

MARCO Workshop on Technology Development for Mitigating Greenhouse Gas Emissions from Agriculture

Date: 15-17 November, 2011

Venue: Epochal Tsukuba (Tsukuba International Congress Hall), Tsukuba, Japan

3rd Paddy Rice Research Group Meeting, Global Research Alliance on Agricultural Greenhouse Gases

Date: 18 November, 2011

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Sponsored by: National Institute for Agro-Environmental Sciences (NIAES)

Supported by: National Agriculture and Food Research Organization (NARO)

Agriculture, Forestry and Fisheries Research Council, MAFF

Japanese Society of Soil Science and Plant Nutrition

Monsoon Asia Agro-Environmental Research Consortium (MARCO)

Global Research Alliance on Agricultural Greenhouse Gases (GRA)



Rationale for the MARCO Workshop:

Agriculture currently produces 14 percent (6.1 Pg CO₂eq.) of the world's annual greenhouse gas (GHG) emissions, about the same as the transport or stationary energy sectors. Agricultural emissions of GHGs could increase to 7.9-8.5 Pg CO₂eq./year by 2050, as the agricultural sector seeks to meet an expected doubling of food demand. On the other hand, there are opportunities to reduce agricultural GHG emissions or promoting soil carbon sequestration through improved management technologies of agricultural lands and livestock production.

National Institute for Agro-Environmental Sciences (NIAES) and National Agriculture and Food Research Organization (NARO) are organizing a research project entitled "Development of Mitigation Technologies to Climate Change in the Agriculture Sector" together with other research institutes and universities in Japan. The project has accumulated scientific knowledge for mitigating agricultural GHG emissions by a series of process studies, field monitoring, and modeling approaches.

This Workshop aims at exchanging the results of the Japanese research project with invited foreign experts in order to help better understanding about the issues related to mitigation of agricultural GHG emissions. The workshop will be jointly organized by the Monsoon Asia Agro-Environmental Research Consortium (MARCO).

Rationale for the Paddy Rice Research Group Meeting:

This is the 3rd group meeting of the Paddy Rice Research Group of the Global Research Alliance on Agricultural Greenhouse Gases, which follows the 1st meeting last September in Tsukuba and 2nd one last March in France. As a result of the 2nd meeting, the group set a research plan including both immediate and long term activities. The group will review the activities since the 2nd meeting and discuss the ways of progressing its research plan.

Official Language:

The official language of the Workshop will be English. However, voluntary services of simultaneous translation for any monsoon Asian languages are welcome, in particular during the discussion sessions.

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MARCO Workshop on
**Technology Development for Mitigating
Greenhouse Gas Emissions from Agriculture**

15-17 November 2011, Tsukuba, Japan

PROGRAM

Tuesday, November 15

One day Excursion

- 09:10 Participants meet at the Okura Frontier Hotel Tsukuba Epochal
- 09:10 Leaving the Okura Frontier Hotel Tsukuba Epochal
- 09:30 National Institute for Agro-Environmental Sciences, in Tsukuba city
- An introduction to the Institute
- Natural Resources Inventory Museum
- GHG monitoring facility and equipment
- 11:30 Return to the Okura Frontier Hotel Tsukuba Epochal
- 12:00 *Lunch*
- 09:10 Participants meet again at the Okura Frontier Hotel Tsukuba Epochal
- 13:40 Leaving the Okura Frontier Hotel Tsukuba Epochal
- 14:20 Horticultural Institute, Ibaraki Agricultural Center, in Kasama city
- An introduction to the Institute
- GHG monitoring field
- 15:40 Local agricultural area and mini-sightseeing
- 17:20 Return to the Okura Frontier Hotel Tsukuba Epochal

Wednesday, November 16

at Epochal Tsukuba, Room 300

Scientific Symposium for Oral Presentations of Research

09:00 *Participant Registration*

Opening Session

Chair: K. Yagi and A. Miyata

09:30 Opening address
 Kiyotaka Miyashita
 President, National Institute for Agro-Environmental Sciences, Japan

09:40 Outline of the Workshop
 Kazuyuki Yagi
 National Institute for Agro-Environmental Sciences, Japan

Keynote Lectures

Chair: K. Yagi and A. Miyata

09:50 Management of agricultural soils for greenhouse gas mitigation: opportunities and challenges
 Charles W. Rice, Miguel Arango, and Ganga Hettiarachchi
 Kansas State University, U.S.A.

10:40 Nitrous oxide mitigation in UK agriculture
 Robert Rees, John Baddeley, Anne Bhogal, Bruce Ball, David Chadwick, Michael MacLeod, Alan Lilly, Rachel Thorman, Christine Watson, and John Williams
 Scottish Agricultural College, U.K.

11:30 Risk management of climate change and expectation of agricultural sector
 Taishi Sugiyama
 Central Research Institute of Electric Power Industry, Japan

12:20 *Group Photo and Lunch*

GHG Mitigation in Livestock Production

Chair: A. Takenaka and A. Ogino

- 13:30 The possibility of controlling flow of hydrogen into methane production and alternatives in the rumen
Makoto Mitsumori, Osamu Enishi, and Takumi Shinkai
National Institute of Livestock and Grassland Science, NARO, Japan
- 14:00 Methane production and mitigation from ruminant livestock in Thailand
Kritapon Sommart, Chatchai Kaewpila, and Akio Takenaka
Khon Kaen University, Thailand
- 14:30 Evaluation for greenhouse gas emission from slurry storage of dairy cattle
Takashi Osada and Keiko Minato
National Institute of Livestock and Grassland Science, NARO, Japan
- 15:00 *Coffee Break*
POSTER PRESENTATION at the corridor: Results of Research Project:
“Development of Mitigation Technologies to Climate Change in the Agriculture Sector”
- Chair: T. Osada and A. Takenaka*
- 15:30 Mitigating strategy of greenhouse gas emission from dairy manure composting process
Kouki Maeda, Sakae Toyoda, Dai Hanajima, Riki Morioka, Naohiro Yoshida, and Takashi Osada
National Agricultural Research Center for Hokkaido Region, NARO, Japan
- 16:00 Nitratation promotion process for reducing N₂O emission from swine manure composting
Yasuyuki Fukumoto
National Institute of Livestock and Grassland Science, NARO, Japan
- 16:30 Reduction of greenhouse gas emissions from livestock manure management by feeding low-protein diet
Akifumi Ogino and Takashi Osada
National Institute of Livestock and Grassland Science, NARO, Japan
- 17:00 *Adjourn*
- 18:00** ***Workshop Reception*** ***at Café “berger”***

Thursday, November 17

at Epochal Tsukuba, Room 300

Scientific Symposium for Oral Presentations of Research

GHG Mitigation in Croplands

Chair: N. Koga and A.W. Kishimoto-Mo

- 09:00 Effect of manure application on greenhouse gas emissions from managed grasslands in Japan
Mariko Shimizu, Ryusuke Hatano, Takatoshi Arita, Yasuyuki Kouda, Akinori Mori, Shoji Matsuura, Mitsuhiro Niimi, Masayoshi Mano, Ryuichi Hirata, Tao Jin, Atfritedy Limin, Osamu Kawamura, Masayuki Hojito, and Akira Miyata
Hokkaido University, Japan
- 09:30 Characteristics of soil carbon sequestration and CO₂ emission from arable land of China based on long-term experiments
Minggang Xu, Xubo Zhang, Wenju Zhang, Yilai Lou, and Hui Li
Institute of Agricultural Resources and Regional Planning, Chinese Academy of Agricultural Sciences, China
- 10:00 Simulating soil organic carbon stock change in Japanese agricultural land with the RothC model
Yasuhito Shirato and Yasumi Yagasaki
National Institute for Agro-Environmental Sciences, Japan
- 10:30 Evaluation of technologies for sequestering carbon by using organic filter underdrains
Iwao Kitagawa, Yasutaka Tsukamoto, and Satoshi Nakatsu
National Institute for Rural Engineering, NARO, Japan
- 11:00 Fallow management alters plant species composition and soil carbon profile after cessation of cultivation
Seiji Shimoda
National Agricultural Research Center for Western Region, NARO, Japan
- 11:30 Effects of the partial cooling on tomato (*Solanum lycopersicum*) with the method of the undersurface heat exchange
Shohei Shibata, Teruo Hidaka, and Johshin Tsuruyama
National Agricultural Research Center for Western Region, NARO, Japan
- 12:00 *Lunch*

GHG Mitigation in Paddy Fields

Chair: O. Nagata and T. Fumoto

- 13:00 When should mid-season aeration begin and nitrification inhibitor be applied to reduce CH₄ and N₂O emissions from rice fields
Hua Xu, Jing Ma, Xianglang Li, Guangbin Zhang, and Kazuyuki Yagi
Institute of Soil Science, Chinese Academy of Sciences, China
- 13:30 Effects of surface drainage during fallow seasons on mitigating methane emissions from poorly-drained paddy fields in Japan
Yutaka Shiratori and Yuichiro Furukawa
Niigata Agricultural Research Institute, Japan
- 14:00 Greenhouse gas emissions from Indian rice paddies using DNDC model
Jagadeesh B. Yeluripati, Steve Frohling, Changsheng Li, Dali Rani Nayak, and T.K. Adhya
University of Aberdeen, U.K.
- 14:30 Nation-scale estimation of methane emission from paddy fields in Japan using a biogeochemistry model
Michiko Hayano, Tamon Fumoto and Kazuyuki Yagi
National Institute for Agro-Environmental Sciences, Japan
- 15:00 *Coffee Break*
POSTER PRESENTATION at the corridor: Results of Research Project:
“Development of Mitigation Technologies to Climate Change in the Agriculture Sector”
- 15:30 Mitigation of greenhouse gas emission from paddy fields (provisional title)
Tapan K. Adhya
Central Rice Research Institute, India

General Discussion Session

Chair: K. Yagi and A. Takenaka

- 16:00 Summary presentations for key categories of research targets
- 16:20 Discussion by all participants
- 16:50 *Closing remark*
- 17:00 *Adjourn*

Paddy Rice Research Group Meeting

18 September 2011, Friday: 09:00-17:00

Room 405, Tsukuba International Congress Center, Tsukuba, Japan

AGENDA

Time	Session	Presenter / Moderator
0900	Opening: <ul style="list-style-type: none"> - Welcome addresses - Participants' self-introductions - Overview of the Paddy Rice Research Group - Review of decisions made by the 2nd group meeting at Versailles (March 2011) - Review of today's Agenda and Objectives 	Kaz Yagi Alvaro Roel Akihiko Uchikawa
0930	Overview of the Alliance: <ul style="list-style-type: none"> - Review of Ministerial Summit and Council meeting (Rome, June 2011) - Membership - Communications policy development - Policy on partnership - Other Research Group activities - Upcoming milestones 	Deborah Knox
0930	Brief reports for research update in each member country <ul style="list-style-type: none"> - Stock-take for paddy rice research - Recent research activities - Priorities of research needs 	Delegates from member countries (maximum 10 min presentation)
1030	<i>Coffee break</i>	
1100	Brief reports for research update in each member country (continued)	Delegates from member countries
1230	<i>Lunch - Venue TBD; each participant responsible for paying for his or her own meal.</i>	
1330	Action Plan discussion: <ul style="list-style-type: none"> - Standardization of measurement techniques - Databases for publications and experts - the future of the stocktake - Longer term action: an experimental protocol for a pilot multi-site/country experiment - others 	Moderated by Kaz Yagi Presentations by: Kazunori Minamikawa Shigeto Sudo
1500	<i>Coffee break</i>	

1530	<p>Linking to the other Research Groups and cross-cutting issues</p> <ul style="list-style-type: none"> - Reports for the activities of other groups - Discussion 	<p>Moderated by Alvaro Roel</p> <p>Reports: Participants from other groups</p>
1600	<p>Linking with partners and resource persons</p> <ul style="list-style-type: none"> - Reports from partners and others - Discussion 	<p>Moderated by Alvaro Roel</p> <p>Reports: Participants from partners, etc.</p>
1630	<p>Future activities:</p> <ul style="list-style-type: none"> - Next steps to implement the Action Plan - Upcoming milestones 	<p>Kaz Yagi</p> <p>Alvaro Roel</p>
1700	Meeting close	