GLOBAL FUTURE AND TROPICAL AGRICULTURE

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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.

Left : Maize cultivation in Thailand
Right: Slope land agriculture in Tanzania

Responses of tropical crops to the environment

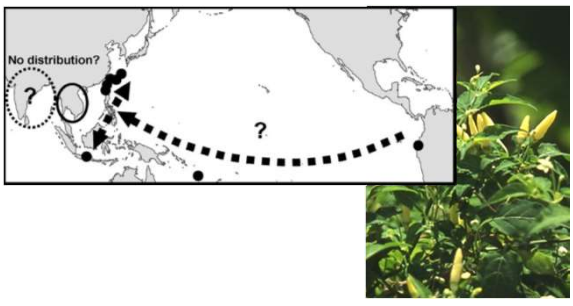
Chili plants with separated roots
Left : half roots waterlogged
Right: whole roots waterlogged

Measurement of photosynthesis of water-stressed mango

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 glutinous maize.



Estimated dispersal route of bird pepper

A plant of bird pepper

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

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