GLOBAL FUTURE AND TROPICAL AGRICULTURE

Tropical Agriculture  Professor: Nawata E., Associate Prof.: Higuchi. H.

In the tropics, for a long time, environmentally sound agriculture was performed. The recent population increase, however, has made it difficult for the traditional systems to sustain the food supply, resulting in rapid expansion of agricultural land, and intensification and diversification of agriculture, with various environmental problems, including deforestation, soil erosion and salinization, in addition to the deterioration of agro-environment itself. We aim at effective utilization of agricultural resources including bioresources to realize sustainable agriculture harmonized with environment in the tropics through fundamental and applied research.

Evaluation of agricultural resources and farming systems in the tropics

In order to realize sustainable agricultural production, it is important to use appropriate agricultural technologies harmonized with the local environment. For this purpose, it is indispensable to understand local agricultural resources and present and past farming systems. We are studying and evaluating agricultural resources and farming systems through field surveys and experiments.

Responses of tropical crops to the environment

We are trying to clarify the water dynamics and the mechanisms of stress tolerance of tropical crops in order to stabilize the agricultural production in the stressful tropical environment. We are also studying flowering and fruiting physiology of tropical fruit trees.

Crop evolution of tropical crops

We are studying the origin and process of dissemination of tropical crops, especially Asian traditional ones. For example, bird pepper cultivated in the Seinan Islands in Japan and Indonesia is considered to be disseminated from the Philippines along various islands based on biochemical and morphological traits. In addition, we are studying crop evolution of mango and coriander.
Key words

Agricultural ecology, Agricultural resources, Crop evolution, Environmental stress, Farming systems, Herb, Land use, Southeast Asia, Spice, Utilization of bioresources, Tropical Africa, Tropical fruit trees

Recent publications

**Mango resources left on Okinawa Island and their diversity.**  
Ueda Y. and H. Higuchi  

**Effect of Temperature on the time requirement of pollen tubes to penetrate into embryo sac after pollination in cherimoya (*Annona cherimola* Mill.).**  
Matsuda, H., H. Higuchi, N. Kozai and T. Ogata.  

**Application of GGE-biplot analysis to multi-environment screening of sugarcane in central and western regions in Thailand.**  
Chatwachirawong, P., P. Srinives and E. Nawata  

**Effect of crop load on the acidity of passion fruit.**  
Kondo, T. and H. Higuchi  
Tropical Agriculture and Development. 55 : 129-134. 2011.

**Wild mangoes in Mainland Southeast Asia: Their local names, uses and growing environments.**  
Ueda Y., H. Higuchi and E. Nawata  

**Capsicum use in Cambodia: The continental region of Southeast Asia is not related to the dispersal route of *C. frutescens* in the Ryukyu Islands.**  
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**Crop field referred as "dumping yard" -Case study in eastern Uluguru Mountains- In M. Kakeya and J. Itani eds., African Studies and Rural Development.**  
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