

Case Study: Using Crop Covers to Reduce Soil Erosion



A cover crop mix of oats, peas and radish can add and scavenge nitrogen, improve soil structure and suppress weeds.



Dan Veldman took over the Oxford County family farm 25 years ago. He is a second generation farmer, bringing on the third generation. The Veldman family runs a poultry operation and farm of 1,800 to 2,000 acres on a corn, soybean, wheat rotation.

Concerns:

Dan had traditionally used red clover to enhance soil health and reduce soil erosion; however, he was finding it tough to get a good stand over the entire field. Frequently, the clover was not establishing in areas of the field that could benefit the most from erosion control and a good wheat crop often resulted in a poor clover crop.

In addition to enhancing soil health and organic matter, the Veldmans were also looking to further reduce soil erosion in a way that would complement the various erosion control structures already implemented on their fields.

Solution:

Dan moved away from using red clover and began experimenting with multi-species cover crop mixes. The multi-species blend has resulted in a more uniform stand. Currently, cover crops are only planted following wheat harvest, but he and his children are educating themselves on how they can work cover crops into the rest of the rotation.

“[Cover crops] really play an important role in keeping our soil in place.”

Benefits:

The use of multi-species cover crop offers a variety of benefits to the Veldman farm. Cover crops work in combination with the erosion control structures to keep the top soil in place. They also increase the uptake of nutrients from surface-applied manure. Deep rooting cover crops help reduce soil compaction and improve soil structure.

Other benefits the Veldmans have noticed since using a cover crop include:

- Increased infiltration as the cover crop roots create pores, which enhance water movement
- Protection of water quality by reducing soil erosion and increasing uptake of nutrients
- Increased soil organic carbon and organic matter
- Increased crop yield

Experimentation:

The Veldman family has used a variety of cover crop species in different mixes over the last several years, with each species providing different functions and benefits to soil health. Below are a few of the species that have been used in the past. The family continues to experiment with cover crops, trying to find the right fit for their farm. Following the 2016 wheat harvest, they plan to plant a cover crop of sunflowers.

“Cover crops are part of our sustainability plan...[we need] to come up with what will work on our farm, in this area.”



A cover crop of field peas.



A mixed cover crop of oats and field peas.



A radish root from a cover crop of tillage radish.



"Sunflowers can also work well in a mixed cover crop."

Field Peas

- Grow well in cool conditions
- Terminated by hard frost
- Nitrogen fixer
- Decompose quickly
- Soil builder
- Weed suppression

Oats

- Establish quickly
- Frost terminated
- Nitrogen scavenger
- High biomass
- Limit soil erosion
- Weed suppression

Radishes

- Establish quickly
- Frost terminated
- Nitrogen scavenger
- Deep taproots can help alleviate soil compaction
- Weed suppression
- Nematode suppression

Sunflowers

- Establish quickly
- Frost terminated
- Fibrous taproots can scavenge nutrients deep in the soil
- High biomass
- Pollinator habitat