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Leafcutter or Honeybees?

One bee doesn't fit all jobs

Which one to choose for optimal pollination? Usually it's both

by Barb Glen Lethbridge Bureau

The distance a honeybee will fly to gather nectar or pollen is an important factor in crop economics. It dictates the number of hives needed to ensure successful pollination of seed canola crops and also has implications for optimum hive location. Sam Robinson, a PhD student at the University of Calgary, is studying that distance and has based his work in southern Alberta, where most of Canada's seed canola is grown.

"Say there's a Tim Hortons near to you but you know that the lineup is very, very long," said Robinson in describing his research. "It might be worth your while to go a little bit farther. Or another sort of interesting analogy is how far do you go for gas? If you live in Lethbridge and gas is five cents cheaper out in Coaldale, is it worth your time and effort to go out there? And this is a question that honeybees and other types of foraging social insects have to ask themselves when they go out and forage…. That plays into how far they should go into a field."

Robinson discussed bees and crop pollination July 28 at a Farming Smarter plot hop. He said both honeybees and leafcutter bees are important for seed canola and alfalfa crops because of the species' different habits and strengths. Leafcutter bees tend to remain within 100 metres of their shelters, but honeybees will fly two kilometres or more to find either pollen or nectar. However, that depends on how much is available nearby and the level of competition to claim it. "It's kind of a tradeoff of how many honeybees we should have versus how many leafcutters" to adequately pollinate a crop, said Robinson.

"In a single trip, a honeybee typically either gathers only pollen or nectar. You can see why that might be a problem when you want them to go to both types o f f l ow e r s (ma l e a n d f e ma l e canola plants.) "You want them to jump back and forth. Often they don't. But if you put enough bees in a field …that actually will go on." In terms of pollen gathering efficiency, Robinson said leafcutters are superior because they carry material on their fuzzy bellies. Honeybees clean themselves and carry pollen on their legs. "Per visit, leafcutters are actually far superior to honeybees," he said. "The only problem with leafcutter bees is they're very expensive and they also don't travel as far as honeybees." How expensive? Robinson said it costs about $100 for a gallon of leafcutter cocoons and two gallons per acre are needed for optimum pollination. That's a cost of $32,000 per quarter section. As for honeybees, beekeeper contracts with seed companies vary, but Robinson said about $170 per hive is common and one hive per acre is needed for best results. That's another $27,200 per quarter. However, foregoing pollination is not an option on seed canola. "If there are no bees or no leafcutters, then there's no seed made. That's not debatable." However, the value of bee pollination on commodity canola is less clear. Robinson said some research indicates older canola varieties in particular benefit from pollination, though the relationship is less clear for newer seed varieties. Other studies suggest canola seed size or number of seeds per pod is higher in fields near hives but whether that contributes significantly to yield is another question. "There's certainly not really a downside to having bees on your field," said Robinson.

As for native wild pollinators, he said there are many and they should be encouraged. "If people are interested in cultivating or in promoting wild bees on their farm, maybe think about if you have a pivot

and the corners are just bare, maybe think about keeping wild grass there, or maybe not mowing down the flowers in the ditches too often during the spring at least, when they're building up their brood stock.