

Tillage, Harvest and Residue Management Practices



Many Alberta farmers, even the most committed zero-tillers, want better ways to manage crop residue before it can hinder the following year's crop. It's time to solve this.

It's no secret: today's Alberta crop producer tills his or her land significantly less than the previous generation. Advances in seeding equipment and pest control technology played a major role, along with the desire of producers to improve the quality of their soil and retain moisture.

While this revolution in practices answered many farmers' agronomic needs, it also raised what has now become an urgent question: what do you do with all the crop residue that used to be worked in or burned?

Fairview, Alta. consulting agronomist Jason Casselman sees his clients struggling with this issue. He registered their concern, and his, at the ACIDF Cropping Initiatives Issues/Solutions Session he attended.

"In my work with farmers, a lot of the time when a crop is harvested, it spreads residue out the back of the combine," says Casselman. "At that point, they have to figure out how to deal with it, either through the use of harrows or a tillage pass."

Often, residue is spread unevenly, with greater concentrations 10 ft. to 15 ft. on either side of the combine. With any luck, the producer's post-harvest residue management practices do the trick. If not, next spring, the farmer could be seeding into thick residue that's unevenly distributed across the field. That's no fun, and it's no way to get a healthy, uniform plant stand either. The farmer could end up managing an unevenly staged crop all season long, with significant weed issues as well.

In Central Alberta, according to Kevin Bender, this same issue is very much on producers' minds.

"In this area, there's a lot of interest in residue management, especially in a direct seeding operation," says Bender, who farms near Bentley and is Director-at-Large with the Alberta Wheat Commission. "If we get a large amount of canola stubble, especially if the crop was lodged, it can be difficult to deal with the next spring."

He knows producers who've experimented with stripper headers or disc-drill operations. Others rely on heavy harrow operations, either post-harvest or the following spring, to try to get crop residue under control or at least more evenly distributed. The time available for harrowing in the fall is limited, and of course, the same can be said for the spring. What's the best method, and when should you do it?

Says Bender: "It's also the question of, how much tillage do you want to be doing, before you're compromising the soil. There are a number of issues there that we could be addressing."

Tillage, Harvest and Residue Management Practices ranked high in the minds of farmers and agronomists as an issue that must be explored. In some areas, growers also grappled with the issue of how tillage could work best with problem (e.g. solonchic) soils.

Having seen the benefits of reduced, minimum or zero-tillage, most Alberta farmers aren't looking to go back. Still, as many expressed at the ACIDF Cropping Initiatives Issues/Solutions Sessions, these new-school farming systems need a rethink in terms of residue management.

“To me, the reason for tillage is to fix a problem,” Casselman says. “Whether it’s for weed management, drainage or some other issue, I’d like to see us fix the problem at the source. The ideal is to harvest a field in the fall, get the residue spread evenly, with good drainage, setting you up for seeding the next spring. I just don’t think we have all the necessary pieces in place yet to do that.”

Tillage, Harvest and Residue Management Practices

Issues identified by stakeholders

- need to compare varying levels of tillage intensity, acknowledging crop rotations
- incorporating tillage into a zero-till system
- advantages and disadvantages of straight-cutting canola
- managing residues in seed beds
- nutrient effects from residues and cycling
- harvest management (weed seed)
- soil biology of ultra-low disturbance systems

Tillage, Harvest and Residue Management Practices

Action items: what should be researched first

- develop a decision-making tool to assess tillage required to maximize crop production under varying crop residues
- re-define the meaning of zero-till, given practical farming realities
- cost/benefit analysis of straight-cutting canola
- strategies for better decision-making on equipment issues
- incorporating some tillage into a zero-till system.