

Feed the Future: Innovation Lab for Integrated Pest Management

Trip Report for the EPIC Project

Country Visited: Cambodia

Dates of Travel: 18 to 20 July 2016

Travel Request #: 0083

Travelers' Names and Affiliations: Nancy P. Castilla, IRRI; Jhoana L. Opeña, IRRI; Sylvia Villareal, IRRI

Purpose of Trip:

1. Assist the staff of the Plant Protection Division (PPD) of the Cambodian Agricultural Research and Development Institute (CARDI) in the selection of farmers' fields where rice health and production situation will be assessed or characterized,
2. Review the procedure for rice health assessment, and
3. Assist CARDI staff in assessing rice health and sampling of arthropods in the selected fields.

Sites Visited:

Villages: Owkarnthor Tbong and Drek Sbov
Commune: Owkarnthor
District: Stoengsan
Province: Kampong Tom

Description of Activities/Observations:

1. Selection of farmers' fields to be surveyed (18 July 2016)

Farmers' fields where rice health and production situation will be assessed were selected together with PPD, CARDI and Vath Kim Cheang, a staff member of the Cambodian Provincial Directorate of Agriculture (PDA) in Kampong Thom. The fields were located in the villages of Owkarnthor tbong and Drek Sbov. These villages were earlier identified by the Vath Kim Cheang. A farmer and the village chief of Drek Sbov assisted in the identification of farmers who owned or managed selected fields. Eight farmers' fields were selected in each village. The geographic coordinates of each field were recorded using a GPS device.

2. Assessment of rice health and arthropod sampling in selected farmers' fields (19 to 20 July 2016)

A six-member team, composed of researchers of PPD, CARDI, is assigned to collect data on rice health in the four target provinces for the EPIC project. IRRI reviewed with CARDI staff the procedure for data collection. The researchers explained that Dr. Khay Sathya, head of the PPD, CARDI, discussed and explained the survey procedure to them prior to data collection in Prey Veng, the first province where rice health assessments were conducted.

All the selected fields in Owkarthor Tbong village were direct-seeded and the standing crop was at booting stage. The major disease was bacterial leaf streak (average incidence = 4.46%, maximum incidence = 10.16%) and the major insect pest injury was caused by whorl maggot (average incidence = 3.21%, maximum incidence = 7.64%). The average incidence of rat injury was 0.49% and the maximum was 2.62%. The low rat incidence can be partly attributed to the fact that fields in the village were planted synchronously. The percentage of ground covered by weeds above and below the rice canopy was 31.30% and 8.15%, respectively. The dominant weed species were *Echinochloa crus-galli* followed by *Cyperus iria* and *Fimbristylis miliacea*. *E. crus-galli* was observed in almost all of the surveyed fields. Arthropods were sampled using blow vac and sweep nets. Samples will be identified by PPD after they have been trained by entomologists of IRRI.

Results of rice health assessments in Owkarthor Tbong village are summarized in the Table. Photos taken during the assessments are shown in Figures 1 and 5.

It was observed that seeding rate was higher than the recommended rate and fields were not well levelled. Linear patches of weeds were observed in some fields which suggest that herbicide was not applied uniformly. Data on seeding rate and herbicide application will be collected during farmer interviews by CARDI at the end of the cropping season.

During the data collection, IRRI observed that CARDI staff has understood the procedure and has developed a systematic approach to facilitate data collection.

Suggestions, Recommendations, and/or Follow-up Items:

IRRI suggested to revise the data sheets to facilitate recording of data. The data sheets were then revised and sent by Nancy Castilla to CARDI for review and comments a week after returning to IRRI. The revised data sheet for rice health assessments included a list of options with check boxes for growth stage, scientific names of weeds, and water status rating. The data sheets will be used in succeeding rice health assessments and farmer interviews and will be the basis for developing the template for data entry.

It was agreed that, during or immediately after data collection, CARDI staff will send photos of insect pest injuries, diseases, or weeds, which they cannot identify to IRRI staff.

Table. Summary of results of rice health assessment in Owkarnthor Tbong village.

Variable	Value	
	Mean	Maximum
No. of tillers per quadrat ¹	11.21	19.25
No. of leaves per quadrat	59.59	97.85
Incidence ² of leaffolder injury	0.10%	0.86%
Incidence of whorl maggot injury	3.21%	7.64%
Other insect defoliator ³ injury	2.59%	5.69%
Incidence of rat injury	0.49%	2.62%
Incidence of bacterial leaf streak	4.46%	10.16%
Incidence of sheath blight	0.55%	2.72%
Weed cover above the rice canopy	31.30%	78.33%
Weed cover below the rice canopy	8.15%	25.00%

¹A quadrat measures 10-cm x 10-cm and is considered as the equivalent of one hill in transplanted rice.

²For insect pests or diseases affecting leaves, incidence refers to the no. of injured or diseased leaves divided by the total number of leaves in a quadrat. For those affecting tillers, incidence refers to the number of injured or diseased tillers divided by the total number of tillers in a quadrat.

³Refers to injuries (damage) caused by insect pests other than leaffolder, whorl maggot, rice hispa, thrip and caseworm.

Figure 1. Preparation of the blow vac used for



Figure 2. Measurement of weed cover using the



Figure 3. Measurement of the morphology of a rat for species identification.



Figure 4. A wire frame was used to delimit the 10-cm x 10-cm quadrat where data on insect pest injuries and diseases were collected.



Figure 5. Photo taken after data collection in Owkarnthor Tbong village. From left to right: Sylvia Villareal (IRRI), Oeurn Samoul (CARDI), Heng Sovanroth (CARDI), Kong Parameas (CARDI), Kong Sokvisal (CARDI), Vath Kim Cheang (PDA), Soeur Somany (CARDI), Nancy Castilla (IRRI), Pream Rady (CARDI), and Jhoana Opeña (IRRI).

List of Contacts Made:

Name	Title/Organization	Contact Info (address, phone, email)
Soeur Somany	Assistant Head, Plant Protection Division (PPD), CARDI	P.O. Box 01 Phnom Penh Cambodia National Road No 3, Prateah Lang Commune Dangkor District, Phnom Penh Tel.: 015 25 68 97 Email: soeursomany168@gmail.com
Kong Sokvisal	Researcher, PPD, CARDI	Tel.: +855-096 32 84 661 Email: kongsokvisal@gmail.com
Heng Sovanroth	Research Assistant, PPD, CARDI	Tel.: 015 21 13 07 Email: heng6sovanroth@gmail.com
Kong Parameas	Research Assistant, PPD, CARDI	Tel.: 010 37 03 64 Email: parameaskong@gmail.com
Oeurn Samoul	Research Assistant, PPD, CARDI	Tel.: 092 22 25 08 Email: oeurn.samoul@gmail.com
Pream Rady	Technician, PPD, CARDI	Tel.: 098 84 67 07 Email: radypream1@gmail.com
Vath Kim Cheang	Cambodian Provincial Directorate of Agriculture	