Crop and urban systems

Ecologically based rodent management in post-harvest: progress and success

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The high losses caused by rodents to cereal grains in storage have a disproportionately high impact in smallholder farming communities in low and medium income countries (LMICs). Many are subsistence farmers, and they can ill afford losses to rodents after investing money and labour into the production and harvest of their crop. Post-harvest rodent impacts in high income countries (HICs) are also apparent, often in terms of quality loss. We review the ecology of different rodent species and associated management systems during storage in LMICs as well as in HICs.

In LMICs, rodenticides and community trapping alone have been shown to reduce rodent populations, damage and contamination, however, populations quickly rebound if control is not maintained. The main rodent pest species attacking grain storage often live in both field and community areas. Ecologically based rodent management (EBRM) in post-harvest systems in Tanzania and Myanmar highlighted the importance of integrating on-farm and rural community rodent management. In HICs, warehouses on farms and food processing operations also face a number of specific rodent control related problems. This is particularly related to the lack of safe chemical alternatives to anticoagulant baits, associated with environmentally unfriendly impacts (secondary exposure of non-target animals), especially those linked to bait-based rodent control outdoors and barrier baiting around warehouses. Additionally, the reduction in the concentration of active ingredients in baits and the growing resistance to anticoagulants are significant concerns. This implies the necessity of developing more comprehensive, targeted integrated pest management (IPM) strategies that will rely less on chemical control and more on advanced methods such as electronic distance monitoring, mechanical trapping, and exclusion. Proper sanitation and exclusion of rodents integrated with regular monitoring for the presence of rodents followed by quick management action when rodent signs are above a threshold are key EBRM practices for managing post-harvest impacts of rodents.