



W. Garrett Owen  
owen.367@osu.edu

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# Safeguarding Overwintering Structures and Greenhouses from Rodent Infestations

*Overwintering structures and heated greenhouses create an ideal habitat for rodents, posing a challenge for growers who must monitor and control rodent activity to protect hardgoods, seeds, and young to finished plants.*

Overwintering tunnels and heated greenhouses create the perfect habitat for rodents such as mice, rats, and voles (Fig. 1). The warm environment offers protection from winter weather and predators and provides ample food supplies. Under these conditions, rodent populations can increase and be challenging to control; therefore, growers should be aware of the signs of rodent activity.

Common rodents that may be encountered in

overwintering structures or greenhouses include the house mouse (*Mus musculus*), deer mouse (*Peromyscus maniculatus*), white-footed mouse (*Peromyscus leucopus*), brown rat (*Rattus norvegicus*), chipmunks (*Tamias* sp.) and voles (*Microtus* sp.). Mice and rats can cause damage by feeding on sown seed (Fig. 2), germinated seeds (Fig. 3), young transplants (plugs; Fig. 4), bulbs, rhizomes, tubers, and even leaves and stems of maturing crops. Figure 5 demonstrates the severity of mice and rat activity in a heated



Figure 1. Overwintering tunnels and heated greenhouses create the perfect habitat for rodents such as rats. Photo by: W. Garrett Owen.

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greenhouse and plug loss. In addition, these rodents can use damage to hardgoods and supplies by chewing holes into plastic pots and inserts, loose-filled bags of substrate (Fig. 6A-B), or cardboard boxes. Bulk or loose-filled bags of substrate create ideal locations for storing food (seed) reserves leading to removal of germinated seeds during production. Rodents will also create tunnels in bulk bagged substrate or under containers placed at ground level or runways between containers and flats. Chipmunks and voles are less likely to be found in greenhouses; however, they are commonly found in overwintering structures among herbaceous perennials and nursery stock. Chipmunks and voles often feed by chewing on young transplants or emerging spring growth as well as on roots, bulbs, tubers, and rhizomes.

Rodent control in overwintering structures and greenhouses begins with exclusion. Greenhouse and nursery growers should first identify entry points. Mice can squeeze through cracks, gaps, and holes about ¼-inch in size. Therefore, inspect growing environments and fix holes in polyfilm or polycarbonate and ensure door sills, louvers, and knee wall or baseboards are gap free. This also prevents cold air infiltration into the growing environment and eliminates the likelihood of chilling or freeze injury on crops. If gaps are found along the knee wall or baseboards of overwintering structures or greenhouses, then consider installing metal screening or mesh hardware cloth around the outside perimeter. Secure the screening to the knee wall or baseboards and bend the bottom edge away from the growing structure, and if possible, bury or secure by installing groundcover or sod pins. This technique will help mitigate tunneling or entry into the overwintering structure and greenhouse.



Figure 2. Plug trays where mice had eaten sown seed leaving behind partial trays. Photo by: W. Garrett Owen.

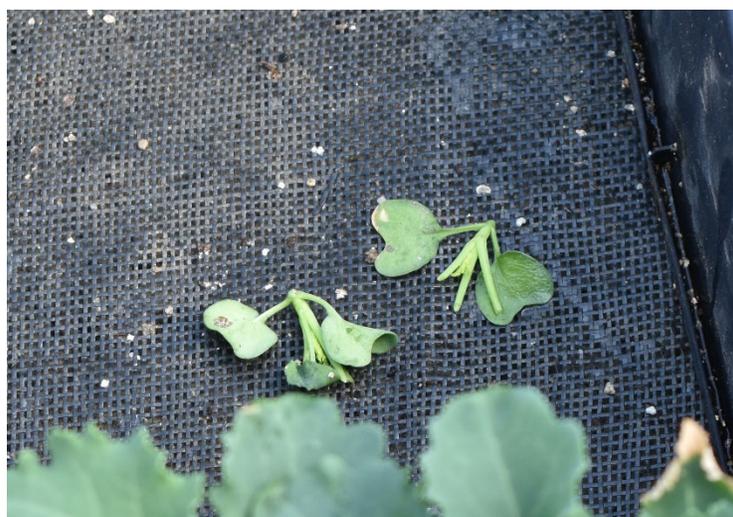


Figure 3. Young seedlings were excised by mice while feeding on plugs. Photo by: W. Garrett Owen.

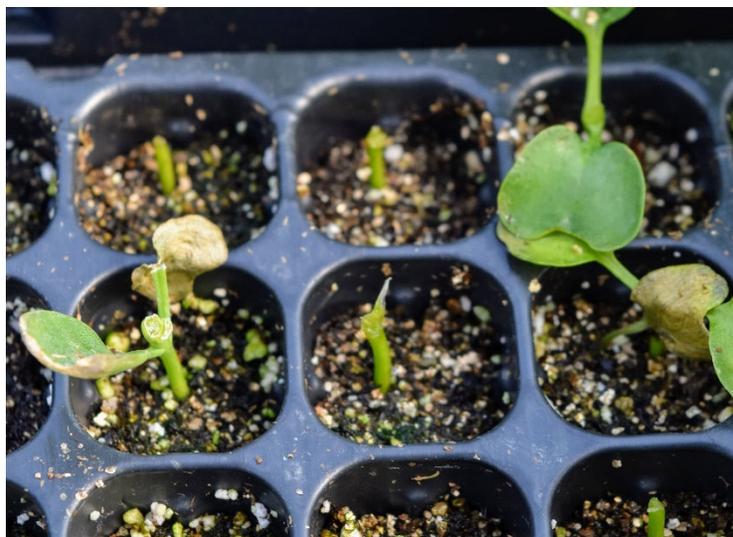


Figure 4. Plug damage caused by mice feeding. Photo by: W. Garrett Owen.

Keeping the areas outside and inside the overwintering or greenhouse structure sanitized will help prevent rodent infestation. Remove debris or protected areas outside the overwintering or greenhouse structure (Figs. 7A-B). Eliminate long-term storage of pallets of substrate or boxes of pots, hanging baskets, or inserts in the growing environment. These materials should remain in the headhouse or production barn; however, if space is limited, then consider thoroughly inspecting materials before moving into the growing environment. Cover and remove organic and inorganic trash from the growing environment. Do not store seeds in the growing environment thereby eliminating a potential food source.

Greenhouse and nursery growers should monitor for rodent activity in overwintering structures and greenhouses. For mice and rats, monitor for droppings, digging of seed or removal of plugs or liners from pots, and damage to hardgoods. For voles, consider deploying the Apple Sign Test. This monitoring technique requires placing multiple empty pots or nursery containers upside down on the ground throughout the growing environment or suspected infested area. Ensure that you leave a slight gap between the container rim and the ground. Alternatively, a wooden shingle can be placed on the ground and propped up 3-to-4-inches off the ground or two wooden shingles can be used to create a tent at ground level. Allow the pots or shingles to sit in the growing environment undisturbed. After five days, place a small slice of apple under each pot or shingle. After 24 hours, inspect each pot or shingle to monitor feeding activity on the apple slice. Feeding activity will help identify where control is needed.



Figure 5. The severity of mice activity in a heated greenhouse and plug loss. Photo by: W. Garrett Owen.



Figure 6. Example of (A) rodent damage to loose-filled bags of substrate and (B) rodent that caused damage while utilizing the substrate. Photos by: W. Garrett Owen.

Many greenhouses have cats to help with rodent control, but most times they are off sleeping and sunbathing (Fig. 8). Baited snap traps can help control mice, rats, and voles (Fig. 9). Baits that are effective include peanut butter, oatmeal, and apple slices. Repellents have not been shown to be consistently effective and sometimes will be stockpiled or hoarded (pers. experience). Rodenticides or toxic baits marketed as anticoagulants or formulated with zinc phosphide may be used if trapping is not effective (Fig. 10), but care must be taken to protect other non-target animals and children. Baits formulated with zinc phosphide are restricted, therefore you must be a certified pesticide applicator to purchase and apply. Growers should always follow the manufacture directions and label rates before using any product.



Figure 7. Remove (A) debris or (B) protected areas outside the overwintering or greenhouse structure to eliminate rodent habitats. Photos by: W. Garrett Owen.



Figure 8. Greenhouse cat used to help with rodent control. Photo by: W. Garrett Owen.



Figure 9. Snap trap used to protect seed and young plants from rodent activity. Photo by: W. Garrett Owen.



Figure 10. Example of a greenhouse deploying a rodenticide. Photo by: W. Garrett Owen.

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**CONTRIBUTORS**

Dr. Nora Catlin  
Floriculture Specialist  
Cornell Cooperative Extension  
Suffolk County  
[nora.catlin@cornell.edu](mailto:nora.catlin@cornell.edu)

Dr. Chris Currey  
Assistant Professor of Floriculture  
Iowa State University  
[ccurrey@iastate.edu](mailto:ccurrey@iastate.edu)

Dr. Ryan Dickson  
Greenhouse Horticulture and  
Controlled-Environment Agriculture  
University of Arkansas  
[ryand@uark.edu](mailto:ryand@uark.edu)

Dan Gilrein  
Entomology Specialist  
Cornell Cooperative Extension  
Suffolk County  
[dog1@cornell.edu](mailto:dog1@cornell.edu)

Dr. Chieri Kubota  
Controlled Environments Agriculture  
The Ohio State University  
[kubota.10@osu.edu](mailto:kubota.10@osu.edu)

Heidi Lindberg  
Floriculture Extension Educator  
Michigan State University  
[wolleage@anr.msu.edu](mailto:wolleage@anr.msu.edu)

Dr. Roberto Lopez  
Floriculture Extension & Research  
Michigan State University  
[rglopez@msu.edu](mailto:rglopez@msu.edu)

Dr. Neil Mattson  
Greenhouse Research & Extension  
Cornell University  
[neil.mattson@cornell.edu](mailto:neil.mattson@cornell.edu)

Dr. W. Garrett Owen  
Sustainable Greenhouse & Nursery  
Systems Extension & Research  
The Ohio State University  
[owen.367@osu.edu](mailto:owen.367@osu.edu)

Dr. Rosa E. Raudales  
Greenhouse Extension Specialist  
University of Connecticut  
[rosa.raudales@uconn.edu](mailto:rosa.raudales@uconn.edu)

Dr. Alicia Rihn  
Agricultural & Resource Economics  
University of Tennessee-Knoxville  
[arihn@utk.edu](mailto:arihn@utk.edu)

Dr. Debalina Saha  
Horticulture Weed Science  
Michigan State University  
[sahadeb2@msu.edu](mailto:sahadeb2@msu.edu)

Dr. Beth Scheckelhoff  
Extension Educator - Greenhouse Systems  
The Ohio State University  
[scheckelhoff.11@osu.edu](mailto:scheckelhoff.11@osu.edu)

Dr. Ariana Torres-Bravo  
Horticulture / Ag. Economics  
Purdue University  
[torres2@purdue.edu](mailto:torres2@purdue.edu)

Dr. Brian Whipker  
Floriculture Extension & Research  
NC State University  
[bwhipker@ncsu.edu](mailto:bwhipker@ncsu.edu)

Dr. Jean Williams-Woodward  
Ornamental Extension Plant Pathologist  
University of Georgia  
[jwoodwar@uga.edu](mailto:jwoodwar@uga.edu)

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