



Allee Demonstration Farm, Weather, and Research Summary

Lyle Rossiter—farm superintendent, Allee Demonstration Farm

Farm Comments

Developments. Strip-till and dry fertilizer within an 8 in. berm was implemented after drilling red winter wheat cover crop in the fall. All cover crops were drilled this year to control seeding areas. Planting “green” into live cover crops in the spring with zero till has been successful with corn and soybean. The drought decreased corn yields and planting green in cover crops suppressed corn water availability. Composting cattle manure on site has become the main nutrient for the soil microbes and crops. Fall strip trials of cover crops with cereal rye and oats have been implemented, comparing weed control and nitrogen needs for corn. Spreading cattle compost with a vertical spreader provides even distribution of nutrients and allows cover crops to grow through the residue. Side dressing liquid nitrogen on corn after planting has decreased total nitrogen on corn by 50% without reducing yield.

Gentry Sorenson is the new extension field agronomist for the Newell, Storm Lake, and Spencer area. Sorenson will assist Lyle Rossiter in the implementation of cooperator on-farm trials that continue in Buena Vista, Sac, Pocahontas, Carroll, Calhoun, Ida, Cherokee, and Clay counties. Iowa State staff assisted individual farmers in setting up field-length strip trials and collecting data for statistical analysis.

Events. Soil health training sessions with NRCS and FSA were held during the summer with 78 staff participating. Two cover crop meetings were held with 56 farmers discussing their management and experiences while touring the Allee Farm projects.

The Allee Farm hosted Ag-Citing Days on September 20th and 21st. Topics covered included: amazing corn, dairy, biofuels, grains, eggs and buzzing with bees. Additionally, FFA youth presented talks on their live beef, goat, rabbit, and swine projects to 420 fourth-grade students from across Buena Vista County. Nicole Reinert is the new B.V. Extension Youth Coordinator

On September 22, the Allee Farm hosted the Buena Vista County Ag Safety Day for 195 third-grade students. Topics included: chemical liquids, home safety, first aid, sheriff car tour, home alone (911), sun exposure, electrical, lawn equipment (mower), farm equipment, horse safety.

The Allee Farm appreciates the community support and the opportunity to be an educational site for all ages and families. A total of 785 guests visited the farm, and the Allee Historical Mansion hosted 600 visitors in 2022.

Projects. The eighth year of the long-term assessment of miscanthus productivity and sustainability (LAMPS) is in full production on 10 acres on three Iowa State farms. The biomass plantings are being studied to learn how to grow and maintain miscanthus at a farm scale. A new adventure for the use of the biomass includes grinding the bales for turkey bedding. The shredded miscanthus bedding will replace the use of wood shavings for some producers in the future. Shredded miscanthus is used to create biodegradable protein tubs for the cattle industry, replacing plastic tubs.

Drill seeding cover crops in the fall of oats, cereal rye, radishes and turnips provides various opportunities for research with corn and soybean. These research projects are published in this report.

Livestock. The farm custom-fed 154 head of cattle and collected research data for the purebred Angus cow herd at the Iowa State McNay Memorial Research and Demonstration Farm in Chariton, Iowa.

An automated weather station was installed in the northwest corner of the farm in fall 2014. Above-ground data collection includes wind speed, wind direction, high and low temperature, humidity, and solar radiation. Below-ground soil probes monitor soil moisture and temperature at 4, 12, 24, and 50 in. depths. Data collected is available as part of the Iowa State University Mesonet at mesonet.agron.iastate.edu under Iowa Ag Climate Network.

Crop Season Comments

Soybean planting was finished May 21. Harvest was completed September 28 with average yields of 47 bushels/acre.

Corn planting started May 4 in wet soils and finished May 19. Harvest was completed October 19 with one of the driest falls on record, average yields of 155 bushels/acre.

Weather Comments

Winter. January was the warmest due to little snow pack and remained dry. February was the sixth driest, and tied 1987 and 1996 of 150 years of records. March remained dry with only .95 in. of moisture. The drought map shows D2 expanding from Nebraska into western Iowa.

Spring. April rainfall was needed to rebuild the top soil from the dry winter. April moisture total was 3.06 in., slowing the start of corn planting. May rains were frequent, totaling 3.40 in. May 12 was the warmest day with a high of 96°F. The planting season was damp and warm so most of the corn and soybean were planted the second and third week. Concerns of drought in western Iowa was a frequent topic in the news, while the rest of the state was receiving frequent rains, delaying planting.

Summer. June was hot the first two weeks with nine days above 90°F. The warmest day was June 13, 98°F. Corn and soybean were showing drought symptoms in northwest Iowa. The Newell area received little moisture with 1.23 in. in June. With warm temperatures and lack of moisture, the corn and soybean were showing drought stress. July 4 was the largest rainfall day with .82 in. July 5 was the warmest day, 93°F. Relief from drought conditions came with cooler-than-normal temperatures the rest of July and total moisture of 2.71 in. Corn and soybean rooted deep in the soil profile to find moisture the last week of July. August was warmer and dryer than normal, with 1.90 in. of rain. Crop conditions improved where areas received rain; many fields showed crop stress and variable yields with both corn and soybean in the same field. Cover crops were seeded with airplanes in August when the soybean leaves started to yellow. Ground application of cover crops with converted sprayers is a common practice in corn fields.

Fall. September was warmer and drier than average, soybean matured early with the drought persisting and lowering average yields. Most soybean were combined in September. Corn dry down was fast the last two weeks of September, warm dry winds persisted for 31 days of harvest with no rain delays. Corn yields varied from very high to very low across the field and counties in northwest Iowa. High winds blew corn stalks, so many farmers started tilling after combining and completed in November. Anhydrous was delayed with the absence of moisture in the top 6 in. of soil.

Acknowledgements

The farm would like to thank the Newell-Fonda and Alta Community School, ISU Extension and Outreach, Farm Bureau, Buena Vista Public Health, Storm Lake Police Department, Buena Vista County Sheriff Department, Iowa Lakes Electric Cooperative, Iowa Corn Growers Association, NRCS, and the Practical Farmers of Iowa for their assistance with field days and events.

Table 1. Allee Demonstration Farm, Newell, monthly rainfall and degree days above 90°F for 2022.

| Month | Rain, in. | Days above 90°F |
|-----------|-----------|-----------------|
| April | 3.06 | 0 |
| May | 3.40 | 5 |
| June | 1.23 | 9 |
| July | 2.71 | 5 |
| August | 1.90 | 4 |
| September | 1.34 | 3 |
| October | 0.27 | 0 |
| Totals | 13.91 | 26 |

Research Summary

| Project | Project Lead |
|---|--------------|
| Automated weather station | L. Rossiter |
| Beef cattle feeding | |
| Cover crops, composting, regenerative practices | |
| Cooperator on-farm trials | |
| Cooperator on-farm trials | M. Witt |
| Cover crops regenerative practices | |
| Miscanthus | N. Boersma |
| Cooperator on-farm trials | P. Kassel |