Good Practices for Climate Change Adaptation in Agricultural Sector, Thailand

*KOSHI YOSHIDA[1]

1. Ibaraki University

Meteorological Uncertainty caused by Global Climate Change would have significant impact on agricultural sector, because agricultural systems are strongly affected by local climate condition. In Thailand, agriculture is major sector which producing 11% of GDP and 40% of employment. Ratio of irrigated agricultural land is 30% and other 70% is rain-fed so that climate change makes agriculture more unstable and also makes crucial damage to the societies and economics in local area. To mitigate these issues, it is desirable to develop and disseminate enhanced adaptation systems including impact assessment tool for drought problem by using water-soil-plant model, mapping technology of shallow ground water or soil salinity, and development of adaptive farming practice. Therefore, in this study, we introduce the good practices of following topics related to agricultural adaptation measures under CC condition in Thailand.

1.Enhancement of Production System Management in Orchid farming
Low water levels in the Chao Phraya River cause seawater intrusion. Salinity, in irrigation water, is one of the major environmental limiting factors for growth and productivity of orchids. Since orchid farmers do not know much about the effect of salinity, they are afraid of using saline water to irrigate mature plants, especially in the flowering stage. Therefore, the objective of this research was to determine the interaction between water salinity level and duration of growth, flower quality and photosynthesis parameters. And new growing material, the cement block and coconut shells were tested.
2.Development of Drought Monitoring Platform in whole Thailand
This research mainly develops drought monitoring model based on satellite data which can provide drought risk map country-wide on a weekly basis. In addition, an algorithm to combine phenological and demographic data will be pursued to generate a drought vulnerability map. Such results can be analyzed with other group’s results (via Multi-Criteria Analysis) to provide useful information to the government for adaptation and mitigation to Climate Change.
3.Salt Affected Soil Mapping and Future Projection of Soil Salinity Level under Climate Change Condition
In North East Thailand, annual rainfall is about 1200mm and average rice yield is only 2.1 t/ha (rain-fed). In addition, 50% of total land area in this region are classified as salt affected area. Therefore, salt-affected soils are major environmental problems in NE Thailand. In future, climate change may cause negative impact on salt-affected soil problems. In this study, we investigate the climate change impact on salt affected soil, establish more useful salt affected soil maps to propose appropriate cropping system/crop calendar under CC condition.
4.Evaluation of Potential Yield of Shallow Ground Water for Countermeasure in Drought Problem
This research aimed to assess shallow ground water use for agricultural farming, as the countermeasure of severe drought problem. Firstly, we monitored the seasonal fluctuation of shallow ground water level in Dan Chang district, Suphanburi province, based on resistivity mapping data. Then, sugarcane yield estimation model was developed and applied. And numerical simulation was conducted to estimate the potential sugarcane yield by using shallow ground water.
5.Evaluation of Weather-Induced Economic Damage on Agricultural Production
In The Twelfth National Economic and Social Development Plan (2017), the Thai government advised farmers to cultivate cash crops rather than rice to increase farmer income. However, some upland crops

are more sensitive to climate condition than rice, so weather-induced economic damage should be previously evaluated for each crop. Therefore, in this study, weather-induced economic damages of rice and upland crops such as sugar cane and cassava were evaluated in Northeast Thailand.

Furthermore, it is necessary to conduct reliable research to find ways to achieve economic betterment through agriculture under CC condition. Therefore, cost-benefit analysis also should be applied to consider the possible and acceptable ways and planning.

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