

International Conference

# Threats of Insecticide Misuse in Rice Ecosystems – Exploring Options for Mitigation



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IRRI



## Conference Report

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Rice planthoppers and the virus diseases they carry have re emerged as serious rice production constraints in several Asian countries in the last 10 years. They are becoming a threat to the sustainability of rice production and causing financial losses and suffering to thousands of farmers. Planthopper outbreaks can inflict complete crop failures (called puso in Indonesia) in a matter of couple of months. Scientifically shown to be insecticide induced the two planthopper species, the brown planthopper (BPH) and the white back planthopper (WBPH) are destroying rice crops in Cambodia, China, Indonesia, Malaysia, Myanmar, the Philippines, Thailand and Vietnam through either direct feeding or through the 3 virus diseases they carry. In 2005 China lost about 2.7 millions tons and had been losing about 1 million tons annually. Vietnam in 2007 lost 0.7 million tons, Thailand between 2009 and 2011 lost about 1.1 million tons and Indonesia in 2011 lost about 0.8 million tons. Such losses can be avoided if insecticide use in rice ecosystems is better managed.

Insecticide misuse such as spraying routinely at the wrong crop stages and spraying pest resurgence insecticides in rice fields tend to disrupt ecosystem services rendering the sprayed fields more vulnerable to invading planthoppers. By design, planthoppers are ecologically well adapted to rice ecosystems. They are usually present in most rice fields in very small numbers and do not pose any threat. However when the ecosystem services that regulate them are disrupted by insecticide misuse, planthoppers grow exponentially into outbreak proportions. They have high reproductive capacities and can migrate over long distances thus invading crops hundreds of kilometers away.

The rampant insecticide misuse in Asian rice is caused by factors such as farmers' lack of knowledge, unqualified pesticide retailers providing advice, products sold in numerous trade names, irresponsible advertising and sales promotional activities equivalent to those of fast moving consumer goods (FMCGs). In many cases insecticide sales and promotions violates the FAO code of conduct and farmers become victims of the pesticide abuse.

IRRI together with FAO, ADB and MARD (Ministry of Agriculture and Rural Development) organized the International Conference on "Threats of Insecticide Misuse in Rice Ecosystems: Exploring for Mitigation Options." held on 16 December, 2011 in Hanoi, Vietnam to provide a forum to discuss these problems. Attended by international scientists that included the Director General of IRRI, Chief of Plant Protection Division in FAO, Head of Stewardship and Sustainable Agriculture in CropLife International, Deputy Director General of the ICAMA, China, Professor of Anthropology in the University of Indonesia, scientists and pesticide regulation policy makers, the Conference agreed that planthopper outbreaks are induced by insecticide misuse.



The weak pesticide regulatory systems in many developing countries are the root causes of wide spread insecticide misuse. Unlike in developed countries in Europe, the USA, Australia and New Zealand, pesticide marketing is not regulated and as a result, products are loosely sold as FMCG. Farmers' knowledge on pesticides is poor and they are further confused by misinformation through marketing, advertising and the same insecticides being sold in multiple names.

The Conference was opened by the Vice Minister Bui Ba Bong of MARD where he emphasized on the need to manage pesticide distribution and marketing in order to address pesticide misuse. The Director General of IRRI then discussed on the future needs for rice to achieve food security and stressed that sudden and huge production losses caused by planthoppers can destabilize rice prices and threaten food security. He was followed by a video speech by Sir Gordon Conway, former science advisor to the UK government and president of the Rockefeller Foundation. In his video presentation, he related a similar experience of insecticide misuse causing pests in cocoa in Sabah Malaysia. The FAO's Chief of Plant Protection Peter Kenmore in his presentation confer that planthopper threats are man made and urge for reform in government plan protection departments to serve more as bodies to protect ecosystem services and to regulate plan protection information and product supplies. Dr. K.L. Heong spoke about the recent planthopper outbreaks and why they have become a major threat to rice production. Among the factors he discussed are the lack of biodiversity in rice varieties planted in large scale, the lack of habitat biodiversity where rice is intensively grown and most important of all, the lack of biodiversity of predators and parsitoids in rice ecosystems. The latter factor is caused by insecticide misuse driven by market forces created by weak pesticide marketing regulations. Dr. Keith Jones, Head of stewardship and sustainability of CropLife, emphasized on the importance of farmers' training while Dr. Rangunathan,

the former plant protection advisor to the Government of India, discussed on the rampant violation of the FAO Code of Conduct in most ASEAN nations, both by local and international pesticide distributors. Dr. Larry Wong, an economist, discussed about the pesticide information supply chain that is dominating farmers' pest management decisions. Most farmers are getting pesticide information from untrained secondary and tertiary sub retailers that sell pesticide among other consumer products, such as candies, cigarettes, rice, vegetables and sundries. The Vice DG of Plant Protection Department of Vietnam, Dr. Nguyen Huu Huan, pointed out that Vietnam's investments in pesticide imports in the last 10 years had negative benefits to rice production. Finally, Dr. Zhang from ICAMA discussed China's pesticide registration processes.

Following the morning paper presentations, a panel discussion moderated by Dr. Bas Bouman addressed the threats of insecticide misuse and options.

### **Panel Discussion**



Panelist: Dr. Nguyen Huu Huan – MARD  
Dr. Peter Kenmore – FAO  
Dr. Robert Zeigler – IRRI  
Dr. Yunita Winarto  
Dr. Keith Jones – CropLife  
Dr. Zang Wenjun

Moderator: Dr. Bas Bouman

1. While there are a lot of IPM trainings given to farmers, it seems that it is only the farmers' perception changed not their behavior. Why?

Both Dr. Jones and Dr. Zeigler pointed out that farmers do not fully understand pesticide information like the principles on usage to rice and vegetables as well as savings from not over spraying pesticides. Oftentimes they get information from suppliers or retailers whose primary concern is income or the amount they sell. Dr. Winarto added that there is a need to institutionalize in order for programs to be sustainable. It should be a continuous learning process and one way is to make it part of the community.

2. What are the ways to convince farmers?

Dr. Kenmore said that basically giving sustainable funding for educational programs is a key. In the case of pesticide companies, about 20% of their gross sales i.e. about \$50-60 billion go to their marketing budget. Unfortunately, no program has even reached 1% of said figure hence there is a flood of marketing information. He suggested that farmers should be trained in groups. In that way, common resources can be mobilized through public funding.

3. Among the many aspects of pesticide regulation, what is the most urgent?

Dr. Zeigler recognized that the problem is multiple facets but for those pesticides that caused outbreaks, it should be banned from rice. On the other hand, he pointed out that he sees no wrong in pesticide advertising as long as it is honest and accurate. Sales of pesticides should also be handled by licensed individuals like pharmacists.

Ms. Nursiah Aros of Malaysia commented that banning will not solve the problem because it is more of a behavioral problem. Dr. Heong explained that banning insecticides is not a long term solution rather an immediate solution in the short term. However, this should be institutionalized which is important in building resilience and regulating information flow.

Still on banning pesticides, Dir. Gicana of Philippines commented that pesticides to be banned are those connected with BPH outbreak. He also warned that there are enterprising farmers who use not registered pesticides hence there is a need for a collaboration with local and national agencies as well as private sector for this move to be successful. Dr. Huan confirmed that indeed private sector provides good credit to farmers wherein they offer free pesticide at the onset and to be paid after harvest.

4. What are the mechanisms?

Dr. Jones cited that there is FAO Code of Conduct which has been translated to several languages and it clearly states the responsibilities of the pesticide companies with regard to proper advertising.

In addition, Dr. Zeigler noted that if there are no penalties then there is no compliance and public sector plays a vital role in this process. He further emphasized that public sector has to protect the public good.

5. How will the penalties and sanctions be done?

Most panelists recognized that enforcement is inadequate hence putting it into law is their solution. On a different perspective, Dr. Kenmore commented that government should get out of the pesticide business. They should eliminate budget for outbreaks and transfer or put more budget to the regulatory body and keep pest control brigade.

6. What will your institute do?

- Dr. Wenjun said they will continue to promote safe use of pesticide.
- Dr. Jones suggested more trainings for retailers that is in line with CropLife's Vision 2020.
- Dr. Zeigler said that IRRI will be more engaged and proactive in doing research on factors that may contribute to the next outbreak.
- As an anthropologist, Dr. Winarto acknowledged that there are some potential farmers who have moved away from pesticides. It would be helpful to have them documented on film or other visual products.
- Dr. Kenmore mentioned that FAO will re-engage with CropLife and consider financial risk management wherein companies will guarantee the amount of pesticides to be used. He also mentioned of their plans in tracking/monitoring when an outbreak will happen using a network similar with the concept used for cyclone warning.
- Dr. Huan cited the administrative order on pesticides as their initial step. Next steps will be upgrading quarantine into law and promotion of Ecological Engineering at the regional level.