Rice planthopper problems are intensifying in China

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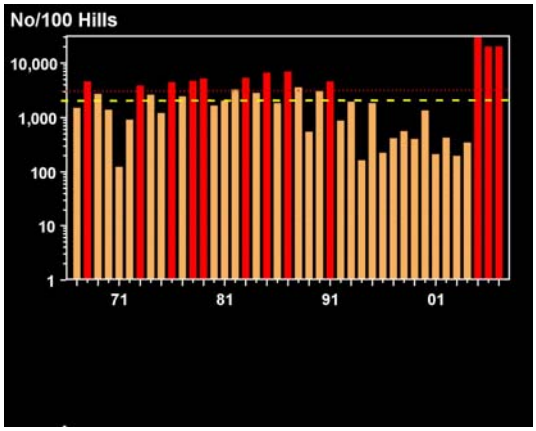
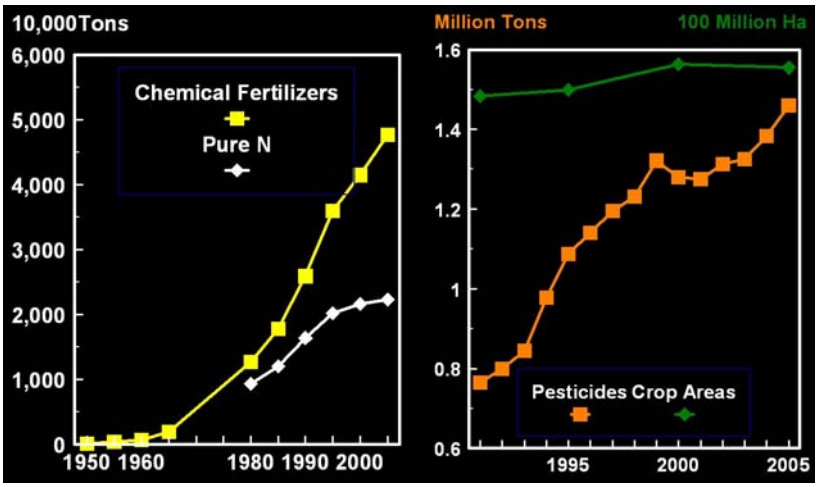
Hopperburn in China, photo credit: J. Cheng

Planthopper problems in China are normal. Every year thousands of hectares are infested with planthoppers and pockets of hopperburn (see picture) can be observed in many fields. Exact estimates of loss are difficult to obtain, but some scientists estimate that China loses about 1 million tons of paddy from planthopper infestations annually. In the last 5 years, China has experienced rather abnormal outbreaks of these pests, infesting millions of hectares and losses are estimated to be 2 or 3 million tons annually.



Peak densities in 100 hills in insecticide-free plots in Zhejiang

The field data without any insecticides in Jiaxing indicates that huge populations of between 10 to 20 folds are observed (see chart 1, where the scale is in logs and the red bars indicate high population years). This trend is extremely worrying in the light of food crisis. If a huge infestation occurs in the coming years, it can create a similar rice shortage scenario as in early 2008.



Total and nitrogenous fertilizer applications and total insecticide application in China; cropping areas remain stable.

Several factors that had happened in China over the last few years seem to be linked to the increase in vulnerability to pest outbreaks. One is the ever increasing trend in fertilizer and pesticide applications (see figure). Another factor is the change in varieties used. Hybrid rice has become widely grown and these varieties seem to favor white-backed planthopper. Thirdly is perhaps climate change. In 2005, China had the largest outbreak to planthoppers ever. Some 2.8 million tons of paddy were said to be lost. Some scientists have attributed this to the abnormal high autumn temperatures and the abnormally high number of typhoons. The typhoons coming from the southeast tend to displace the planthoppers northwards. Another sign that is becoming apparent is the growing in insecticide resistance in the planthoppers. Introduced just about 10 years ago, the insecticides, imidacloprid and fiprinol, that are being used for seed treatment, have become virtually useless because planthoppers have evolved adaptation to these chemicals. The Chinese government is now considering to impose a ban on the use of these two compounds in 2009.

The growing occurrences of pest outbreaks and insecticide resistance are clear indicators of unsustainable practices in China. These two symptoms have been described in the 1970s as “pesticide addiction” by entomologists in the University of California, Berkeley, led by Dr Robert van den Bosch and are now beginning to surface in many parts of China.

Clearly, to tackle this problem needs radical changes in policies and structure that now favor the high use of chemical fertilizers and pesticides. At the International Planthopper Conference held in the International Rice Research Institute in the Philippines, a new direction using ecological engineering principles are proposed. Following this, China’s ministry of agriculture sponsored a planning workshop to introduce this approach in Guilin. In Zhejiang province, a site

with increase in habitats to strengthen natural biological control was created in Jin Hua. These two initiatives are perhaps towards the right direction.