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Green Revolution

Hosted by the Graduate School of Biosphere Science, Hiroshima University

Co-hosted by the Research Center for Animal Science, the Research Center for Japanese Foods and  
the Research Core for Plant Science Innovation, Hiroshima University

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## **10th International Symposium on Food and Environment**

“Status of Biotic Resources and Efforts for Sustainable Production in Asian Countries”

13 00 – 16 30

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C206

Date: 4 November, 2017 (Sat.) 13:00 – 16:30

Venue: Room C206, Graduate School of Biosphere Science, Hiroshima University

### **Greetings from the Dean**

It is our great pleasure to commemorate the 10th anniversary of our International Symposium on Food and Environment.

Human existence largely depends upon sustainable food production in many countries. Various factors related to climate change, human population increase and change of socio-industrial structure caused by rapid development are affecting the production environment of biotic resources which consist of genetic and environmental resources. It is of our great concern how to manage and produce sustainably such valuable biotic resources for clothing and medicine as well as foods that are essential for human life. This symposium is convened to present overviews and discuss current situations, issues and challenges affecting biotic resources and the environment towards their sustainable production in Asian countries.

Dr. Yukinori Yoshimura, Dean

----- Page 1  
Dr. Wen-Dee Chiang (Tunghai University, Taiwan )  
Chair : Makoto Hirayama

**13:50 “Food Production and Environment Management Systems and Problems in Thailand”**  
----- Page 4  
Dr. Chaiyapoom Bunchasak (Kasetsart University, Thailand )  
Chair : Taketo Obitsu

**14:30 Poster Presentations**

- \* Staffs supported by the 2016 Grant-in-Aid for Research from the Graduate School of Biosphere Science, Hiroshima University 2016
- \* Students of Hiroshima University and Tunghai University

**Break time**

**15:20 “Mechanisms of Coastal Biological Production in Southeast Asia and Some Concerns: Case Studies at the Myanmar and Indonesian Coasts”**  
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Dr. Kazuhiko Koike (Hiroshima University, Japan )  
Chair : Masayuki Yoshida

**16:00 General Discussion** Chair : Lawrence M. Liao

**16:20 Closing Remarks**  
Toshinori Nagaoka, Chair of the International Exchange Committee

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\* Reports of studies supported by the 2016 Grant-in-Aid for Research from the Graduate School of Biosphere Science, Hiroshima University 2016 Page 7

\* List of Poster Presentations by Students Page 12

# **Overview of the Studies on Bioactive Peptides in Taiwan**

**Chiang Wen-Dee**





**Food Production and Environment Management Systems  
and Problems in Thailand**

**Chaiyapoom Bunchasak**

# **Mechanisms of Coastal Biological Production in Southeast Asia and Some Concerns: Case Studies at the Myanmar and Indonesian Coasts**

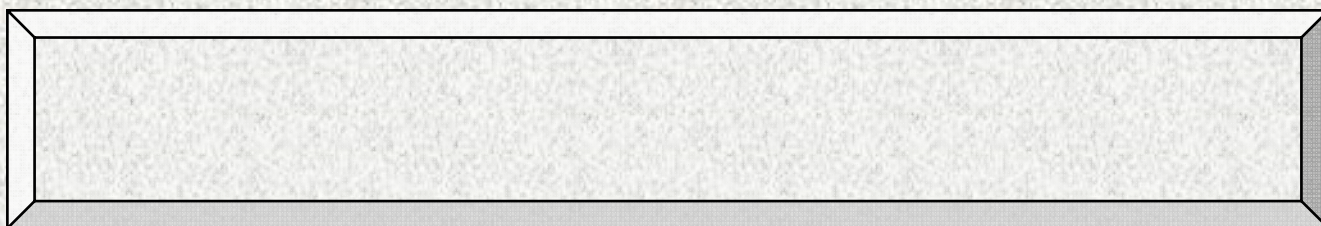
**Kazuhiko Koike**

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**Reports of studies supported by Grant-in-Aid for Research from the Graduate School of  
Biosphere Science, Hiroshima University**



**November 4, 2017**

**Graduate School of Biosphere Science, Hiroshima University**

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Grant-in-Aid for International Cooperative Research  
Tamiji Yamamoto

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International Comparative Study on Management of Basin-scale Water Quality and Quantity

Grant-in-Aid for Fundamental Research  
Miki Okita

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Research on acclimazation of prepubertal Holstein heifers for hot summer season



## **International Comparative Study on Management of Basin-scale Water Quality and Quantity**

Tamiji Yamamoto<sup>1</sup>, Doddi Yudianto<sup>2</sup>, and Peter Davey<sup>3</sup>

*1: Graduate School of Biosphere Science, Hiroshima University, Director of Center for Restoration of Basin Ecosystem and Environment*

*2: Vice Dean for Academic Affairs, Faculty of Engineering, Parahyangan Catholic University, Indonesia*

*3: Environmental Protection, Program Director Bach of Environmental Management and Specialization Convener Masters of Environment, Griffith University, Australia*

The authors have conducted the project “Cooperative Education of “Peace” and “Environment” in the Framework of International University Consortium INU (International Network of Universities)” by the support of Inter-University Exchange Project of Japan Society for the Promotion of Science during 2011-2015. During the four-year project period, we conducted international summer school for master course students in the field of aquatic environmental sciences every year. More than 140 peoples including students and teachers in total came together from the 7 oversea schools which have agreement with Hiroshima University. In parallel, Parahyangan Catholic University in Indonesia and Griffith University in Australia have also held their summer schools twice in each. Students and teachers of Hiroshima University attended these summer schools.

Due to termination of the Japan-supported exchange program in 2015, we faced to fund shortage for the activity, and the activity center moved to Parahyangan Catholic University. Then, we shifted our activity to exchange information in research field, because it would less spent much money compared to student exchange program. During the summer schools so far, we have already recognized that the way of management of water quality and quantity is much different in each country. In Indonesia, rivers are just the place of garbage dump site because of poor garbage collection system. This is also the cause of drinking water shortage. In Australia, repetition of drought and flood may have their water management difficult. On the contrary, we have been storing several excellent technologies in the fields of civil engineering, water management and ecosystem restoration in Japan.

Therefore, in the present project, we proposed to spend fund for attendance to the largest conference “International Seminar on Water Resilience in a Changing World” in Indonesia for comparison of the diversion system of river water and management system of water quantity and quality in the water cycle of different countries. The senior author, Tamiji Yamamoto, attended the conference as a scientific committee member. There were three sub-topics, “Water Conservation and Risk and Impact of Extreme Event”, “Water Security for All”, and “Water Governance and Partnership”, and the total number of papers submitted were 95.

By hearing excellent presentations and through discussion with presenters, we could exchange information. Other than Parahyangan Catholic University, presentations were done from other Indonesian universities, Hassanuddin University, Gadjah Mada University, Bandung Institute of Technology, Brawijaya University, Diponegoro University, Indonesia University, and North Sumatera University, which have agreements with Hiroshima University. Several presentations were from Netherland, Koria and Japan. To pursue our collaborative research regarding management of water quantity and quality in the basin scales, information exchange like this time would be very important.

Being not different from our expectation at the initial stage of our collaboration, we recognized that technologies and knowledge of Japan in the fields of water purification, garbage collection and processing, and restoration of ecosystem are at the top level in the world. These sophisticated technologies and systems we have developed in Japan could contribute restoration of water environment in other countries by transferring the technologies.

The senior author has experience of an industrial development advisor of Hiroshima City, a council member of Hiroshima Recycle Initiative, and an advisor of Chugoku New Business Conference. In these relationship, now we are planning to hold an international seminar in Hiroshima or Higashi-Hiroshima.

## **Research on acclimatization of prepubertal Holstein heifers for hot summer season**

Miki Okita, Yuzo Kurokawa, Takashi Bungo

(Graduate School of Biosphere Science, Hiroshima University)

Recently, we found that raised dairy cow's rectal temperature and respiration rate because of hot summer tended to lower with time during hot summer season (Okita et al. 2014). It implied that cows gradually acclimatize to thermal condition in summer. There is little information for the acclimatization in cattle. The objective of the present study was to investigate the changes in physiological parameters and dairy gain in Holstein heifers during summer.

The experiments were conducted from 28 June to 3 July (period 1), 25 July to 30 July (period 2), 23 August to 28 August (period 3) and 20 September to 25 September (period 4) in 2016. We used 4 or 5 Holstein heifers (initial age =  $8.6 \pm 0.9$  months, initial body weight =  $295 \pm 32$  kg). All heifers were fed colored guineagrass and concentrate to meet the heifer's growth rate of 0.9kg/day.

The mean temperature-humidity index (THI) during period 1, 2, 3, and 4 were 73.9, 77.0, 75.7 and 69.6, respectively.

We measured dry matter intake, body weight, heart rate, rectal temperature, respiration rate and skin temperatures.

Samples of jugular vein blood were collected to determine the plasma glucose, total cholesterol (T-Cho), alanine amino transferase (ALT) and alkaline phosphatase (ALP) with a biochemistry analyzer.

Dry matter intake for periods 3 and 4 were significantly lower than that for period 1 and 2, though body weight gain did not differ among the experimental periods. Rectal temperature and respiration rate for period 2 and 3 were significantly higher than those for period 4. Skin temperature for period 2 was significantly higher than that for period 1, 3 and 4. Plasma ALT, T-Cho and Hematocrit for period 3 were significantly lower than those for period 1, 2 and 4. ALP for period 2 and 3 were significantly lower than that for period 4.

## List of Poster Presentations by Students

<b>Tunghai University 東海大学</b>		
	Name	Title of presentation
	Ying-Chu Shin 施 映竹	Evaluation of soy protein hydrolysate with calcium-chelating activity in Caco-2 cell
	Chia-Chun Chan 詹 佳純	Ultrasound-assisted ethanol extracts from guava leaves and their antioxidant and blood glucose regulation activities in C2C12 cells with insulin resistant
<b>Hiroshima University 広島大学</b>		
Grade Level	Name	Title of presentation
M1	Saki Ishimaru 石丸 彩樹	Effect of calcium salts of medium-chain fatty acids on performance and plasma hormone concentrations in lactating dairy cows
M1	Yui Takao 高尾 結衣	Effect of calcium salts of medium-chain fatty acid supplements of feeding behavior and milking activity in lactating dairy cows in an automatic milking system
M1	Maho Ito 伊藤 真穂	Molecular phylogenetic analysis and morphological features of Ryukyu Wild Boar in Japan
M1	Taiki Fuji 藤 太稀	Functional morphology of cephalothoracic sucker of <i>Caligus</i>
M1	Yuya Furukawa 古川雄也	The difference of phosphorus uptake among natural variations of <i>Arabidopsis thaliana</i>
M1	Shin-ya Morishima 森島 慎也	Observation for zooxanthellae in feces expelled from tridacnine shellfishes
M1	Azusa Endo 遠藤 梓	Strict pair-bond and stable territories of the vagabond butterflyfish, <i>Chaetodon vagabundus</i> performing spawning migration
M2	Masami Koide 小出昌美	Phylogenetic and photosynthetic characters of zooxanthellae (dinoflagellate genus <i>Symbiodinium</i> )
M2	Tadashi Okamura 岡村 惟史	<i>Helicia cochinchinensis</i> : an “Influencer” for mineral uptake of surrounding plants under low phosphate by forming cluster root
M2	Kazuki Yoshida 吉田 和貴	Comparison of size parameters of the invasive moon snail <i>Laguncula pulchella</i> between northern and southern Japan
M2	Tomomi Ebara 颯原 智美	Glass transition and texture properties of hazelnut
M2	Masahiro Yamaguchi 山口 将大	Consumption of fructo-oligosaccharides increases ethanol levels in intestines and tissues of rats
M2	Kaho Honma 本間 香帆	Genetic diversity and origin of native chicken in Madagascar
M2	Misaki Fujisawa 藤澤 美咲	The cleaner's mimic <i>Aspidontus taeniatus</i> utilizes the effect of aggressive mimicry only when it is small
M2	Sumana Chuamnakhthong	The effects of mild salinity and osmotic pretreatment on salt acclimation in rice

Grade Level	Name	Title of presentation
D1	Shizuka O-hara 小原 静夏	Spatiotemporal changes of primary production related with environmental factors and <i>in situ</i> photosynthetic factors of phytoplankton communities in the Bingo-Nada (the Seto Inland Sea)
D1	Qin Dong	Study on physiological characteristics of germination of plants differing in phytate content
D1	Fumika Ito 伊藤 文香	DNA polymorphism on a tool for molecular discrimination in animal species
D2	Chinami Ishibashi 石橋 ちなみ	<i>In situ</i> observation of template effects of emulsifiers with different fatty acid moieties
D3	Sunday Oluwatoyin Michael	Selective determination of Lipid hydroperoxides in natural waters using a fluorescent probe
D3	Fongin Suwalee	Effect of maltodextrin on the water sorption and glass transition of freeze-dried mango pulp and its application to other dry fruits
D3	Dwi Eva Nirmagustina	Gender differences and dietary supplemental Vitamin B6: Impact on colon luminal environment
D3	Dissanayaka Mudiyanselage Samantha Bandara Dissanayaka	Response to phosphorus deficiency of two rice genotypes with contrasting tolerance is determined by plasticity of root growth and leaf phosphorus remobilization
D3	Yang Yongshou 楊 永寿	Bifidogenic effect of <i>Aspergillus</i> -derived acid protease