

Mice, rats, and people: the bio-economics of agricultural rodent pests

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Mice, rats, and other rodents threaten food production and act as reservoirs for disease throughout the world. In Asia alone, the rice loss every year caused by rodents could feed about 200 million people. Damage to crops in Africa and South America is equally dramatic. Rodent control often comes too late, is inefficient, or is considered too expensive. Using the multimammate mouse (*Mastomys natalensis*) in Tanzania and the house mouse (*Mus domesticus*) in southeastern Australia as primary case studies, we demonstrate how ecology and economics can be combined to identify management strategies to make rodent control work more efficiently than it does today. Three more rodent–pest systems – including two from Asia, the rice-field rat (*Rattus argentiventer*) and Brandt’s vole (*Microtus brandti*), and one from South America, the leaf-eared mouse (*Phyllotis darwini*) – are presented within the same bio-economic perspective. For all these species, the ability to relate outbreaks to interannual climatic variability creates the potential to assess the economic benefits of forecasting rodent outbreaks.

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