**Olmsted County Soil Health Farm**

Olmsted County Soil and Water Conservation District
2122 Campus Drive SE, Suite 200 Rochester, MN 55904

**Purpose:** To gain a better understanding of cover crops and soil health in Olmsted County. By using the county owned farmland we can gain a real world understanding about soil heath and how it can be applied by the producers in SE MN. We will provide demonstration and education to producers in the county interested in applying soil health management techniques.

**Background:** Healthy soil provides a platform that sustains and nourishes plants, soil microbes, and beneficial insects and increases the resilience of agricultural production systems. At the Soil Health Farm we are demonstrating the 4 key principles of soil health as they relate to local cropping systems. The four key principles are:

1) Disturb the soil less
2) Keep living roots in the soil as long as possible
3) Increase crop diversity
4) Keep the soil cover.

Producers who adopt all or some of these key principles can see healthier soils which include better infiltration, better nutrient efficiency and sustainable high crop yields.

**What We Have Accomplished So Far:**

In 2015 the Soil Health Farm was planted to Soybeans after 3 years with no cropping history, resulting in significant weed pressure. In the spring of 2015, the farm was sprayed with herbicide and approximately 1 week later the soybean crop was planted into the weed residue with a no-till planter. One herbicide application and one pesticide application for bean leaf beetles took place during the 2015 growing season. The soybeans were harvested on the second week of October and yielded an average of 52 bushels per acre. The Soil Health Farm was then fall seeded with winter rye in late October 2015. The winter rye was broadcast spread with fall P & K fertilizer on the surface at a seeding rate of approximately 1 bushel/ac. Before the first snowfall in early December 2015, the cover crop was nearly 2” tall.

In the spring of 2016 the winter rye started to green up in March, the cover crop was terminated on April 17th with a herbicide spray of Glyphosate within the plots to allow for in season cover crop planting. The rest of the field was sprayed with Glyphosate and Verdict burn down.

At the time of termination the winter rye averaged a leaf growth of 5 inches and a root growth of 5 ½ inches.

The cover crop study has six treatments that will demonstrate planting single and multiple species cover crops at different stages of crop development, they are:

1) Check, no cover crop will be planted
2) Multiple species planted at V-7 (planted June 16th)
3) Single species planted at V-7 (planted June 16th)
4) Multiple species planted post-harvest (winter hardy covers)
5) Single species planted at post-harvest (winter hardy covers)
On April 26th the corn crop was no-till planted into the terminated cover crop and soybean residue.

5 weeks after planting it was noticed that the initial burn down of the cover crop outside of the plot was still actively growing. Weed pressure within the plot was heavy enough that the entire field was sprayed again Glysophate within the plot, Halex GT outside. The corn within the plots was sprayed with Glysophate at total of 4 times before the first cover crop was planted.

Throughout the year soil data will be collected, to measure how the no-till and cover crops may change the soil structure.

Water samples are being collected using Lysimeters throughout the crop season, the water samples will be tested for nitrates. By collecting samples we hope to determine if adding cover crops into the cropping system will reduce the amount of nitrates leached during the crop year.

We have partnered with the USDA Plant Materials Center to plant a demonstration plot that consists of 39 single and multi-species mixes. It was planted on June 7th and started to emerge on June 15th. This plot is open for producers to visit throughout the growing season to view the variety of cover crops that can be planted.

On June 16th, treatments #2, (Annual rye, red clover and crimson clover) and #3 (annual rye) of our plot study were planted using a broadcast spreader.

We saw emergence of treatments #2 & #3 on June 27th.

We will be holding a field day on August 17th 9:00 am – 11:00 am to discuss with local producers what we are learning about cover crops and soil health.