

Eurasia Foundation International Lectures, Fall 2020 Semester

“The Construction and Transformation of East Asiaology” Lecture Series (9)

Title: The History of the Development of Taiwan’s Fruit Tree

For the ninth Eurasia Foundation International Lectures, we invited Professor Tung-Chuan Hsiung, from the Department of Horticulture and Biotechnology (DHB) at the Chinese Culture University (CCU). Professor Hsiung delivers a speech entitled “The History of the Development of Taiwan’s Fruit Tree.” The speech focuses on the agricultural development and fruit tree industry management in Taiwan and also cover issues of promoting improved breed and healthy seeding, improving cultivation techniques, applying biotechnology, issues in the development of fruit tree industry. Professor Hsiung shares his agronomy and economic, and trade knowledge about the history and current situation of Taiwan’s fruit tree, technical improvement, exports, which brought lots insights to teachers and students.

I. His studying abroad in Japan experience and the Introduction of DHB

After graduating from the Chinese Culture University, Professor Hsiung received his master degree in Kagoshima University and Ph.D. degree in Kyushu University and return to CCU as faculty members. DHB at CCU studies a various research subjects, including the propagation of camellia oleifera, export processing of eustoma and oncidium, tube plant of white flower alocasia. Among them, Professor Hsiung introduces the related technology and export experience of top-working pear and litchi. In orchards in Taiwan, we can see pear tree installed with small umbrella for the purpose of the pollination of top-working pear. Moreover, when exporting litchi to Japan, there is a strict quarantine. During the quarantine, litchi is under a strict process of temperature difference, and it might change its color.

II. Taiwan’s Agricultural development, management of fruit tree industry, production typology and characteristics

Professor Hsiung explains how “climate change” brought biggest problem to Taiwan’s agricultural development and the management of fruit tree industries. Heavy rain caused the situation that either concentrated rainfall or days without rain which brings negative impact to agricultural production. Professor Hsiung cites statistics data to introduce and analyze this problem.

1. From the agriculture GDP, the comparison and changes in the structure of agricultural

production: Agriculture GDP as share of total GDP was 50% in 1950s, but it declined to 1.77% in 2019. In the structure of agriculture, forestry, fishery and animal husbandry production, agricultural production was 54% in 1971 and 51% in 2019. In addition, in the early days of Taiwan, due to the popularization of rice cultivation during the Japanese colonial period, the proportion of rice production was the highest; however, accompanied with the improved economic conditions, fruit, vegetable, flower production showed a substantial increase. Fruits production increased from 13% in 1971 to 37%, vegetables increased from 16% in 1971 to 26% and flower increased from 0.03% in 1971 to 6.7%. In terms of output value, the output value of fruit trees and vegetables are equivalent while the output value of flowers is the highest.

2. The changes in agriculture exporting countries: Japan was Taiwan's biggest exporting countries, but mainland China has become Taiwan's biggest exporting countries of agricultural production in recent years. The reason is that Japan formulates different quarantine methods comparing to other countries and the quarantine methods are relatively strict to Taiwan's products, which directly or indirectly decreased the willingness of Taiwanese companies to export their agricultural products to Japan in recent years.

3. The typology and characteristics of Taiwan's fruit tree production: Taiwan's fruit trees can be divided into temperate, tropical and subtropical fruit trees. In terms of planting area and productivity of the cultivated fruit trees, citrus, pineapple and banana are the three major ones. In term of gross production value and average production value, comparing the unit price per hectare, grape is the highest for it can be harvested three times a year; passion fruit is the second; papaya is the third. Professor Hsiung also mentions that betel nut is also classified as fruit tree and an important medicinal plant, for it can repel roundworms. However, due to the negative impact of betel nut trees on soil and water conservation and the addition of lime, the government does not assist or encourage planting.

III. Technical improvement and issues of fruit trees

In the final section, Professor Hsiung talks about the technical improvements and issues of fruit trees.

1. Improvement breed and healthy seedlings: In Taiwan, government is the main actor in encouraging breed diversification to increase output value and competitiveness. For

example, new breed such as pineapple sugar apple and milk pineapple have come out to provide consumers with more choices. Healthy non-toxic seedlings refer to tissue-cultured non-toxic seedlings, especially bananas, grapes and citrus.

2. Improvement of cultivation techniques: Professor Hsiung mentions that Taiwan's cultivation techniques have achieved the following goals: ① Technique-intensive and refined management. ② Construct a crop safety management model, use organic certification to improve product safety to increase consumers' purchase willingness. ③ Using off-season production techniques to reduce the pressure from the overproduction period. ④ Use facility cultivation, such as greenhouse cultivation to improve yield and quality.

3. Application of fruit tree biotechnology: At present, it mainly focuses on gene transfer, tissue culture, and molecular markers. For example, the diagnostics of healthy banana seedlings, the application of grape embryo culture methods, etc.

4. Current issues and solutions for the fruit tree industry: ① The income from agriculture is low and mainly came from domestic sales: it is advisable to improve quality, increase local consumption, and increase the added value of products. ② The production-oriented business strategy ignores soil and water conservation: it is advisable to reduce those cultivated areas with these concerns. ③ It is not easy to control the supply volume and quality, and thus the export stability is insufficient: it is advisable to establish an overall safe, high-quality brand and adjust the marketing model. ④ Small scale of operation, high production cost, and the crisis of aging and declining birthrates: expand the scale of operation by means of "small landlords and large tenant farmers." ⑤ Meteorological disasters, production falls way below demand and prices skyrocket and thus farmers scramble to plant these crops: It is advisable to establish a management and early warning model for fruit trees cultivation to response to the meteorological disasters.

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(Written by Hsin-I Huang, Assistant Professor of the Department of Japanese Language and Literature)

(English Version Translated by Wenting (Florence) Yang, Post-doctoral Research Fellow, Institute for National Defense and Security Research)