Rodents in southeast Asia

Impacts of rodents

In south and southeast Asia there are more than 418 species of rodents. Of these, 65 species cause significant damage to crops. In many areas in the region the percentage of chronic losses caused by rodents to production has risen dramatically over the last few decades. Increases in cropping frequency are resulting in increases in production losses caused by rodents.

Economic impacts

In Asia, pre-harvest losses to rice alone are estimated to be between 5 and 10%. A loss of 5% of rice production amounts to approximately 30 million tonnes; enough rice to feed 180 million people for 12 months.

In Indonesia the ricefield rat, *Rattus argentiventer*, is economically the most important pre-harvest pest causing annual losses to rice production of 17%. In Vietnam, pre-harvest damage to rice by rodents is one of three most important problems faced by the agricultural sector.

Rodents have an enormous impact on stored grain in developing countries; reports of up to 20% post-harvest losses of rice are not unusual. Rodents eat about 10-15% of their body weight daily and waste 7.5 times the amount they eat. Also rodents significantly contaminate stored foods; they produce about 40 droppings per day. Therefore in one year, a population of 25 adult rats would eat and damage about half a tonne of grain and produce about 375,000 droppings!

Spreading diseases

Another important factor to consider is that rodents carry diseases that impact negatively on livestock and human health. Rodents are involved in the transmission of more than 60 human diseases, including plague, murine typhus, leptospirosis, lung worm and Lassa fever which are potentially fatal. From 1995-2000 at least 25 new hantaviruses and arenaviruses were identified.

In the year 2000 in Thailand, 14,000 cases of leptospirosis were reported among rice farmers and 365 deaths were recorded, having a major impact on rural communities.

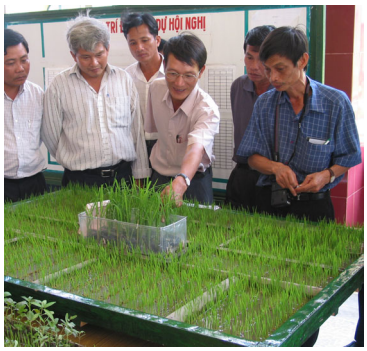
There is a rise in concern over rodents as a health risk in rice agroecosystems because of increase in travel of people between rural and urban areas and between countries; increased population density that amplifies the ability of a disease to spread through a population; and increased clearance of natural habitats that promotes rodent-human contact. In poorer communities, if a rodent zoonotic causes disability for a poor farmer for a month at a key time, then it may lead to no crop, a late crop, or reduced crop yield. Each can lead to a debt treadmill.

Current rodent control

Environmentally benign and cost-effective approaches to pest management are key to sustainable livelihoods in Asia and the conservation of beneficial rodent species, 88 of which are endangered. Good knowledge of the ecology of a particular rodent pest leads to more effective, cheaper and more environmentally benign management. Chemicals are commonly used for controlling pre- and post-harvest damage by rodents. A major concern with such chemicals is that they are not specific to the species that needs to be controlled. Other species are at risk of feeding directly on the chemical or through secondary poisoning. The humaneness of poisons is also becoming an important factor to consider.

Farmers often use inappropriate methods in their desperate attempts to reduce the impacts of rodents. These include:

1. broad-spectrum poisons mixed with used engine oil before applying to flooded rice crops;
2. mains power to electrocute rats in flooded rice paddies;
3. poisons not prepared properly and used at the wrong time and in the wrong place.



Farmers in Vietnam inspecting a model of a community trap-barrier system.

Farmers showing a range of their locally made rat traps.

Ecologically-based rodent control

Our implementation and testing of integrated rodent pest management has been tested in Indonesia and Vietnam in lowland irrigated rice farming systems. They are based on a solid understanding of the population ecology of the pest species and of the farming systems, together with strong farmer participation.

The integrated management methods include:

- promotion of synchrony of cropping (crops planted within 2 weeks of each other);
- the use of a community trap-barrier system (cTBS);
- short two-week campaigns to collect rodents at key times (1 week prior to transplanting; or within 2 weeks of crop initiation) and in focal (source) habitats;
- where possible to reduce width of irrigation banks to less than 30 cm;
- increase general hygiene around villages and village gardens.

Further reading

Non-Chemical Control of Rodents in Lowland Irrigated Rice Crops (http://www.cse.csiro.au/rodents - see publications)

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