

Sustained Agriculture: The Need to Manage Rodent Damage

Researchers from the U.S. Department of Agriculture's Animal and Plant Health Inspection Service (APHIS) and the International Rice Research Institute (IRRI) compiled a [review](#) of the latest information on rodent damage management as it relates to world-wide agricultural production. Their review was recently published in the book, "Agricultural Production," by Nova Science Publishers, Inc., Felix C. Wager (editor). The chapter entitled, "Sustained Agriculture: The Need to Manage Rodent Damage," brings to light the importance and challenges of rodent damage management as the need for sustained agricultural production increases worldwide.

"Sustainable agriculture attempts to ensure the profitability of farms while preserving and protecting the environment upon which they depend," says Gary Witmer, lead author and research wildlife biologist at the USDA APHIS National Wildlife Research Center (NWRC). "Rodents pose one of the most serious threats to food production worldwide, but indiscriminately removing rodents from ecosystems is not always the best management option."

Traditional approaches to rodent population and damage management have relied on direct reduction of populations using rodenticide baits or rodent traps and modifying the habitat to be less suitable for rodents. Recently, the use of an ecologically based rodent management system (EBRM) that is tailored to the rodent species, agricultural system and local habitat is gaining more support from researchers and agricultural specialists. EBRM requires a strong understanding of the ecology of the targeted rodent species and the use of specific farm-level damage management actions, such as simultaneous plantings of crops, controlling fallow vegetation and minimizing the height and width of irrigation banks.

"The key to the EBRM is to reduce important resources needed by rodents, such as food and nesting sites at critical times of the year, through habitat modification," notes co-author Grant Singleton from the

IRRI. "The emphasis is on a lower reliance on rodenticides and more community-wide habitat management approaches."

Witmer and Singleton note the EBRM approach may still involve the use of lethal methods, such as rodenticides, and research is critical to finding new rodenticides as well as to making existing rodenticides more effective and less hazardous to non-target animals and the environment.

Rodents cause millions of dollars in damages to field crops, stored grain and farm equipment each year. For example, the house mouse "plague" in Australia in 1993-94 caused about \$60 million in damage to crops, livestock industries and rural communities. Singleton and colleagues estimate that almost 280 million undernourished persons around the world could benefit if more attention were paid to reducing pre- and post-harvest crop losses caused by rodents. In addition, rodents are the major carrier for more than 60 diseases that are transmissible to humans, companion animals and livestock.

The NWRC is the research arm of USDA's wildlife services program, and the federal institution devoted to resolving problems caused by the interaction between wildlife and humans. NWRC applies scientific expertise to the development of practical methods to resolve these problems and to maintain the quality of the environments shared with wildlife. To learn more about NWRC, visit its website at www.aphis.usda.gov/wild-life_damage/nwrc/.

The IRRI is a nonprofit independent research and training organization focused on reducing poverty and hunger, improving the health of rice farmers and consumers, and ensuring environmental sustainability. To learn more about IRRI, visit its website at www.irri.org/.

Additional Links:

- [Rodent Ecology: Ecology and Impacts](#)
- [Rodent Management](#)

Note to Stakeholders: Stakeholder announcements and other APHIS information are available on the Internet. Go to the APHIS home page at www.aphis.usda.gov and click on the "Newsroom" button. For additional information on this topic, contact Gail Keirn (970) 266-6007 or e-mail: gail.m.keirn@aphis.usda.gov.

USDA is an equal opportunity provider and employer.