

RESEARCH TARGETS MULTIPLE STRATEGIES AGAINST PEA ROOT ROT

By planting varieties with some degree of resistance, growers can stay a step ahead. Agronomic tactics could also play a role. Here's a look at ongoing root rot work.



Peas showing symptoms of root rot.

It's too early to say that science has *Aphanomyces* on the run, but research continues to build a vital knowledge base and a toolkit for growers.

Dr. Syama Chatterton explained that growers and scientists first came face to face with this causal agent of pea root rot in 2012-13. Plant damage was different and more extensive than the accustomed causal agent, *Fusarium*.

"We spent the first five years doing surveys on the distribution of *Aphanomyces* across the Prairie provinces," said Chatterton, Plant Pathologist with Agriculture and Agri-Food Canada in Lethbridge.

"Since 2018, we're focusing more on management and breeding."

Management: intercropping, pulse substitutions. Chatterton's heard a lot of buzz about intercropping as a means of managing pulse disease. The idea is that glucosinolates from the roots of a *Brassica* crop (canola, mustard) could act as a biofumigant to keep disease down in the roots of its companion pulse crop. Chatterton has put this idea to the test, planting intercropped peas/canola and peas/brown mustard.

"Our last two years haven't been very encouraging," she said. "Where sites already have high root rot – and that's all of our sites – intercropping isn't

making a difference on the root rot level of the peas."

If you like peas in the rotation but are concerned about root rot, could a resistant pulse take the place of peas for a turn or two? With funding from the Canadian Agricultural Partnership AgriScience Program, Chatterton is continuing to study whether and how chickpeas, soybeans and faba beans reduce the level of root rot inoculum in the soil. She'll build a case over the next few years.

Breeding: cross-province effort lays the foundation. Chatterton and Saskatchewan colleagues have divided up field research into two root rot causal agents. Chatterton is covering *Fusarium* and the Saskatchewan team is handling *Aphanomyces*. The goal is to identify registered pea germplasm lines with some resistance to *Fusarium*, *Aphanomyces* or ideally both, and move that resistance into Canadian-adapted lines. It's a complex effort, one that will continue in 2020 and beyond.

"We spent most of 2019 looking at different methodologies for screening lines," Chatterton said. "The traditional screening method is to soak the seeds in inoculum, but we find that most lines just die that way. We've looked at other methods where we can grow the plants out, so they're a little bit older, then add inoculum so you get the right amount of disease without killing the plant."

For Chatterton, this is part of her broader effort to ensure that pulses are a steady or expanding part of Alberta crop rotations.

"I love working on pulse crops because I think they're so important to our sustainable agriculture system," she said. "One of the challenges is that they're susceptible to a fair amount of disease, yet there hasn't been as much disease research as in other crops. I feel this research is essential for growers to continue to want pulses in their rotations."