

Cover Crops and Inter-seeding

Which cover crops provide the best ground coverage? Which cover crops keep undesirable plants from growing while bolstering corn growth?

Ohio Learning Standards Emphasized: Biology – Cells (cellular processes); Physics – Waves (wave processes); Environmental Science – Earth’s Resources (ecosystems, soil and land), Global Environmental Problems and Issues (sustainability, food production and availability).

Background

Cover crops are used when a crop has been harvested from a field or as an aid to cover the ground in fields in between row crops.

Cover crop benefits include: soil erosion protection, reduced nutrient leaching, carbon sequestration, weed suppression and integrated pest management. Cover crops protect water quality by reducing losses of nutrients, pesticides and sediment.

<http://ohioline.osu.edu/factsheet/anr-57>

Many of the cover crop species may provide a few of the benefits described above, but it is unlikely a producer will see all of the benefits with a single species. For instance, some species like oats or radish can provide rapid growth and ground cover in the fall, but are killed by the cold winters in Ohio and provide limited soil cover in the spring. A species like cereal rye can establish well in the fall, and will survive the winter to provide soil coverage in the spring which can help reduce weed pressure. Clover cover crops are legumes, which means they can be used in some cases to act as a nitrogen source for the crop planted the following year. Often times producers will plant a mixture of cover crop species to provide a wider range of benefits and increase the likelihood of establishment.

However, farmers may choose not to use cover crops due to the additional labor and costs associated with managing the plants. Different considerations for management include when to plant or how to plant the cover crop, how to terminate the cover crop, and if using a cover crop will increase pest pressure in the future. Growers will often plant cover crops in the fall following wheat or soybean harvest, but cover crop use in corn has been more limited. A new technology that is under investigation is the process of ‘inter-seeding’ cover crops, which is a way of planting a cover crop early in the season to allow for faster establishment in the fall after the corn is harvested. Regardless of how they choose to plant, producers are interested to know how well their cover crop has established to help them to decide if this practice is working or needs to be re-evaluated in the future.

I. Measure the ground coverage of various cover crops

1. Download the Canopeo App to your Smart Phone or another handheld device.
-Create a new account if you have not used this app before.
2. Choose the camera.
3. Walk into the plot to the corresponding flag with your number, and place the PVC 0.25 m² quadrat on the ground so the short edges are touching the corn rows. Extend your arm out to your side, camera parallel to the ground, two feet above the canopy so that only the space between the rows is present. Take a photo.
4. Complete the table below with the percent cover you discovered. You may take a screen shot from the Canopeo app to use in your presentation.



United States
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COLLEGE OF FOOD, AGRICULTURAL,
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Percent Cover

Condition	Percent cover	Percent cover	Percent cover	Percent cover	Percent cover
	Group 1	Group 2	Group 3	Group 4	Group 5
corn + no cover crop (Trt 1)					
corn + legume cover crop (Trt 2)					
corn + grass cover crop (Trt 3)					
corn + legume + grass cover crop (Trt 4)					

II. Complete a quadrat study of .25 m² of the field.

1. Use the 0.25 m² quadrat for each identified space in the plots.
2. Count the number of different species and the number of each species in your quadrat. Repeat with two additional quadrats.

Species name	Qty in Trt 1	Qty in Trt 2	Qty in Trt 3	Qty in Trt 4

III. Compare weed biomass from each condition

1. Remove identified weeds from your sample. Prepare for determining mass by following the procedure below.
 - a. Cut or dig weeds from quadrat trying to remove as much of the root mass as possible using a hand trowel.
 - b. Brush off as much dirt from the weed root as possible using soft brush.
 - c. Put weeds in container.



2. Measure mass of samples from each condition.
3. Record data in data table.

Biomass

Sample	Trmt 1	Trmt 2	Trmt 3	Trmt 4
Cover crop				
Weeds				

Interseeder Demo, WARS 2017

