Don’t let rodents chew into your profits

An informative article on ground squirrel and pocket gopher control; as seen in Alberta Beef and Beef Illustrated magazines.

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In early March, PMRA announced what many had feared but few thought would actually happen: as of March 4, 2020, popular rodenticide Strychnine lost its registration across Canada. Retailers have until March 4 2021 to sell the product, and producers have until March 4 2023 to use up whatever strychnine they have in storage. Luckily, farmers and ranchers who practice timely and effective integrated pest management can maintain good rodent control, even in the absence of strychnine.

Rodents are more than a nuisance. They can damage crops and native pasture, consume yield, facilitate the spread of invasive weeds, and create safety hazards for livestock and humans. That's not all: their burrowing and chewing can damage irrigation lines; their nesting and snacking habits can damage vehicles and farm equipment (they especially like soy-based wiring); their burrows can slow harvest, damage equipment and compromise hay. In case all of that isn't enough, their feces can contaminate crops; the bacteria and flea/tick parasites they carry can transmit e-Coli, Salmonella, Lyme disease, Rocky Mountain spotted fever, relapsing fever, and tularemia.

Though rodent pest pressure changes with the growing region, time of the year and/or local environmental conditions, many prairie farmers are reporting more of an issue than ever of late.

"I would say gophers (Richardson's ground squirrels) are the biggest problem for most farmers & ranchers. Numbers seem to keep growing over the past five or six years," says Chinook Applied Research Association's executive director, Dianne Westerlund. "The badgers that seem to congregate where the gophers are create an even bigger problem due to the size of their holes. Pocket gophers or moles have become more of a problem in hayfields within Special Area 3 and 4 during the past few years as well – possibly associated with the wetter years of 2014-2016? The mounds cause a real problem when haying. A few guys have floated their fields (i.e., dragged something heavy over the mounds) but it is a short-term fix at best. Many resort to tillage to level out the mounds & holes from both gophers & moles."

That said, Jory Hoffmann, the ag fieldman and pest control officer for the MD of Acadia says most farmers and ranchers are doing a "pretty good job" of rodent control. "Spring just hit and I'm already getting lots of calls from producers. People tend to get out there as soon as they can. Though they only have so much time to go out and deal with gophers and ground squirrels, they care and they control them as they can."

Managing a rodent problem starts with correctly identifying the pest. In Alberta and Saskatchewan, ground squirrels (often incorrectly called gophers) cause the most damage to grain crops, orchards and rangeland; whereas pocket gophers (often incorrectly called moles) are generally to blame for damage in alfalfa hay and pastureland, though they colonize rangeland too. Each pest has slightly different characteristics and life cycles, so each needs somewhat different management strategies.

The best time to control rodents is first thing in the spring, before adults have raised litters of young. Adult male ground squirrels emerge from hibernation about two weeks before females. Depending on weather and elevation, ground squirrel reproduction can begin as early as mid-March or as late as into May. One month after the females emerge, they deliver a litter of young underground. Six to eight weeks after the peak of adult emergence, juveniles start to appear above ground. Ground squirrels are inactive for two periods during the year: during the heat and dry of July - early September, and again during the cold of October - late February/early March). Between these inactive periods, they forage very aggressively to store adequate energy.

Unlike ground squirrels, pocket gophers do not hibernate at all but instead are active throughout the year. If a population is left uncontrolled and food is abundant, pocket gopher density can increase to over 20 individuals per acre. Surface activity decreases in hot, dry or gravely areas during summer and following heavy rains. Due to their frequent migration and inconsistent mound creation, effectively controlling pocket gophers usually requires multiple approaches.

Richardson's Ground Squirrel
Photo by Wayne Lynch

Pocket Gopher. Thomomys sp. Juvenile Male.
Photo by Wayne Lynch

The Verminator is the best built burrow building machine with unmatched results controlling gophers.

Mechanical burrow builders, which only a small portion of farmers are familiar with, can prove an effective preventative tool in the battle against pocket gophers.

Rodent control measures that offer only moderate success include trapping, shooting, repellants and burrow modification. Typically, these methods are not maintained consistently enough to reduce or frustrate newly migrating rodent populations.

"Farmers need to stop thinking they can shoot their way to a rodent free field. Managing pest population is an ongoing journey, not a single event," says Chuck Hathaway, senior market manager for Liphatech, a global leader in pest control products and the developer of three of the industry's most important rodent control ingredients: chlorophacinone, bromadiolone and difethialone.

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There are two major groups of rodenticides. Acute toxicants induce death very quickly, generally after just a single feeding, with death typically occurring at the site the bait was ingested. Acute toxicants (ex. strychnine) can work well when they are first distributed, but studies show the kill-rate generally drops soon after. This is because any rodent that recovers from a less-than-lethal dose will associate their illness with the bait, not only avoiding that bait but teaching their young to do the same. Further, rodents that witness the death of another rodent from acute poisoning may also learn to avoid that bait. Since acute toxicants have no antidote, they also pose user safety and non-target concerns. Pests killed by toxicants found above-ground should be removed and buried promptly as non-targeted wildlife can be poisoned if they feed on the carcasses.

Anticoagulants damage capillaries and stop blood from clotting, causing an animal to bleed out. First generation anticoagulants such as chlorophacinone (exs. Rozol RTU, GroundForce) can require two or more feedings and act more slowly than an acute poison. The slower action means rodents generally return to their burrows to die: a positive both because scavengers are less likely to find carcasses and suffer secondary poisoning, and because rodent populations are less likely to develop bait avoidance. Anti-coagulants also offer the benefit of an effective antidote (Vitamin K1), a valuable back-up plan if pets or livestock consume the rodenticide.

Baiting ground squirrels with anticoagulants can be done via spot treatments, placement around burrow openings, or bait stations that are protected from the elements and non-targets. Ground squirrels forage relatively close to their burrows: within about a 400-yard radius. Bait stations along a crop field perimeter of less than ¼ square mile have been effective at drawing ground squirrel populations out of the crop.

All pocket gopher bait is applied below ground. There are three primary methods for baiting: 1) hand baiting via the funnel and spoon method, 2) an all-in-one probe and bait dispenser, and 3) a mechanical burrow builder. Preventative perimeter treatments using burrow builders around hay or crop fields (up to three rows, 15-30 feet apart) made 2-3 times per year (fall, spring and mid-summer) can effectively reduce pocket gopher migration into crops before damage occurs. These applications via artificial burrows should be made at the same depth as natural burrows and require placement of 1.5 to 4 lbs. of bait per acre. Curative, targeted treatment of large infestations with established burrows often require making more passes (6-8 rows) across the infested area.

The number one reason people fail at rodent control? "They don't have enough bait stations," says Hathaway. "Some of that is thriftiness, but a lot of it is misunderstanding the density of bait stations you need for effective control. If you have 20-30 squirrels in an acre, they're going to go through bait fast." For additional tips and suggested bait station density diagrams, check out: https://www.liphatech.ca/ag-field-orchard/ground-squirrels/ Regardless of which product a farmer/rancher chooses, it is critical to follow all label instructions.

Integrated pest management depends on more than just pesticides. Ground squirrels prefer over-grazed/open landscapes as they can better see predators. As such, supporting longer forages can make the land less attractive to these rodents. Too, farmers can encourage natural predation by supporting rather than harassing / removing coyote, snake and birds of prey populations.

Ranchers and farmers are naturally vigilant in caring for their livestock and crops. It's clear that a similarly watchful and attentive approach to rodents can help reduce negative impacts on rangeland and crops. **BY MADELEINE BAERG**

Pocket Gopher mounds in alfalfa.

Richardson's Ground Squirrel burrow in alfalfa.

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