

# Impacts of Rodents on Rice Production in Asia

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## Summary

This paper provides an up-to-date review of the preharvest impact of rodent pests on rice-based agricultural systems in 11 Asian countries: Bangladesh, Cambodia, People's Republic of China, India, Indonesia, Lao People's Democratic Republic, Malaysia, Myanmar, Philippines, Thailand, and Vietnam. Under traditional rice farming systems, rodents generally cause chronic losses to production in the order of 5-10% per annum. In many areas, this figure has risen dramatically over the last few decades, most noticeably in places where cropping frequency has increased from one to two or three crops per year. Today, it is not unusual for smallholder rice farmers to report chronic yield losses of 20-30% per annum, rising to 50% or even total crop loss in certain seasons. In many areas, farmers actually abstain from planting a second or third rice crop because of the expectation of severe rodent damage. This 'forgone' loss in productivity is rarely taken into account. In Asia, a loss of 5% of rice production amounts to approximately 30 million t; enough rice to feed 180 million people for 12 months. Postharvest losses are probably of a similar magnitude to preharvest losses. However, the data are patchy and there have been few studies of the impacts of rodents on postharvest storage of rice in the past decade.

From the assessment of impacts of rodents on pre- and postharvest operations, it is clear that rodents play a significant role in influencing food security and poverty alleviation programs for the rural poor in Asia. Another important impact is the influence of rodent-borne diseases on the health, and hence, productivity output of humans (both rural and urban). The prevalence of rodent zoonoses is increasing and is likely to be an important impetus for rodent management in rice agricultural communities in the future.

This report highlights the relatively few published studies on the ecology, biology, and management of rodent pests compared with some major insect and disease pests of rice. There is much basic research still required to underpin the strategies being developed to manage rodent pests. Moreover, much of the current rodent control activities by farmers are reactive rather than palliative. Few farmers follow the recommendations of their government agencies. This is a major issue (either the recommendations are ineffective or they are inappropriate for farmers (i.e., too expensive or too labor intensive).

General research needs are identified in this report as well as specific priorities for research and extension for national agricultural research and extension systems (NARES) determined from consultations with collaborators in specific countries. The Rodent Ecology Work Group of IRRI provides one important avenue to promote research on rodent pests in the region. However, stronger expert input is required. IRRI is well placed to play an important role in providing access to this expertise, in providing leadership in research, and in building the capacity of extension staff and farmers in Asia to translate research outputs into management outcomes for the rural poor.

In summary, IRRI has the unique comparative advantage to provide the foci and regional linkages for research and training and the continuity for tackling the important problem of rodent impacts on rice production. The major outcomes from this research and extension effort would be significant improvements in agricultural production, in food security, and in both human and environmental health.