

## Global warming impacts on food production and environmental preservations? Research examples and preliminary surveys

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In case of research programs of the climate change impacts on agriculture and food productions, it is necessary to consider not only the characteristics of natural environment but also the economical conditions such as motivations of cultivating and dispositions of consuming in target areas. It has been estimated that the averaged yield of paddy rice over Japan will be increasing due to declining of cool-summer damage in northern Japan, main rice-crop area of Japan, and due to growing of biomass amount with fertilizer effect by atmospheric CO<sub>2</sub>, up to temperature increase within about 3 degrees compared with current climate. A remarkable declining trend in rice quality, however, has already been observed in western Japan and it is concerned that further declining of the quality because of low insolation in spite of high temperature environment.

Over the Mekong Delta region of the Vietnam, the southern most part of the Indochina Peninsula, inundation/flooding in back-swamp area and salinity intrusion along the coastal lower area are two key issues related to rice yield change. Our preliminary analysis by using paddy water-rice growth coupled model showed that future rice production could considerably decrease because that the reduction of harvest area by severe inundation in the back-swamp and the declining of yield by higher temperature in wet season crop. In this area, other environmental and economical -related problems such as water contamination and the violent fluctuation of price for shrimp that produced in aquaculture converted from the paddy field.

In this presentation, we also introduce current status of our research projects on agro-environmental problems over the other monsoon Asian region, for example, rice cropping for future exporting to Japan over the northeastern part of China and rain-fed paddy fields in the northeastern part of Thailand.

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