

COVER CROPS

Some producers are trying to work cover crops into their no-till system. Where residue cover is consistently high, cover crops may simply not be necessary. They may overcomplicate the system because of the likely interaction with so many other system components (nutrient management, residue management, weed control, insect and disease management). However, where there is a need to add broadleaf or grass crops to the rotation or in areas where there is insufficient residue (on erodible soils), cover crops can be beneficial.

Cover crops can help to make a no-till vegetable system work. No-till in vegetables need a number of modifications to make it work, such as the use of cover crops in a partial or temporary no-till situation to create ground cover and wind strips around strip-tilled areas.

Vegetables are tricky but not impossible to work into no-till crop rotations.



Spring cereals used as cover crops can add to the soil protection potential of low residue crops.

Hort Tip

Use the low rate (0.75 to 1.25 L/ha) of Roundup on rye cover crops to get a slow kill. It could take up to three weeks for the cereal cover crop to die. Meanwhile, it has successfully protected the young tomato or potato plants from blowing soils, and won't require a separate application later in the spring.



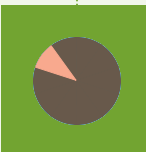
Some cover crops can become a weed management problem if not properly killed.



Cereal strips in tomatoes provide additional erosion protection.

Jack Rigby of Kent County has these tips:

- don't disk wheat stubble because it makes the soil too rough
- keep red clover in the rotation, but manage with care.



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OPPORTUNITIES AND CHALLENGES

OPPORTUNITIES	CHALLENGES
<ul style="list-style-type: none"> • provide additional erosion protection if crop residue is limited 	<ul style="list-style-type: none"> • the dense mat of cover crops may require further residue management
<ul style="list-style-type: none"> • provide food and cover for earthworms, soil microbes and wildlife over the winter 	<ul style="list-style-type: none"> • provide food and cover for insect pests such as slugs
<ul style="list-style-type: none"> • non-legume cover crops convert nitrogen from inorganic to organic, delaying it from leaching 	<ul style="list-style-type: none"> • can tie up available nutrients and cause deficiencies early in the season
<ul style="list-style-type: none"> • legume crops can provide substantial amounts of nitrogen to the following crop 	<ul style="list-style-type: none"> • match nitrogen release to following crop requirement
<ul style="list-style-type: none"> • suppression of weeds 	<ul style="list-style-type: none"> • non-certified or improperly cleaned seed can be a source of weed seed
<ul style="list-style-type: none"> • add organic matter, improve soil tilth and prevent crusting 	<ul style="list-style-type: none"> • some residues may be allelopathic, i.e., impede healthy growth of following crop, e.g., cereals
<ul style="list-style-type: none"> • decaying roots add macropores, improving water infiltration and soil aeration, thus reducing runoff and erosion caused by water 	<ul style="list-style-type: none"> • macropores can provide speedy route for pesticides, manure, bacteria and nitrates to field drains
<ul style="list-style-type: none"> • can speed spring drying on wet soils that have poor or restricted internal drainage 	<ul style="list-style-type: none"> • can deplete soil of valuable moisture reserves in a dry spring
<ul style="list-style-type: none"> • residue can keep soil cool in early summer, reducing moisture loss and organic matter oxidation, while providing a great environment for root growth and microbial activity 	<ul style="list-style-type: none"> • shade the ground and can restrict soil warming in early spring; can also keep soil too wet, delaying drying
<ul style="list-style-type: none"> • can remedy compaction 	<ul style="list-style-type: none"> • can become a weed management problem if not properly killed
<ul style="list-style-type: none"> • provide opportunity for trapping nutrients from manures 	<ul style="list-style-type: none"> • timing of nutrient release with crop needs



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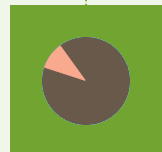
When selecting cover crops in no-till, ask yourself the following:

- ☑ 1. **Do you need** the protection or the flexibility in the rotation?
- ☑ 2. **Killing of cover crop**
 - ▶ Does it die over winter?
 - ▷ or present a residue management or moisture problem in the spring?

Note: Cover crops should be killed at least two weeks prior to planting.
- ☑ 3. **Residue management**
 - ▶ Will it form a dense mat?
- ☑ 4. **Nitrogen management**
 - ▶ Will the crop add nitrogen (legume)?
 - ▶ Will it trap nitrogen and release it later in the season?
 - ▶ How will this affect interpretation of spring nitrate results and timing of nitrogen application?
- ☑ 5. **Weed control**
 - ▶ Will it become a weed?
 - ▶ How much weed control does it provide?
 - ▶ Will the spray program need to be adjusted?

Note: Cover crops will not provide complete weed control in no-till.
- ☑ 6. **Insects and diseases**
 - ▶ Does the cover crop carry or encourage insects or diseases which may affect subsequent crops?

For more information regarding cover crop management, see OMAFRA *Publication 296*.



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TROUBLESHOOTING

PROBLEM	POSSIBLE CAUSES	BEST MANAGEMENT PRACTICES & TIPS
POOR CROP PERFORMANCE WHEN CORN OR SOYBEANS FOLLOW CANOLA	<ul style="list-style-type: none"> • canola inhibits mycorrhiza populations 	<ul style="list-style-type: none"> • grow cereals after this cover crop
DROUGHTINESS	<ul style="list-style-type: none"> • cover crop overwinters, is not killed or reseeds to compete with crop 	<ul style="list-style-type: none"> • select cover crops that are killed over winter • select proper burndown product • try inter-row cultivation or post-emergent treatment (See <i>Publication 75</i>)
MATTED VEGETATION <ul style="list-style-type: none"> • keeps soil wet 	<ul style="list-style-type: none"> • cover crops with excessive top growth • improper burndown treatment 	<ul style="list-style-type: none"> • select more suitable cover crop • crop-row pre-tillage • use 3-coulter system • combine above with additional burndown treatment
COVER CROP BECOMES A WEED IN THE CROP	<ul style="list-style-type: none"> • poor timing or choice of burndown 	<ul style="list-style-type: none"> • kill the cover crop early • select the appropriate herbicide to kill the cover crop



Make sure cover crops are dead at time of planting.



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