Taking Stock of Statewide Tillage

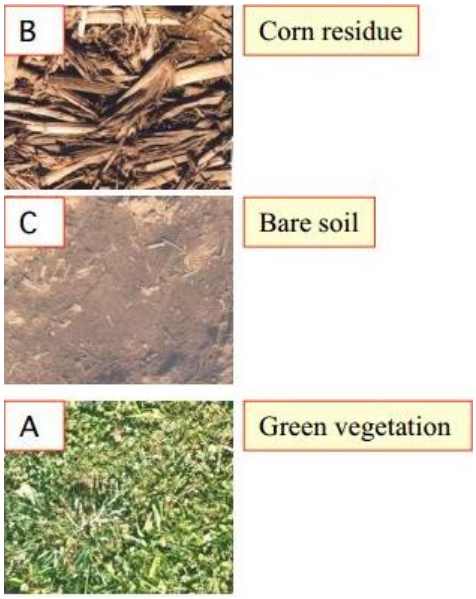
May 2016 Snapshots

It has been almost a decade since a statewide tillage survey has been conducted in the state of Minnesota. Now, thanks to funding received last year, the Board of Water and Soil Resources (BWSR) and The University of Minnesota are working on a new, more efficient and cost-effective method for conducing those surveys using new technological practices.

A tillage survey aims to assess soil residue cover at the time of planting and has mainly been conducted by SWCDs since 1989 via windshield surveys. Windshield surveys require SWCD employees to drive 100 mile + routes throughout each county and visually observe the crop residue left behind after spring planting. According to the University of Minnesota, the windshield survey method is, "time consuming and can only assess a small fraction of agricultural fields within a county". Now, in partnership with the University of Minnesota, the surveys will be conducted via Landsat 7 satellite imagery.

Landsat 7 is a remote sensing technology that has a spatial resolution of 30m and a revisit frequency of 16 days for the entire state of Minnesota. The use of Landsat will help extrapolate crop residue cover and tillage relationships and trends for 67 counties in Minnesota with greater than 30% land in row crop agriculture. This imagery can be used to estimate the percentage of agricultural land in each county that has enough crop residue at planting to be considered conservation tillage. Conservation tillage is defined as at least 30% of soil covered by crop residue during the time of planting and is a practice that can help protect waterways and maintain soil productivity by keeping the soil on the fields and phosphorous and sediment out of nearby waterways.

Landsat will also allow BWSR and SWCDs to look at tillage types, cover crop adoption, and wind and water erosion. The wind and water erosion monitoring is an extension of the Daily Erosion Project conducted by Iowa State and will be expanding to the 67 county area of Minnesota.



The information gained from these tillage surveys will be used to aid staff in watershed planning, prioritizing and targeting measurable implementation practices, and to help support local conservation delivery. BWSR also aims to use the tillage survey results to inform public and policy-makers of the current status of Minnesota's soil resources as well as trends in conservation and resource protection over time.

The first steps will be developing and calibrating the Landsat technology with the University of Minnesota by conducting ground truth surveys in Polk, Becker, Swift, Stearns, Redwood, Fillmore and Blue Earth counties. The program will begin this spring and is set to run for two years. BWSR hopes to receive more funding so it can monitor long term tillage practice trends throughout Minnesota.