

# Hoppers, stunt virus threaten Indonesian rice production

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Bogor, West Java (ANTARA News) - Real danger looms over rice production in Indonesia as new types of pesticide-resistant hoppers may soon swoop on the millions of plants in the fields to take their share of the country's rice crop.

The grave prospect Indonesia's rice production faces was shown by study recently done by the International Rice Research Institute (IRRI) on rice viruses in Western and Central Java. The study was conducted on July 19-23, 2010 by two IRRI researchers, R. C. Cabunagan and I. R. Choi.

The Indonesia Center for Rice Research (ICRR) based in Sukamandi, West Java, had detected high levels of mixed and individual infection of rice plants with rice grassy stunt virus (RGSV) and rice ragged stunt virus (RRSV) transmitted by brown plant hoppers (BPH).

Local farmers who worked in rice paddies and fields belonging to a seed company, Sang Hyang Sri, located adjacent to the ICRR reported fields appeared to have also been seriously damaged by BPH and the viruses.

In Central Java, extensive areas of rice fields had been seriously damaged by mixed and individual infection with rice tungro spherical and bacilliform viruses (RTSV and RBSV) spread by green leaf hoppers (GLH), and RRSV transmitted by BPH.

The survey was launched after the Indonesian Center for Food Crop Research and Development approached IRRI last March and reported that damages from BPH and BPH transmitted viruses such as RGSV and RRSV were spreading in Western Java.

In many plots workers were still removing rice plants showing the symptoms to prevent virus infection from spreading to other plants. Some plants were covered with nets to avoid further infection, while pesticides were sprayed on rice plants in ICRR, which were already showing symptoms of RGSV and RRSV.

Popular varieties such as "ciherang," which is derived from an IR64 rice variety, were most vulnerable to the recent virus infection. They sometimes were observed up to 50, 000 BPH caught in one night by a light trap in the experimental field.

In the Klaten region which had some 36, 000 ha of mostly irrigated-fields, local officers said that the western part of the region was being affected by tungro disease, and the eastern part with BPH and BPH-transmitted viruses. Many farmers in the region had not been able to harvest rice crops for three consecutive cropping seasons.

IRRI representative in Indonesia, Dr. Zulkifli Zaini observed that several possible causes of the increased BPH incidence were cropping patterns distorted by changes in local climate and rainfall distribution with higher rainfall during dry season. This condition had induced farmers to grow rice continuously, and they did not spare enough time to fallow rice field to cut off the life cycle of BPH or used of BPH-susceptible hybrid rice.

At national level, Director General of Food Crops, Dr. Gatot Irianto sent a letter to all governors in the provinces suffering from BPH damages to control pest and disease in their areas, improve coordination between institution linkages and immediately operate control post in regency, sub-district, and village levels.

The central government also asked provincial governments to stabilize crop protection system to be more effective, ban insecticides which facilitate BPH resurgence, plant resistant varieties to BPH and promote

development and application of natural enemies of BPH in the field.

Plants samples apparently affected by viruses in Western and Central Java were brought back to be examined at IRRI to confirm the virus species affecting the rice plants there by enzyme-linked immunosorbent assay (ELISA). The results confirmed that all plants examined were infected with RRSV.

Many plants collected in West Java were mix-infected with RRSV and RGSV, and many plants from the eastern part of Klaten region were mix-infected with RRSV and tungro viruses (RTSV and RTBV), IRRI concluded.

### **Excessive use of chemical-pesticides**

Indonesia is among the top producers of rice in the world with an annual production of around 65 million tons. In 2010, the government has set a production target of 66, 68 million tons.

However, as the IRRI survey indicated, the production is being threatened by a possible catastrophic attack by insecticide-resistant hoppers something that has caused a drastic decrease in China`s rice production in the recent years.

Indonesia`s imports of chemical pesticides have been increasing during the last decade, where between 1998 and 2008 insecticides imports had soared more than 30 fold from US\$1.9 million to US\$60.6 million.

"The excessive use of pesticides is eliminating the natural predators and causes massive outbreaks of hoppers, especially brown plant hopper," said Dr. K. L. Heong, an insect ecologist with IRRI, Monday.

Heong added, that a strong tendency for that problem had already been seen in Central and West Java. He attributed this problem in the apparent excessive use of pesticides by farmers, an action that had killed predators to hoppers an the process.

Heong said, many farmers still did not know with what they were doing and kept using the chemical pesticides to kill brown plant hoppers. The fact was, by using chemical pesticides, it also killed the beneficial insects, spiders as well as insect pathogens.

The beneficial insects used to be the balancing system in the food chain, he said, but now it has almost disappeared and therefore threatens balance in the ecosystem. This condition makes the number of brown plant hoppers in the increase simply because their natural enemies have been eliminated by chemical pesticides.

Heong took the example for the impact of such a situation in China and Thailand where millions of hectares of rice paddies have lost to catastrophic attacks by hoppers.

Based on a result of that IRRI survey, Heong predicted in the next few years the situation may happen in Indonesia if farmers still used chemical pesticides and keep ignoring rules of the ecosystem. The survey has revealed that the problem of hoppers and the associated virus was still persisting in West Java province and it has been spreading to other areas of Indonesia. (\*)