



all about rice

Vol. I No. 2
June 2004

A public education series of the Asia Rice Foundation

rice is life



INTERNATIONAL
YEAR OF RICE
2004

All About Rice is a quarterly centering on hot issues of the day on rice. We hope this publication will enlighten our leaders in agriculture, education, extension and media, our policymakers and the general public about timely and hot issues on rice. We believe that information and knowledge empower people to reason, decide, act and innovate, which make a dynamic and progressive rice industry.

We welcome comments and views on issues tackled in the articles, suggestions to improve the publication, and for ideas for topics to be covered in succeeding issues.



The Asia Rice Foundation is a regional nonprofit organization that works for an Asia that can feed itself, treasures the rich heritage of its rice cultures, cares about the well-being of both its rice consumers and producers, and values its rice-growing land as a precious commodity to be shared with future generations.

IPM and Rice – Quo Vadis?

Luis Rey I. Velasco

Summary

IPM is now the “in-thing” when it comes to handling pest problems. While this may be the case, there is still much misunderstanding about IPM among proponents themselves. This is typical of an idea that is evolving as we learn from our field experience and interaction with farmers. IPM is explained in many ways:

- IPM is a framework in “problem-solving” and “decision-support system” to managing pest problems.
- IPM is not about not using pesticides but about its rational use.
- IPM is not only about doing control when a pest is about to cause economic damage but also, more important, about strengthening the natural control mechanisms in the agroecosystem.

The United Nation’s Food and Agriculture Organization season-long farmer training program in rice has shown that farmers can be educated in IPM with significant changes in their practices. However, evaluation studies indicate that there is a need to strengthen the community-based continuing informal education component of the IPM program to sharpen their problem-solving and decision-making capabilities. Many persistent pest problems can only be dealt with at the community level.

Introduction

While IPM has been extensively promoted for about two decades, it remains an enigma and tough to sell. What is the reason for the slow rate of adoption? Could it be because IPM means differently to different people? Researchers and practitioners have variedly referred to it as a host plant resistance-based IPM, a biological control-based IPM, a pesticide-based IPM and a no-pesticide IPM, bio-intensive IPM, area-wide IPM, community-based IPM, and many other forms. This is typical of an idea that is evolving.

Could the other reason be because the technology is essentially a mental process with no definitive prescription making it not so easy to follow?

While IPM has been extensively promoted for about two decades, it remains an enigma and tough to sell. What is the reason for the slow rate of adoption?

IPM, a problem-solving technology

IPM is not a clearly defined package of pest control measures but a “problem-solving” and “decision-support” system for managing pest problems. This is explicit in the definition by Kogan (1998) “... IPM is a decision support system for the selection and use of pest control tactics, singly or harmoniously coordinated into a management strategy, based on cost-benefit analyses that take into account the interests of and impact on producers, society, and the environment.”

IPM is both Prevention and Control

IPM has a two-stage management strategy against pests with the following objectives: 1) preventing the pests (and potential pests) from becoming an economic problem; and 2) controlling the pests (population and/or damage) if they are to cause significant economic loss.

The first stage may use the following methods, singly or in combination:

- a) quarantine restrictions to prevent entry of potential pests into the community;
- b) appropriate plant variety that is adapted to the local environment, in particular resistant to the existing pests;
- c) enhancing the natural control mechanisms (e.g., natural enemies of the pests) in the agro-ecosystem;
- d) mechanical/physical control (e.g., use of physical barriers); and
- e) chemical control

The second stage requires a method that would result in immediate suppression of the pests, and for this purpose often fast-acting bio-pesticides or synthetic pesticides are used.

IPM as Economic Threshold

Earlier versions of IPM make use of the concept of “economic threshold level (ETL)” as a basis when control must be applied. This refers to the damage level and/or population level of the pest where control must be applied to prevent loss in profit.

It has been the experience in rice in the Philippines and other Asian countries that using ETL is not so practical for farmers for a number of reasons. First, farmers have problems determining the friendly insects from the bad insects, and do not like to count pest numbers because of their minute size. Second, it is not easy to estimate the extent of damage of the crop in the field.

However, ETL is only one of the tools for decision-making. FAO has been promoting the “agro-ecosystem analysis” in IPM decision-making. Because decisions and actions to manage pests require knowledge of the health condition and growth stage of the plant, the local population ecology of the pests, and also other considerations come into play. Farmers must have a good understanding of crop growth and development, crop physiology, crop behavior as well as the pest local ecology, so that they can make informed decisions in managing their crop and pests.

Pests must not only be managed when pest population becomes economically damaging. Pests must be prevented from becoming a problem by strengthening natural control mechanisms and quarantine protocols.

Can Rice Farmers Implement IPM?

More than 200,000 farmers have been trained in the Philippines following the FAO Farmer Field School extension. Farmers were trained under actual field conditions to make

decisions along the following management guidelines:

- 1) Grow a healthy crop:
 - Prepare soil properly and maintain soil fertility.
 - Choose rice varieties appropriate for the locality.
 - Use only healthy and clean seeds.
 - Maintain the right water level in the field.
- 2) Enhance natural enemies of the pests:
 - Maintain organic matter in the soil to encourage presence of natural enemies (spiders, crickets) early in the crop season and prevent build up of insect pests.
 - Avoid unnecessary use of pesticides, especially insecticides, early in the cropping season.
 - Maintain natural enemy “refuge areas” in the farm.
- 3) Monitor field regularly.
- 4) Adopt community-based IPM implementation.



Report on the impact of the FAO approach to educating rice farmers looks impressive. Farmers no longer apply pesticides unnecessarily, resulting in a reduction in the numbers of spray applications per season without a decrease in yield.

However, much needs to be done. Rola et al (1997), showed that still 30-40% of the trained farmers were considered “not good decision-makers.” As in most national-scale farmer training programs, assuring quality of training is often a challenge. Perhaps, farmer education in IPM should strengthen its continuing informal education

program and focusing on a community level rather than on an individual level. Many important pests (locusts, rice bug, black bug, tungro, rats, etc.) are more effectively dealt with at a community level rather than at an individual farm level.

The impact of the FAO approach to educating rice farmers looks impressive. Farmers no longer apply pesticides unnecessarily, resulting in a reduction in their number of spray applications per season without a decrease in yield.

IPM Quo Vadis?

As cited earlier, the idea of IPM is continually evolving. Unresolved issues about IPM still remain.

- **Need to Strengthen Natural Control and Other Non-chemical Preventive Controls**

While there are successful efforts in developing plant resistance to pests, one of the mechanisms of natural control namely, strengthening the biological control, has been lagging behind. With the thousands of predators, parasitoids, parasites, and antagonists in the rice agroecosystems, we still do not have a good understanding of how to use these natural control agents to manage the problematic pests of rice (e.g., tungro, stemborer, etc). Enhancing their role requires understanding of the local organisms and their behavior within the particular environment.

- **Need for Farmer Education and Community Action**

IPM is most effective if farmers synchronize their planting schedule. This will require subordinating personal convenience to what is good for the others. Also, collective actions and decisions are crucial such as in choice of varieties, land preparation, water

management, rat control, and common time for training and educational trips.

Teaching a mental process like problem-solving and decision-making is different from teaching manual skills or teaching definite mechanical procedure. The latter is straightforward. The former is non-structural and situational. Extension workers need to learn ways of teaching this type of content to farmers who are not used to abstraction.

Conclusion and Recommendation

The emerging IPM approach to pest problems has proved to be a difficult framework to teach farmers than the previous "calendar-based" pesticide application paradigm. Years of hard sell promotion and marketing by pesticide companies have been effective in making farmers hooked to chemical pesticides. The difficulty of changing into a more critical system of pest management is like making a right-handed person write with the left hand.

To gain the full benefit from IPM, efforts must be directed toward strengthening the natural control component of the agroecosystem and providing community-based continuing education to farmers to sharpen their problem-solving and decision-making capabilities.

References:

- KOGAN M.** 1998. Integrated pest management: Historical perspectives and contemporary developments. *Ann Rev Entomol* 43:243-270.
- ROLA A.C., PROVIDO Z.S., OLANDAY M.O.** 1997. Socio-economic evaluation of farmer decision-making among IPM farmer field school. SEAMEO Southeast Asian Regional Center for Graduate Study and Research in Agriculture (SEARCA) Bulletin. College, Laguna: SEARCA. 28p.
- VELASCO L.R.I.** 1999. *Philippine Agricultural Scientist*. Vol. 82 No. 3. pp.285-295.

Paper edited by **Rudy Fernandez** and reviewed by **Santiago Obien** and **Victor Gapud**.

A note to contributors

All About Rice encourages submissions dealing with timely, relevant, and exciting issues and new developments on rice. This paper will come out quarterly. Submissions should provide additional information that will help readers understand specific issues, mobilize public support, and increase appreciation for this staple food and important cultural icon.

Please include a brief statement of the objective/s of the article, a short description of the issue being highlighted, and a discussion of the important points. Limit each submission to approximately three to four pages of double-spaced, typewritten text. Illustrations and photos are encouraged.

Send manuscripts, correspondence, and comments or suggestions by mail or e-mail to:



The Asia Rice Foundation
Los Baños, 4031 Laguna
Philippines
Tel/Fax: (63-49) 536-2285
Email: asiarice@laguna.net
Web site: <http://www.asiarice.org>

Disclaimer

Contents and statements expressed in this publication are the author's own and do not necessarily reflect those of the ARF.

Mailing List

If you are interested to be in our mailing list for All About Rice publication, please send us your address.



'Rice is Life'- a Photo Contest In celebration of the International Year of Rice 2004

The Asia Rice Foundation is sponsoring a photo contest that is open to everyone -- amateur and professional photographers. The entries should be related to the theme *Rice is Life* that can include all aspects of rice from production to harvest, from marketing to consumption, and the rice cultural heritage from beliefs, rituals, festivals through various forms of arts.

All entries, color or black and white, should be in an 8x10 print from negatives, slides (35mm) or digital images that are of reproduction quality. Multiple exposures, composites and manipulated images are not included.

Prints should have title, place and date taken, name of photographer and contact details written at the back. Every print must have an accompanying negative or CD-ROM. Non-winning entries will be returned if a self-addressed stamped envelope is submitted with the entry.

Entries must be received no later than **17 August 2004** at the ARF office. Mailed entries must be postmarked **6**

August 2004. More than one entry can be submitted per person.

Three prizes will be awarded: **1st prize P25,000, 2nd prize P15,000 and 3rd prize P10,000.**

Entries will be judged by a panel of judges, composed of Prof. Emmanuel Torres, art critic, poet and curator of the Ateneo Art Gallery for 40 years; top journalists Letty Jimenez-Magsanoc and Julie Yap-Daza; noted photographers Ram Cabrera and Mandy Navasero. Winners will be announced in the newspapers.

All entries are accepted on the premise that they are original photographs, taken by and belong to the participant, and have not been submitted for publication or appeared in print previously.

ARF will retain all winning entries, which may be reproduced, published or exhibited by the Foundation.

Submit entries to:
The Asia Rice Foundation
Los Baños, 4031 Laguna
Philippines

For inquiries contact:
Tel/Fax: (63-49) 536-2285
E-mail: asiarice@laguna.net

Bureau of Agricultural Research Supporting ARF's Advocacy in Rice Biodiversity

With funding from DA-BAR, ARF initiated field trials on rice biodiversity in two locations (Muñoz, Nueva Ecija and Candelaria, Quezon) during the dry season (Nov 03 - Apr 04). On-farm trials are conducted to test the effectiveness and acceptability in the Philippines of the genetic diversity deployment schemes for the control of pests and diseases as was demonstrated and popularized in China in 2001. The deployment scheme tested involved planting four rows of hybrid rice variety PSB Rc72H (Mestizo), alternating with one or two rows of PSB Rc18. Mestizo is a good quality and high yielding hybrid rice but is highly susceptible to bacterial leaf blight while PSBRc 18 is a widely grown variety resistant to the disease.

The idea is to grow high- value rice varieties (which are commonly susceptible to diseases and/or lodging), side by side, either in rows or random mixing, with disease- or lodging- resistant varieties. This will insure a better yield for the high-value rice variety because the resistant variety will prevent the spread of the disease by serving as "barrier." This is sometimes called the "firewall" principle. Also, if the high-yielding variety is lodging- susceptible, it may be prevented from lodging from the support or "prop up" provided by the lodging- resistant variety.

The field trials will be continued in the wet season (Jun to Oct 04), when disease incidence is expected to be greater and the scheme more effective.

- Emerlito S. Borromeo

Philippines International Year of Rice Off and Running

As mandated by Presidential Proclamation 524, creating a National Steering Committee to plan and execute the country's celebration of International Year of Rice 2004 (IYR), the Department of Agriculture has taken the lead in the interagency and nationwide celebration of IYR.

The IYR is a UN declaration to create international awareness on the importance of rice as staple crop. More than one-half of the world's population eat rice. In terms of total land area planted and number of people involved in the industry, more than 1 billion in Asia alone rice is the most important economic and livelihood crop that also affects the environment. Among poorer people, 60-70% of their energy intake come from rice.

The goal of the IYR declaration is to pay tribute to the small rice farmers who produce about 80% of the total world rice supply. In spite of tremendous aggravation and adversities they continue to plant rice season after season and manage to feed humankind.

Food security, increased income, reduced poverty, sustainable growing environment, and agricultural employment are the major thrusts of IYR globally.

After the national launching by President Gloria Macapagal-Arroyo on February 6, 2004 on the occasion of the national convention of the grains industry sector, other government agencies are following with their own celebration of the IYR. These include: technical seminars, R&D conferences, musical concerts, agency's anniversary celebration with theme revolving around rice, rice festivals, art contests, exhibits in various educational and Science & Technology museums, book launching, grand celebration on the World Food Day, observance of the rice month (November) and observance of environment and rice.

The active members of the IYR steering committee are: Philippine Rice Research Institute, International Rice Research Institute, Commission on Higher Education, Department of Tourism, Asian NGO Conference, Food and Agriculture Organization, Department of Science and Technology- Philippine Council for Agriculture, Forestry and Natural Resources Research and Development and the Asia Rice Foundation.

- Rogelio V. Cuyno

Layout: Gilbert O. Rondilla
Editorial consultant: Rogelio V. Cuyno