Management and performance of Iowa cover crops

After seven years of continuous cereal rye cover crop usage, this project clearly shows that the impact of the cover crop production on yield is neutral. Since this is on-farm research being conducted by farmer partners, it makes the finding even more important and eliminates one of the major concerns about cereal rye cover crop usage.

What was done and why?

In 2008, with State Soil Conservation Committee (SSCC) funding, the Iowa Cover Crop Working Group (ICCWG) established a five-year, multi-faceted cover crop demonstration, research and education program distributed across Iowa’s five major soil regions. Since that time, ICCWG partners have documented and assessed the management and performance of cover crops on 10 on-farm sites. The funding for this project was used to expand the project to collect seven years of information.

Objectives for the project were: 1) Collection and analysis of yearly management, yield and biomass data from seven of the original 10 farmer-partner cover crop demonstrations to support the wider-scale adoption of cover crops in Iowa, and 2) Creation of a database and summary document of all agronomic, management, and soil data for the first seven years of the project (2008-2015).

What did we learn?

Impact on Soil Properties: There were generally no differences in soil health variables between the no-cover and cover treatments at the locations. Many soil changes take years to become noticeable or significant. An earlier study took 10 years of winter rye treatments to detect significant organic matter content and soil nitrogen cycling differences between rye cover and no cover treatments. The mechanisms by which rye cover crops influence soil properties across different soil regions and the amount of time that any such changes may need to occur are not well understood.

Impact on Cash Crop Yields: Since 2008, there have been 30 site-years dedicated to determining the effect on corn yields and 23 site-years to gauge the effect on soybean yields. After their first year of introducing cereal rye into their operations, the farmer partners made adjustments to their planter settings to handle more residue and planned to terminate the cover crop 7-10 days before planting to minimize negative impacts on yield. After seven years in the study, the farmer partners have reported little to no effect of the cereal rye cover crop on corn and soybean yield.