

Ecologically-based rodent management for diversified rice-based cropping systems in Bangladesh R8184 (ZA0503)

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Executive Summary

Rodent pests have been identified as a serious constraint not only with regard to agricultural production of many crops, but also to the health of people and livestock through the spread of many communicable diseases. Rodents are a problem for both rich and poor, individuals and communities, with disproportionately larger impacts on the rural and urban poor who are the least likely to possess the tools and knowledge to control rodents effectively.

This research project was based on addressing the multiple impacts that rodents have on rural agricultural communities in Bangladesh and developing sustainable methods to manage rodents that could be implemented by these communities. Project activities were based in the districts of Comilla and Feni, southeast of Dhaka. This project had four main objectives:

- Understand the current impact of rodents upon rural agricultural communities
- Understand the impact of existing control strategies used by small-scale farmers upon rodent population dynamics, the environment and socio-economic capital
- Develop rodent control strategies through farmer participatory research
- Develop and disseminate policy recommendations to stakeholders involved in rodent pest control

Research, training and dissemination activities related to satisfying these objectives are presented in this report within ten different subsections. Each subsection presents work completed related to a particular theme such as collecting information on rodent damage or evaluating potential rodent management interventions. Each subsection presents the analysis of data solely collected within the project by the project staff and may involve activities that attempt to survey, demonstrate, evaluate and/or monitor. Anthropological and biological expertise were required to deliver the project outputs, involving technical staff from the UK, Australia and Bangladesh possessing a range of skills related to research, extension and training. The research was participatory in nature, fully involving entire communities in collecting baseline data, and using their knowledge and experience about their environment to evaluate the feasibility of various rodent management actions. Many of the research activities presented are novel in their approach and application and produce new information that has not been previously collected by other scientific endeavours in Bangladesh or elsewhere in the world. New knowledge about the

impacts of rodents on people's lives has been generated, and ecologically-based rodent management actions have been demonstrated to work under the agro-ecological and socio-economic conditions found in rural agricultural communities in Bangladesh.

The research findings showed that rodents had significant impacts upon people's livelihoods in many ways including:

- Damage to field crops of rice, vegetables, and fruits
- Loss, damage and contamination of stored rice
- Damage to building foundations, structures, electrical cables
- Contamination of food and water supplies
- Damage to personal possessions such as clothes, fishing nets, furniture, kitchen utensils

The existing rodent management strategies applied by rural communities were not very effective in controlling their rodent problems. The analysis of project activities concluded that communities did not have sufficient knowledge about the impacts of rodents on their lives, and knew too little about how rodent management must work in order to reduce rodent populations and their damage.

Various rodent management interventions were evaluated in the villages, and it was shown that very significant reductions in the rodent population could be achieved through community-wide intensive trapping of rats with snap traps. The interventions significantly reduced rodent damage levels as observed through controlled monitoring trials as well as by observations of the community members themselves. A number of environmental management options were demonstrated that could lead to permanent reductions in the carrying capacity of the environment to sustain high rodent populations if adopted by a significant proportion of community households.

The results of the project and its implications for rodent management in Bangladesh were discussed with key stakeholders such as the Department for Agriculture Extension, and it is hoped the evidence will help reformulate existing national strategies and policies aimed at rodent pest management and rodent research in Bangladesh.