

**NIAES International Symposium 2006
in Epochal Tsukuba,
12-15 of December 2006**

International Workshop:

**Prediction of Rice Production Variation
in East and Southeast Asia
under Global Warming
in Epochal Tsukuba,
13-14 of December, 2006**

09:00-17:00 on 13th, 09:30-15:00 on 14th at Congress room 303

Purpose of this work shop

The purpose of this workshop is;

- **to survey the results of old research project “Technical Development on Predicting the Food Production Variation under the Global Environmental Change”.**
- **to inherit of the new information, knowledge and techniques obtained from the old research project activities to the new one.**
- **to discuss the establishment of “consortium” to encourage our research activities in this field.**

4 sessions in this workshop;

- **Monitoring and Clarification of the Change in Agro-environment**
- **Rice Response to the Change in Agro-environment**
- **Modeling and Prediction of the Change in agro-environment**
- **General Discussion**

Session 1: Monitoring and Clarification of the Change in Agro-environment (Chairman: Dr. Tsuneo Kuwagata).

- **Focusing establishing climate scenarios.**
 - **Description and management of water resources.**
- ① **Dr. Motoki Nishimori: Current Estimation and Future Projection of Climate Extremes and Unusual Weathers over the Asian Region simulated by a Regional Climate Model.**
 - ② **Prof. Yinlong Xu: Developing High-resolution Climate Scenarios in China.**
 - ③ **Mr. Yasushi Ishigooka: Assessment of Temporal-Spatial Distribution of Agro-Water Resources in East Eurasia.**
 - ④ **Dr. To Quang Toan: Water Resources Management in The Mekong Basin: Modeling and Evaluation of Floods, Droughts and Salinity.**
 - ⑤ **Dr. Anan Polthanee: Agro-Environmental and Farmers' Management Strategies in Northeast Thailand.**

Session 1: Contents

- **Report of precipitation and temperature over the Asian Region simulated by a regional climate model.**
- **Introduction of high-resolution climate scenarios in China simulated by a regional climate model.**
- **Description of the results of assessment of demand-supply relationships of agricultural water use.**
- **Report of scenario analysis of usage of a model operating river and reservoir in Mekong river delta.**
- **Introduction of various field management strategies employed by farmers to water risk in Northeast Thailand.**
- **Discussion of Session 1;**
 - **Accuracy of the results simulated by regional climate model.**
 - **Some issues on the usage of regional climate model.**
 - **Connection between scenario distributor and user.**
 - **Mismatching of data quality required by distributor and user.**

Session 2: Rice response to the change in agro-environment (chairman; Dr. Toshihiro Hasegawa).

- **Focusing on response to air temperature and water.**
- **Focusing on response to CO₂ and nitrogen.**
 - ① **Dr. Eiji Kanda: Recent Trends in Cool Weather Damage to Rice.**
 - ② **Dr. Motohiko Kondo: Effect of High Temperature on Yield and Grain Quality in Rice.**
 - ③ **Mr. Pisarn Konghakote: Cultivar and Management of Aerobics Rice under Agro-ecosystem in the Northeastern Thailand.**
 - ④ **Dr. Hidemitsu Sakai: Prediction of Impacts of Elevated CO₂ Concentration on Rice Productivity and Water Use.**
 - ⑤ **Dr. Lianxin Yang: Recent Findings on Chinese Rice FACE studies.**

Session 2: Contents

- **Introduction of cool weather damage to rice and cultivation management technique to protect against cool weather.**
- **Report of high temperature effect on grain quality and yield of rice.**
- **Report of management of aerobics rice on upland cropping system in the Northeastern Thailand.**
- **Description of leaf photosynthetic response and canopy water use under higher CO₂ condition.**
- **Introduction of results of FACE in China.**
- **Discussion of Session 2;**
 - **Uncertainties of the future yield prediction, such as function of nitrogen, water, temperature and CO₂ to each physiological process.**
 - **Necessity of consideration of interaction of nitrogen, water, temperature and CO₂.**

Session 3: Modeling and prediction of the change in agro-environment (chairman: Dr. Mayumi Yoshimoto)

- **Focusing establishing the method to detect land use change.**
- **Focusing on establishing the prediction technique of land use and insect emergence.**
- **Modifying the food supply-and-demand model.**
 - ① **Dr. Hiroyuki Ohno: Detection of Cropland and Crop Phenology by Frequently Observing Satellite Data.**
 - ② **Dr. Koji Yamamura: Analysis of 50-Year Dynamics of Insect Pest Populations for Predicting Their Abundance under Global Warming.**
 - ③ **Dr. Katsuo Okamoto: Potential Effect of Climate Change on Rice Production in Eastern Asia.**
 - ④ **Dr. Jun Furuya: Impacts of Global Warming on Agricultural Product Market: World Food Model Analysis Using HadCM3 Scenario A2.**

Session 3: Contents

- **Introduction of remote sensing data for applying to detect rice phenology and agricultural land.**
- **Introduction of method to predict insect pest populations abundance under Global Warming.**
- **Description change in suitable/potential areas for main crop.**
- **Introduction modified food supply-and-demand model to analyze Impacts of Global Warming on Agricultural Product Market.**
- **Discussion of Session 3;**
 - **How to treat climate data.**
 - **Linkage between climate data and biological and socioeconomic analysis.**
 - **To collect and exchange information.**

Session 4: General Discussion

Framework of “international cooperation” applied in the research on rice production variation of East and Southeast Asia (chairman: Dr. Hitoshi Toritani)

“What kind of consortium do we require for achieving our activities effectively in Monsoon Asia to solve the food production issues under the environmental change?”

- 1. Brief introductions of the international research activities.**
 - 1. Outline of Our Ongoing Research Project (FY2006-2010); Modeling Rice Growth and Paddy Ecosystem Responses to Climate Change and Risk Assessment of Rice Production (Dr. Toshihiro Hasegawa, NIAES).**
 - 2. Research Activities in SE Asia (Prof. Shu Fukai, The University of Queensland).**
 - 3. Water Balance in Rainfed Lowland Rice Ecosystems - A Case Study in the Mekong region - (Dr. Mitsuru Tsubo, The Tottori University).**
 - 4. Comments; the case of Department of Global Agricultural Sciences (Prof. Kazuhiko Kobayashi, The University of Tokyo)**

2. Information obtained from brief introductions of the international research activities.

- ✓ To clarify two aspects of climate change effects on rice production, regional level impacts (outlook of food supply will be measured at this level) and field or farm level impacts (Countermeasure and adaptive technologies will be practiced at this level).
- ✓ International research activities with clarifying issues and having suitable partners.
- ✓ To strike a balance between issue-oriented and Inter-/multi-/trans-disciplinary approaches.
- ✓ To joint meeting with other groups related to same issues.
- ✓ (Big) money fund from Japan is also needed in International research activities, especially in SE Asia.

3. The functions requested to “consortium”.

- ✓ To exchange information (Web and so on).
- ✓ To discuss with other groups related to same issues (Symposium and Workshop).
- ✓ To support data collection and distribution (Data center).
- ✓ To support model updating (Model center).

4. Notes in consortium.

- ✓ To clarify Issue, focus, and region Specify the function.
- ✓ Human Resources and money to Maintain the system of consortium.
- ✓ Name is also needed!! Like MARCO...