SUMMARY OF STUDY RESULTS

Richardson's Ground Squirrel Control Trial – Alternatives to Strychnine

DECEMBER 1, 2023

MD OF WILLOW CREEK NO. 26

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Agricultural Service Board
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Summary of Results: Richardson's Ground Squirrel Control Trial – Alternative products to concentrate strychnine.

In 2020, the Pesticide Management Regulatory Agency deregistered concentrate strychnine as a rodent control pesticide (rodenticide). Previously, it was thought that strychnine had the highest success in controlling Richardson's Ground Squirrel populations in agricultural settings. However, strychnine was found to be causing secondary poisoning of non-target organisms such as predatory hawks, for this reason, it has been removed as a legal pest control product.

Since this PMRA decision, the Saskatchewan Ministry of Agriculture, Alberta Agriculture and Irrigation, as well as the MD of Willow Creek have partnered to find alternative products that match the same control level as strychnine. These studies have been completed over the last few years, and have produced the following results:

- Although there were significant reductions in Richardson's ground squirrel populations with the other currently available products, it was found that numerically, Zinc phosphide products (Burrow Oat Bait) had the best efficacy for controlling populations.
- There was no non-target mortality reported for any non-strychnine product or control site during the study. This includes anticoagulants like Ramik Green and Rozol RTU, or Zinc phosphide products like ZP Rodent Oat Bait AG and Burrow Oat Bait.
    - All of the above products were found to reduce RGS populations, however, the anticoagulants had numerically lower performance and a slightly higher cost (repeated applications).

This study was conducted in both Alberta and Saskatchewan sites. RGS populations were evaluated for two days prior to application of treatments, and this process was repeated daily. Raw oats were applied to the 40m x 40m (0.16ha) study areas seven days prior to the application of treatments to acclimate the Richardson's ground squirrel populations to food availability at the opening of their burrows. A stake was placed at the centre of the plot, and was fitted with game cameras to track any motion in the sites. All anticoagulant treatment sites received a second application. All mortalities were tracked, recorded for location and date, and assumed to be the result of the treatment.

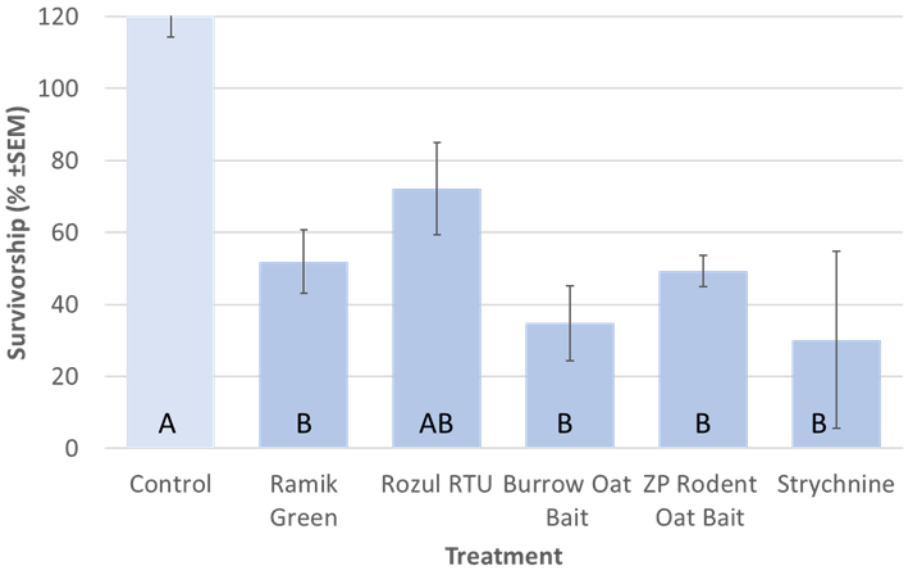

Figure 1: Saskatchewan sites. Percent survivorship post-application, relative to baseline counts on each site, by treatment ± Standard Error of the Mean (SEM) by treatment. There are no significant differences among like-lettered treatments by Sidak test

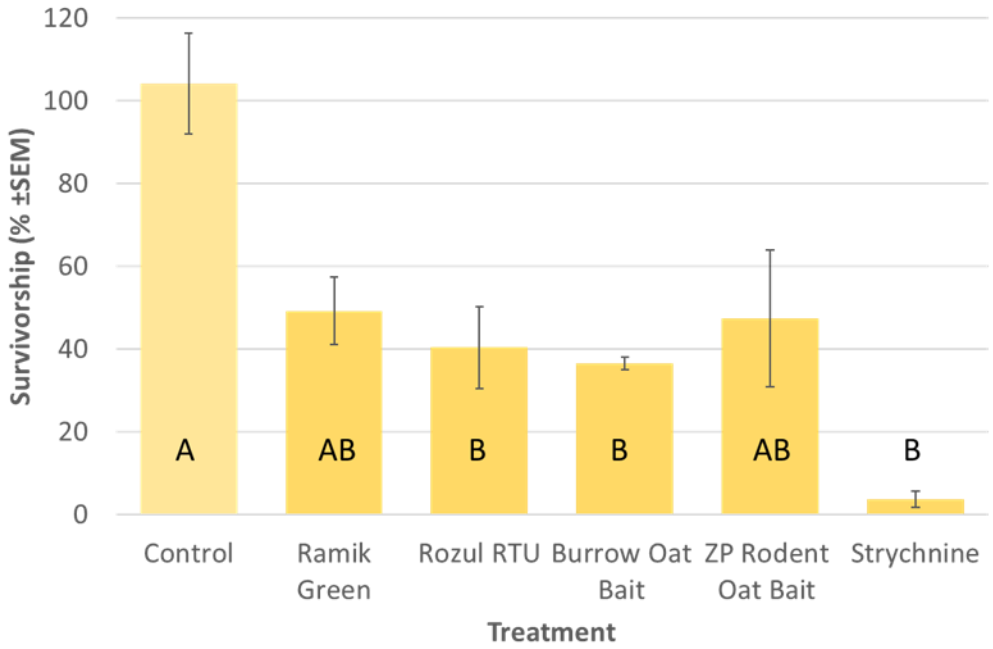

Figure 2: Alberta sites. Percent survivorship post-application, relative to baseline counts on each site, by treatment ± Standard Error of the Mean (SEM) by treatment. There are no significant differences among like-lettered treatments by Sidak test.

	$/container (includes oats at $1/kg strychnine)	container size (g)/ bait treated (g)	bait per hole (g) at high rate	$ per hole	holes per 1600 m^2	holes per acre	$ per acre
2% Liquid Strychnine Concentrate	14	1000	15	0.21	5.25	63.23	13.28
Burrow oat bait	178.3	20000	15	0.13	3.34	63.23	8.46
ZP Rodent oat bait AG	145	20400	15	0.11	2.67	63.23	6.74
Rozol RTU Field Rodent Bait	224	9071.85	14	0.35	8.64	63.23	21.86
Ramik Green	130.07	10000	15	0.20	4.88	63.23	12.34

Table 1: Application costs comparison calculation for the registered Richardson's ground squirrel control products tested. Rozol and Ramik can require multiple applications. Costs are per application.