

## **REPORT ON THE ACADEMIC VISIT TO MEIJI UNIVERSITY.**

**(From October 27, 2018 to November 13, 2018)**

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### **Objective of the visit**

Chiang Mai Rajabhat University and Meiji University established a Memorandum of Understanding (MOU) in 2014 resulting in collaboration for academics and educational programs. Professor Dr. Takashi Ikeda and student from the School of Agriculture visited Chiang Mai Rajabhat University on November, 2014. Four years later, in 2018, I was granted by Meiji University to visit Japan. I was greatly honored to receive the invitation to be part of your Meiji University “International Scholars and Intellectuals Invitation Project”. The purpose of the visit was undertaken with the view to broadening the University’s international relationships in term of research and educational activities. The visit was conducted on dates October 27, 2018 – November 13, 2018 at Kawasaki campus of Meiji University.

### **Teaching**

It has been a great pleasure for me to spend 17 days in Japan. During this time I presented lectures and participated in undergraduate and postgraduate student’s presentation. Copies of all my presentations are on a USB with Professor Takashi Ikeda. My lectures at the School of Agriculture were related to the king’s sustainability philosophy. The past king of Thailand, His Majesty King Bhumibol Adulyadej (Rama IX), gave the Thai people a great roadmap to sustainable development at a personal and country level. Agriculture had always been His Majesty the King's foremost concerns. For more than 60 years, King Rama IX has initiated projects aimed at raising the standards of rural life and helping farmers to be self-reliant. The projects are classified into various categories, such as agriculture, water resources, the environment, occupational promotion, public health, public welfare, and communications. To achieve their aim, each of them is based on major

principles suggested by His Majesty. His principles have been simplicity, frugality, and effectiveness laying a firm foundation for the prosperity and happiness of the people in the country.

The King Philosophy known as the “Sufficiency Economy” The basic tenets of the philosophy are threefold: moderation, reasonableness and resiliency. It was believed that this philosophy will be working and this knowledgeable is moral. The Sufficiency Economy is an approach to life and conduct which is applicable at every level from the individual through the family and the community to the management and development of the nation. It promotes a middle path, especially in developing the economy to keep up with the word in the era of globalization.

Sufficiency has three components: moderation, wisdom or insight, and the need for built-in resilience against the risks which arise from internal or external change. In addition, the application of theories in planning and implementation requires great care and good judgment at every stage. At the same time, all members of the nation- especially officials, intellectuals, and business people need to develop their commitment to the importance of knowledge, integrity, and honesty in conducting their lives with perseverance, toleration, wisdom and insight. Thus, the country has the strength and balance to respond to the rapid and widespread changes in the economy, society, environment, and culture in the outside world.

According to this philosophy, Thailand established many projects, for example the royal project foundation, royal development study centre, royal agriculture station and occupational promotion project, and Royal rain making, etc. Currently, there are more than 4,700 royal projects around the nation, where tourists can learn from the late King Bhumibol’s life work and apply this to their daily lives. At the same time, they will be helping to create new careers for the local people. It is a popular venue for eco and agro-tourism.

Agro-tourism has been officially promoted in Thailand since 1999 to generate additional income for farmers, provide new occupations for unemployed people, and enhance local rural economies. Agro-tourism is a hybrid type of agricultural system that merges elements of farming and tourism to create markets for farm products and services and provide travel experiences for tourists. The amount of agro-tourism investment in Thailand has been

increasing each year. The Tourism Authority of Thailand is continuing to follow the royal wisdom of the late King Bhumibol with the development of major tourism routes in five regions. These routes are linked to royal projects that were set up to solve environmental problems involving water resources, soil, and forest. This tourism project will also help disseminate his royal wisdom on the Sufficiency Economy.

There are many fascinating destinations in Thailand. I had carefully chosen a number of exemplary destinations in the 5 regions of the country to present in the lecture. The agricultural practices of each of the destinations, the unique local wisdom, and the activities that visitors can participate in while visiting the sites were also noted. It provides opportunity for student to explore the knowledge of agriculture and appreciate the unique rural landscapes. This information provided student to plan trips to learn about local wisdom and participate in traditional Thai agricultural activities.

Mushroom was considered one of the most sustainable produced foods in Thailand. It was considered as an environmentally friendly disposal of any agricultural wastes (agro-wastes). Open burning of agro-waste causes severe air pollution in Thailand; however, air pollution was also caused by a combination of factors such as vehicle emissions, biomass burning, industrial discharges and forest fires. Slash and burn farming techniques have been common over the centuries in the northern region of Thailand as well as neighboring Burma and Laos. From February to May, farmers enthusiastically burn fields to make room for new crops, pushing the amount of particulate matter in the air to unacceptable and unsafe levels. It was a report on an increase in hospital visits, respiratory issues, pneumonia and asthma cases in the northern region of Thailand. Northern Thailand currently has the highest rates of lung cancer in the country. Thai government and other agencies tried to solve this big issue about air pollution. The search for cost effective and environmentally friendly methods of handling agro-waste was carried out by many sectors. Mushroom cultivation on agricultural wastes was considered as one of the most effective ways to solve the air pollution problem in Thailand.

Mushrooms have the ability to bio-transform fibrous agro-wastes into value-added products through their extracellular enzyme activities. Different kinds of agricultural wastes have been used as a substrate for growing various edible and medicinal mushrooms in Thailand. The most extensively used agricultural wastes for mushroom cultivation were rice straw and sawdust. However, soybean straw, rice bran, wheat bran, corn cob, corn

stalk, corn husk, banana leaves, sugarcane bagasse, cotton seed hull, cotton waste, coffee pulp, chicken manure, horse manure, sawdust derived from different kinds of trees and weed (undesirable plants) were also widely used as the substrate (growth medium) for mushroom cultivation in Thailand. At the end of the cultivation cycle, these substrates, known as spent mushroom compost, can be used as a soil fertilizer and as a prospective bioremediating agent. Therefore; there were no wastes from growing mushroom. In Japan, agro-waste had been used as biofuel (student discussion in the lab) and as the ingredient for alternate sustainable construction materials. It provides a solution which offers reduction in natural resource use as well as energy. Recycling, reprocessing, and utilization of the wastes in a positive way to offer the possibility of returning the excess to beneficial use as opposed to the traditional methods of waste disposal and relocation.

## **Research**

Professor Ikeda, the in charge gave an orientation to me on the Plant Factory Unit, and took me out to visit a commercial plant factory farm - Vitamin farm. Professor Ikeda mentioned that agriculture sector in Japan is facing a wide range of challenges, including aging farmers, decline in the number of young people who want to work in fields and increase of abandoned farmlands. In order to solve this problem, it is important to promote the utilization of new technology in agriculture.

Plant factory technology (vertical farming) gets more attention, because it can solve many problems such as energy crisis, environmental pollution, food security and food supply for farmers in eco-friendly and economical way. The plant factory technology could deliver a substantial reduction in water and land needs, while producing more per square meter. It controls temperature, light, carbon dioxide, nutrient solution, and other environmental conditions. Because all production was completed controlled, it is possible to steadily supply crops without being affected by outside weather or damage by pests and diseases. In addition, food grown locally can arrive in local supermarkets in shorter time periods, thus retaining more of its flavor and nutritional value. This Japanese style of farming is developed with advanced technology and is attracting attention worldwide.

A special presentation from Professor Ikeda's ex-student who works in the HOKUTO mushroom company was very useful for me. I have an opportunity to strengthen

knowledge of the plant factory technology and mushroom cultivation technology in Japan. I had collected ideas to develop a research project between our universities. I, Dr. Soonthornvipat and Professor Ikeda could develop joint research perspectives. We will work and finish the research in the near future. Moreover, Professor Acram Taji from Queensland University of Technology came along from Australia to support our project.

### **Other activities**

Being a visiting lecturer in Japan is an amazing opportunity for me to learn, not only in the academic field but also in daily life. Japan has a culture, food and landscape unique from the others in the world. The Japanese are honest and disciplined. Japanese product has excellent design with high-quality and cuteness. It seems like, in Japan, animation (cartoon) is a well-established and very prevalent part of the culture. Cartoons greatly influenced personalities and way of life of Japanese people. That is possibly be the answer of why the Japanese can create innovative things.

I was pleased with the level of interest shown by Japanese students in the lectures, they were very curious. I spent a lot of my time speaking to students about their projects, visiting their experiments in the greenhouse and with Professor Ikeda about different methods of teaching and learning. From my point of view, Professor Ikeda provides good guidance and assistance to his students so that they may carry out their research and present their results to the best advantage. Students also have the opportunity to go on field trips to see a real life working in a local farm. Students will have better visualize what they have learned in classroom to the real industrial situations. Students' exposure to real environments and experiences is one way for students to gain their theoretical learning to a more practical learning.

I also recommended free proofreading software for English to student, they showed keen interest in a free online grammar checker. It could help student write better English and save time. Furthermore, I got a chance to experience the university festival. The festival provides students the opportunity to sell their products and to make connections with

locals. Students told me that there are a lot of activities available to students. Students seem to keep a good balance between study and play, and seem to really enjoy their campus life. Meiji University also provides student a cheap self-service canteen with good quality food. It would be great if the Japanese word on the vending machine in the canteen was replaced with number or picture of food.

I wish that my short visit here has stimulated our students to pursue further studies in English and has opened our minds to closer collaboration and interactions leading to a better internationalized campus for our respective universities. The exchanges of knowledge and technology with the professional people at Meiji University fulfill my lifelong learning. This short visit will contribute to the further development of research and educational activities between Meiji University and Chiang Mai Rajabhat University. We plan to establish a workshop on agricultural technology between Meiji University, Chiang Mai Rajabhat University and Queensland University of Technology, a three way relationship, in the future. It is a wonderful opportunity to have collaboration among 3 Universities. Students will learn knowledge and culture from this workshop.

### **Acknowledgements**

I gratefully acknowledge the financial support provided by Meiji University “International Scholars and Intellectuals Invitation Project”. I also wish to express my gratitude to all students in the Lab and Professor Takashi Ikeda at the School of Agriculture who welcomed me and made my stay so productive and personally rewarding.