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**Proceedings of International Seminar on  
Enhancement of Functional Biodiversity Relevant to Sustainable Food Production in ASPAC**  
--- In Association with MARCO ---

November 8-12, 2010      Tsukuba, Japan

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## Program of Activities

### Organizers



Food & Fertilizer Technology Center (FFTC)  
for the Asian & Pacific Region



National Institute for Agro-Environmental Sciences,  
Japan



**NARO**

National Institute of Fruit Tree Sciences (NIFTS),  
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Council of Agriculture , Executive Yuan, Taiwan ROC

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2. Current status of habitat manipulation for natural enemies and pest management in Japan  
Dr. Hisashi Nemoto .....

## Resource papers

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Dr. Hisatomo Taki .....
4. Conservation and sustainable utilization of stingless bees for pollination services in agricultural ecosystems in Malaysia  
Dr. Mohd Norowi Hamid .....
5. Advanced management of bee health and beekeeping under Taiwan subtropical/ tropical climate  
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6. Effect of sub-lethal dosages of insecticides on honeybee behavior and physiology  
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12. Natural enemies of important insect pests of field crops and utilization as biological control agents in Thailand  
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Dr. Hea-son Bang .....
19. Selection of indicator organisms for functional agrobiodiversity in paddy ecosystems in Japan  
Dr. Koichi Tanaka .....
20. Selection of indicator organisms for functional agrobiodiversity at the crop field level in Japan  
Dr. Fumio Ihara .....
21. Preservation of natural enemies as an indicator of agrobiodiversity in terms of planting ground cover in orchards  
Dr. Koji Mishiro .....

## Program of Activities

<u>Date</u>	<u>Topic/Activity</u>
<b>08 Nov., (Mon.)</b>	Arrival of overseas participants, Tsukuba, Japan
<b>09 Nov., (Tue.)</b>	
09:00-09:40	<b>Registration</b>
09:40-10:20	<b>Opening Ceremony</b> <b>Welcome Remarks</b> Dr. Yohei Sato President, NIAES, Japan  Dr. Yoshinori Hasegawa Director General, NIFTS, Japan <b>Opening Messages</b> Dr. Hideo Imai Deputy Director, FFTC/ASPAC  <b>Group Photo</b>
10:20-10:40	Tea/Coffee break
<b><u>Session 1</u></b>	<b><u>Keynote papers</u></b>
10:40-11:20	1. Biodiversity enhancement on arable land: the effects of local management and landscape context Dr. Matthew S. Heard Head of Biodiversity & Conservation Management Group, NERC Centre for Ecology and Hydrology, Oxfordshire, UK
11:20-12:00	2. Current status of habitat manipulation for natural enemies and pest management in Japan Dr. Hisashi Nemoto Director of Crops Laboratory, Crops and Fields Research Institute, Saitama Prefectural Agriculture and Forestry Research Center, Saitama, Japan
12:00-13:00	Lunch break
<b><u>Session 2</u></b>	<b><u>Enhancement of Functional Biodiversity</u></b>
13:00-13:30	(A) <u>Biodiversity of pollinators</u> 3. Effects of diverse surrounding ecosystems and pollinator species on crop pollination Dr. Hisatomo Taki

- Department of Forest Entomology,  
Forestry and Forest Products Research Institute, Tsukuba,  
Ibaraki, Japan
- 13:30-14:00 4. Conservation and sustainable utilization of stingless bees for  
pollination services in agricultural ecosystems in Malaysia  
Dr. Mohd Norowi Hamid  
Deputy Director, Pest and Disease Management Program, Rice  
and Industrial Crops Research Centre, MARDI  
Kuala Lumpur, Malaysia
- 14:00-14:30 5. Advanced management of bee health and beekeeping under  
Taiwan subtropical/ tropical climate  
Dr. Yue-Wen Chen  
Professor and Chairman, Department of Animal Science,  
National Ilan University, Ilan, Taiwan ROC
- 14:30-15:00 6. Effect of sub-lethal dosages of insecticides on honeybee  
behavior and physiology  
Dr. En-Cheng Yang  
Associate Professor, Department of Entomology,  
National Taiwan University, Taipei, Taiwan ROC
- 15:00-15:20 Tea/Coffee break
- 15:20-15:50 7. Current status and agricultural utilization of insect pollinators in  
Korea  
Dr. Hyung-Joo Yoon  
Senior Researcher, Lab. of Pollinating Insects,  
National Academy of Agricultural Science, RDA,  
Suwon, Seoul, Korea
- 15:50-16:20 8. Cost and benefit analysis of alternative pollinators: A case study  
in Taiwan  
Dr. Jung-Tai Chao  
Research Scientist, Taiwan Forestry Research Institute, COA,  
Taipei, Taiwan ROC
- 16:20-16:50 9. Wild bees as crop pollinators in Taiwan  
Dr. I-Hsin Sung  
Division of Crop Environment,  
Tainan District Agricultural Research and Extension Station,  
COA, Tainan, Taiwan ROC
- 16:50-17:20 (B) Biodiversity and enhancement of natural enemies  
10. Natural enemies and their use in the bio-control of insect  
pests in Taiwan  
Dr. Chi-Feng Lee  
Associate Researcher, Applied Zoology Division, Taiwan  
Agricultural Research Institute (TARI), COA, Taichung,

**10 Nov., (Wed.)**

Taiwan ROC

09:00-09:30

11. The species of an herbivore-natural enemy associated with brown plant hopper outbreaks at Red River Delta, Viet Nam

Dr. Ho Thi Thu Giang

Lecturer/Faculty of Agronomy

09:30-10:00

Ha Noi Agricultural University, Ha Noi, Viet Nam

12. Natural enemies of important insect pests of field crops and utilization as biological control agents in Thailand

Dr. Wiwat Suasaard

Executive Director, National Biological Control Research Center, Chatuchak, Bangkok, Thailand

10:00-10:30

13. Classical biological control of banana weevil borer, *Cosmopolites sordidus* (Coleoptera: Curculionidae) with natural enemies from Indonesia

Dr. Ahsol Hasyim

Director, Indonesian Vegetable Research Institute (IVEGRI), Kotak Pos, Lembang1 - Jawa Barat, Indonesia

10:30-10:50

10:50-11:20

Tea/Coffee break

14. Biological control agents of bean fly *Ophiomyia phaseoli* (Tryon) (Diptera: Agromyzidae) on mungbean in Myanmar

Dr. Thi Tar Oo

Professor and Head, Department of Entomology and Zoology, Yezin Agricultural University, Yezin, Nay Pyi Taw, Myanmar

### **Session 3**

#### **Functional Biodiversity in Agro-Environments**

11:20-11:50

15. Effect of landscape structure on functional biodiversity

Dr. Shori Yamamoto,

Senior Researcher and Yoshinobu Kusumoto, Researcher, NIAES, Tsukuba, Ibaraki, Japan

11:50-12:20

16. S&T technology transfer from modality in managing crop pests

Dr. Jocelyn A. Eusebio-Eusebio

Director, Crops Research Division (CRD), Philippine Council for Agriculture, Forestry and Natural Resources Research and Development (PCARRD), Los Baños, Laguna, Philippines

12:20-13:30

13:30-14:00

Lunch break

17. Metagenomic approach to soil microbial diversity and functions

Dr. Takeshi Fujii

Director of Environmental Biofunction Division, NIAES, Tsukuba, Ibaraki, Japan

14:00-14:30

18. Diversity of coprophagus invertebrates in Korea and their role in soil ecosystem  
Dr. Hea-son Bang  
Senior Researcher, Agro-Ecosystem Lab.  
National Academy of Agricultural Science, Suwon, Seoul, Korea

**Session 4**

**Selection and Utilization of Indexes to Evaluate Functional Biodiversity**

14:30-15:00

19. Selection of indicator organisms for functional agrobiodiversity in paddy ecosystems in Japan  
Dr. Koichi Tanaka  
Senior Researcher, National Institute for Agro-Environmental Sciences (NIAES), Tsukuba, Ibaraki, Japan

15:00-15:20

15:20-15:50

Tea/Coffee break

20. Selection of indicator organisms for functional agrobiodiversity at the crop field level in Japan  
Dr. Fumio Ihara

15:50-16:20

Team Leader of Entomology Research, National Institute of Fruit Tree Science (NIFTS), Tsukuba, Ibaraki, Japan

21. Preservation of natural enemies as indicator of agrobiodiversity in terms of planting ground cover in orchards  
Dr. Koji Mishiro  
Senior Researcher, NIFTS, Tsukuba, Ibaraki, Japan

16:20-17:00

Wrap-up of meeting and closing proper

**11 Nov., (Thurs.)**

Field trip

**12 Nov., (Fri.)**

Return of overseas participants to respective country

**International Seminar on  
Enhancement of Functional Biodiversity Relevant to Sustainable  
Food Production in ASPAC  
--In Association with MARCO--**

**Rationale:**

Under the Convention of Biological Diversity (CDB), functional biodiversity is well recognized as one of the vital resources to materialize sustainable agriculture in EU and others. The functional biodiversity possesses a variety of ecosystem services; however, its desired effect on sustainable crop production such as pest management and pollination is particularly expected. The conversion of conventional agriculture to the one which is fully exploiting the potential of functional biodiversity comes to be a matter of considerable public concern and a variety of activities have initiated to enhance the functional biodiversity. However, “Indicators” which are capable of evaluating the effect of the functional biodiversity quantitatively, have not been developed yet. Of which the would-be promising indicators are natural enemies (Parasitoids, Neutrals, Herbivores, and Predators), pollinators (bees and hoverflies), specified plant species and so forth.

Since 1980, a significant decline in pollinator diversity and density have been reported in UK and the Netherlands, and in recent years, scientists and agriculturalists around the world become considerably concerned with this phenomenon. Pollinators are known to play a crucial role in the reproduction of flowering plant species, and in particular, the species of agricultural importance such as vegetables, fruits, and ornamental flowers. The pollinator-decline is probably due to destruction of habitat and agricultural changes, however, major factors contributed to this great decline remain to be solved. Thus, the vital importance of the sustainable use such as pollinators of biological diversity for society/agriculture is evident.

In view of serious declines in the functional biodiversity represented as natural enemy and pollinator, it is primarily important for them to be preserved and further increased for the development of sustainable crop production. It is therefore a matter of urgency to identify and develop “the indicators” for evaluating the effect of cultural practices and/or agricultural technologies on the functional biodiversity, and based upon the indicators thus identified/developed, to develop a simple and practical technique for evaluation of the effectiveness of functional biodiversity in sustainable agricultural production systems.

In 2010, 10<sup>th</sup> Conference of the Parties to the Convention on Biological Diversity (COP10) will be held in Nagoya, Japan with participation of 190 countries worldwide, and they are to verify their commitment made in 2002, “to achieve by 2010 a significant reduction of the current rate of biodiversity loss at the global, regional and national level as a contribution to poverty alleviation and to the benefit of all life on Earth”.



This international seminar aims to obtain a better understanding of the current status of the functional biodiversity, in particular, focusing on natural enemies and pollinators in the Asian and Pacific region. In case a significance decrease in the functional biodiversity can be observed in certain areas/countries, and/or the wider region, the factors responsible for the decline and its adverse effect on the short-/long- term crop production are to be discussed. Also this seminar is to aim at sharing and exchanging relevant information and promising technologies/management to enhance the functional diversity for sustainable crop production. The promising candidates of “the indicators” evaluating the effect of cultural practices/agricultural technologies on the functional biodiversity are to be first proposed for the Asia Monsoon Climate.

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**Published by:**

National Institute for Agro-Environmental Sciences,  
3-1-3, Kannondai, Tsukuba, Ibaraki, 305-8604 Japan

National Institute of Fruit Tree Science, NARO  
2-1, Fujimoto, Tsukuba, Ibaraki, 305-8605, Japan

Food and Fertilizer Technology Center (FFTC) for the Asian and Pacific Region  
5F, 14, Wenchow St., Taipei 106, Taiwan

Published in November, 2010

**Sponsored by:**

National Institute For Agro-Environmental Sciences (NIAES),  
3-1-3, Kannondai, Tsukuba, Ibaraki, 305-8604 Japan

National Institute of Fruit Tree Science, NARO  
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Printed in Japan