



NEOGEN
CORPORATION

BREAK
The Cycle

Rodenticide Baiting Instruction Booklet

Baiting Strategies
Rotational Baiting System



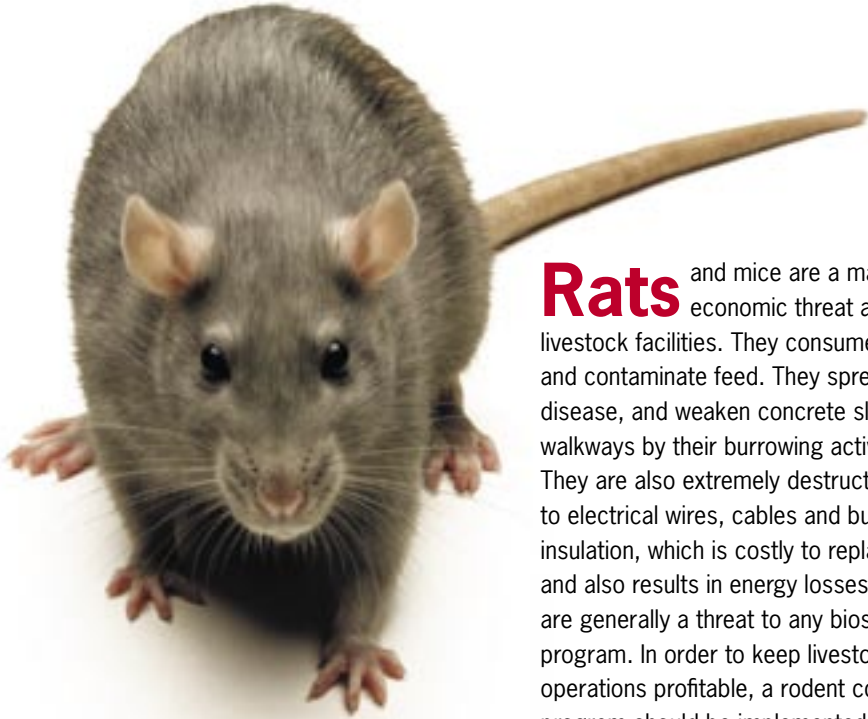
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Degrees of Rat Infestation

Rat Signs Observed	Light (1-20 Rats)	Medium (21-50 Rats)	Heavy (Over 50 Rats)
Tracks			
	Few to moderate; usually all of one size.	Moderate to many; usually of two or more distinct sizes.	Many; two or more sizes, slick runways in dusty areas.
Fresh Droppings			
	No or few groups observed, generally all of the same size.	Some always observable in two to six; usually two distinct sizes.	Many; usually of several sizes, small to large and in at least six locations.
Active Runs			
	None or few and relatively indistinct.	Several distinct; one or more indicating heavy travel.	Many; more than one heavily traveled run.
Fresh Gnawings			
	None to few instances nightly.	Usually several instances nightly.	Many instances nightly.
Live Rats Seen			
	None by day, except on clean-up and harborage removal.	None to two by day unless harborage is opened up.	Often one or more seen by quite close observation, even in daytime.

Source: Taken from Army Medical Service School Department of Professional Sciences, Preventive Medicine Branch, M-708-5 Code 046

Neogen Rodent Baiting Strategy



Rats and mice are a major economic threat around livestock facilities. They consume and contaminate feed. They spread disease, and weaken concrete slabs and walkways by their burrowing activities. They are also extremely destructive to electrical wires, cables and building insulation, which is costly to replace and also results in energy losses. They are generally a threat to any biosecurity program. In order to keep livestock operations profitable, a rodent control program should be implemented.

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Conducting Building Inspections



Building inspections are critical as they will let you know where to place your bait. Random baiting is ineffective and costly.

Livestock facilities should be inspected just after dusk and again shortly before dawn. This is when rodents are most active. If rodents are present, inspections at these times will reveal the location, distribution and severity of the infestation. This is important because it will let you know where to place baits. Also, if you see rats or mice during the daylight hours, you can be assured that you have a **severe** infestation.

When doing a building inspection, start by checking areas where feed is stored or where spilled feed may lay. Rodents will build up in high numbers in areas where food is easily accessible.

Where to start: Rat burrows can occur both indoors and out, but will be commonly seen along the outside of the building up against the foundation. Check outside building foundations and the perimeter edges of all grain silo cement pads every couple of weeks for burrows.

If the facilities have insulated walls, the walls should be checked for damaged insulation. If you see expelled insulation on walkways or around building perimeters, there are rodents nesting inside the walls. Insulated attics should also be inspected, especially during the cooler months and especially if the facility is located where roof rats are established.

Next, look at overhead wiring and conduit lines for “grease marks”. Mice and rats may be using these lines to travel throughout the premises.

If you have scales, look beneath them. Mice will build up in large numbers in this kind of protected location.

If pen feeders are being used and they have hollow base voids, those voids should be inspected regularly.



Sanitation

Sanitation is a critical part of any rodent control program. Clean and disinfect with a product such as DC&R®, which stands up under organic load and has a broad spectrum. DC&R is economical to use, has only 1 dilution rate and is not corrosive to equipment or facility structures. DC&R is the only disinfectant on the market that has a 7-day residual claim, which means that it starts working on contact and continues to kill bacteria and viruses for 7 days.



Regarding both interior and exterior sanitation, it's important to remove any kind of superficial harborages, dried piles of manure (mice tend to live in these piles and other indoor junk piles or floor debris). It's also very important to keep exterior areas clean and free from weeds.

Each building should have a 30-36 inch weed-free perimeter all the way around the building. You can further discourage rats from burrowing near building foundations by putting down a perimeter strip of $\frac{1}{4}$ inch rock that is laid 3 feet wide and is 4-6 inches deep.

Keep any outside feed bins in good repair and clean up any spilled feed as soon as possible. Any debris outside like old equipment, old boards, etc, should be eliminated because rodents use these for hiding or nesting.

Inside the facilities, store all feed, feed sacks and supplements 12 inches off the floor and at least 6 inches away from walls. This makes it easier to bait under and around pallets of feed.



Baiting Strategies



When trying to reduce rodent populations remember that the key to success is bait placement. It's very important to place bait where the rodents will repeatedly encounter it. In livestock facilities, no matter how well managed, rodents almost always have access to some amounts of feed; therefore, they won't (or don't have to) venture far from their nests to search for food.

A combination of direct bait placement and the use of bait stations in various pathways both inside and outside the facility is the best approach to achieve quick and effective control.

Indoors:

1. At or near rodents' regular feeding sites.
2. In the pathway from nests to food sources.
3. In hollow base voids of feeding equipment.
4. In tamper-resistant bait stations near stored feed.
5. On wall ledges.
6. On top of pen dividers.
7. In attics.

Outdoors:

1. In and around active burrows.
2. In pathways between active burrows and food sources.
3. Around the perimeter of the building.



Inside the Building

When baiting indoors, it's important to consider the type of activity that is occurring inside the facility. For example, you will need to bait swine grow/finish facilities differently than you will bait nursery or sow buildings. When baiting for rodents in grow/finish buildings, remember that there is a lot of activity by the pigs on the floor, so mice will bypass the floor and use pen dividers and wall ledges to travel.



For rodent baiting on ledges and pen dividers, use a 10 inch section of PVC pipe with a 2 inch diameter. You will also need to buy caps for each end of the pipe. The entire section and cap setup will cost approximately \$2.00. Cut $\frac{3}{4}$ inch holes into the end caps and then wire Havoc XT® blocks, CyKill™ chunks or Ramik® mini-bars inside of the pipe. These pipe bait stations can be mounted on top of pen dividers using zip strips and can be mounted to wall ledges using nails or strips of metal.

Bait these tubes and refill every 7-10 days as needed for the first 3 weeks and then every 30 days thereafter. They will need to be cleaned on a monthly basis.

Place these tubes every 8 feet on wall ledges around the inside perimeter of grow/finish facilities. When possible, like in nursery and sow buildings, the Multiplex bait station should be used on the floors (and in aiseways where rats and mice are active) and placed every 20 feet around the inside perimeter of the building.

Grow/finish barns are areas of high activity and are somewhat difficult to bait. We recommend using both floor and off-floor baiting programs, but don't bait within the pens directly. Baiting only floors of grow/finish barns won't control mice populations. Mice in these units often travel directly to feeders via the tops of pen dividers or wall ledges and may not even come in contact with the floor. Install the tube baiters along back wall ledges near any vertical conduits the mice use to climb to attics or where back wall ledges intersect with pen dividers. Also install ledge baiters on the tops of pen dividers between box-style feeders that are back-to-back between different grower pens.

Be sure to place mouse bait stations in each open corner of floor space. This is especially critical in the farrowing house and nursery, where the corners contain unoccupied space.

Ceiling Voids & Attics

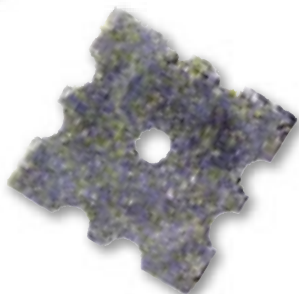
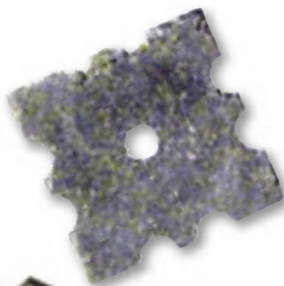


Any insulated ceiling/attic area should be inspected and baited. This is crucial with severe infestations. If attics are left unbaited, the ceiling rodents will replace the rodents killed below.

When baiting attic floors use Havoc, CyKill or Ramik place packs. Put the place packs every 8-10 feet for mice and every 20 feet for rats. Be sure to bait the entire attic. There is no need to open the packs up in this situation, the rodents will eat through the packaging.

If an attic floor isn't present, bait rafters by wire-tying Havoc XT blocks or Ramik Mini-Bars to the rafters. Bait should be placed every 8-10 feet for mouse infestations and every 20-50 feet for rat infestations. When baiting for a heavy infestation, use the lower intervals.

Bait should be checked and replaced once per week initially, and then every 30 days after the first 3 weeks.



Outside the Building

Rodent control outside of buildings:

1. Inspect the perimeter of the building and immediate grounds.
2. Determine if burrows are active by filling the burrow with dirt. Go back the next day. If the burrow has been opened, it's active.
3. Bait the burrow directly by placing Ramik, Havoc or CyKill pellets into the burrow or by placing a bait station between the burrow and the current food source. Do not throw entire packets of bait down into the burrow because rats will simply push them out. Open the packet and pour the pellets down into the burrow. Make sure you insert the bait deep into the burrow.
4. Go back after 7-10 days, cover the burrows again so you can see which ones are still active and re-bait the active burrows.
5. Continue to monitor all ground burrows for at least 3 weeks.
6. After the initial 3 week period of baiting every 7-10 days, you should be able to bait every 30 days after that.



When using bait stations or PVC tubes, fill the stations and recheck them in 7-10 days. Replace eaten bait and continue to monitor the activity once a week for 3 weeks. **Be sure to continue to replace the eaten bait.** After 3 weeks, check stations every 30 days. Be sure to replace uneaten bait every 30 days and clean the trays so that the bait remains palatable to the rodent. Ideally, bait stations should be placed every 20-50 feet around the exterior perimeter of livestock buildings. If you have a heavy rodent infestation, place them every 20 feet apart. These stations should be filled with Havoc XT, CyKill or Ramik Mini-Bars.



Neogen's Rotational Baiting System

When possible, start by using 1 application of Prozap® Zinc Phosphide Pellets during the all-out phase for quick knock down. One application of Prozap will be sufficient, and do not use Prozap again for at least 3 months, as bait shyness may occur. Don't leave Prozap pellets out for longer than 3 days.

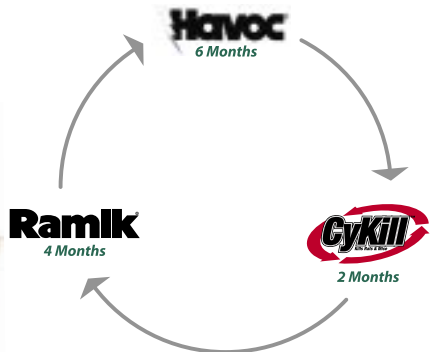
After the Prozap application, use Havoc chunks, pellets or blocks for the next 6 months. Be sure to apply the bait, check it 7-10 days later and refill stations or repeat applications every 7-10 days for the first 3 weeks and every 30 days thereafter. After the 6 month application period of Havoc XT chunks and Havoc pellets, use CyKill chunks and place packs for 2 months. Practice the same type of bait maintenance with CyKill as you did with Havoc. Following the 2 month CyKill rotation, use Ramik chunks and pellets for the next 4 months. Again, an application of Prozap pellets can be used during clean-out, but only 1 application should be made every 3 months, at most. Do not leave Prozap pellets out for longer than 3 days and do not use Prozap pellets in bait stations.



If you would rather not use different products, you can bait all year long with Havoc XT chunks and Havoc pellets.



Finally, the importance of sanitation and of placing the bait in the proper locations cannot be stressed enough. It's also equally important to keep bait in supply to the rodents. Prozap is a great tool for quick knock-down, but it should be used sparingly. And it's especially important to keep feed spillage at a minimum, keep feed bins covered and keep feed sacks on pallets, off the floors and keep bait stations filled with fresh bait.



Product Ordering Guide

This instruction booklet is intended as a guide in providing general information associated with the use of these products. Always read and follow label instructions on the package before using.

Product	Item #	Package	Qty per package
Havoc Pellets – 50 g Place Packs			
	116381	Box	12 packs
	116372	Pail	40 twin packs
	116374	Brute	240 twin packs
Havoc Chunks – 1 oz Chunks			
	116378	Pack	8 chunks
	116376	Pail	48 chunks
	116377	Bucket	320 chunks
Havoc-XT Blok – 20 g Blocks			
	116375	Pack	8 blocks
	116370	Pail	40 blocks
	116368	Bucket	11 lbs of blocks
CyKill Blocks – 14 g Blocks			
	112810	Pail	125 blocks
CyKill Packs – 14 g Place Packs			
	112820	Pail	100, 14 g packs
Ramik Bait Packs – ½" Nugget Place Packs			
	116305	Bucket	60, 4 oz packs
	116307	40 lb Carton	160, 4 oz packs
	116330	48 lb Carton	48, 1 lb packs
	116363	Brute	76, 1 lb packs
Ramik Mini Bait Packs – 3/16" Nugget Place Packs			
	116354	Box	8, 43 g packs
	116316	Pail	45, 43 g packs
	116319	Bulk Tub	300, 43 g packs
Ramik Mini-Bars – 1 oz Bars			
	116333	Pack	8 bars
	116332	Pail	64 bars
	116325	Bucket	400 bars
	116326	Bulk Tub	640 bars
Ramik Bars – 12 oz bars			
	116364	Pack	18 bars
Ramik Green Bait Pellets – 3/16" Pellets			
	116300	Bucket	20 lbs of pellets
	116303	Box	50 lbs of pellets
Prozap Zinc Phosphide Pellets – 1/8" Pellets			
	114600	Pail	12 lbs of pellets
	0283390*	Bag	50 lbs of pellets

*Restricted use product.

Rat & Mouse Facts

- Norway rat droppings are blunt compared to mouse droppings, which are pointed on both ends. Roof rat droppings are pointed on at least 1 end.

Dropping Sizes	
Norway Rat	3/4"
Roof Rat	1/2"
House Mouse	1/8" - 1/4"

- A young rat can squeeze through a hole the size of a quarter.
- Rodent hairs carry bacteria and shed rodent hair can become airborne contaminants.
- Rat burrows are usually 8-18" below the surface of the ground.
- A mouse can squeeze through holes 1/4" in diameter.
- A female mouse can produce 30-35 offspring per year.
- A single mouse produces 50 or more droppings per day.
- One pair of mice can produce 18,000 droppings in 6 months.



www.neogen.com

800/621-8829
859/254-1221

944 Nandino Blvd.
Lexington, KY 40511