Wed. Sep 8, 2021

Plenary Room

Opening Ceremony
11:00 AM - 11:30 AM Plenary Room

Keynote Lectures | Keynote Lectures | KL-01

New Agricultural Research Paradigms to Build Resilient Food Systems
Lecturer: Jacqueline d'Arros Hughes (Director General, International Crops Research Institute for the Semi-Arid Tropics (ICRISAT), India)
Chair: Hiroshi Ehara (Nagoya University, Japan)
11:30 AM - 12:00 PM Plenary Room

[KL-01] New Agricultural Research Paradigms to Build Resilient Food Systems
Jacqueline d'Arros Hughes （Director General, International Crops Research Institute for the Semi-Arid Tropics (ICRISAT), India）
11:30 AM - 12:00 PM

Keynote Lectures | Keynote Lectures | KL-02

Ten Reasons Why Asian Crop Science Must be Reinforced
Lecturer: Osamu Koyama (President, Japan International Research Center for Agricultural Sciences, Japan)
Chair: Hiroshi Ehara (Nagoya University, Japan)
12:00 PM - 12:30 PM Plenary Room

[KL-02] Ten Reasons Why Asian Crop Science Must be Reinforced
Osamu Koyama （President, Japan International Research Center for Agricultural Sciences, Japan）
12:00 PM - 12:30 PM

Workshop (Presented by Sponsoring Company)
Latest Photosynthesis Measurement Systems
(Meiwafosis Co., Ltd.)
12:30 PM - 1:00 PM Plenary Room

[WS-01] Latest Photosynthesis Measurement Systems
Meiwafosis Co., Ltd.
12:30 PM - 1:00 PM

Symposium | Symposium | S-01 - S-05

Climate Change and Advancing Rice Production in Asia
Chair: Jun-Ichi Sakagami (Kagoshima University, Japan)
1:55 PM - 4:30 PM Plenary Room

[S-01] Reduced Stomata Density and Size: The key to improve WUE in Climate-ready Rice
Mutiara K. Pitaloka[1], Robert S. Caine[2], Christopher Hepworth[3], Emily L. Harrison[2], Jen Sloan[2], Cattleya Chutteang[1], Chutima Phuntong[1], Rungsan Nongngok[1], Theerayut Toojinda[5], Siriphat Ruengpayak[4], Siwaret Arikit[1,4], Julie E. Gray[2], ○Apichart Vanavichit[1,4,5] （1.Department of Agronomy, Faculty of Agriculture, Kasetsart University,Thailand, 2.Department of Molecular Biology and Biotechnology, University of Sheffield, UK, 3.Department of Animal and Plant Sciences, University of Sheffield, UK, 4.Rice Science Center, Kasetsart University, Thailand, 5.National Center of Genetic Engineering and Biotechnology (BIOTEC), National Science and Technology Development Agency (NSTDA), Thailand）
2:00 PM - 2:20 PM

[S-02] Maximizing Rice Production and Quality under Climate Change
○Junhwan Kim, Wangyu Sang, Pyeong Shin, Jaekyeong Baek, Dongwon Kwon, Yunho Lee, ChungIl Cho, Myungchul Seo （National Institute of Crop Science, RDA, Korea）
2:20 PM - 2:40 PM

[S-03] Global Climate Changes and Their Impacts on Crop Production
Toshihiro Hasegawa （Division of Climate Change Adaptation Research, Institute for Agri-Environmental Sciences, National Agricultural and Food Research Organization, Japan）
2:40 PM - 3:00 PM

[S-04] Challenges and Adaptation for Rice Production under Climate Change in Taiwan
Huu-Sheng Lur[1], ○Ming-Hwi Yao[2] （1.Department of Agronomy, National Taiwan University, Taiwan, 2.Taiwan Agricultural Research Institute, Council of Agriculture, Taiwan）
3:10 PM - 3:30 PM

[S-05] Farming Systems under Environmental Changes in the Mekong Delta of Vietnam
Nguyen Duy Can （College of Rural Development, Can Tho University, Vietnam）
3:30 PM - 3:50 PM

Young Scientist Forum
Supported by Working group for Fostering Young Scientists and Gender-Equal Participation, Crop Science Society of Japan (CSSJ)

5:00 PM - 7:00 PM Plenary Room

Opening Ceremony

Chair: Hiroshi Ehara (Nagoya University, Japan)

Wed. Sep 8, 2021 11:00 AM - 11:30 AM Plenary Room

Opening Address 11:00 AM - 11:10 AM

President of Asian Crop Science Association

Sun-Hee Woo (Chungbuk National University, Korea)

Greeting Message 11:10 AM - 11:20 AM

Chairperson of the Organizing Committee of ACSAC10

Makie Kokubun (Professor Emeritus at Tohoku University, Japan)

Information from ACSAC10 Secretariat 11:20 AM -11:30 AM

Keynote Lectures | Keynote Lectures | KL-01

New Agricultural Research Paradigms to Build Resilient Food Systems

Lecturer: Jacqueline d'Arros Hughes (Director General, International Crops Research Institute for the Semi-Arid Tropics (ICRISAT), India)

Chair: Hiroshi Ehara (Nagoya University, Japan)

Wed. Sep 8, 2021 11:30 AM - 12:00 PM Plenary Room

[KL-01] New Agricultural Research Paradigms to Build Resilient Food Systems

Jacqueline d'Arros Hughes （Director General, International Crops Research Institute for the Semi-Arid Tropics (ICRISAT), India）

11:30 AM - 12:00 PM

11:30 AM - 12:00 PM (Wed. Sep 8, 2021 11:30 AM - 12:00 PM Plenary Room)

[KL-01] New Agricultural Research Paradigms to Build Resilient Food Systems

Jacqueline d'Arros Hughes (Director General, International Crops Research Institute for the Semi-Arid Tropics (ICRISAT), India)

Current food systems based on over-reliance on a limited number of crops and marginalisation of smallholder farmers who produce a significant portion of the world's total food grain production are neither sustainable, nor resilient. The present pandemic has exposed the vulnerabilities and inequities of our current food systems and its impact on the most marginalized communities. It has exacerbated malnutrition and slowed progress towards achieving SDG 2 (Zero Hunger) as well as many of the other SDGs around gender, health and nutrition and beyond. Sustainable changes are required to increase agricultural production, improve global supply chains and value webs, decrease food losses and waste, and to ensure that heathy and nutritious food is available and affordable for all.

A transformation of our food systems requires bridging yield gaps, fixing long and inefficient supply chains where profits accrue to intermediaries who add little value, reducing food losses and waste, curbing greenhouse gas emissions, shifting and diversifying diets to eliminate undernutrition, over-nourishment as well as the hidden hunger of micronutrient malnutrition.

Diets, and the food systems that deliver them, are at the intersection of the challenges associated with malnutrition, human health, natural resource degradation, and climate change. There is already high-quality research on various aspects of climate change, health and food and nutrition security. To transform food systems, inter-disciplinary research in support of policy makers facing difficult decisions at the intersection of human and planetary health is urgently required.

Policy makers are confronted with rapidly evolving, rapidly changing and sometimes even U-turns of scientifi c views across multiple disciplines. Current research fails to meet the most pressing needs of policy makers (especially in relation to managing policy trade-offs and costs). More research needs to be driven by the specific needs of national governments and their policy makers. Inter-disciplinary / multi-disciplinary / transdisciplinary research linkages across disciplines – climate, natural resources, food, health, and nutrition is required to fully address the diversity and complexity of global and local food systems. This calls for a new approach to find the solutions we and our planet desperately need. The public sector, the private sector and all participants and stakeholders at all levels in our agriculture and food systems need to work together to make this happen.

The complexity of our food systems calls for the best minds of the public and private sectors, with research institutions, civil society think tanks and advocacy groups, to pool their skills and resources to transform our dryland food systems for the benefit of all.

Keynote Lectures | Keynote Lectures | KL-02

Ten Reasons Why Asian Crop Science Must be Reinforced

Lecturer: Osamu Koyama (President, Japan International Research Center for Agricultural Sciences, Japan)

Chair: Hiroshi Ehara (Nagoya University, Japan)

Wed. Sep 8, 2021 12:00 PM - 12:30 PM Plenary Room

[KL-02] Ten Reasons Why Asian Crop Science Must be Reinforced

Osamu Koyama （President, Japan International Research Center for Agricultural Sciences, Japan）

12:00 PM - 12:30 PM

12:00 PM - 12:30 PM (Wed. Sep 8, 2021 12:00 PM - 12:30 PM Plenary Room)

[KL-02] Ten Reasons Why Asian Crop Science Must be Reinforced

Osamu Koyama (President, Japan International Research Center for Agricultural Sciences, Japan)

The issues of sustainability have recently become common among a wide range of population as the Sustainable Development Goals of the United Nations (SDGs) have gained global recognition. The issues are increasing its urgency and intensity. Climate change, for example, is now being called as "climate crisis" because of frequent extreme climate events, which in turn strongly affect agriculture and food security. Among the SDGs, sustainable agriculture is undoubtedly one of the most critical issues for the existence of human beings. Thus, the United Nations will hold a Food Systems Summit in September 2021 in order to foster innovative ideas and prompt collective actions worldwide.

Asia is well known for being the origin of human civilization and for its long history of crop cultivation. For example, sustainable rice paddy cultivation has been continuing for thousands of years, and wheat is said to be one of the first crops cultivated by human beings in the Middle East. However, Asia, which accounts for about 60% of the world's population, has always been suffering from famines and starvation. Although Asia has partly succeeded in providing enough food by introducing modern technologies, the region as a whole has gradually become dependent on imported food. And the region's high population density and intensive farming systems have turned agriculture-related environmental issues into a most pressing concern in recent years. In addition, Asia, with its diversified natural conditions — from dry to humid, from continental to archipelagic, and from cold to hot temperature — is a showcase of cropping systems, and consequently, a showcase of food-related problems such as poor soil fertility and limited water resources, weeds, pests, and so on. We Asians must find solutions against these various problems by ourselves as nobody else has enough capacity and experiences to provide the proper answers. Without these answers for Asia, the rest of the world would not be able to attain the goal of sustainable agriculture.

Crop science, as an academic field that deals with the relationships between plants species and human beings, can provide objective and technical solutions — namely, proper land use, proper chemical input use, proper water use, proper energy and labor use, and the proper combinations of the above — to most of the aforementioned problems. Furthermore, as a knowledge base of holistic wisdom accumulated in the long history of humankind, crop science can provide effective answers to complicated questions regarding human-nature relationship, namely, how to adapt to extreme climate, how to conserve biodiversity and ecosystem, how to optimize food and dietary culture, and eventually, how to maintain human society. Thus, there are plenty of reasons why Asian crop science should be energized more. It is natural to say, in the year of the Food Systems Summit, that Asian crop scientists should lead and guide the world towards creating sustainable and harmonious food systems.

Workshop

Workshop (Presented by Sponsoring Company)

Latest Photosynthesis Measurement Systems

(Meiwafosis Co., Ltd.)

Wed. Sep 8, 2021 12:30 PM - 1:00 PM Plenary Room

[WS-01] Latest Photosynthesis Measurement Systems

Meiwafosis Co., Ltd.

12:30 PM - 1:00 PM

12:30 PM - 1:00 PM (Wed. Sep 8, 2021 12:30 PM - 1:00 PM Plenary Room)

[WS-01] Latest Photosynthesis Measurement Systems

Meiwafosis Co., Ltd.

1. Features of LI-6800 Portable Photosynthesis System (LI-COR)
2. Features of LI-600 Porometer/ Fluorometer (LI-COR)
3. Demonstration of LI-600 (LI-COR)

Meiwafosis provides a wide range of instruments to monitor and analyze plant growth and the global environment.

[Products]

LI-COR, Inc.

- Photosynthesis (LI-68800, LI-600)
- N2O/CH4/CO2/H2O Gas Monitoring (Trace Gas, LI-830 and LI-850, LI-7500DS, LI-7200RS, LI-7700)
- Light Measurements (LI-190R, LI-200R, LI-210R, LI-250A, LI-1500G, etc.)
- Leaf Area, Plant Canopy (LI-3000C, LI-3100C, LAI-2200C, etc.)

Dynamax Inc.

- Transpiration Sap Flow (Dynagage Sap Flow Sensors, etc.)

Stevens Water Monitoring Systems Inc.

- Soil Monitoring (Hydra Probe, etc.)

Others

- Nano Particle Analyses / Fine Bubble, Humic substance, viruses, etc.

(VIDEO DROP, Exoid, NanoFCM, etc.)

Meiwafosis Own Products

- EM observation, Element Analyses / EDS, AES, XPS, EBSD, etc.

(Osmium Coater, Carbon Coater, Soft Plasma Etching Device)

Symposium | Symposium | S-01 - S-05

Climate Change and Advancing Rice Production in Asia

Chair: Jun-Ichi Sakagami (Kagoshima University, Japan)
Wed. Sep 8, 2021 1:55 PM - 4:30 PM Plenary Room

[S-01] Reduced Stomata Density and Size: The key to improve WUE in Climate-ready Rice

Mutiara K. Pitaloka[1], Robert S. Caine[2], Christopher Hepworth[3], Emily L. Harrison[2], Jen Sloan[2], Cattleya Chutteang[1], Chutima Phuntong[1], Rungsan Nongngok[1], Theerayut Toojinda[5], Siriphat Ruengpayak[4], Siwaret Arikit[1,4], Julie E. Gray[2], ○Apichart Vanavichit[1,4,5] (1.Department of Agronomy, Faculty of Agriculture, Kasetsart University,Thailand, 2.Department of Molecular Biology and Biotechnology, University of Sheffield, UK, 3.Department of Animal and Plant Sciences, University of Sheffield, UK, 4.Rice Science Center, Kasetsart University, Thailand, 5.National Center of Genetic Engineering and Biotechnology (BIOTEC), National Science and Technology Development Agency (NSTDA), Thailand)

2:00 PM - 2:20 PM

[S-02] Maximizing Rice Production and Quality under Climate Change

○Junhwan Kim, Wangyu Sang, Pyeong Shin, Jaekyeong Baek, Dongwon Kwon, Yunho Lee, ChungIl Cho, Myungchul Seo (National Institute of Crop Science, RDA, Korea)

2:20 PM - 2:40 PM

[S-03] Global Climate Changes and Their Impacts on Crop Production

Toshihiro Hasegawa (Division of Climate Change Adaptation Research, Institute for Agri-Environmental Sciences, National Agricultural and Food Research Organization, Japan)

2:40 PM - 3:00 PM

[S-04] Challenges and Adaptation for Rice Production under Climate Change in Taiwan

Huu-Sheng Lur[1], ○Ming-Hwi Yao[2] (1.Department of Agronomy, National Taiwan University, Taiwan, 2.Taiwan Agricultural Research Institute, Council of Agriculture, Taiwan)

3:10 PM - 3:30 PM

[S-05] Farming Systems under Environmental Changes in the Mekong Delta of Vietnam

Nguyen Duy Can (College of Rural Development, Can Tho University, Vietnam)

3:30 PM - 3:50 PM

2:00 PM - 2:20 PM (Wed. Sep 8, 2021 1:55 PM - 4:30 PM Plenary Room)

[S-01] Reduced Stomata Density and Size: The key to improve WUE in Climate-ready Rice

(Thailand)
Mutiara K. Pitaloka[1], Robert S. Caine[2], Christopher Hepworth[3], Emily L. Harrison[2], Jen Sloan[2], Cattleya Chutteang[1], Chutima Phuntong[1], Rungsan Nongngok[1], Theerayut Toojinda[5], Siriphat Ruengpayak[4], Siwaret Arikit[1,4], Julie E. Gray[2], ○Apichart Vanavichit[1,4,5] (1.Department of Agronomy, Faculty of Agriculture, Kasetsart University,Thailand, 2.Department of Molecular Biology and Biotechnology, University of Sheffield, UK, 3.Department of Animal and Plant Sciences, University of Sheffield, UK, 4.Rice Science Center, Kasetsart University, Thailand, 5.National Center of Genetic Engineering and Biotechnology (BIOTEC), National Science and Technology Development Agency (NSTDA), Thailand)

Rice is among the lowest water-use efficient crops. To produce a kg of polished rice, 2.5 tons of water on average is needed. Rice plants utilize most of the uptake water for evapotranspirational cooling via stomata. In order to develop water-used efficient rice, reducing stomatal density and size may help optimizing transpiration and photosynthetic assimilation. Climate-ready, Nutrient-dense rice is an integrative approach to develop new rice varieties of the future agriculture. By pyramiding genes/QTLs controlling broad-spectrum resistance to biotic and abiotic stresses into high nutritional rice background, we have generated series of rice ideotypes to mitigate the effects of climate change and to cope with double malnutrition in 2050.

By forward screening on a large-scale M_5 fast neutron mutagenized population, four stomatal model lines were identified expressing distinct stomata density (High vs Low Density = HD vs LD), and size (Big vs Small Sizes = BS vs SS). Gas exchange analysis revealed that the stomatal model lines were not different in photosynthetic assimilation (*A*) and chlorophyll fluorescence. In response to increasing [CO_2], no difference in *A* from 100-600 ppm [CO_2] for all stomatal model lines but beyond the peak, SS was more responsive to increasing [CO_2] than any stomatal model lines. Nonetheless, HD had higher stomatal conductance (*gs*) and *gsmax* than any stomatal model lines. All stomatal model lines were also similar in rhythmic stomatal responses to ten minutes dark/light transition cycles, except SS was more rapid than BS in the initial stomata closure.

The stomatal model mutants did not show any significant difference in response on a short term water stress. Long-term water stresses had less impact on leaf drying, F_v/F_m, grain yield, and harvest index in LD and SS. In the field, all stomatal model lines and JHN wt had similar WUE in well-water treatment. Nonetheless, LD showed the highest WUE and biomass/plant than any stomatal model lines in the long-term water-stress treatment.

In addition, three cycles of forward screening for recovery from drought stresses on 971 M_5 lines revealed three drought-selected mutants showing good recovery. Surprisingly, when compared to the stomatal model lines, all drought-selected mutants had lower stomatal density similar to LD. Comparison under well-water and water-stress revealed the three drought-selected mutants and LD gained better water-used efficiency and more drought tolerance than BS, HD, and SS. This is a conclusive evidence linking LD, WUE, and drought tolerance.

It is not clear the impact of altered stomatal traits on transpirational cooling under heat and drought stresses. Our recent experiments on heat stress indicated that high stomata density (HD) were beneficial in high air temperature tolerance at reproductive stage while SS and LD accumulated higher canopy temperature than HD, BS, and JHN-wt. in a mild heat at 30℃. Nonetheless, SS and LD were cooler under water deficit.

Specific DNA markers associated with altered stomata traits were used for marker-assisted backcrossing to optimize high yielding, multiple resistance, grain quality, and water-use efficiency.

2:20 PM - 2:40 PM (Wed. Sep 8, 2021 1:55 PM - 4:30 PM Plenary Room)

[S-02] Maximizing Rice Production and Quality under Climate Change

(Korea)
○Junhwan Kim, Wangyu Sang, Pyeong Shin, Jaekyeong Baek, Dongwon Kwon, Yunho Lee, ChungIl Cho, Myungchul Seo (National Institute of Crop Science, RDA, Korea)

The crop growth model, Oryza2000, was simulated to study the temporal and spatial change of the rice productivity of South Korea based on the RCP 8.5 climate change scenario. In general, the decline rate of early ecotype yield was the fastest, followed by the medium-late and the medium. Finally, it was predicted that more than 25% reduction in yield would occur in most areas by the end of the 21st century. The rice quality was evaluated indirectly through the 1000grain weight obtained from the crop growth simulation. The simulation result showed that the 1000grain weight change was similar to the change pattern of rice yield. For adaptation measures, we had tried to shift seeding date. Shifting seeding date was a strategy to avoid low grain filling rate at high temperatures. As a result, shifting of seeding date could delay the decreasing rate of yield as scenario. However, shifting of seeding date could not be a perfect countermeasure to keep current yield level because of uncertainty of solar radiation in future climate condition. Therefore, based on the simulated results, it is necessary to conduct an actual field test every 10 or 15 years

2:40 PM - 3:00 PM (Wed. Sep 8, 2021 1:55 PM - 4:30 PM Plenary Room)

[S-03] Global Climate Changes and Their Impacts on Crop Production

(Japan)
Toshihiro Hasegawa (Division of Climate Change Adaptation Research, Institute for Agri-Environmental Sciences, National Agricultural and Food Research Organization, Japan)

Atmospheric concentrations of major greenhouse gases (GHG) such as carbon dioxide (CO_2), methane, and nitrous oxide have increased by about 50%, 160 %, and 23 %, respectively, since the preindustrial era (https://public.wmo.int/en), mainly as a result of anthropogenic activities. These changes have already raised air temperatures globally for the past 100 years and increased extreme climate events in various regions across the globe. There is a growing body of evidence that the long-term change in air temperatures and associated changes in precipitation amount and patterns have already been affecting crop production, but with varying degrees across different regions. As climate change progresses, the impacts will be greater, but they depend on various factors such as GHG emission scenarios, times, locations, and warming degrees. Since the last assessment report by the Intergovernmental Panel on Climate Change in 2014, a large body of literature has become available for the projected impacts using crop simulation models run under different representative GHG concentration pathways at different spatial scales. Recently, a global dataset has been developed by compiling more than 8000 simulation results from 203 independent studies, providing a valuable source of comprehensive analysis on the projected impacts on major crops. Here I first summarize the impacts of plausible climate change in the current century on the major crop yields, demonstrating that the sign and magnitudes of the effects are heavily dependent on the current temperature levels, with special references to Asian regions. The impacts of climate change also appear in various processes of food systems, including food prices, labor

capacity, transport, storage, and food safety, which ultimately undermine food and nutrition security. On the other hand, food systems are a major source of GHG, accounting for about 1/3 of the anthropogenic emission. In the later part of the presentation, I introduce some examples of complex interactions between food systems and atmospheric conditions that need better understandings to enhance synergies and reduce trade-offs between adaptation and mitigation measures.

3:10 PM - 3:30 PM (Wed. Sep 8, 2021 1:55 PM - 4:30 PM Plenary Room)

[S-04] Challenges and Adaptation for Rice Production under Climate Change in Taiwan

(Taiwan)
Huu-Sheng Lur[1], ○Ming-Hwi Yao[2] (1.Department of Agronomy, National Taiwan University, Taiwan, 2.Taiwan Agricultural Research Institute, Council of Agriculture, Taiwan)

Located in East Asia, the climate of Taiwan is governed by the East Asian Monsoon resulting in the strong seasonality of precipitation pattern and the topographic features further amplify the vulnerability to different natural disasters as compared to other countries. It is crucial to develop the resilient agriculture by improving Taiwan's future agricultural production systems with respect to the future trends of climate change. Paddy rice is the major crop produced in Taiwan, and the small fluctuations of rice yield could lead to serious impact on food security. Evaluation of the major crop production under the different effects of climate change would be essential for bettering the future strategies for enhancing food security. Crop production simulation frequently employs the future climate data predicted by global climate models. The effects of climate change on rice production were evaluated based on the future climate data of four different climate scenarios provided by the United Nation's Intergovernmental Panel on Climate Change. Results indicated that total rice production would decrease by approximately 5%–15%, and this could be the consequence of the reduction of the number of growing days and the undergrowth of grains associated with the poor photoassimilation of vegetative organs due to global warming. Analysis of the future Representative Concentration Pathway (RCP) 8.5 scenario showed that rice yields will decrease in near-term, mid-term, and long-term horizons of the century by 5.1%, 12.5%, and 22%, respectively, especially in northern and eastern of Taiwan. These results are consistent with evaluation results concerning other Asian countries. Climate change refers to not only the changes in average temperatures but also the intensity and frequency of extreme weather events, and the unpredictability of natural disasters has increased the uncertainties for understanding the future changes of crop production. The limitation of existing atmospheric models for predicting disaster occurrence, especially heavy rainfall or strong wind events. The current crop model could simulate various specific disasters but not including typhoons and heat waves which are one of the most important disasters in Asia causing yield reduction during the harvesting season or the flowering stages of crops. The present study analyzed the meteorological changes that have caused the reduction of rice production in Taiwan over the past 60 years. These data were used with the predicted frequency of different climatic scenarios in the future to estimate the effects of future disaster factors on rice yield. Moreover, the approach to establishing a resilient system for rice production that would withstand the various effects of climate change has been considered. In particular, the water used for rice cultivation accounts for approximately 50% of the total water resources in Taiwan. As the traditional policy, farmers are offered with subsidies and undergo fallowing during drought periods. This paper introduces an advanced system to change current farming practice into the dry-field direct seeding as an adaptative farming method to water shortages in farming regions. The present findings provide new

insights on farming systems for climate change adaptation.

3:30 PM - 3:50 PM (Wed. Sep 8, 2021 1:55 PM - 4:30 PM Plenary Room)

[S-05] Farming Systems under Environmental Changes in the Mekong Delta of Vietnam

(Vietnam)
Nguyen Duy Can (College of Rural Development, Can Tho University, Vietnam)

The Mekong Delta is the most important agricultural area of Vietnam and has often been described as the "Rice Bowl of Vietnam". This Delta provides to more than half of food production and over 95% of rice for export from Vietnam. From long time ago, rice monoculture is a predominant system of agricultural production of the Delta. The reason for this is the environmental conditions such as land and water resources are favorable for rice growing. In addition, other than rice, there are a great potential for fruit trees, fish, shrimp rearing, and to develop diversification of rice-based farming or integrated farming systems in the Delta. Although specialization is the global trend in agriculture, integrated farming systems have emerged in the Mekong Delta of Vietnam during the last two decades. An important motive was the desire to improve the livelihoods, the diet of the nuclear families and to adapt to environmental change. Integrated farming systems are often considered equal to extensive or low-input farming systems and to sustainable agriculture, but usually receives low incomes. The transformation of the farming systems from an extensive, low-input system into an intensive, industry farming system associated with changes in government policy, production technologies and environmental changes. Recently agriculture in Southeast Asia, especially in the Mekong Delta of Vietnam is vulnerable to climate change. Therefore, adaptation measures are required to sustain agricultural productivity, to reduce vulnerability, and to enhance the resilience of the agricultural system to climate change. There are many adaptation practices in the production systems to reduce the effects of climate change. Some farming systems and government policy toward agriculture contributes to adaptation to environmental changes.
This paper focusses on two issues. The first issue presents a systematic review of the historical development of the predominant production systems under environmental changes in the Mekong Delta with major characteristics, performance, perspectives and with reference to other Southeast Asian countries. In the second one, as climate change has already begun, adaptation or the modification of farming practices and production to be discussed – and also the major options in the agricultural sector for adaptation to climate change.

Young Scientist Forum

Supported by Working group for Fostering Young Scientists and Gender-Equal Participation, Crop Science Society of Japan (CSSJ)

Wed. Sep 8, 2021 5:00 PM - 7:00 PM Plenary Room

Let’s join the free discussion that everyone can talk together via Zoom!
The Forum prepared 3 topics as bellow;

1) Think about Communication among the Young scientists &Students in Asia

2) Think about Women roles in Agricultural Sciences in Asia

3) Think about Future of ACSAC for Young Scientists

We will use breakout rooms of Zoom. The participants will be divided into several groups of four or five, and do free discussion for 10 to 15 min for each topic. Let’s share your experiences, opinions, and ideas. After discussion, each group will report the summary what they discussed briefly (1 to 3 min per each group, total 10 to 15 min). The members of groups will be swapped at each topic. Through the discussions, we will reach new suggestions to our community and also establish new personal relationships.

The Forum prepared online whiteboards “Jamboard” to facilitate discussion. We can see Jamboard while talking on Zoom. The participants don’t need to install any software or app except Zoom (but please confirm update version is the newest).