W1389

Mice, Rats and Traps

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Introduction

Rodents, primarily mice and rats, can pose a risk to food safety through produce contamination in fields, high tunnels, greenhouses, storage sheds and packinghouses. They are carriers of diseases and contaminate produce by contact with saliva, urine or feces. Some examples of bacterial and viral diseases that can be transmitted by mice and rats include Hantavirus, Leptospirosis, Salmonellosis and Yersiniosis.

Rodents can damage farm infrastructure by burrowing or gnawing through various building materials including electrical wiring and by constructing nests. Utilizing rodent exclusion practices in farm structures can reduce the risk of crop contamination and property damage. There are several viable methods of rodent management including exclusion, habitat modification, toxicants and trapping. Besides exclusion, all of these management tactics are forms of active control, meaning they will directly reduce the rodent population.

Rodent Exclusion

Rodent exclusion involves thoroughly enclosing a space to keep rodents out. Mice can fit through gaps as small as one-quarter inch, and rats can squeeze through openings as small as one-half inch. Therefore, a thorough inspection must be completed, and every gap one-quarter inch or larger must be filled or covered with rodent-proof materials such as concrete, brick, or one-eighth inch galvanized hardware cloth to keep out mice and rats. To prevent rodents from entering trash cans, storage items or other containers, it is helpful to secure trash cans or containers with a tight-fitting lid. Plastic or metal containers exclude rodents better than cardboard (Fig. 1).

Figure 1*: Rat in a small hole in the cardboard. Photo from Adobe Stock Photos.*

Habitat Modification

Habitat modification includes reducing cover or shelter for mice and rats. In packinghouses, this includes storing produce off the ground at least one foot away from the walls, and on pallets or shelves. The free space between the walls and produce will reduce their ability to hide near the wall or in corners and facilitate monitoring for rodent activity (e.g., droppings, feeding activity and nest material). Tall, dense vegetation around the perimeter or interior of a high tunnel or packinghouse often provides food and cover for mice and rats. It is a best management practice to create a 3-foot wide well-manicured area around the perimeter of structures and remove all natural vegetation from the interior. Frequently trimming around the exterior to maintain short grass and prevent seed production also limits cover and available food. It is recommended to remove all natural vegetation and woody debris around the perimeter as well. Stacks of cardboard, building materials and other objects will provide habitat for rodents in and around structures and should be avoided.

Toxicants

Bait typically contains a toxicant or poison that rodents will eat at the station and then leave. It is important to always read the label before using a toxicant to determine if it is labeled for use in your state and for indoor or outdoor use. Rodenticides labeled for use inside and around buildings include those containing active ingredients like bromadiolone, chlorophacinone, difethialone, zinc phosphide, diphenadione, bromethalin and warfarin. Zinc phosphide is one of the most commonly used toxicants with many products available for either indoor or outdoor use. Anticoagulants are commonly used as well with second generation anticoagulants often requiring only one feeding to produce the desired results. Second generation anticoagulants and some zinc phosphide products are limited for use by licensed pest control professionals only. For certified organic growers, the only approved bait active ingredient is Vitamin D3. Products with Vitamin D3 are allowable with restrictions. Always check with your certifier and get any product approved on your Organic Systems Plan before you use it on your farm. Although several rodenticide products are labeled for indoor use, toxic baits are never allowed inside packinghouses, greenhouses or high tunnels due to the risk of the mouse or rat tracking the poison onto the produce and rodent death inside the facility. Similarly, rodenticides labeled for outdoor use are typically not labeled for use around crops and should be kept out of the production area. Toxicants are a valuable part of a rodent integrated pest management (IPM) program but are not recommended for ongoing, preventative use. They should only be used to mitigate known pest problems.

Indoor and Outdoor Traps

Traps labeled for use indoors can be used both inside and outside of buildings on the farm; however, some trap types can only be used outdoors. Electric traps are designed for both indoor and outdoor use. Non-toxic bait is placed inside the trap, and the rodent gets electrocuted after touching both electrodes while trying to retrieve the bait. Glue traps are another type of commonly used trap that is approved for indoor use. These traps are placed at openings or entry points, against walls and along runways. The extreme stickiness of the surface traps the rodent on contact and prevents it from moving. One drawback of glue traps is you may catch non-target wildlife such as birds, lizards or snakes. Furthermore, animals may still be alive when monitoring glue traps and will require humane euthanasia. Sherman-style box traps can be used both indoors and outdoors. Selecting the best food-based bait for the target wildlife species will improve effectiveness. This is a type of live trap and requires humane euthanasia or release elsewhere. Snap traps can only be used indoors when placed inside a fully enclosed bait station that will prevent both rodent exit and potential blood contamination. Spring snap traps that are not covered and live traps that are not fully enclosed can only be used around the perimeter of facilities. Snap traps are considered to be the most effective trap type.

Figure 2*: Examples of indoor and/or outdoor use traps and bait. Inclusion in the photo does not constitute endorsement of the product by UT Extension. Photo by Brooke Emery.*

Proper Trap Placement

Traps should be placed on the ground at entry points and along walls and runways with the entrance of the trap facing perpendicular to the wall. The trigger and bait should be against the wall along the rodent's pathway. The placement and spacing of traps depend on the type of structure. A fully enclosed packinghouse or shed should utilize both indoor and outdoor traps. Indoor traps should be placed within 6 feet of both sides of the door and then spaced 20-40 feet apart along walls. Outdoor traps follow a similar pattern: placed within 6 feet of each side of the door and then spaced 50-100 feet apart around the perimeter. For partially enclosed packinghouses, high tunnels, open sheds, and coolers, only indoor traps should be used.

Monitoring and Documentation

Rodent traps must be carefully logged and monitored. It is a best management practice to maintain a rodent control log (see sample log below). This log is useful for keeping track of the number of rodents captured per trap, trap type and location, species of rodent, date of capture and how often each trap was checked. Assessing trends in the data should improve the overall rodent trapping program and reduce costs. Furthermore, identifying problem areas may lead to solutions to exclude or further reduce the rodent population. Each trap should be numbered and a map developed to easily locate and identify all traps (Fig. 3). It is a best management practice to check all traps daily to remove caught animals, replace bait and replace lost or damaged traps. Live traps should be checked before 10 AM each day because most species are nocturnal and are likely to overheat in live traps.

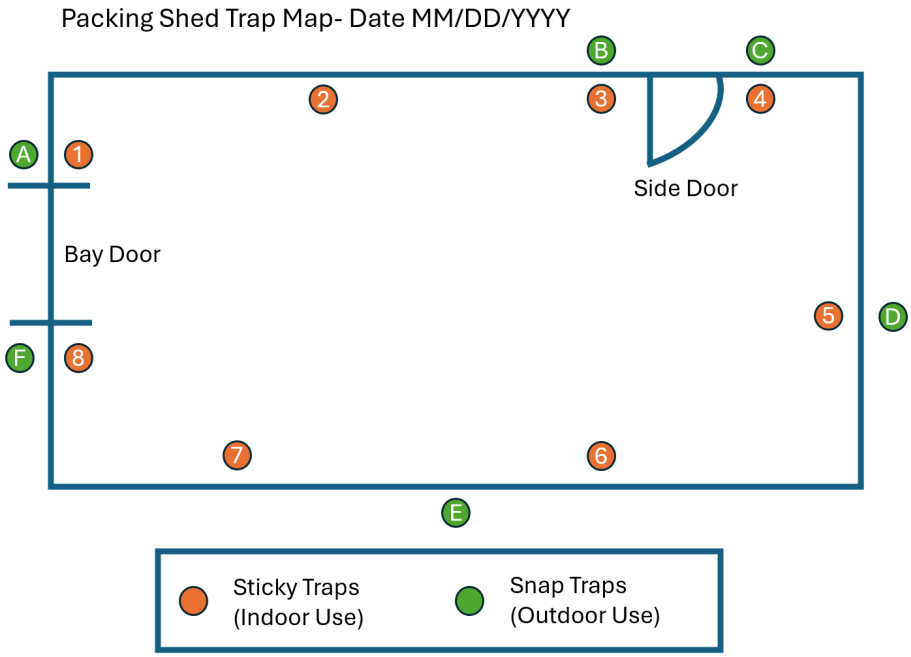

Figure 3*: This is an example of a map made to keep track of traps around a packinghouse. Each trap is numbered to make recordkeeping easier.*

Rodent Disposal

When disposing of a dead rodent, wear disposable gloves for handling rodents or traps to prevent disease transmission. Double bag and throw away all carcasses or put them in a designated place on the farm far from all produce growing and packing areas. Some traps may be single use only and should be thrown away with the rodent. Check the trap label and use it in accordance with EPA rules. Always wash your hands after handling rodents and traps.

If live trapping, have a plan in place for release or humane euthanasia in advance. The American Veterinary Medical Association recognizes cervical dislocation as an approved method of humane euthanasia. Wear disposable gloves and handle traps carefully to avoid potential bites or scratches from the rodent. Always observe state and local regulations when releasing caught rodents.

Conclusion

Controlling the nuisance rodent population on the farm can be challenging. Monitoring for mice and rats is a best management practice. Moreover, prudent and appropriate wildlife damage management are usually part of any successful farming operation. Before taking any produce out of storage, do a final check to ensure there are no visible signs of rodent damage such as bite marks, gnawed packaging and rodent droppings. Any produce with contamination should not be sold or allowed to enter the market.

For more information on rodent control:

Trap placement in and around buildings: researchgate.net/publication/29744440_Pest_Management_Systems_to_Control_Rodents_in_and_around_Packing_Sheds

Rodent control tips from growers: https://blog.uvm.edu/cwcallah/files/2016/10/2017-10-09-Rats-and-Rodent-Facts-Sheet-cc-edits.pdf

Sample Pest/Rodent Control Log

Name of Farm: _____

Please see the food safety plan for *Pest/Rodent Control* procedures

Date	Company used* or self	Type of pest	Type of control**	Location of traps	Action Taken	Checked by (name)	Disposal means

*If using a company for service, attach report or receipt of service for each of their visits.
**List type of control methods used such as exclusion, traps, poison, repellants, etc.

Reviewed by: _____ Title: _____ Date: _____

Confidential Record

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