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CONSERVATION Showcase

Interseeding Cover Crops Early Could Solve Fall Establishment Issues

by Jason Johnson, State Public Affairs Specialist
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After years of struggling to consistently establish cover crops in the fall on cropland in Iowa's northern tier counties, more than a dozen Allamakee County producers are participating in a new USDA-sponsored soil health demonstration project that – after one growing season – is showing promising results.

USDA's Natural Resources Conservation Service (NRCS) awarded the Allamakee Soil and Water Conservation District (SWCD) \$236,000 through a three-year grant to lead, manage, and analyze a series of data from interseeding cover crops at the V4-V7 corn growth stages (June).

Interseeding allows cover crops to establish prior to corn canopy. After canopy, the cover crop can go dormant from being shaded out and then restart growth once the corn is harvested.

LuAnn Rolling, district conservationist for NRCS in Allamakee County, says it has been disappointing to see the lack of cover crop success in her county. "Our window to establish cover crops in the fall is smaller than much of the state," she said. "Aerial seeding hasn't worked well for us. The (SWCD) commissioners pushed for this grant to encourage producers to try something different."

Why grow cover crops?

Iowa farmers have used cover crops for many years, but they have grown in popularity during the past

decade. Cover crops help reduce soil erosion, utilize excess soil nutrients, suppress weeds, minimize soil compaction, increase soil organic matter, improve soil moisture efficiency and overall soil health.

Cover crops also provide soil cover at the most vulnerable times, anchor corn and soybean residues, increase water infiltration, and reduce compaction. In addition to the environmental and soil health benefits, some cover crops may be used for grazing forage for livestock and wildlife.

Demonstration Details

Fifteen Allamakee County producers participated in the Conservation Innovation Grant (CIG) On-Farm Soil Health Demonstration Trials in 2020 – the first year of the grant. Most participants planted four interseeded 30-inch corn row plots and four 30-inch corn row plots with no interseeding. Each plot was at least the width of a combine and at least 300 feet long.

Producers planted a cover crop mix between corn rows at the V4-V7 corn growth stage, choosing from four different seed mixes, which included species such as ryegrass, buckwheat, brassicas, and cow peas. Participants used various cover crop seeding methods, including a no-till drill, broadcast spreader, Monosem planter, and various custom air seeders.

Aarik Deering, who farms near Postville, has been growing cover crops for about five years. Besides the soil health benefits, Deering uses cover crops to supplement feed for the cow-calf operation he manages with his wife, Haley. "I am trying the CIG trial to see





Allamakee County farmer Brady Kruger (left) shows off his 60" inch twin corn rows to the SWCD project coordinator Eric Novey and NRCS District Conservationist LuAnn Rolling in October 2020.

if it will help extend the grazing period in the fall and spring," he said. "We typically can't get enough cover crop growth in the fall for grazing and then that often leads to being too short to graze in the spring."

Brady Kruger, who farms with his dad near Waukon, sees the soil health benefits to cover crops and wants to get it right. "This trial is providing a way to try to get early cover crop establishment and have it there when the corn is harvested," he said. "We have only had sporadic success with fall cover crop growth until this year."

Analyzing Year 1 Results

Farmers completed a minimum of four replicated strip trials on each demonstration site. Eric Novey, project coordinator for the Allamakee SWCD, is working with producers to collect data. He is evaluating yields, cover crop biomass, nutrient uptake, soil microbiology, soil loss, and several soil health measures using the Haney Test.

Novey also installed temperature loggers in interseeded and non-interseeded rows with each participant to assess season-long differences in soil temperature.

A sampling of Year 1 results:

- » **Corn Yields** – Plots that were interseeded with cover crops yielded slightly better than plots with no cover crops (188 bushels per acre, compared to 187). Ten of the 15 participants produced better corn yields in fields with cover crops.
- » **Cover Crop Biomass** – Novey measured biomass monthly beginning in July and continued through September. Data collected indicates a sharp increase in biomass from July to August (400 lbs./acre to 525 lbs./acre) then a slower rate of increase from August to September (550 lbs./acre).
- » **Soil Temperatures** – Novey says cover crops kept soil temps more consistent during the growing season. "The seeded strips were slightly cooler in the summer, but what was more noticeable was the seeded strips had fewer extremes in temperature," he said.

One component that's harder to measure is time. "Fall is such a busy time already," said Kruger. "Interseeding cover crops early in the growing season takes weight off us when we're trying to get crops out. It's hard to find time to do other things in the fall."



60-Inch Corn Rows

NRCS allowed CIG participants to interseed up to 50 additional acres through the trial, so Kruger and Deering tried 60-inch corn rows with interseeding. Kruger planted 60-inch twin rows with the same population as his 30-inch rows. He said the growth difference was substantial. "I really enjoyed walking the (60-inch) plot throughout the summer and seeing the difference and how cover crop species performed much better when given more sunlight," said Kruger. "The (corn) yield came out to be the same as the rest of the farm, so I was pleased with that considering how dry August was."

Deering says he was worried the interseeded cover crops would rob moisture from corn during grain fill, but that didn't appear to be an issue. "I am planning more 60-inch twin row corn for 2021 and will be putting a lot more effort into it," he said. "I feel there is great potential there."

Cover crop biomass samples taken between Kruger's 60-inch corn rows totaled about 3,100 lbs. compared to an average of 395 lbs. of biomass in his 30-inch rows. Kruger feels the increased biomass on the 60-inch rows will provide better weed control, more nitrogen fixation and a bigger "bump" in soil health. He says he plans to no-till corn into the interseeded cover next spring and hopes to eliminate a herbicide pass based on the amount of ground cover and its ability to suppress early season weeds.

Biomass from Deering's 60-inch rows averaged 5,000 lbs. compared to 854 lbs. from his 30-inch rows. "I am excited about the 60-inch row biomass production and the forage value it will offer our cattle this winter," he said. "I was really happy with corn yields on my 60-inch rows and found it comparable to my 30-inch rows."

Sharing Successes

Kruger says he's enjoyed sharing ideas with other trial participants. He even hosted a small field day to exchange stories and ideas. "It's been good to get together with other like-minded farmers," he said. "I know I've learned a lot already."

Kruger says many producers commented on cover crop growth rates. "Early on, some of the species we thought failed came on later. Throughout the season, we saw different species rise and fall," he said.

For example, Kruger said buckwheat was dominant very early on, and late in the year it seeded out and laid down. Later in the year, he said turnips and rye-grass really started to "pop."

Preparing for 2021 On-Farm Trials

Novey says most producers were excited about first year trial results, but the group learned some lessons. "Farmers who opted to broadcast the cover crop seemed less satisfied," he said. "They had issues with growth consistency and overall delayed growth, leading to less biomass."

"We are considering looking harder at the 60-inch corn row option," says Novey. "That generated a lot of interest during the field days."

Novey hopes the on-farm trial receives a similar strong response in Years 2 and 3. Participants signed up for just one year, but they can sign up for multiple years. "We are looking for participants for 2021," he said.

For more information about the CIG project, contact the Waukon NRCS office at 563-568-2246 ext. 3.

Authorized in the 2018 Farm Bill, On-Farm Conservation Innovation Trials support more widespread adoption of innovative approaches, practices and systems on working lands. On-Farm Trial projects feature collaboration between NRCS and partners to implement on-the-ground conservation activities and then evaluate their impact. Incentive payments are provided to producers to offset the risk of implementing innovative approaches.

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