Annex 1:

Program of the MARCO Symposium 2015

"Next Challenges of Agro-Environmental Research in Monsoon Asia"

Date:	26–28 August 2015
Venue:	Tsukuba International Congress Hall (Epochal Tsukuba), Tsukuba, Japan
Organized by:	Monsoon Asia Agro-Environmental Research Consortium (MARCO)
Sponsored by:	National Institute for Agro-Environmental Sciences (NIAES)
	Food and Fertilizer Technology Center for the Asian and Pacific Region (FFTC)
Supported by:	Ministry of Agriculture, Forestry and Fisheries (MAFF)
	National Agriculture and Food Research Organization (NARO)
	Japan International Research Center for Agricultural Sciences (JIRCAS)
	College of Agriculture, Ibaraki University
	Japan International Cooperation Agency (JICA)
	Asia Soil Partnership (ASP)

Objectives:

The MARCO Symposium 2015 organized:

(1) Plenary sessions to report the latest results of studies on agriculture and environment in monsoon Asia and to discuss the direction of future research and ways to strengthen collaboration
(2) Parallel or satellite workshops to exchange information and discuss research plans for specific topics
(3) Field excursion

The MARCO Symposium 2015 aimed at:

– Exchanging the status quo of problems and the latest results of studies on agriculture and environment in monsoon Asia,
– Discussing the direction of future research and ways to strengthen collaboration for agro-environmental challenges in monsoon Asia.

August 26, Wednesday

Plenary Sessions

Background

Agriculture centering on paddy rice in Monsoon Asia has enabled sustainable production while fostering distinctive agroecosystems. The demand for food, however, is going to increase

considerably due to population growth, economic development, biofuel production, and so forth. As a result, the demand for agricultural production in this region will increase significantly. On the other hand, agricultural and environmental problems, including urbanization, pollution from industry, environmental impacts of agricultural intensification, deterioration of natural resources, and the progress of global warming, are getting more serious and casting a shadow over agriculture and the environment. In order to meet the growing demands on agriculture while using natural resources in sustainable ways and providing protection and support for the ecosystem, it is imperative that researchers and administrators of this region closely collaborate, internationally, by facing the emerging problems as challenges and opportunities.

In order to meet this requirement, MARCO, or the Monsoon Asia Agro-Environmental Research Consortium, has organized by the agreement of the participants from 15 countries at the international symposium entitled "Evaluation and Effective Use of Environmental Resources for Sustainable Agriculture in Monsoon Asia: Toward International Research Collaboration", which was held during 12–14 December, 2006 in Tsukuba, Japan. Since that, MARCO has promoted international collaboration for advancing research activities on the issues of agriculture and the environment in monsoon Asia, by hosting a couple of international symposia or workshops every year, setting up a website as a venue for exchanging consortium information, and helping train the people who will carry on activities under the consortium.

In the last MARCO Symposium, entitled "Strengthening Collaboration to meet Agro-Environmental Challenges in Monsoon Asia", held during 24–27 September, 2012, participants exchanged the latest research achievements of various issues relevant to agriculture and environment in Monsoon Asia and earnestly discussed about the future directions of cooperative researches among the member institutions of MARCO.

The MARCO Symposium 2015 will provide another venue for exchanging the status quo of problems and the latest results of studies, and for discussing the direction of next challenges of research, as well as ways to strengthen collaboration for the challenges.

Presentations

Building resilience in rural Asia-combining traditional and modern bio-production systems
Kazuhiko Takeuchi, *United Nations University/The University of Tokyo, Japan*

Indonesian environmental challenges toward sustainable agriculture
Prihasto Setyanto, *Indonesia Agricultural Environment Research Institute, Indonesia*

Impact of climate change on biodiversity: A challenge to agro-ecosystems in South Asia
Buddhi Marambe and Pradeepa Silva, *University of Peradeniya, Sri Lanka*

Water resources, floods and agro-environment in Monsoon Asia
Takao Masumoto, *National Institute for Rural Engineering, NARO, Japan*

Soil carbon sequestration and greenhouse gas mitigation in agriculture
Yasuhito Shirato, *National Institute for Agro-Environmental Sciences, Japan*

JIRCAS's climate change initiatives for Monsoon Asia
Yasukazu Hosen, *Japan International Research Center for Agricultural Sciences, Japan*

Climate change adaptation for rice cultivation system in Monsoon Asia
Fulu Tao, *Institute of Geographic Sciences and Natural Resources Research, CAS, China*

Global risk assessment of climate-induced food production shocks: From seasonal scale to the end of this century
Toshichika Iizumi, *National Institute for Agro-Environmental Sciences, Japan*

General Discussion

August 27, Thursday

Workshop 1: Integration of Adaptation Measures against Climate Change for Asian Rice-based Agriculture

Objectives

This workshop is held with cooperation of the Food and Fertilizer Technology Center (FFTC), to share the latest advances in understanding the climate change related problems in collaboration with smallholder rice farmers in Monsoon Asia who adapt rain-fed agriculture and irrigated agriculture, and to find out problems and to implement a suitable method among various types of agricultural forms in the area.

This workshop is also based on the East Asian regional program of the Agricultural Model Intercomparison and Improvement Project (AgMIP). Technical Meeting for the AgMIP-EA is also held on 25th August at the same facility, Tsukuba International Congress Center (Epochal Tsukuba). From a series of these activities, countries in Monsoon Asia including South East Asia through South Asia collaborate in approach to adapt to the climate change.

Presentations

The Agricultural Modeling Intercomparison and Improvement Project (AgMIP) for evaluating agricultural impacts of and adaptations to climate change
Daniel Wallach, *Institut National de la Recherche Agronomique, France*

The spatio-temporal pattern of extreme temperature events and its impact on rice yields across main rice planting areas in China

Zhao Zhang, *Beijing Normal University, China*

Climate, water resource and cropping in South Asia

Lalu Das, *University of Agriculture, West Bengal, India*
Javed Akther, *Jadavpur University, Kolkata, India*
Monami Dutta, *University of Agriculture, West Bengal, India*
Jitendra Kumar Meher, *University of Agriculture, West Bengal, India*

Assessment of climate change impacts on irrigation water requirement and rice yield: A case study from Ngamoeyeik Irrigation Project in Myanmar

Sangam Shrestha, *Asian Institute of Technology, Thailand*
Naw May Mya Thin, *Irrigation Technology Centre, Myanmar*

Multiple cropping scenarios based on local climate and the growth of dryland rice against regional climate change in stabilizing agricultural production (case study in South Central Java rain-fed agriculture)

Bayu Dwi Apri Nugroho, *Gadjah Mada University, Indonesia*

Rice model inter-comparison in Asia

Toshihiro Hasegawa, *National Institute for Agro-Environmental Sciences, Japan*

Crop model resaerch in China

Yan Zhu, *Nanjing Agricultural University, China*

Redevelopment of the DSSAT Model using C++ for facilitation of large data processing

Kwang-Soo Kim, *Seoul National University, Korea*

Simulating climate change impact on rice yield in Malaysia using DSSAT 4.5: Shifting planting date as an adaptation strategy

A.T. Shaidatul Azdawiyah, A.G. Mohamad Zabawi, A.R. Mohammad Hariz, M.S. Mohd Fairuz and J. Fauzi,
Malaysian Agriculture Research and Development Institute, Malaysia
M. Mohd Syazwan Faisal, *National Hydraulic Research Institute of Malaysia, Malaysia*

Projection of rice yield in 21st century in South Korea under RCP 8.5 scenario using a mechanistic crop model

Jun-Whan Kim, Wangyu Sang, Pyeong Shin, Hyeounsuk Cho, Myungchul Seo, Jiyong Shon and Woonho Yang,
National Institute of Crop Science, RDA, Korea

The risk analysis for rice production due to agro-climate change in Taiwan

Ya-Wen Chiueh, *National Hsinchu University of Education, Taiwan*

Shiang-Jen Wu, *National Center for High-performance Computing, Taiwan*

Climate change adaptation for rice in Japan

Tomonari Watanabe, *NARO Agricultural Research Center, NARO, Japan*

Biochar-based technologies for enhanced productivity, efficiency, resilience and adaptive capacity of smallholder rice-based farming communities in the Philippines

Ricardo F. Orge, *Philippines Rice Research Institute, Philippines*

Strategies of adaptation and mitigation for coping with climate change: From aspects of Taiwan agriculture

Chwen-Ming Yang, *Taiwan Agricultural Research Institute, Taiwan*

Impacts of climate change on rice production in the Red River and Mekong River Delta of Vietnam

Tran Van The, Pham Quang Ha, Bui Thi Phuong Loan, *Institute of Agriculture and Environment, Vietnam*

Loan Nguyen Hong Son, *Vietnamese Academy of Agricultural Science, Vietnam; Cuu Long Rice Research Institute, Vietnam*

Quantifying the GHG emission in paddy field in China under climate change based on the coupling of DNDC, DSSAT and AEZ models

Zhan Tian and Yilong Niu, *Shanghai Climate Center, China*

Laixiang Sun, *International Institute for Applied System Analysis, Austria;University of Maryland, USA*

Gunther Fischer, *International Institute for Applied System Analysis, Austria*

Changsheng Li, *University of New Hampshire, USA*

General Discussion

August 27, Thursday

Workshop 2: Perspectives on Sustainable Agriculture in Monsoon Asia: Biodiversity-Friendly Farming and Landscape Management

Objectives

The 10th meeting of the Conference of the Parties of the Convention on Biological Diversity

(CBD-COP10) adopted the Aichi Biodiversity Targets, including the goal that by 2020, areas under agriculture are managed sustainably, ensuring the conservation of biodiversity. Recently, the 4th Global Biodiversity Outlook (GBO4) evaluated the possible achievements of the Aichi Targets. In relation to agriculture, GBO4 reports some progress, such as increasing areas under sustainable management based on organic certification and conservation agriculture, but unsustainable practices in agriculture continue to be responsible for substantial environmental degradation, including biodiversity loss. Agriculture fundamentally receives benefits in a multitude of ways from ecosystems, which are referred to as ecosystem services, but as a result of biodiversity losses, the degradation of ecosystem services in areas under agriculture is becoming of greater concern. Environment-friendly agriculture, including organic farming and farming with reduced agrochemical use, is likely sustainable, but has a problem with agricultural productivity. It was pointed out that if agricultural production is insufficient for human needs, more conversion to farmlands may occur, causing a greater threat to wildlife. On the other hand, biodiversity in agricultural areas is well-known to strongly depend on landscape structure in/around farmlands. For example, species diversity generally increases with increasing degrees of heterogeneity in landscape patterns (mosaic landscapes). Thus, biodiversity is expected to increase in agricultural areas by strategically designing farmland development and the appropriate management of landscapes around farmlands. It is also suggested that the effectiveness of environment-friendly practices in agriculture for biodiversity conservation may be improved by taking regional landscape structure into account and/or by introducing appropriate local landscape management.

This workshop reports several efforts to provide for the compatibility of agricultural production and biodiversity conservation in Asian countries, and presents case studies to evaluate the effectiveness of environment-friendly farming and rural landscape structure to conserve wildlife diversity. Based on these reports, we discuss what sustainable agriculture should be to promote harmony with wildlife in Monsoon Asia.

Presentations

FAO's Regional Rice Initiative: Sustainable management of the multiple goods and services derived from rice production landscapes in Asia

Alma Linda M Abubakar, Jan Willem Ketelaar and Naoki Minamiguchi,
FAO Regional Office for Asia and the Pacific, Thailand

Dual values for biodiversity conservation in agricultural landscapes

Tadashi Miyashita and Masaru Tsutsui, *The University of Tokyo, Japan*

Effects of environmentally friendly farming and multi-scale environmental factors on generalist predators in rice paddy ecosystems of Japan

Yuki Baba, *National Institute for Agro-Environmental Sciences, Japan*

The current study for the management and restoration of paddy ecosystem to enhance biodiversity in Korea

Myung-Hyun Kim, L.J. Choi, S.K. Choi, J.U. Eo, M.S. Han and H.S. Bang
National Academy of Agricultural Science, Republic of Korea

Perspective on improving landscape managements for biodiversity conservation and sustainable production in China

Yunhui Liu, *China Agricultural University, China*

Environment friendly agriculture and organic agriculture in Vietnam

Ho Thi Thu Giang, *Vietnam National University of Agriculture, Vietnam*

General Discussion

August 27, Thursday

Workshop 3: Challenges of Soil Conservation for Combating to Soil Degradation in Monsoon Asia

Objectives

International year of soils 2015 has started for raising awareness on the importance of soil health for food security and essential eco-system functions. Generally, inappropriate soil management practices triggered by rapid social change in monsoon Asia have resulted in land degradation, nutrient imbalance and acceleration of greenhouse gas emission from agricultural land. Challenges of soil conservation for reversing these defunctioning and/or maintain soil health should be highlighted. Furthermore, sharing on the current situation of soil degradation and identifying a range of relevant good practice for regional and national sustainable soil conservations are required in monsoon Asian partnership. The purposes of the workshop are to clarify the present condition of soil degradation to exchange information on the current challenges of sustainable soil conservation against soil contamination, nutrient imbalance, and climate change in Monsoon Asia, to discuss the direction of future research and ways to strengthen collaboration for Asian Soil Partnership in the context of Global Soil Partnership (FAO).

This workshop is held as commemoration of the International year of soils 2015 in the MARCO symposium 2015.

Presentations

The challenges of soil conservation for combating soil degradation in the Philippines

August 28, Friday

One day field excursion

– The rice-FACE experiment site at Tsukuba-mirai city

– "Yokota farm", a large scale operating farm in Ryugasaki city

– Natural Resources Inventory Museum, National Institute for Agro-Environmental Sciences, Tsukuba city

Satellite Workshops

Satellite Workshop 1

Remediation of Heavy Metals-contaminated Soils:
Novel Practical Approach based on State-of-the-art Science

July 14–16, 2015, in Fukuoka, Japan

Alongside the 13th International Conference on the Biogeochemistry of Trace Elements (ICOBTE)

Satellite Workshop 2

International SWAT-Asia Conference IV, Adoption and Adaptation of SWAT for Asian Crop Production Systems and Water Resource Issues

October 20-13, 2015, in Tsukuba, Japan

Satellite Workshop 3

MINCERnet: Multi-site Monitoring Network of Canopy Micrometeorology and Heat Stresses of Rice under the Climate Change

November 24-26, 2015, in Tsukuba, Japan