

From Rainfed to Semi-controlled Water Management of Paddy Cultivation in Northeast Thailand

Yasuyuki Kono[1]

[1] CSEAS, Kyoto Univ.

Paddy is grown under either irrigated or rainfed water environment. In Monsoon Asia where paddy is the dominant crop and rice is the major food, irrigated paddy prevails in the temperate zone such as Japan, Korea and China, while rainfed paddy is widely practiced in Southeast Asian countries. This study aims at reconsidering the dichotomy of water management as irrigated and rainfed and to proposing the significance of semi-controlled water management particularly for unpredictable climatic changes in the future through a case study at a rice growing village in Northeast Thailand.

Nearly 95% of paddy growing in Northeast Thailand was rainfed in the early 1980s. In-situ rainfall and run-off from the small catchment area of each plot were the sources of water for paddy. Rainfall is erratic in terms of both seasonal distribution and year-to-year fluctuation. This directly affected water regime of paddy. Farmers had developed various kinds of technology including the selection of rice variety and the control of growing period to cope with instable water supply and to harmonize their farming with empirically-learned monsoon rhythms. The technology was well elaborated under the given rainfed environment, but its effect in terms of rice productivity was limited. Rainfed paddy cultivation suffered frequently from water shortage.

Rapid economic growth of Thailand since the mid-1980s had a wide range of impacts on rural societies. Labor-saving technology spread in paddy cultivation in order to provide farmers with opportunity to work in the non-agricultural sectors. Simultaneously, both government agencies and farmers started investing in land and water development for paddy cultivation. What they have achieved was, however, not the conversion of rainfed farming to irrigated farming due to lack of water resources and large-scale water controlling facilities. Instead, farmers evolved paddy cultivation by means of site- and time- specific combinations of water use technology including on-farm water management under the semi-controlled water regime. This, combined with other technical innovation, increased rice productivity in the early 2000s three to five times higher than that of the early 80s.

This case study suggests the significance of an alternative development of water management under the monsoon climate. This is neither fully adjusting farming practice to natural water regime nor creating man-made water regime to suit to the most advanced technology, in other words, neither rainfed nor irrigated. The technology adopted is flexible toward water demand, water availability, and labor availability, though its effectiveness is still limited and paddy cultivation suffers from flood and drought in some years. Diverse environment-adjusting technologies should be a key to sustainable paddy cultivation under the changeable and unpredictable monsoon climate.