Module 5: Rodent Pest Identification and Monitoring

Duration: 20 minutes

Overview:

Rodent pests are a significant concern in agriculture, particularly in storage facilities, grain silos, and fields. They can cause direct damage to crops, contaminate food supplies, and pose serious health risks by spreading diseases. In this module, we will explore how to identify common rodent pests, understand the damage they cause, and use monitoring techniques to assess rodent populations. By the end of this module, learners will be able to identify the signs of rodent infestation, implement monitoring strategies, and apply appropriate actions to mitigate damage caused by rodents.

Key Topics:

1. **Common Rodent Pests in Ontario**
   Ontario's agricultural sector is susceptible to rodent infestations, especially in storage areas where food products like grains, seeds, and produce are stored. The two most common rodent pests in agriculture are the **house mouse** and the **Norway rat**.
   - **House Mouse**:
     - The house mouse (*Mus musculus*) is a small, highly adaptable rodent that commonly infests buildings, barns, and grain storage facilities. It is known for its ability to squeeze through small openings, making it difficult to keep out of structures.

     - **Damage**: House mice can cause significant damage by gnawing on stored crops, packaging, and equipment. Their constant chewing can also damage electrical wiring and insulation in buildings. Additionally, house mice can contaminate food with urine, feces, and fur.
     - **Health Risks**: Mice are carriers of several diseases, including *Hantavirus*, *Salmonella*, and *Leptospirosis*. Their droppings and urine can trigger allergic reactions in humans, especially in indoor environments.
   - **Norway Rat**:
     - The Norway rat (*Rattus norvegicus*) is a larger rodent compared to the house mouse. It is commonly found in fields, barns, grain silos, and agricultural buildings. Norway rats are excellent swimmers and

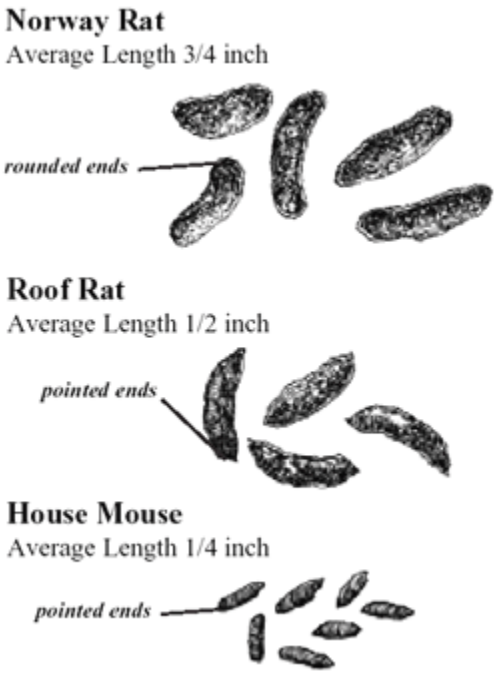
burrowers, often nesting underground or in hidden areas within buildings.

- **Damage**: Norway rats can damage crops in the field by feeding on seeds, seedlings, and mature plants. In storage facilities, they consume grains and other stored products, causing significant financial losses. Their gnawing on materials can also damage pipes, insulation, and structures.
- **Health Risks**: Norway rats are notorious for spreading diseases such as *Leptospirosis*, *Salmonella*, and *Rat-Bite Fever*. They are also known to carry parasites like fleas and ticks, which can transmit diseases to both animals and humans.

2. **Rodent Monitoring**

Effective rodent management begins with identifying the presence of rodents and monitoring their activity. By detecting infestations early, farmers can take action before damage becomes severe. There are several methods used to monitor rodent populations:

- **Signs of Infestation**: Regularly checking for signs of rodent activity is key to identifying infestations. Common signs include:
  - **Droppings**: Rodent droppings are one of the most obvious signs of an infestation. House mice produce small, dark, cylindrical droppings, while Norway rat droppings are larger and more oblong. The presence of fresh droppings indicates that the rodents are actively present in the area.
  - **Gnaw Marks**: Rodents have constantly growing teeth and need to gnaw on materials to wear them down. Look for gnaw marks on food packaging, wooden beams, electrical wires, or plastic materials. The gnaw marks left behind can also help determine the type of rodent present, as house mice and Norway rats leave different marks.



  - **Burrows**: Norway rats often create burrows around building foundations or in fields, while house mice may burrow into walls or underneath piles of debris. These burrows often have entrances that are 2-4 inches wide and are typically surrounded by debris, such as gnawed materials, fur, and droppings.
  - **Footprints and Rub Marks**: In areas with dust or dirt, rodents leave visible footprints or rub marks where their fur touches walls and surfaces. These marks can help confirm the type of rodent and the extent of the infestation.

- **Tracking Devices**: Tracking devices are a useful tool for monitoring rodent activity over time. These devices help detect the presence and movement of rodents in specific areas:
    - **Tracking Powder**: Tracking powder is a non-toxic substance that sticks to rodents' paws and fur. By placing the powder along suspected rodent pathways, you can track their movement and pinpoint areas of high activity. After a period of time, the powder can be checked to see where rodents have been traveling.
    - **Tracking Tape**: This tape can be placed on floors, around building foundations, or along walls where rodents are suspected. When rodents pass over the tape, their footprints leave a trace, which can be analyzed to estimate the level of activity.
- **Baiting**: Baiting is another method for monitoring rodent populations. Rodent bait stations can be used to attract and trap rodents, allowing farmers to monitor the number and type of rodents present in an area.
    - **Rodent Baits**: Rodent baits come in various forms, such as blocks, pellets, or liquids, and can be placed in areas where rodents are suspected. When rodents consume the bait, it provides an indication of the level of infestation. However, caution must be exercised to avoid placing baits where non-target animals or pets can access them.
    - **Bait Stations**: Bait stations are enclosed containers that securely hold the bait, preventing access by other animals. These stations can be placed in areas where rodents are active, such as along walls, near food storage areas, or around the perimeter of buildings.

3. **Examples of Monitoring Strategies**
    - **Grain Storage Facility**: Grain storage facilities are particularly vulnerable to rodent infestations, as they provide an ideal environment for rodents to find food and shelter. To monitor rodent activity in such facilities, farmers can implement the following strategies:
        - **Traps**: Setting traps in strategic locations, such as near burrows or gnaw marks, can help capture and monitor rodent populations. Traps can be checked regularly to assess the level of infestation.
        - **Motion-Activated Cameras**: Motion-activated cameras can be set up in storage areas to capture rodent activity, even at night when rodents are most active. The footage can provide valuable insights into rodent behavior and help identify problem areas.
        - **Regular Inspections**: In addition to setting traps and monitoring with cameras, conducting regular inspections of storage areas for signs of rodent activity (e.g., droppings, gnaw marks, and burrows) can help detect infestations early.
    - **Field Monitoring**: In fields where crops are growing, monitoring for rodent activity is critical, especially if crops are at risk of damage from rodents. Field monitoring strategies may include:

        - **Burrow Inspections**: Checking for rodent burrows around crop fields, particularly near field edges or along fence lines, can help identify where rodents are living and feeding.
        - **Bait Stations**: Placing bait stations along field perimeters or near known rodent burrows can help monitor rodent populations. The amount of bait consumed can provide an estimate of population density.
4. **Homework/Challenge**
    - **Assignment**: Conduct a rodent inspection of a local building or storage facility. Document the signs of rodent activity you observe, such as droppings, gnaw marks, burrows, or tracks. Based on your findings, recommend monitoring tools or strategies, such as traps, tracking powder, or bait stations. Provide a brief report detailing your observations and the best monitoring techniques to implement in this particular setting.

Conclusion

Rodent management is an essential aspect of agricultural pest control, particularly in storage facilities and fields. In this module, we have explored the identification of common rodent pests like house mice and Norway rats, as well as effective monitoring techniques to detect and assess rodent populations. By understanding the signs of infestation, using tracking devices, and implementing baiting strategies, farmers can develop an effective monitoring plan to control rodent populations. Early detection and regular monitoring are key to preventing rodent-related damage to crops, stored goods, and infrastructure.