

Pocket gophers ... controlling this pest

The message is that effective control of pocket gophers in your irrigated alfalfa can be achieved by:

1. **Smooth the field first.** Mounds of earth on your field and the resulting surface roughness are always the first problem to address. Old compact mounds must be loosened. Effective smoothing should be performed with either harrows, a float, a land leveler or an old rod weeder, combined with a light rolling.
2. **The pocket gopher control program starts three days after the alfalfa field has been smoothed.** Once smoothed, new mounds pinpoint the location of each individual pest. Attack every sign of fresh digging with bait or traps. You may have far less gophers than you had expected. Fresh digging is very obvious in the early fall with the first light snow cover on your hay field.
3. **Go after the source of infestation.** Early defense of your borders is essential! When you kill only the infield pests, a secondary immigration will soon arrive to take their burrows. The “old mama” pocket gopher digs under cover from predators, heavy traffic and winter cold in ditches, fence lines, road allowances, under bale stacks and waste areas. With an annual birth rate increase of four to six, young pocket gophers will establish a home away from home out in your irrigated alfalfa field in late July, or after second cut. The tunnels, dug by the youngsters are smaller in diameter.
4. **Traps, hand or machine baiting.** If you want to study your pest, trap the pocket gopher use a trap like The Black Hole trap, costing about \$12.00. Effective hand bait placement is cheaper (about \$0.25/hole), faster, can produce multiple kills over many days, and allows you to cover many acres per day. When baiting severely infested areas in advance of trapping or hand baiting a burrow building ripper may be useful. Fumigation of the pocket gopher is best left to trained professionals.
5. **Rodenticides** A rodenticide is any chemical licensed to control rodents. Acute poisons such as zinc phosphide and strychnine are more applicable to pocket gopher control than the anticoagulants which require multiple feedings. You can purchase bait (Burrow Oat Bat) which is oats, rolled to allow absorption of the poison, laced with zinc phosphide. On contact with dilute stomach acids, phosphine gas is released causing asphyxia. Fresh, palatable bait is essential regardless of the poison. Cameron Wilk, Sask Ag & Food (306-787-2195) is most familiar with the latest rodenticides registrations.
6. **Hand baiting method.** Careful probing at a 45 degree angle to locate and trowel out the entry tunnel will expose the main burrow system less than a foot below the surface. Pocket gopher tunnels are not directly below their mounds. Check your field in the early morning before the gopher has fully plugged the fresh rising tunnel. Funnel half a cup of bait right down into the main burrow and always plug the tunnel and level the mound. Always level the mound you bait. A tunnel left open after baiting will encourage the gopher to throw the bait and even more dirt onto the surface mound while rapidly re-plugging the entry tunnel. The pocket gopher does not hibernate



and complete burrow systems go down below the frost under your alfalfa.

7. **Calling all entrepreneurs!** Your best option can be the establishment, training and part-time support of a custom gopher control business for your district. This two-year battle plan is realistic:
 1. In late August immediately following second cut when all bales are removed, and after three inches of irrigation if possible, carefully level the field. You have to deal with the source areas by mowing, cultivation or, maybe by annual burning of the dry cover.
 2. Do at least two complete fall hand baitings of every fresh tunnel.
 3. Do two spring hand baitings, and start trapping where bait is not being taken.
 4. Bait after first & second cuts.
 5. Flag the problem areas that you notice while taking first and second cuttings and always bait the bordering source areas.

For an information package pocket gopher control, as well as plans and video of the truck mounted leveler are available from ICDC, (306) 778-5041.

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Attention: Irrigators and Pocket Gopher Control Clients

ICDC has tackled the control pocket gophers on irrigated alfalfa with a refined baiting demonstration program in 2001, 2002 and 2003. This demonstration was first hosted by the Grainland Irrigation District on 590 acres and has grown to include 2750 acres in the Lake Diefenbaker Development Area with the addition of ten irrigated alfalfa growers. Many other alfalfa growers have with some training also adapted this control method to their irrigated acres and to a lesser extent on their dryland alfalfa.

Burrow baiting has cost ranged from \$0.65 to \$1.25 per hole, with the average bait cost at about \$0.85 per hole. The highest volume of bait has been recommended for establishing fall bait stations. The opportunity for multiple kills and the expectation that the bait remains lethal from October to March favors the placement of larger bait volumes in the fall. In high populations a pest control officer (PCO) can bait ten holes per hour, but with low and scattered populations five burrows baited per hour would be normal. In the past three years over \$5300.00 of Borrow Oat Bait have been placed in 6260 burrows in less than 1000 hours. Thank you to Clint Bjolverud and Randy Thalheimer of Central Butte for all this work. Also thank you to Elton Weich of Hoskins, Nebraska and Calvin Beddome of Prince Albert for all their guidance and practical experience that was shared.

Contracting a PCO on a \$2.00 per hole basis has not been considered. Irrigators have contracted on a control per acre or control per hour basis. The farmer has also been responsible floating the irrigated alfalfa field smooth in late April and hopefully managing the border to the alfalfa if this source area is infested with pocket gophers. \$3.50 per acre per early spring or fall season or \$7.00 per acre per year is a fair labor and equipment cost for an experienced PCO. Contracts per acre imply control on the whole field and being highly responsive to all fresh digging. Contracts per hour flex with the infield population, the differences in grower expectations and the source area, plus "you get what you pay for". Evaluation of pocket gopher control is normally done at the first cut of hay and monitored henceforth. Fall and spring baiting targets the breeding population. However, irrigated alfalfa is like a magnet force in the July mobility of new adolescent pocket gophers. High value alfalfa for dairies, export and seed marketing will best return an investment in control of burrowing rodents.

Attached is an independent review of the three year 2001 – 2003 ICDC Pocket Gopher Control Demonstration. Thank you to Jerod Yasinowski and Amanda Walker for their keen attention to this evaluation and their report. This concludes the ICDC Pocket Gopher Management Demonstration.

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ICDC Pocket Gopher Management Program Evaluation

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Beginning in the spring of 2001, Irrigation Crop Diversification Corporation, in conjunction with several irrigated alfalfa producers, began a pocket gopher (PG) control program. The purpose of this report is to objectively evaluate the value of this program after 3 years, and to identify potential areas of improving PG management on irrigated alfalfa fields in Saskatchewan. A survey of producers involved in the program was conducted in order to gain an overall view of how the program had worked in individual cases, as well as a general feeling of the group as a whole. The following are questions asked of the producers in reference to various production and business parameters:

Why do you grow alfalfa? How many irrigated/dryland acres of alfalfa do you have in production?

Answers varied according to the production goals of each individual producer, whether they were growing feed for their own use, selling to local or international markets, or for further processing (e.g. cubing). Reasons for growing alfalfa included:

- Production of feed for livestock

- Provides consistent/greater economic return relative to crops such as grains and oilseeds

- Lower crop inputs and labour costs on a yearly basis

- As part of an extended crop rotation to control plant diseases and weeds

- Well adapted for production on saline and sandy soils Among the producers surveyed, irrigated alfalfa production ranged from 40 to 2200 acres and from 160 to 4000 acres on dryland.

Rank the rodent problems on your forages (Severe > 35%; Moderate 11-35%; Light 0-10%)?

Producers identified both the Richardson's Ground Squirrel (gopher) and Pocket Gophers (moles) as rodents that presented problems on their alfalfa acres. One producer also mentioned the 13-lined ground squirrel, but that it did not represent a large problem due to their minimal disturbance burrowing system. Badgers were also identified as a problem in some areas where they had moved in to prey on the gopher population. Out of the seven producers interviewed two ranked the Richardson's Ground Squirrel first as being the most problematic in their fields (>35% infestation). The remaining five producers indicated that pocket gophers were the larger problem. Of these, three producers reported severe infestations on irrigated acres (>35%), and two producers ranked PG's as problematic, but causing only light damage (0-10%) on irrigated land. However, these two credited the lower infestation to control measures that had been implemented in the last few years. Two producers also reported that PG infestations were severe on their dryland acres.

Have Pocket Gophers been increasing over the last 10 years?

Response to this question varied depending on the history of the field as well as any previous efforts at PG control on the part of the producer. Answers included:

Five producers thought that the problem was increasing. Suspected reasons included the increase in continuous cropping practices, and moving into fields from nearby source areas such as ditches, tree rows, and pasture land.

Two reported that the PG population was declining due to management and employing control measures. Several of the producers surveyed expressed a preference for strychnine bait, and felt that other types of poison (such as zinc phosphide) did not provide a comparable level of control.

Are Pocket Gophers more problematic in a specific soil texture?

Some producers felt that sandier soils were more prone to problems, but others reported PG activity on all types of soil, especially once the population was established. Evidence of burrowing activity was also noted in alkaline soils.

Rank the types of losses caused by PG's in order of importance (crop yield, crop quality, wasted time & energy, equipment damage, livestock injury)?

The majority of the producers ranked equipment damage and wasted time as the top two losses caused by pocket gophers. Of those, most felt that equipment damage was most important. One producer thought that loss of crop quality was the most important loss. These rankings were somewhat dependent on the end use of the harvested alfalfa. Producers that were putting up hay for their livestock felt that damage to their equipment and time wasted on repairs and rough fields were most costly. On the other hand, producers who were planning on selling high quality alfalfa to the export or local market were more concerned with the loss of hay quality. Several producers also reported loss of yield because of the need to swath higher in order to avoid the mounds created by the pocket gophers. None of those surveyed felt that livestock injury was the source of loss. (Note: For future reference, "livestock injury issue" is more related to RGS problems and may not apply in this question)

Have you attempted to control pocket gophers?

All but one of the producers surveyed had made attempts to control pocket gophers on their irrigated land. Some of the methods used were:

- Trapping
- Hand baiting
- Borrow Builder (Plow) – many thought this method was fairly ineffective and left the field rough
- Poisoning - contracted

List the PG control methods that you are familiar with.

In addition to the methods listed above:

- Foam (for Richardson's ground squirrels)
- Anhydrous
- "Pogo stick" for inserting bait

Would you consider trapping as your only control method?

All of those surveyed answered 'no' to this question. Some of their reasons were:

- Too time-consuming
- Not feasible for large acreage
- Inconvenient
- Not enough man-power to make trapping effective
- More effective for preventative control rather than reducing a large population already in the field
- Would like a comparison between trapping and baiting efficacy

Did the Pest Control Officer (PCO) bait in a timely manner?

All producers were fairly satisfied with the timeliness of the spring and fall baiting by the PCO. Spring baiting was conducted before new plant growth occurred, which increases the attractiveness of the bait. Producers were responsible for ensuring that their fields were levelled (floated) in the spring so that any new burrowing activity was evident and that the PCO would not be wasting bait on old, abandoned burrows. Some producers expressed the desire to have their fields baited between 1st and 2nd cut in addition to spring and fall baitings. If time permits, this is a good opportunity to bait because old mounds are levelled off by the cutting operation, exposing any new burrowing activity. Others felt that it was possible to do a more thorough job of baiting by walking through the field rather than driving.

Did the PCO communicate information with you?

Most producers were satisfied with the informal level of communication with the PCO. They required the PCO to carry out the contract baiting agreement independently and with minimal supervision. A more formal report should be provided to each producer on the baiting operations conducted on their property. Within the report, information on the number of holes baited, date of baiting, approximate amount of bait used, field map of problem areas, and general comments, etc., should be documented to assist in the long term PG management plan. By keeping detailed records the producer can evaluate the efficacy of the program and make any changes if needed.

Do you feel that baiting by a PCO is cost effective and worth continuing?

Most producers felt that the program was worth continuing, however, some would prefer a different business relationship with the PCO. The current program involved payment on a per acre basis, or hourly wage (depending on the area). Some additional options mentioned were:

- PCO could assess the field and give quotes for each individual job
 - Payment based hourly rather than per acre due to variations in field infestation levels
- Payment of an hourly wage up to a maximum amount for a given number of acres The convenience of being able to contract the baiting service from a PCO was seen as being a valuable asset to several producers. Many producers felt that it was more economical to hire a PCO to perform the baiting, rather than spending their own time during some of the busiest times of the year. It is important to note that some producers would be willing to participate in a contract type program over an extended period (i.e. four years). Within that time frame, even if PG's were kept to low levels (field margins),

they felt the program would be cost effective by taking a proactive approach.

How do you measure the success of pest control?

This question was designed to determine the producer's expectations for a successful pest control program. Some of their answers were:

By visual results – PG mounds reduced, eliminated, or contained to the outside margins of the field

Improved field smoothness resulting in the ability to increase field speeds during cutting

Reduced equipment wear and damage

Control of PG population by reducing the number of hills – not total extermination

Taking a proactive approach to prevent any future problems

- A reduction in the number of mounds after the 1st cut and in the fall. The common feeling among producers was that a successful pest control program would allow them to cut their alfalfa fields without having to unplug the haybine, replace dull knives, raise the cutting bar to avoid mounds, or slow down because of field roughness. By removing PG's and reducing the number of mounds, field smoothness is improved and subsequently overall alfalfa production efficiency increases.