



---

## **Interim Project Update for the BC Cranberry Marketing Commission – November 19<sup>th</sup>, 2020**

**Project Title:** Non-chemical vole control in berry fields

**Commission Research Priority addressed is rodent control.**

Specifically testing a new method to control voles in berry fields. It will record the number of voles killed and will be implemented as part of a wider monitoring scheme for vole presence and damage in the Fraser Valley.

The overall objective is to help Fraser Valley berry growers and other agricultural sectors improve crop production and efficiency in an environmentally sustainable manner.

**Project Duration: May 1<sup>st</sup>, 2019 through May 1<sup>st</sup>, 2021**

**Year 1 May 2019 – May 2020**

**Objective:**

- 1) Asses the effectiveness of using non-toxic, instant kill, self-resetting bolt traps versus rodenticide for vole control in berry fields. The relative cost of the traps, and risks to non-target wildlife will also be evaluated. We will recruit three or four growers (one of which will be a cranberry grower) to participate in this two-year pilot project.

**Activities:**

- Identify 3-4 farms to conduct pilot project assessing instant kill bolt traps. Initiate trials on bait lures on 2 farms to evaluate effectiveness of different lures.
- Based on outcomes from lure trial, start pilot project assessing the instant kill bolt traps on participating farms.
- Wrap up first year of pilot project assessing the instant kill bolt traps on participating farms, analyze data and provide summary for BC Blueberry Council and the BC Cranberry Marketing Commission.
- Present initial results from pilot project at the BC Blueberry Council and BC Cranberry Marketing Commission education days.



---

**Results to date:**

**Goodnature instant kill bolt trap trial**

From November 2019 to June 2020, the bolt traps were trialled in three blueberry and two cranberry fields. The traps were monitored with Bushnell trail cameras and refilled with lure and checked bi-weekly.

We trialled various set-up designs for the bolt trap. Based on video footage of voles inspecting the traps (n=5) the best trap set-up is to place the trap 2-3 cm (~ 1 inch) above ground or use the Goodnature trap stand that places the trap on a 45° degree angle (Figure 1 and 2).

The results to date have shown that the Good Nature lure developed for rats has not attracted the voles to the traps. However, it successfully trapped a roof rat in a blueberry field. We had some success using peanut butter as a lure and trapped two voles at a cranberry farm where we did a two-week trial in May. After trialling traps for two weeks in May at Golden Eagle Farms in Pitt Meadows, we discovered that peanut butter, or other food attractants were not a viable option because of the presence of black bears. Having learned from these outcomes, and from reviewing camera footage showing non-target species such as deer mice and songbirds being attracted by the food lures, the pheromone lure for the bolt trap seems to be the most viable option. Notably, our trigger camera captured substantially more deer mice running inspecting the traps (n=37) versus voles (n=7). This highlights the importance of farmers being able to decipher the difference between the two rodents, as deer mice do not cause damage to berry bushes.



**Figure 1. Bolt trap placed above entrance to vole tunnel in blueberry field ~ 2-3 cm above ground.**



**Figure 2. Video footage showed that the Goodnature trap stand which places the trap on a 45° degree angle made it easier for the voles to investigate the trap.**

Prior to the COVID-19 outbreak, we were in the process of testing whether sex pheromones would be a potential lure to attract voles to the traps as this has been a successful lure for attracting rats and mice to snap traps. Elena Varner, a PhD student in the Gries lab at Simon Fraser University (SFU), is collaborating with us on this component of the project. She and the Gries lab have worked extensively on food and pheromone lures to attract rodents to traps. She joined specifically to provide guidance on the methodology for field testing the instant kill bolt trap with different lures. To test this, we were collecting soiled bedding from captive male and female voles, and Elena was going to analyze the bedding samples using gas chromatography-mass spectrometry to confirm that male and female sex pheromones were present in the bedding. Due to the COVID-19 outbreak we have not been able to analyze the samples at SFU. As of October 2020, Elena has access to her laboratory again, and we will be able to continue this component of our project. However, we were not able to complete our initial field season and we are now partially through our second season, placing us behind schedule. As a result, IAF has granted us a project extension to March 2022, so that we have an additional field season to test the bolt



---

trap. We are asking if the BC Cranberry Marketing Commission would also grant us the same extension to complete this component of the project.

On a related note, two of the three blueberry farmers participating in the bolt trap trial were applying an indoor-use only second generation rodenticide in their blueberry fields. Hombre (active ingredient: difethialone) is an indoor only product due to its persistence and high toxicity. One of the farmers had been recommended the product by a berry consultant specializing in pruning berry bushes, and the other farmer purchased it from a local feedstore. This unfortunately demonstrates that there is still a need to ensure that berry consultants and stores supplying rodenticide products are recommending the appropriate products to farmers.

Cranberry specific engagement:

To date we have tested bolt traps at two Cranberry farms: Golden Eagle Farms (Pitt Meadows) and Glen Valley Cranberry Farm (Fort Langley). We will re-engage the growers this winter to test the pheromone lures.

**Objective:**

- 2) Incorporate vole monitoring as part of the pest services provided to farmers. In collaboration with ES Crop Consult, test vole monitoring protocol in the field and provide guidance on how to refine monitoring and associated management guide.

**Activities:**

- Collaborate with ES Crop Consult on the field vole monitoring protocol and assess its utility as part of their field monitoring services.
- Summarize results and compile feedback on the utility of weekly field monitoring for field voles as part of the pest monitoring services provided by ES Crop Consult.

**Results to date:**

Applicable to all sectors

The spring/summer 2020 was the second season ES Crop Consult used the field vole monitoring protocol and management recommendations document as part of the pest monitoring services provided to growers. The protocol recommends BMP actions if the scouts document more than four berry bushes with apparent vole damage. The field scouts also count the number of vole holes in fields in the spring (April) and in the fall (September) to compare relative difference in vole holes through the season as an index of vole abundance, keeping in mind that vole abundance tends to increase in the late summer/fall when young voles are dispersing. ES





---

Crop will inform growers if there has been a change in abundance at the end of the season. This season there was no significant increase in vole activity and/or damage. Typically, in August, scouts will see voles running into their fresh holes, but none were documented this year. Management recommendations to reduce vole abundance was only provided to three growers.

#### Cranberry specific engagement

On August 14, I met with Rene Prasad at the Cranberry research farm. Among other things we discussed how vole damage in cranberry fields manifests itself. I also will be meeting with Heidi Van Dokkumburg to better understand how vole damage manifests itself in cranberry bogs and develop a cranberry specific vole monitoring protocol.

#### Objective:

- 3) Increase berry growers, pest advisers, retailers and other agricultural sectors knowledge of best management practices. These include: *Best Management Practices (BMP)*: [Minimizing vole damage](#), [Using rodenticides](#), [Barn owls as a pest management ally](#) (Hindmarch 2016), as well as the pending BMP for controlling commensal rodents on farms.

#### Activities:

- In conjunction with advisory team, develop content for general outreach video on BMPs for controlling commensal rodents on farms; identify next steps to produce videos.
- Confirm contract with video producers and finalize script.
- Find appropriate site(s) for shooting videos and start filming at identified sites.
- Complete shooting for outreach video on BMPs for controlling commensal rodents on farms and begin postproduction.
- Finalize video on BMPs of commensal rodent control on farms and disseminate to various groups.
- Consult with Pest Management Regulatory Agency and pest management advisors during the project.
- Arrange and hold workshops, individual meetings with pest management advisors and retailers on BMPs for rodenticide usage on farms.
- Present videos and fact sheet information at BC Cranberry Marketing Commission and BC Blueberry Council education days and other agricultural sector meetings.
- Produce articles and newsletter for berry growers' interest organizations on fall and winter field preparation to control for voles, and on barn owls as a pest management ally in vole control.
- Attend the Pacific Agricultural Show with outreach booth on the project.



- 
- Create press releases and engage media for stories on the project goals (to Country Life, regional newspapers,) and other relevant agencies.
  - Compile findings and report for IAF and partners. Post summary and relevant information links on the Fraser Valley Conservancy's website and various agricultural interest organizations such as the BC Blueberry Council, BC Cranberry Marketing Commission, and the Delta Farmland and Wildlife Trust.

**Results to Date:**

Benefits to all sectors

The three outreach videos on BMPs for controlling rats on farms are completed.

The videos cover the topics of identifying and preventing rats from establishing themselves on the farm, various trapping options and correct and effective rodenticide application. The videos are currently posted on [the Barn Owls BC](#) and [the Stewardship Centre of BC](#) websites, and will shortly be posted on the Fraser Valley Conservancy's website. As part of our outreach, the videos will also be shown at various agricultural sector meetings in the fall and promoted to various agricultural organizations.

On June 11, I presented on effective vole control in berry fields for the BC Young Farmers webinar. As a result of finding farmers using indoor-use only products in their fields, I have also connected with Terra Link and other suppliers on the correct and effective use of rodenticides. I plan to attend the online BC Blueberry Council Virtual Field Day and AGM on December 9-10.

Country Life featured an article about the bolt trap trial in their December 2019 issue:

[Preserving owl, bat habitat good for farming](#)

The Fruit & Vegetable Magazine featured an article about the bolt trap trial in their May 2020 issue:

[Poison-free vole control](#)

**Objective:**

- 4) Engage "champion" berry growers, who will adopt BMP for vole management on their farms, and so, demonstrate the benefits to other growers.

**Activities:**

- Engage up to 8 individual berry farmers to adopt BMPs for vole control and install barn owl boxes on their farms.
- Monitor previously installed (2017/2018) barn owl boxes on berry farms to assess uptake and breeding success in occupied boxes. Survey farmers for anecdotal evidence of reduced plant damage in their field.



---

## Results to Date:

### Overall project engagement

This past year, we installed 16 barn owl nest boxes (Figure 3). We are excited to have a waitlist of farmers interested in participating and install an owl box as part of their IPM for vole control. Due to COVID-19, box installations have been occurring more intermittently and are currently on hold as a result of the new Provincial COVID-19 restrictions. This spring we surveyed previously installed barn owl pole boxes and found four successful active barn owl nest sites in Abbotsford, Langley and Surrey. [Click here for video of 4 young owlets in nest box May 20, 2020.](#)



**Figure 3. Barn owl nest box installed at Dave Sangha's farm in Abbotsford. Dave is very interested in exploring alternatives to rodenticides for controlling voles. He also wants to participate in the bolt trap trial this fall. We hope a barn owl pair or two will find the boxes we installed on his 20-acre farm.**

### Cranberry specific engagement

We reached out to cranberry growers, and we have been in contact with Renee Prasad, Grant Keefer and Mike Wallis regarding installing a barn owl pole box at the BC Cranberry Research Farm in Delta. On August 14<sup>th</sup> Renee Prasad and I met at the Cranberry Research Farm and identified a suitable location for the nest box. The box is ready for installation, pending the confirmation of a date with Grant and Mike. Golden Eagle Farm in Pitt Meadows has ordered five barn owl boxes which are ready to be installed, (four outdoor pole boxes, and one indoor box). Installation is pending based on weather and COVID-19 restrictions, but we are hoping to install the boxes in the next couple of months.