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To: MN Corn Growers

From: Vance Johnson, Operator & Kim Melton, Wilkin SWCD

Progress Report for December 1st, 2024, Wilkin County Soil Health Demonstration Site

2024 has offered its set of challenges. It was an open winter with no snow cover going into the spring. This meant farmers were getting in the field early since we had dry soil, and farmers were itching to get seed in the soil. Spring planting went well and we had some moisture here and there but toward the end of May the rain started in and showed up every four or five days. This meant we had a lot of drown out spots and some preventive plant acres with most of our crops under a lot of stress from saturated soils. The rain shut off end of August, and with the dry hot heat our soil sealed up like concrete. We watched a flux of weather events change our soils condition so fast and we felt like it was one extreme to the other. The dry weather made for an easy harvest without rain delays but brought us tough conditions for fall tillage and establishing cover crops.

The cash crop at the demo site in 2024 was soybeans. They were planted May 13th. All three plots were planted on the same day. The dust collectors stayed in the field all winter. We pulled them and the soil sensors to allow Vance to plant the field. This gave us time to weigh the soil that was collected and read the soil sensors. Once the field was planted, we installed the dust collectors and soil sensors so they could collect data throughout the growing season. The results, once again, were minimal and not enough dirt was collected from the dust collectors to send to the lab for analysis. See attached document and pics below for individual site specifics and the graphs from the soil temp sensors.

We hosted our fourth annual field day July 10th, 2024. We used the same format as previous years, rotating the group through four stations: Jamieson Volk, NRCS, covering the soil data, Jeff Strock, UofM, talking about soil moisture, Vance Johnson, our demo site farmer, talking about each plot's economics and Alex Sirovy, NRCS Soil Scientist, clueing everyone in on the make-up of our soil in a soil pit. After lunch we had five farmers sit on a farmer panel and talk about how they have incorporated rye strips. This was a very interactive session with many good questions asked. Watching this interaction showed us the need to have more farmer panels and it also shows us people are curious about implementing these soil health practices. Next, we moved into live demonstrations. Justin Deal and Josh Deal covered precision planting equipment used when planting cereal rye strips, Tanner Schuldt with Soil Warrior, covered the mechanics behind the Soil Warrior strip-till machine and Carson Klosterman, with Strip Till For You, talked about using a strip-cat strip-till machine. It was interesting to learn the difference between the two strip-till units and even better to walk behind them and compare the different trenches they made as we watched them pulled across the test strips. Rounding out the day, NRCS staff talked about the different soil analysis we have running at this site and how, you as a producer, can run your own simple tests to check your soil health. For the "Soil Your Undies" display, we buried 100% cotton underwear three times at different dates, and we learned that when the soil is saturated there is no chance for microbial activity in the soil because there was not much difference from one pair to the

other except, they were wet. This demonstration emphasized the strain on living roots and how the soil biology reacts under wet conditions. They also shared the yearly results from the dust collectors and ran the rainfall simulator. See pics below.

The cover crop mix was flown into the standing soybeans plots for no-till and strip-till on 9/11/24. The cover crop mix consisted of 12lbs/ac. Cow Pea, 10lbs/ac. Winter Pea, 5lbs/ac. Winter Vetch, 16lbs/ac. Oats, 3lbs/ac. Flax, and .5lb/ac. Red Clover. The conventional cover crop was broadcast incorporated by Vance. Unfortunately, due to the lack of moisture, we did not see much of our cover crop mix this fall. We saw a couple blades sticking out of the ground, but it would be too hard to tell if it was a weed or our cover crop mix.

The soybeans were harvested September 27th. NRCS and Wilkin SWCD staff completed the soil analysis and collected samples of soil to be shipped off to labs. We collected and shipped soil samples and sent them to Cornell and Ward Labs. Cornell processes a soil health suit that includes soil pH, OM, Modified Morgan Extractable P, K, micronutrients, along with texture, carbon, aggregate stability, soil respiration, total N and predicted available water capacity. Ward Labs process the basic S101, PLFA, and the Haney. The soil health assessment included earthworm count, infiltration, soil moisture, soil temperature, and penetrometer readings for compaction. The day goes fast and thankfully we have a great team to complete all these tasks in one day!

We did not lay any strips this year in the strip till plot because next years cash crop is going to be wheat. Vance plans on drilling the wheat into the soybean stubble in the no-till and strip-till plots. One pass of light tillage will be done before he drills the wheat into the conventional plot.

This will be the last year of the five-year demonstration site. There are plans to continue this site but with a vertical tillage program replacing the strip-till program and scaling back on the amount of soil samples we send to the lab for processing. This will help keep costs down. We have commitments from NRCS and MDA to continue analysis at this site for another five years, so we are excited to continue sharing the story of how these clay loam soils handle the different tillage treatments.

Thank you for your continued support over the years!!

Sincerely,

Vance Johnson, Operator

Kim Melton, Wilkin SWCD

Wilkin SWCD Soil Health Demonstration Site

Dust collector results from

Nov. 23rd, 2023 – April 1st, 2024



CT 5.345 Grams	CT - CC 1.050 Grams	ST 0.910 Grams	ST - CC 0.915 Grams	NT 0.625 Grams	NT - CC 0.145 Grams
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Cover Crop Pics in Spring 2024 – Flown on fall 2023





2024 Soil Your Undies display



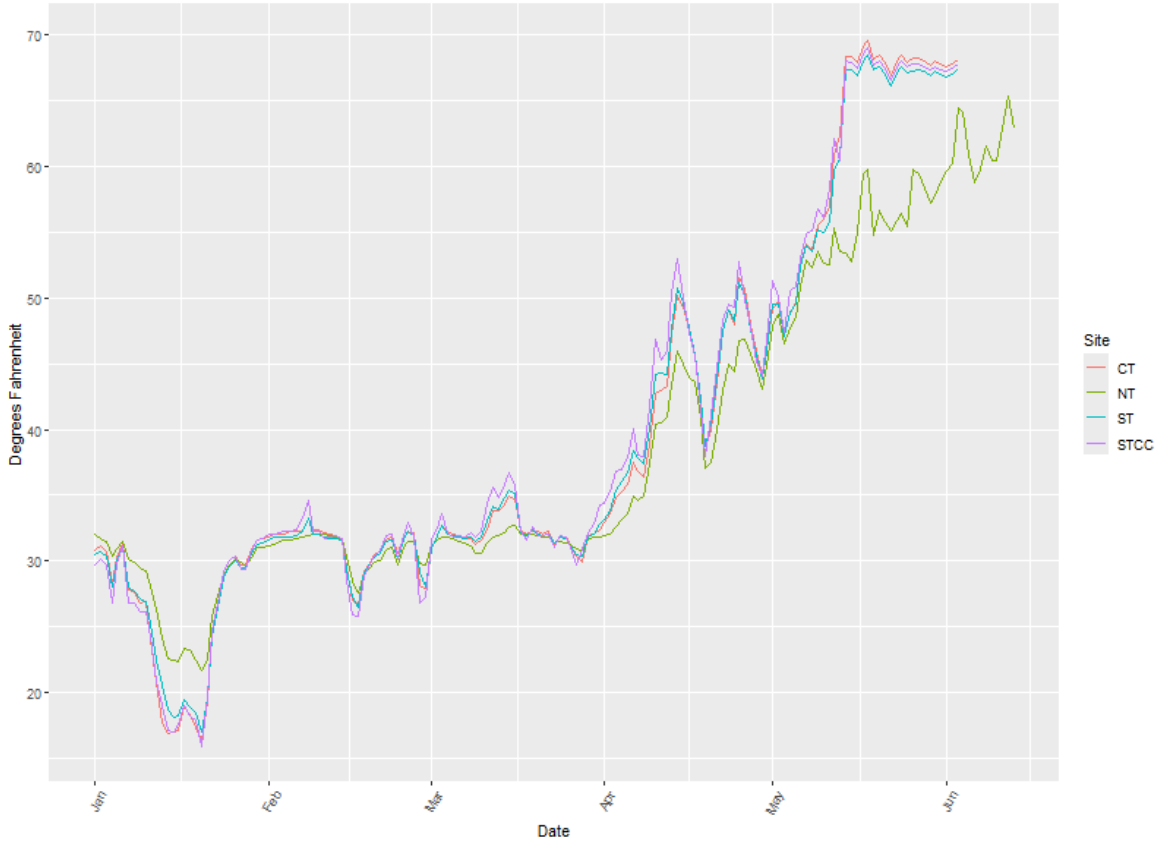
Field Day – Farmer Panel



Field Day – NRCS Demonstrations(above) & Live Equipment Demonstrations(below)



2024 Soil Temperature at 2" Depth



2024 Soil Temperature at 4" Depth

