation system. However, no toxic residuals are allowed to remain within bird food chains. Birds eat bugs and bugs eat microorganisms in soil. Therefore, chemical free soil environment is critical for sustaining a healthy food chain for birds. With help from Pinglin eco-tea farmers, Dr. Tabata (2012) found out that the larvae of *Neolucanus swinhoei* can only survive in soil without chemical containment. This Taiwanese native lovely little beetle's baby can serve as one indicator of chemical free tea cultivation environment.



Fig. 5. Ecological chain for the Blue Magpie TEAgriculture

Source: The BP NTU Pinglin Studio

Secondly, in order to protect top soil, farmers need to plant green manure crops and develop weed management methods. The topography of Pinglin tea plantations are mostly hilly terraces. In conventional tea cultivation fields, no green cover protects top soils. Top soils usually get washed away in

heavy rain periods. Green cover plants as well as green manure crops are highly recommended for tea plantations. For example, Lupinus is a genus of flowering plants in the legume family (Fabaceae). It works very well as the spring green manure crops in Pinglin tea plantation. It contains rich nitrogen can contribute to tea leaves. Daylilies (*Hemerocallis*) are better for autumn and winter, and it also good for steep slope due to its deep and comprehensive root systems.

Third, farm for nurturing, not for consuming. The magpie tea farmers welcome cooperative social responsibility (CSR) programs adapt their eco-tea plantation via participatory farming activities. Company employees, as volunteers, donate time and money to support magpie tea cultivation systems. Each CSR program has its designated tea farms and cultivating schedules. Farmers coach CSR volunteers how to manage tea trees. Therefore, volunteers come to take care of tea trees not because of how many tea leaves their plantation can produce, but because of the precious experiences of cultivating each tea trees.

Fourth, no new tea plantation developments are allowed. The magpie tea cultivation systems encourage conventional tea farmers transform their tea plantations to environmental friendly tea cultivations. In other words, the way to harvest more tea leaves require farmers change their cultivation styles. They should not cut forests and develop new tea farms for environmental friendly tea cultivations. Due to the 2006 tea business recession in Pinglin, tea farmers have abandoned certain portions of their tea plantations. A few tea farmers have been pondering on restoring their idle tea plantations and joining the magpie tea group. We consider this is acceptable for joining the magpie tea systems. However, we encourage more active conventional tea plantations can be turned to eco-tea farming.

In order to understand tea cultivations and investigate new methods, our team has also adopted one tea plantation since September 2012 (Figure 6). We have been working on tea terraces as if we were farmers for three seasons so far. We are going to have our first spring harvest of our BP Blue Magpie tea plantation in the coming April. Due to the decade long idle period of our tea plantation, the quality of our tea leaves would be under the market standard. However, we perceive every tea tree as our child. The special ties between tea trees and us cannot be replaced by the market prices.



Fig. 6. The BP participatory tea plantation in Pinglin. In September 2012, The BP team, with helps from tea farmers, cleaned up an idled tea plantation that was abandoned since 2000

4. Where we are – The BP-NTU designed Blue Magpie tea packages flying around the world

To be successful of the Magpie TEAgricultural action, we have to confront the challenge of today's consumer society where shopping and buying are the center every civil life. Marketing and package design the magpie tea have been the most critical step that our action trying to achieve. Astuti and Hanan (2011) point out design factors have profoundly influenced customers' preferences. From the strategic point of view, successfully marketing the Blue Magpie tea products have been as important as the development of environmentally friendly farming methods that explained above.

To make the long story short, faculty and students of the Economics Department of the Meiji Gakuim University joined the package design effort in late August 2012. The Meiji Gakuim group has been also marketing the magpie tea in the campus neighborhood since then. With their endorsement and support, the BP team composed two types of package designs (figure 7 right) and constructed the internet blog site for sale. Interestingly enough, according to our sale experiences, the small red and green box design is much more accepted than the blue cans, even though the tea quality within the cans are ranked much higher. Especially for young/student groups, they even thought the 200 NTD (6.5 USD) box packages are very affordable and considerably cheap. Up-to-date, the Blue Magpie Tea packages have been flying three continents and landing on 15 countries (Figure 7 right). The Blue Magpie tea packages have functioned as the best ambassadors symbolize the Taiwanese way to balance economy and ecology.



Fig. 7. The current Blue Magpie Tea packages designed by the BP NTU team (Left). The worldwide visiting of the Blue Magpie tea packages (Right)

Source: The BP NTU studio

5. Envisioning the future

Tea cultivation and tea drinking have been historically integrating with Chinese civilization. According to tea history exhibition in the Iruma Museum in Japan, the earliest tea trees were found in Sichuan Province of the central China dated back in the beginning of the western calendar. During the past two thousand and more years, tea trees and the hobby of tea drinking have been gradually spreading worldwide. The participatory based Blue Magpie TEAgriculture is one of many efforts that tea farmers and environmental activists have tried to restore the ecological systems damaged by tea cultivations. To sustain the goal, customers also have to be engaged in changing their drinking and consuming preferences. To reach the balance between ecology and economy, everyone has to participate in the blue magpie actions. A small step, such as to share the blue magpie tea story when one drinks the tea with

one's friends, functions as a critical environmental action that helps our habitat restoration within a big picture. Cheers!

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