

Sniffing out trouble — canines trained to detect clubroot in the field

Josie and Adi blaze new path for quickly determining if a field is infected with the devastating canola disease

by Alexis Kienlen

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Any dog lover knows that dogs can do amazing things. Add to that list the ability to detect clubroot in canola.



Bill Grimmer, a dog trainer from New Brunswick, walks with Adi while the Goldendoodle sniffs out clubroot in a canola field.

Photo: Morton Molyneux

“The idea behind using dogs as detectors has been around for quite a long time. Using them to detect crop diseases has been around for the last five years or so,” said Michael Harding, plant pathologist with Alberta Agriculture and Forestry.

Last spring, Harding got a cold call from a dog trainer in New Brunswick wanting to connect with a plant pathologist to see if dogs could be trained to detect crop diseases.

After some discussion, he and two trainers from Grimmer’s Canine College in Shediac, New Brunswick, Bill Grimmer and Mario Bourque, agreed to conduct a trial on clubroot. Four dogs — all young with high energy and eager-to-please dispositions — were selected and trained using clubroot galls.

“They started doing the clinical training to teach the dogs to alert them when and where they detected the clubroot gall,” said Harding. “The dogs are smelling these things all the time anyway. The trick is just getting them to alert you when they smell what it is you want to detect.”

Once the dogs were trained to the scent indoors, the training moved outdoors, a much more challenging environment because of all the visual, auditory and scent distractions.

“After a couple of months of clinical training indoors and outdoors, they were ready to be field tested,” said Harding.

Funding was an issue but was resolved when Harding connected with Ken Coles, general manager of Lethbridge’s Farming Smarter, who secured a Canadian Agricultural Partnership grant.

In October, the trainers and dogs landed in Alberta and visited four canola fields — two in the southern Alberta brown soil zone, and a pair in the black soil zone near Edmonton. The dogs selected for the project were two-year-old Josie, a German shepherd, and Adi, an eight-month-old Goldendoodle rescued from the humane society.

“When the trainers were here, they showed us using their clinical training aids that the dogs were able to detect clubroot,” said Harding. “They have trained the first two dogs in the world that can detect clubroot by scent.”

Dogs will alert by barking, putting their nose on the infected canola plant, or by digging. It was surprising how quickly the dogs were able to master the task, said Harding.

“The dogs came from New Brunswick, and had never set foot in a canola field before and there were a few distractions, like gophers.”

While Adi and Josie are good examples of “working dogs,” almost any breed could be trained to do this, said Harding.

“Some dogs have some advantages when it comes to scent detection,” he said. “All dogs have the capacity to do this. It’s just a matter of rewarding the behaviour that you want.

“You could as easily train a chihuahua or a Great Dane but we’re looking for dogs that can move through fields easily and be easy to transport.”

The trainers put GPS collars on the dogs, so they could map the fields and see where the dogs stopped. The results can then be mapped and shown on an iPad.



Josie, a two-year-old German shepherd, scouts for clubroot during a research project. Josie is one of two dogs trained to detect clubroot. photo: Morton Molyneux

There are several advantages to using dogs to sniff out clubroot. First, it’s quicker than having a person walk a field looking for stunted or damaged plants, and then digging them up to see if they have galls. It might also be a way to detect the presence of the disease when an infestation is at a very early stage.

Then there’s the cost factor.

“Once you’ve borne the upfront cost of the dog, it’s not that expensive to keep a dog around, compared to what it costs to provide salaries and benefits for employees who are doing scouting,” noted Harding. “You could add multiple inspectors to your inspection crew and not have it be as financially onerous if you were going to add human inspectors.”

While some canola producers might like to train their dogs to do early identification of clubroot, another option is for individual counties to train dogs in order to beef up their level of scouting. Dog trainers might also want to add clubroot detection to their roster of services.

“This was a research project to determine feasibility and so our part in it is done,” said Harding. “If there is something valuable that the industry is going to run with, we hope that this is the case.”

There are skeptics who don’t believe the industry will be keen to adopt sniffer dogs, but Harding has ideas for additional studies to build on this first successful trial.

“We’re wondering if it’s possible to teach dogs to detect resting spores in the soil,” he said. “What if we could train them to detect spores above a certain threshold in the soil and then they could scout equipment to determine whether it was clean or needed to be washed?”