



Fine-Tuning Cover Crop Termination for Better Pest Management



Pitfall trap used to collect natural enemies.

By: Dane C. Elmquist

Cover crops are known to support populations of natural enemies—beneficial insects, spiders, and mites that feed on crop pests. These predators can help reduce the need for insecticides and contribute to more sustainable farming practices. However, cover crops can also create favorable conditions for some pests, like slugs, which may harm the following corn or soybean crop. The relationship between cover crops, pests, and beneficial natural enemies is complex and not yet fully understood, (continued on page 2)

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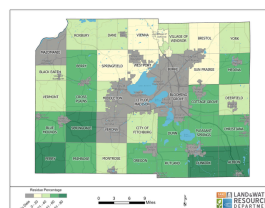
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largely because it depends on several management factors, including the type of cover crop, environmental conditions, and when the cover crop is terminated.

To better understand these interactions, Dane Demo Farms and University of Wisconsin-Madison Extension researchers have started a trial at three Demo farms. The goal of the study is to examine how different cover crop termination timings affect slug pests and their natural enemies. The study compares early cover crop termination (as soon as possible in spring), termination 10 to 14 days before planting, termination at planting, and a no-cover-crop control.



Shingle plot in the termination at planting treatment on May 6th

Since mid-April, we've been monitoring slug activity using simple traps made from 1-square-foot asphalt shingles pinned to the

ground—three per plot. Slugs hide under these shingles during the day, and each week we count the number found under them. We'll continue this for eight weeks after planting and also assess slug feeding damage on corn and soybean seedlings. Slug pressure is one unpredictable challenge in the push to improve soil health with practices like no-till and cover crops. This research will help us determine whether adjusting the timing of cover crop termination can reduce slug pressure and protect emerging crops.

Four slugs on the bottom a shingle trap on May 28th



In mid-May, once the cash crops were planted, we began tracking natural enemy populations using pitfall traps. These are small cups buried in the soil so the cup's rim is level with the soil surface; when insects or spiders crawl across the soil, they fall in. A small amount of liquid in the cup keeps them from escaping and preserves them for identification. So far, we've collected ground beetles, wolf spiders, tiger beetles, and harvestmen (commonly known as daddy longlegs)—all predators that help keep pest populations in check. Monitoring will continue for eight weeks after planting.

Pitfall traps used to collect natural enemies. The lid keeps rain and debris out of the trap while still allowing natural enemies to be captured



*An emerald green Six-spotted Tiger Beetle (*Cicindela sexguttata*) in the termination at planting plot. Tiger beetles are a type of ground beetle known for their impressive speed and showy colors. They will eat moth larvae, beetle larvae, and other invertebrates*

We also collected cover crop biomass from each plot. This will help us understand how the amount of cover crop growth relates to slug populations and natural enemy activity. For instance, more biomass has been linked to higher numbers of ground beetles, which are known slug predators. Modifying when cover crops are terminated could help farmers encourage beneficial insects while keeping pest numbers in check. Since slugs are a growing challenge in soil-health-focused systems, and are notoriously hard to manage, learning how to use natural enemies to help control them could be a valuable tool. (continued on page 3)

Fine-Tuning Cover Crop Termination for Better Pest Management (cont. from page 2)

By tracking both slug pests and their natural enemies across different cover crop termination timings, this research will shed light on how farmers can fine-tune their cover crop management to balance soil health benefits with pest control. Understanding these dynamics is a key step toward making cover crops a more reliable and sustainable tool in Wisconsin cropping systems. We hope to have our first season's data summarized and shared by winter 2025, and plan to repeat this trial again in 2026. University of Wisconsin-Madison Extension researchers collaborating on this project include Connor Schoelzel and Francisco Arriaga.



Take Advantage of Field Day Opportunities Near You!

We really ramped up research this spring by adding four new measurements to a number of plots. If you read the article by Dane Elmquist, you'll know that we added beneficial insect monitoring and slug monitoring to three projects. We also added temperature and moisture sensors – there's an article on the moisture sensors written by the Dane Demo Farms graduate student, Connor Schoelzel. If you'd like to hear more from either of these folks, attend a field day. Alongside the farmers doing the research, we'll have some of the science to share at every field day event.

One of the unique projects looking at moisture and temperature is a project implemented on a low/wet field at the Duerst Farm. Tyler Duerst currently has access to an older disk, so instead of purchasing new tillage equipment he is looking for other ways to manage wet soils beyond tillage; he's interested in using cover crops to help control excess field moisture. You can hear more about this project from Tyler and others at a field day on **Friday, June 20th, from 10 to noon (7313 Schaller Rd, Verona)**. Also, as part of this field day, there will be an opportunity to check out the new edge-of-field monitoring sites on the adjacent Dane County property.

The edge-of-field monitoring will allow us to compare storm runoff between two different management practices—one basin will have the practice installed, the other will not. Ideas include looking at tillage, cover crops, or manure application methods. Plans will be finalized this summer, so if you have opinions, attend the event and share what you think is important to fellow Dane County farmers.

The Sime Farm is hosting a soil health event on **Thursday, June 26th, from 9:30 to noon**. The Sime's (**1192 Starr School Rd, Stoughton**) operate a grain and beef farm near Stoughton, where they integrate all four of the soil health principles by utilizing cover crops, using no-till, integrating livestock on cropland through grazing of cover crops, and more. The event includes a dual-site soil pit to check out soil diversity with Francisco Arriaga. Earlier this month, multiple farms across the county took Haney tests, UW PSNT and routine tests, as well as Cornell soil health tests. These test results will be interpreted at the event.

In August, the Prosser's and Sime's will be hosting field days where you can check out their projects and hear from folks like Dane Elmquist and Francisco Arriaga. Keep an eye out for more information in July.

You can find info on these field days, along with neighboring counties' field days, on the Dane Demo Farms website. We also share timely information on Facebook.

Farmers talking to farmers—that's what these field days are all about, so COME TO A FIELD DAY! There's no better way to learn about a project than from the farmer who is doing the work. Hope to see you at a field day this summer!

FIELD DAY

FRIDAY JUNE 20, 10-NOON

Address: 7313 Schaller Rd, Verona, WI

[More info at demofarms.danecounty.gov/events](https://demofarms.danecounty.gov/events)

Learn about research conducted by Tyler Duerst Farms in partnership with Dane Demo Farms, and check out the new edge-of-field monitoring on the Dane County property.



- Cover Crop Termination Study



- Cover Crops on Low-lying Acres



- Edge of Field Monitoring



Refreshments provided
Brats will be served at noon

Phone Number:
608-445-1474

Email Address:
meyer.kim@danecounty.gov



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SOIL HEALTH EVENT

THURSDAY, JUNE 26, 9:30 AM TO NOON

Hosted by: Sime Farm, 1192 Starr School Rd, Stoughton

- **Get a firsthand look at soil diversity** across farming systems in a dual-site soil pit dig
- **See how your soil measures up** - learn about the Haney test and compare real local samples to UW PSNT & routine tests
- **Explore innovative livestock feeding strategies** on a farm tour with the Sime family - learn how they maximize cover crops and marginal lands to reduce feed costs

Hot lunch provided by the
Biological Farmer Friends farmer-led watershed group
RSVP appreciated but not required, call or text Marie, 608-228-6324



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Soil Moisture Sensors at the Dane Demo Farms

By: Connor Schoelzel

This year, as part of our research on cover crop termination timing and conversions to no-till systems, we have installed soil moisture sensors in all five of the management strips at a farm near Columbus. For each strip, there are three sensors that measure the amount of water in the soil every fifteen minutes at a depth of 3-4.5 inches beneath the surface. The purpose of the moisture sensors is to find out three things about how these management practices affect water in soil:

1. How easily the soil can absorb water
2. How much water the soil can hold
3. How long the soil will hold water

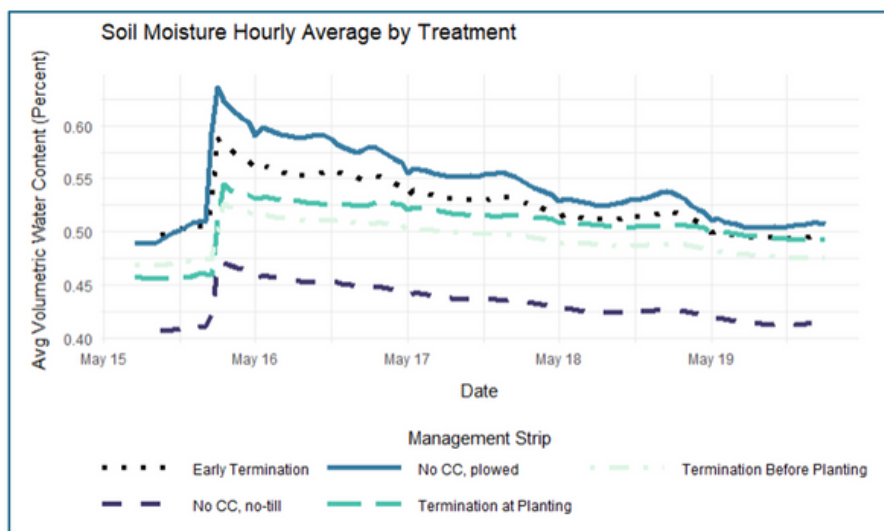
While it will take a full season and comparisons across multiple farms to know if what we are seeing is a result of the different management practices or just luck of the draw, we are already beginning to analyze results and look for patterns. In the graph below, we can see how the different management strips responded to getting about $\frac{3}{4}$ inch of rain just after planting.

The first thing to notice is the range of soil moisture. Across all management strips, the moisture content ranges from about 40-65%. In general, these values are high and the drying times are quick- the water content returns to its starting point in only four days. This is in part due to the shallow depth we placed the sensors at, which is most responsive to wetting and drying from rain and evapotranspiration. However, other soil moisture factors might include soil organic matter, pore spaces from root and insect activity, and soil temperature which is affected by residue cover.

Another preliminary observation is that the two strips without cover crops are the most distinct in terms of soil moisture. The no-till strip has the least amount of water at any given point, likely due to soil crusting and lack of established pores. The tilled strip has the most water at any given time but also has the most variability in moisture content (notice how smooth the other lines are). Since tillage breaks up soil aggregates and promotes quicker decomposition of organic matter, there is less to hold onto water once it enters the soil. However, it will take comparisons across multiple rain events and multiple farms to know if this is a result of management technique or just a one-time coincidence.

As the season goes on, we will continue to monitor the different management strips at this farm, as well as the other Dane Demo Farms. We will use the data we collect from these soil moisture sensors to answer our farmer-lead questions about how these different management practices affect soil moisture, and how soil moisture fits into the bigger picture of the farm's agroecosystem.

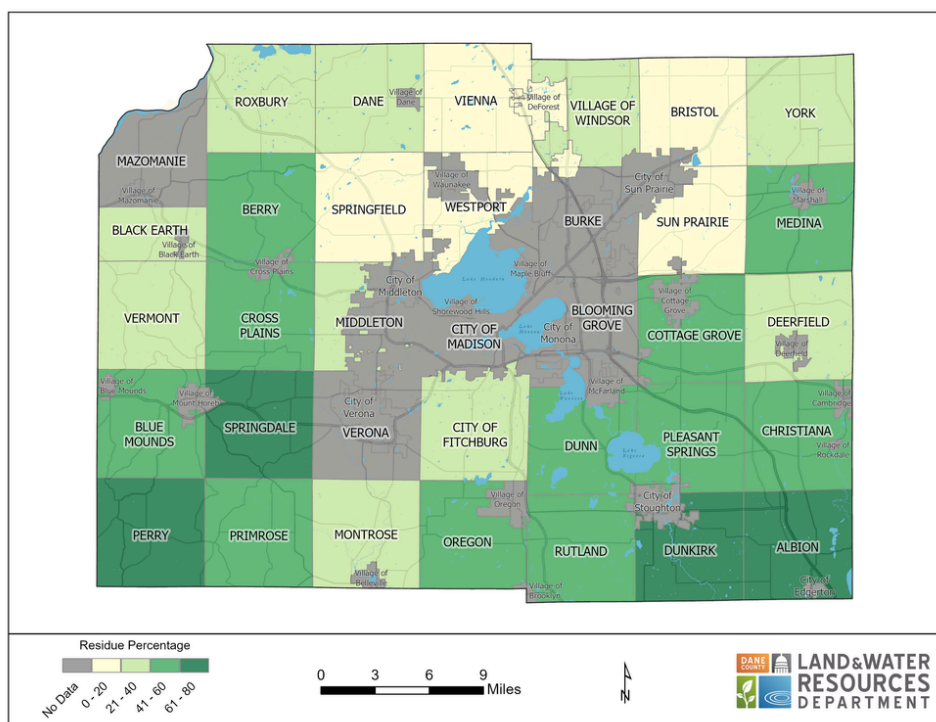
Five Management Strips	
No Cover Crop	Rye Cover Crop
(1) No till	(3) Terminate at planting
(2) Tilled soil	(4) Terminate 10-14 days before planting
	(5) Terminate early (first chance in spring)



Dane County Annual Tillage Survey Findings

Each year, staff from the Land Conservation Department conduct a tillage survey during both the spring and fall seasons. The purpose of this survey is to monitor tillage practices and residue retention trends on an annual basis. The survey encompasses over 1,000 sampling points where data on residue levels and crop types are collected remotely from vehicle cabins. This longstanding effort has been conducted annually since 1994.

The map below presents preliminary data on crop residue. Several sampling locations will require follow-up visits in the upcoming weeks, as crops had not emerged at the time of the late May survey.



0-20% residue



40-60% residue

The above map shows preliminary residue data recorded May 27, 2025 through May 29, 2025. Municipalities with less than three survey points are displayed in grey.

In 2022, trend analysis indicated an overall increase in the amount of residue remaining on the surface after planting compared to earlier years in the survey. Variations in tillage practices across townships may be influenced by different agricultural systems. For instance, farms that harvest corn silage generally leave less residue unless cover crops are utilized.

Understanding the importance of crop residue is essential. Higher residue levels typically reduce soil erosion, helping to maintain soil health. Preserving soil quality benefits not only individual farms but also contributes to the protection of local water resources.

How does your neighborhood measure up? If you'd like to learn more about this annual survey, more information can be found here <https://lwr.danecounty.gov/what-we-do/agriculture/transect-survey>

Cost-Share Reminder

Thinking about planting cover crops or trying no-till but feeling a bit uncertain? You can sign up for cost-share assistance to help with your management transition. You can apply anytime, and it's first come, first served. If you have any questions or need more info, feel free to reach out to the land conservation staff at 608-224-3730 or drop them an email at landcon@danecounty.gov.

Contact Information

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meyer.kim@danecounty.gov

Brooke Lerum, Resource Conservationist

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brooke.lerum@usda.gov

Address:

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Madison, WI 53718

<https://demofarms.danecounty.gov/>

Find us on Facebook and listen to the Dane Demo Farms Podcast

Upcoming Events

Field Day at the Duerst Farm: Friday June 20, 10:00 am - noon

Hosted at Duerst Farm, 7313 Schaller Rd, Verona, See flyer on page 4, Questions contact Kim Meyer, 608-445-1474. Brats served at noon.

Soil Health Event: Thursday June 26, 9:30 am - noon

Hosted at Sime Farm, 1192 Starr School Rd, Stoughton, See flyer on page 5. RSVP appreciated, Marie Raboin, 608-228-6324, Hot lunch served at noon.

Sauk Soil and Water Improvement Group (SSWIG) Sauk County Pasture Walk: Thursday June 26, 6:00 pm

Hosted at Echo-Y Farm, S7905 Skyview Rd, Loganville, featuring electric collars in a rotational grazing system.

UW Forage & Cover Crops Field Day: Tuesday July 15, 9:00 am - 3:00 pm

Hosted at Arlington Ag Research Station, N695 Hopkins Rd, Arlington, bring cash for lunch on site.



Natural Resources Conservation Service
U.S. DEPARTMENT OF AGRICULTURE

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