

# How Cover Crops Can Impact Your Cash Crop



## Highlights:

- We looked at five different cover crop species with two termination timings to learn how they impact the following cash crop stand count.
- There was a lot of variability between different cash crops, the cover crop species, and whether cover crops were fall or spring terminated.
- Several cover crops led to a higher stand count compared to a control with no cover crops, indicating no negative impact of using cover crops

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## Cover Cropping

Cover cropping is a beneficial management practice (BMP) that has been around for decades. A cover crop is a crop that is planted with no intention of harvesting. It is in place to protect the soil by covering it while it would otherwise be bare. This can reduce erosion but there are many other benefits that can be gained by incorporating cover crops into a rotation. What soil issues you're looking to address can determine which species or mix of species you chose to plant.



*A clover cover crop growing in winter wheat stubble.*

Some of the benefits that cover crops can provide in addition to reduced erosion are:

- Improved nutrient cycling
- Increased soil biology
- Increase carbon sequestration
- Improved soil physical characteristics such as compaction
- Weed suppression
- Interruption of disease and pest cycles
- Support for biodiversity
- Improved farm economics (e.g. through reduced fertilizer)

Even with these well-known benefits, the percentage of farms incorporating cover crops is still very low. In a survey of NS farmers, some of the top reasons given for not adopting cover cropping were

the cost, lack of knowledge around which cover crop to use and when to plant them, and not seeing it in other farms in the area.

To address these concerns, the Living Lab – Nova Scotia is testing different cover crops following winter wheat, which is a common crop to include in rotation in this region. The Living Lab project is looking at how different cover crops impact carbon sequestration, greenhouse gas emissions, soil health, crop yield and quality, pest and diseases. In this research brief we are looking at how different cover crops impact the stand count of the following cash crop.

## How we measured cash crop stand count after cover crops

Stand counts were taken at six farms in 2024 and 2025. Cash crops that followed cover crops were corn (three farms), carrots (two farms), and soybeans (one farm). At each farm in one field there were five cover crop treatments planted in approximately 5 m x 60 m strips. There was a control, which had wheat stubble and volunteer weeds, double cut red clover, single cut red clover, oat and peas, and mustard (Table 1). In the soybean cash crop the mustard was removed and replaced with fall rye because there are other brassica crops in that rotation and there was a concern about increasing brassica pest populations.

Table 1. Cover Crop species and termination methods.

Abbreviation	Cover Crop	Fall Termination Method	Spring Termination Method
Control	Wheat stubble/volunteer weed control	Herbicide in Oct/Nov	Herbicide in April
DCRC	Frost-seeded double-cut red clover	Herbicide in Oct/Nov	Herbicide in April
SCRC	Frost-seeded single-cut red clover	Herbicide in Oct/Nov	Herbicide in April
O&P	Oats and peas no-till drilled	Herbicide in Oct/Nov	Frost killed, residue left
Mustard	Brown mustard no-till drilled	Herbicide in Oct/Nov	Frost-killed, residue left
Fall Rye	Fall Rye no-till drilled	Herbicide in Oct/Nov	Herbicide in April



*Corn in cover crop residue during stand count.*

In addition to type of cover crop we also looked at the impact of timing of termination. Half of each cover crop strip was terminated in the fall and the other half in the spring. All fall terminated cover crop treatments were terminated using herbicides. In the spring, red clover and the winter wheat control were terminated using herbicides. The oat/pea mixture and brown mustard were spring terminated by allowing them to winter kill.

Stand count was measured by counting emerging plants over a 1 m section of a row for corn and soybeans and 30 cm for carrots. This was done in each strip of cover crop three times. Those numbers have been scaled up here to be presented in plants/acre.

# How did different cover crops impact stand count?

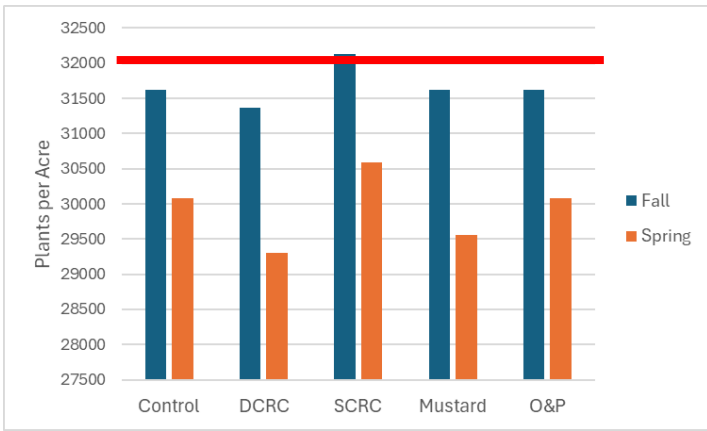


Figure 1. Average corn stand counts scaled up to plants/acre. The red line represents the target plant population. See Table 1 for abbreviations.

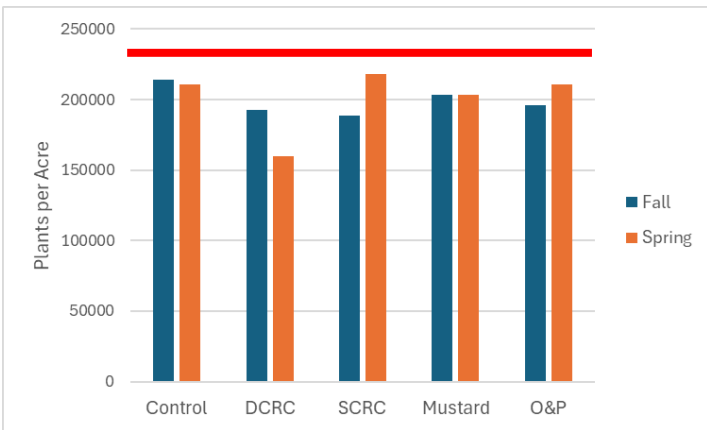


Figure 2. Average carrot stand counts scaled up to plants/acre. The red line represents the target plant population. See Table 1 for abbreviations.

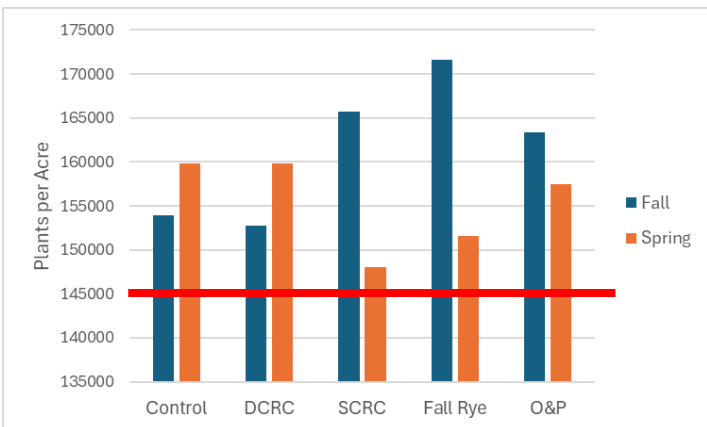


Figure 3. Average soybean stand counts scaled up to plants/acre. The red line represents the target plant population. See Table 1 for abbreviations.

In the corn cash crop, fall terminated treatments always had higher stand counts than the spring terminated (Figure 1). The target stand count for corn is about 32,000 plants per acre (marked by the red line on the graph). All treatments were below this line except for fall terminated single cut red clover. Even the control was below the target line. This could be due to field conditions or weather. Almost half the corn counts came from 2025, which was a very dry season with poor crop performance. There could be a slight advantage from the single-cut red clover for corn emergence.

For carrots, there were smaller differences between fall and spring termination compared to corn (Figure 2). Again, the highest stand counts were seen in single-cut red clover, but with the spring termination, unlike the corn. The target stand count for carrots is about 235,000 plants/acre. All treatments including the control were below this line. Since the control was also below the line, the cover crops did not show any negative impacts on stand count except in spring terminated double-cut red clover, which was the lowest value.

In soybeans, fall terminated single-cut red clover, fall rye, and oats and pea mixture had a higher stand count than the control (Figure 3). Spring terminated single-cut red clover and fall rye both had lower stand counts than that control. The target stand count for soybeans is 150,000 plants per acre. All treatments were above this line except for the spring terminated single-cut red clover.

When comparing across all three crops there is a variety of responses to different cover crops and different termination timings. Overall, there was not a negative effect on stand count when compared to the control with no cover crop.

## How Can This Research Be Used?



*Carrots during stand count.*

In all cash crops included in this cover crop trial, there were always cover crops that resulted in a higher or similar stand count to the control where no cover crops were used. There was variation in cover crop species and termination method. The many benefits known to be provided by cover crops combined with this information indicate that cover crops can work in many annual crop rotations in Nova Scotia.

Stand count is just one of the variables we are looking at in our cover crop trials. Stay tuned for data on soil health, pest populations, and much more. This data will help farmers see the overall picture and allow the best decisions to be made when deciding how and when to incorporate cover crops into a rotation.

## Want to Learn More?

For any questions on this research contact Alexandre Loureiro, our Living Lab Coordinator, at [aloureiro@nsfa-fane.ca](mailto:aloureiro@nsfa-fane.ca) or Caitlin Congdon, Field Crops Specialist at Perennia Food and Agriculture at [ccongdon@perennia.ca](mailto:ccongdon@perennia.ca).

Find out more about the Living Lab project at [nsfa-fane.ca/livinglabs](https://nsfa-fane.ca/livinglabs). Here you can find our other research briefs and additional information resources.



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