附 件 2

PARTICIPATORY MANAGEMENT FOR IRRIGATION PROJECTS

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With high population growth rate nowadays, there is increasing demand for water – domestic, industrial, ecological uses which are usually followed by water deficiency for each sector. More water resources development projects are needed to supply more water to meet these demands. Unfortunately, new water resources development in these days is almost no more possible due to lack of suitable water resources and also the support of nongovernmental organizations, to some extent.

It is crucial importance to seek for ways and means to manage the demand of each sector with water supply available. This paper emphasizes on the management of water demand for agriculture, especially paddy agriculture which is often accused as the major water consumer. It is realized that sustainable irrigation management is very crucial in the current situation. It is fully agreed upon that sustainable irrigation water management is not fully achieved unless all the stakeholders especially the farmers, the main water consumers play the important roles in irrigation water management. Such management includes all the three levels i.e. basin-, project – and on-farm level, water users organizations establishment and strengthening as well as participatory irrigation management, PIM. This paper would show the way and means which Royal Irrigation Department, RID has tried to adopt Participatory Management for her irrigation projects in term of Participatory Irrigation Management, PIM which is implemented nowadays might need some adjustment / improvement for time to time

Keywords: sustainable, water management, Participatory Management, Participatory Irrigation Management, PIM.

RADIOACTIVE CONTAMINATION OF PADDY SOIL AND ITS TRANSFER TO RICE IN FUKUSHIMA

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Due to nuclear power plant accident in March 2011radiocesium (Cs) has been spread over Fukushima prefecture and paddy fields have been contaminated. I will report our investigation on the velocity of Cs migration in soil, firstly, and on the mechanism of exceptionally large transfer of Cs to rice in some paddy field in 2011.

The vertical migration of radiocesium fallout in the soil was monitored for 1 year at several locations in Fukushima after the nuclear power plant explosion. We determined the vertical gamma ray intensity profiles in boreholes in the soil using a scintillation survey meter with a lead collimator to restrict the incoming radiation, only allowing horizontal detection. The average migration distances of radiocesium at 2 time points were accurately determined based on the difference in the depth of the centroids of two gamma ray intensity profiles. The results showed that although the convective velocity of Cs was unexpectedly as high as $1/10^{th}$ of the velocity of the infiltrating rainfall water 2–3 months after the nuclear plant accident, the velocity decreased to $1/100^{th}$–$1/200^{th}$ of that of the water after 6–12 months. This indicated that strong fixation of Cs to clay particles occurred during the initial 2–3 months. Cs uptake by plant roots may have decreased remarkably along with the mobility of Cs in the soil.

In a few paddy field in Fukushima radiocesium transfer from paddy soil to harvested rice exceeded the expected maximum transfer coefficient (0.1) in 2011, although in most of the paddy fields the coefficient was much less. The mechanism for the high transfer to rice has not been known. I will introduce my research on it and show my hypothesis, in which I maintain that organic material that covered soil surface when the radioactive cesium felled produced the high transfer.

FARMERS' RESPONSES TO CLIMATE CHANGE ADAPTATION IN IRRIGATION PROJECT (THAILAND CASE STUDY)

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It has already been acknowledged by many people that the climate change phenomena are affecting normal life activities in the Southeast Asia region. The IPCC reported an increasing trend in the mean surface air temperature with 0.1-0.3 degree Celsius increase per decade recorded between 1951 and 2000. In recent decades, this region has also experienced changes of extreme weather events in terms of frequency and intensity as well as a decreasing trend in precipitation.

The objective of this research study, which comprises a series of studies in three different RID's irrigation projects/sub-projects within the Chao Phraya River Basin, is to analyze the possible impacts of the climate change on agriculture and irrigation systems (particularly in terms of practices, operations and adaptation by farmers). Research activities included: GCM data modification (downscaling) to study area conditions; water uses/agricultural data collection and statistical analyses; selection of stakeholders (i.e. farmers, RID zonemen and irrigation officers) for adaptation interviews; impact assessment on conjunctive water utilization between surface and groundwater; and dissemination of knowledge and creation of community awareness on climate change impacts and adaptations.

The research outputs are recommendations on adaptation measures for three different management levels: the upper watershed, the project and the paddy field levels. Recommendations collated from responses to the questionnaires by all selected stakeholders include reservoir rule curve adjustment, moving forward the existing cropping calendar and provisions of information and knowledge on self-adaptation techniques to farmers. Specific recommendations from farmers were analyzed and included in the training document subsequently prepared as part of the lesson learned from the research study.