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CASE STUDY

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Growers have the tools to manage fungicide resistance in pulses

As pulse acres continue to rise in Canada to meet growing consumer demand, both domestically and in export markets, farmers need to be mindful of issues that come with increased production, including fungicide resistance.

According to Robyne Bowness Davidson, pulse research scientist with Alberta Agriculture & Forestry in Lacombe, Alberta, since 2003 many farmers have been protecting their crops from disease with strobilurins or Group 11 fungicides.

Resistance to strobilurins was first observed with *Ascochyta* on chickpeas, which are typically sprayed five to seven times following early flowering to protect the crop against the yield-robbing disease. The cultural practice of spraying the fungicide in chickpeas moved over to field peas, and, as acres have risen, so has the use of strobilurins.

Trials confirm fungicide resistance in field peas

Bowness initially discovered resistance in field pea across multiple sites in Alberta and Saskatchewan during a three-year research study between 2010 and 2012. Testing of 320 samples confirmed *Mycosphaerella* fungicide resistance to a strobilurin in 19 samples.

The good news for farmers is that there are alternative fungicide groups to manage resistant pockets of *Mycosphaerella* in pulses, such as Group 3, Group 7 and Group M.

“My first response was, ‘I’m sure glad we’re finding results’ and the other side was, ‘here we go,’” she says. “I wasn’t surprised because we’d seen it in chickpeas — the resistance can become a problem very quickly if fungicide use continues.”

The main issue with *Mycosphaerella* being resistant to strobilurins is how destructive the fungus can be, especially in years where there is excessive moisture and rain events. “It’s very weather reliant: in a dry year you won’t see it as much, but in a wet year, it’ll reduce yield by 50 per cent in a really bad case,” explains Bowness.

The mode of attack for *Mycosphaerella* is from the ground up. First, it goes after the stem, which, in pulse crops, can be devastating due to pre-existing issues related to standability. “If you get *Mycosphaerella*, it just flattens it and it attacks the lignin, the fibre, the strength of the stem.”

When pulse crops go down, it makes it that much more challenging for farmers to manage since they have to combine that much lower to the ground, introducing the risk of picking up rocks and dramatically slowing down harvesting speeds.

Best management practices to manage disease

Bowness is confident that farmers will continue to successfully manage the fungus and work around resistance through simple cultural practices, attentive spraying and weather monitoring.

“Make sure you treat your seed and do not use bin-run seed from three years ago that has poor germination and low vigour,” she says, adding that having a one-in-four pulse rotation will help break up and naturally manage weeds. Beyond that, Bowness encourages farmers to have seed treatments in place if planting into wet soils, inoculate and make sure the cleanest, most well-drained fields are being used, in conjunction with a pre-seed burn down.

Still, Bowness knows that fungicide application is likely what will work best on Prairie farms. However, the keys to success are timing, monitoring predicted rain events and multi-modes of action.

“Strobilurin fungicides will work well for managing *Mycosphaerella* in cultures that are still responding, so use multi-mode fungicides. Don’t spray for no reason because every time you spray you’re increasing the risk of fungicide resistance,” she urges. “And if you go in a second time to spray, use something totally different.”

Multiple modes of action available for pulses

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Although moisture has increased overall in the last 15 years on the Prairies, recent years have been dry, which Bowness feels is reason to not spray at all, saving a farmer anywhere from \$10 to \$15 an acre, which can add up to quite a bit of savings when talking about large agricultural operations.

“First of all, scout your fields,” she says. “If you’re not seeing disease and not a lot of wet weather coming, you’re not dealing with a canopy with a high risk of infection, just put it off, come back seven days later and take a look again.”

If wet weather is on the horizon, it’s worth it to spray, however, there’s a likelihood that a farmer will have to spray again. Optimal timing would be early- to mid-flowering or in late-flowering if excess moisture is being predicted. Farmers must also be mindful of not spraying within 30 days of harvest to maintain safe residue levels.

Above all, Bowness believes that despite the issue of fungicide resistance in pulses, the tools are in place for farmers to manage it successfully.

“It’s not doom and gloom at all. The resistance issue in peas is not out of hand. We have tools in our toolbox that are controlling it quite well. And farmers for the most part are using those tools quite well,” she says.

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