



ABSTRACTS

SESSION 1: BOOSTING SUSTAINABLE PRODUCTION

1.1 Minimizing global double impacts (Climate change & COVID-19) to agri-food system transformation in Myanmar

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With the existing global setting, almost all of the countries suffer the double impact i.e., climate change and COVID19 global pandemic impacts, to their agriculture sectors. This double impact also threatens the country food system of Myanmar; specifically, changes in precipitation and temperature have spatial effects on the upstream environment of the agri-food system and COVID 19 on the downstream environment. The climate-smart village approach verified the potential to contribute to diversifying and improving the quality of food consumption and highlighted the fact that climate-smart agriculture of any kind does have a positive influence on dietary diversity in a household. Moreover, self-adaptation measures to climate change proved that there was an additional profit and a cost reduction if the farmer adopted the climate adaptation practices. While struggling with that climate change impacts, however, the country's food system suffers a new challenge from the global pandemic COVID-19. The 30% to 35 % of agricultural production will be reduced due to the second and third waves of the COVID 19 outbreak recently. In this regard, following the evidence of potential transformation, there is a need to alter an adaptive and resilient food system that can respond to changing circumstances and new challenges as they emerge, in addition to the COVID-19 Economic Relief Plan (CERP) and Myanmar Economic Recovery and Reform Plan (MERP).

1.2 Natural capital impacts on food system

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Natural capital provides flow of benefits to people and the economy in the form of “Ecosystem services”. However, due to human activity the world’s ecosystem services have been degraded in the accelerating rate. We are using 50% more natural capital than the regeneration rate. As the global population continues to grow, it has been estimated that by 2030 we will need the natural capital equivalent of two planets to sustain ourselves. Current practices of food systems are also causing significant damage to environment and human well-being.

This study aims to investigate the impact of food system on natural capital in monetary term – valuing the externality from food system. The assessment start by quantifying the environmental consequences in physical terms which are GHG, Air pollutions (SO₂, NO_x, PM2.5, NH₃, VOCs), Water pollution and Waste generation using LCA (Life Cycle Analysis). Then put the values on the impacts using economic valuation technique (Benefit Transfer). The selected food products including Meats, Egg, Vegetables, Fruits, Sugar cane and Shrimp.

1.3 Pesticide use practices in Cambodia's vegetable farming

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Our survey of vegetable farmers reveals that pests and diseases are the biggest challenge Cambodian vegetable production. Pesticides/herbicides account for the largest share in vegetable production costs in our study areas, suggesting that chemical pesticides are commonly used in vegetable farming in Cambodia, particularly our study areas which are the main producers of vegetables in the country. Additionally, it is common that farmers mix various types of pesticides per spray which is not good practice. Applying ordinary least squares regression and probit model, we investigated the factors that facilitate or impede pesticide use practices. The results show that lower use of pesticide is associated with age of farmers in charge of pesticide spraying, educational attainment, female farmer, and varied by locations. At the same time, there is a significant link between the use of large quantities of pesticide and farmers' misperception of pesticide use practices and the proportion of pesticide spending in total input costs. Apart from this, knowledge/advice about pest management/control farmers receive from their peers and pesticide stores, household participation in social groups such as agricultural cooperatives, and farm size are positively correlated with the probability that a farmer will comply with recommended pesticide doses. These results imply that modifying farmers' attitudes towards pesticide use and promoting the role of women in vegetable pest management are among the important interventions to reduce pesticide dependence.

1.4 World fruit tree technology and innovation: implications towards sustainable farming

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The world research data or research systematic mapping for fruit technology are synthesized by searching the literatures through various international academic database using keywords on “inventions, innovations, and technologies”. From the 28,894 international searched databases, only 113 articles are appropriate for further evaluation. The results showed that most articles come from journals that have peer reviewed. During 2005-2019, there was an increasing trend of publication. Most of the study area was located in Europe. Nevertheless, when classified by country, the United States produced the highest studies in terms of fruit tree type. Apple is the fruit tree type that appeared mostly in the studied articles. Most articles are the scientific basic research or at the experimental plots. When classified the papers according to fruit farm production process, most articles conducted research projects into 3 categories, namely the disease and insect management, harvesting, and farm management, respectively. Lastly, the interesting technologies are such as unmanned aircraft technology, trunk drilling inoculation and injection technology, automatic spraying technology, robot harvester, technology to use of robot for disease detection and inspection within the orchard, etc. Further researches on fruit tree farming towards these new technologies are encouraged for Thai government to invest in. However, barriers and uptakes are needed to be considered.

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