

# WORKSHOP REPORT



## Workshop/Training on Decision Making and Sociological Tools in Pest Management

应用生态工程技术控制水稻病虫害研讨会



IRRI



11-15 May 2009  
Guilin, China

20 May 2009

## SUMMARY

On May 11-15, the final in-country workshop-training course on “Decision making and sociological tools in pest management” was held at the Shan Shui hotel in Guilin, Guangxi province. Field work was carried out in Lin Gui county.

Dr. Xia Jingyuan, Director-General of the National Agro-tech Extension and Service Center (NATESC) of the Ministry of Agriculture, China, formally opened the workshop/training with a welcome address. In his speech, Dr. Xia expressed her gratitude to ADB and IRRI for selecting Guangxi and Zhejiang provinces as the experimental site for the project. Dr. Xia stressed that the planthoppers remains one of China's most destructive pests of rice. They know that this problem will continue to be serious unless they find a sustainable means of control. China has been using pesticides and is now facing problems of resistance and other ecological problems. This new imitative of IRRI brings in a holistic way using eco engineering methods. Some of these ideas are new to China and Dr. Xia hoped that they will learn quickly and try them. Farmers will depend on them to find the solutions and he hoped everyone will work hard in the project.

A total of 24 plant protection officials and local leaders in Guangxi province and NATESC, university and college associate professors from Zhejiang province, and directors of agricultural bureaus in participated in the workshop-training. Professor Cheng Jiaan and Dr. Zhu Zeng-Rong of Zhejiang University served as workshop interpreters and helped facilitate the group sessions.

After the opening session, Dr. Heong, principal investigator, presented the background of the project and the expected outputs. This was followed by a description of the workshop/training objectives and expected outcomes by Dr. Escalada, Output 4 coordinator. Group exercises and focus group discussions with farmers in Cai Be District provided participants with insights into the use of sociological methods to understand farmers’ decision making, e.g., focus group discussions, emic-etic, folk taxonomy and folk partonomy. Results of group exercises and FGDs with farmers, folk taxonomy and partonomy are presented in the report.

### Background

Between 2004 and 2007 several countries in Asia suffered heavy pre harvest losses caused by outbreaks of the planthopper pests and virus diseases they carry. In 2005/06, rice production in Vietnam particularly in the Mekong Delta suffered an estimated loss of ~ 400,000 tons (or 1.1 % of Vietnam’s total). In China the planthopper problems are persistent and in 2005 about 2.8 million tons loss was reported. Also in 2005/06 extensive outbreaks of BPH occurred in Korea, Japan and Vietnam bringing about yield losses of more than 3 million tons. Planthopper outbreaks are continuously being reported in other Asian countries (see <http://ricehoppers.net/?s=outbreaks>).

In April 2008 as a response to the rice crisis, ADB invited IRRI to submit a proposal that will help reduce losses, both pre and post harvests under the 13<sup>th</sup> RETA program (Regional Technical Assistance). The project entitled “Bringing about a Sustainable Agronomic Revolution in Rice Production in Asia by Reducing Preventable Pre- and Postharvest Losses” or the “Rice Planthopper Project” in short, was approved in October 2008.

The project will employ a multistakeholder participatory process in planning, review and monitoring of project outputs in target countries. The participatory process will engage policymakers and stakeholders in research, extension, the private sector, NGOs, local government, and farmer groups to contribute toward developing detailed research plans, help implement and review results, have policy dialogues, and provide feedback. Research on farmers’ knowledge, attitude, and practices (KAP) to document impacts on farmer and policy adoption of new ecological ideas will be conducted. The KAP studies will involve conducting focus group discussions and structured interviews of farmers and key stakeholders.

To achieve project outputs in target countries, the in-country workshop-training course aims to impact knowledge and build the capacity of project partners in decision making, sociological tools and impact assessment. With enhanced skills, partners can participate in planning, implementing and reporting baseline research activities to understand farmers’ planthopper management and key stakeholders’ response to planthopper outbreaks.

### **Workshop objectives**

1. To provide workshop participants with a theoretical understanding and conceptual framework on decision making – bounded rationality, procedural rationality and substantive rationality.
2. To improve participants’ understanding and skills on emic-etic approach, farmer survey techniques and focus group discussions.
3. To develop belief statements to explore farmers’ knowledge and beliefs in planthopper management and ecological engineering.
4. To conduct focus group discussions with farmers to explore their knowledge and beliefs in planthopper management and non-rice habitats.
5. To develop a survey work plan, including questionnaire pretesting, fieldwork, data processing and analysis.

**Resource persons:** Drs MM Escalada, KL Heong and Jiaan Cheng

### **Participants**

1. Dr. Xia Jingyuan                      Director-General, National Agro-Tech Extension and Service Centre, MOA, China
2. Mr. Zhang Mingpei                    Director, Department of Agriculture, Guangxi
3. Mr. Jiang Bingsui                     Deputy Mayor, Guilin City, Guangxi
4. Mr. Zhu Enlin                          Director, Pest Control Department , National Agro-Tech Extension and Service Centre, , MOA, China
5. Dr. Yang Puyun                        Deputy Director, National Agro-Tech Extension and Service Centre, MOA, China
6. Ms. Guo Rong                         Senior Agronomist, Division of Pest Control, NATESC, MOA, China
7. Mr. Xiong Yankun                     Agronomist, Division of Pest Control, NATESC, MOA, China
8. Mr. Wang Kaixue                      Director, Guangxi Plant Protection Station
9. Mr. Wang Huasheng                  Extension Researcher, Guangxi Plant Protection Station
10. Mr. Deng Kangkang                 Director, Guilin Agriculture Bureau
11. Mr. Chen Jingqiang                  Director, Lingui Agriculture Bureau
12. Mr. Li Guogang                      Senior Agronomist, Guilin Plant Protection Station
13. Mr. Xu Chengsheng                 Agronomist, Lingui Plant Protection Station Guangxi
14. Mr. Zhou Zhenlin                    Agronomist, Lingui Plant Protection Station Guangxi
15. Mr. Wu Wenxing                     Agronomist, Lingui Plant Protection Station Guangxi
16. Mr. Yang Hui                         Agronomist, Agro-technical Extension Station of Chadong Township, Lingui County, Guangxi
17. Mr. Lu Jianbo                         Agronomist, Agro-technical Extension Station of Chatong Township, Lingui County, Guangxi

18. Ms. Li Xianxin                      Agronomist, Agro-technical Extension Station of Chadong Township, Lingui County, Guangxi
19. Mr. Qin Baorong                    Senior Agronomist, Guangxi Plant Protection Station
20. Ms. Lili                                Senior Agronomist, Guangxi Plant Protection Station
21. Mr. Xie Yiling                        Agronomist, Guangxi Plant Protection Station
22. Ms. Meixian HE                      Associate Professor, Jinhua College, Zhejiang
23. Ms. Xue-Ping HUANG              Associate Professor, Jinhua College, Zhejiang
24. Dr. Zhu Zeng-Rong                  Associate Professor, Institute of Insect Sciences, Zhejiang University, Hangzhou
25. Prof. Cheng Jiaan                    Professor, Institute of Insect Sciences, Zhejiang University, Hangzhou

## Workshop Outputs

Key outputs of the workshop- training were a set of belief statements for the baseline survey, a work plan and an estimated survey budget.

### 根氏表-工作计划进度表

ACTIVITIES	2009										
	A	M	J	J	A	S	O	N	D		
<b>Baseline surveys of farmers' KAP on planthopper &amp; disease management</b>											
2.1. Develop survey instrument											
2.2 Translate questionnaire			X								
2.3. Pretest & finalize survey instrument				X							
2.4 Train student interviewers				X							
2.5. Conduct survey				X	X	X					
2.6 Edit survey data							X				
2.7 Enter the data in Excel							X				
2.8. Data processing & analysis								X	X		
2.9 Write report										X	

## Participants' focus group discussion (FGD) report

May 13, 2009

### Group I

Hushan village, Chadong township, Lingui county, Guilin city, Guangxi, China

Three natural villages: Hushan, Shedu, Xucun with 384 households and a population of 1295

Farmers grow mainly rice on 1600 mu.

### Basic information of farmers visited

17 farmers participated in the FGD: 14 male + 3 female

Age range: 33-60 years old

Education: elementary school +

Table 1. FGD participants' ages

Name	Gender	Age
1	M	58
2	M	37
3	M	36
4	M	39
5	M	45
6	M	43
7	M	60
8	M	45
9	M	48
10	M	46
11	F	46
12	F	42
13	M	33
14	F	46
15	M	54
16	M	40
17	M	52

## **Farmers' Understanding of Rice Planthoppers**

### **1. Main insect pests and disease problems in recent years**

Leaffolder, planthoppers and stem borers are the main insect pests. Most farmers know what rice planthoppers are but cannot distinguish brown planthopper from white-backed planthoppers. They think that there are at least four types of planthoppers with different colors, such as white, brown, green and silver.. Most farmers know planthoppers damage at the base of rice plants. After seriously damaged by planthoppers, the base of rice plants changes to black color and lodge. Most farmers do not know where planthoppers lay their eggs.

### **2. Where rice planthoppers come from? Where do they go after rice harvest?**

Most farmers think that before rice is transplanted, rice planthoppers are already in the rice field. Planthoppers keep their populations in the bunds after rice is harvested. A few farmers know that rice planthoppers migrate from outside, but do not know from where. Some of them think that the rice planthoppers are brought by the wind.

### **3. Do you know if there are any insects or animals eating rice planthoppers?**

Most farmers do not know if there are insects or animals eating rice planthoppers. A few think frogs, dragon flies, swallows can eat rice planthoppers.

## **Control Measures**

### **1. How do you decide when to spray?**

Most farmers said that they check their rice plants themselves. If there are more planthoppers at the base of the rice plant, they will spray. Some farmers will spray when they see 1-2 planthoppers per hill. Some farmers said that in the early season, they spray only when planthopper density is >10 /hill; when it is <5-6 /hill, they do not spray.

### **2. Who decides the type of pesticide to apply?**

Farmers said that they choose the pesticides themselves but some get advice from pesticide dealers.

### **4. How many sprays per rice season? How many spray containers (30 liters) of water you spray per mu (1/15 ha)? How about the efficacy? What is the main expectance of application of pesticide?**

On average, farmers apply 3-4 sprays per season; 2-3 containers (30 liters) of water (solution) per mu. The main “hoppercides” (e.g. imidacloprid) are added in every spray.

They believe that imidacloprid, DDVP, buprofenzin are good insecticides for controlling planthoppers.

Dosage of buprofenzin: 30 grams/container in early season and 50 g/container in late season. DDVP is normally applied when the rice crop is near ripening stage. Control efficacy is thought to be good. Some farmers think that the fat black planthoppers are not easy to kill. Many farmers think that low efficacy is due to the quality of pesticide. They select pesticides according to their high efficacy, regardless of their toxicity, and the price of pesticide is only the second factor influencing their spray behavior.

Farmers expect agricultural agencies to forecast the occurrence of pests in order to be able to spray when insect pests are small.

**5. When is the best time to spray?**

Most farmers think that insect pests are most difficult to control during rice growth stages of booting to milking. Without pesticide application, 70-80% of yield will be lost due to insect damage.

**6. Are there any effect of fertilization, irrigation on density of rice planthoppers?**

Farmers believe that the more the fertilizers applied, the better the rice plants' vigor, and planthopper populations increase during high temperature. Insecticides will have higher efficacy when there is deep water in rice field.

**7. Besides pesticide, are there any other measures to control rice planthoppers?**

All farmers think that it is impossible to have rice harvest without pesticide spray. But alternative pest management methods are acceptable provided that the rice yield is ensured.

**8. Yield, cost and benefit of rice production**

In the village we visited, farmers grow two rice crops/year. The unit yield varied in a range between 350 to 450 kg/mu/season due to different field management methods. The total input of fertilizers, pesticides and seed was 250-300 yuan/mu/season. Net income was around 600 yuan/season/mu (without counting the labor cost). As such, farmers' enthusiasm in growing rice is low.

## **Farmers' Taxonomy of Leaf-feeding Insects**

---

<i>Emic</i>	<i>Etic</i>
Worm-back carrying feces (dropping)	<i>Oulema oryzae</i> (Kuwayama)
Flying lice - rice	Planthopper
Worm – leaf folding – rice (teeth worm – eating rice with teeth)	Rice leaf folder
Worm-boring rice heart	Stem-borer
Bug - stink	Stink-bug
Rice elephant weevil	Rice weevil
Soil dog	Mole cricket
Thistle horse in rice	Rice thrips
Happiness and long-life snail	Golden apple snail
Worm packing rice leaves	Rice leafroller
Standing onion worm	Gall midge

---

### **Group 2 - Non-Rice Habitats**

Non-rice habitats include rice field bunds, fish pools, water pools, slots, roads, sweet-scented osmanthus trees, vegetables, grasses, and fruit trees. Many weeds can be found in rice bunds but some farmers grow soybeans on the bunds.

#### **Effect of non-rice habitats on rice**

- Taller fruit trees shading rice will affect photosynthesis, shorter plants, such as vegetables, have no direct effect on rice growth.
- Stronger wind along roads transmits planthoppers, sheath blight and other pests.
- The golden apple snails in water slots, fish pools can move to rice field and damage rice plants.
- Lights in houses trap moths.
- Rice crops near houses and dry land crops are easily damaged by rats.

Most farmers think that weeds serve as insect pests' habitats; few farmers believe that weeds are the habitats of beneficial insects, while two farmers said that some weeds are herbal medicine or plants that can be used for making medicine.