

CORN INTERCROPPING TRIALS

The practice of corn intercropping involves growing corn alongside one or more additional crop species within the same field during a single growing season. This approach offers several potential advantages, including increased forage yield and quality, improved soil health and fertility, reduced weed pressure, and the opportunity to extend grazing periods. Many producers in Gateway Research Organization (GRO)'s area are interested in corn production, with some particularly interested in cover crops in association with corn, as a potential method to maximize net return per acre.

To develop more results and support the area producers, GRO added a small-plot twin-row corn intercropping trial in 2025 for the first time to explore how different twinned row corn spacing and cover crop types influence forage yield. This trial served as an internal pilot project for GRO staff to refine equipment setup for both corn and cover crop seeders, develop an effective intercrop trial design, determine methods for spacing twin rows without GPS guidance, and evaluate multiple cover crop species. Staff continued to work with a couple producers on their fields to collect yield data which is also included in this report.

SMALL-PLOT INTERCROPPED CORN PILOT:

The objective was to generate preliminary data to inform decisions on row spacing, cover crop selection, and experimental plot design for future trials. The trial included 12-, 9- and 6-inch twinned row spacing as well as six different intercrop options: subterranean clover, faba beans, forage soybeans, peas, warm season blend and full season blend. The spacing between plots was 60 inches.

AGRONOMIC INFORMATION:

Seeded: June 18, 2025

Seed depth: $\frac{3}{4}$ inch

Soil temperature: 20°C

Rainfall recorded: June 18 to Oct. 8, 2025: 138.8 mm

Fertilizer:

Deep Banded (Before Seeding): 28.29-5.78-15.42-1.93 @ 518.8 lbs/ac

147 lbs/ac Actual N; 30 lbs/ac Actual P; 80 lbs/ac Actual K; 10 lbs/ac Actual S

Pre-burn: Glyphosate @ 280 g ae/ac on June 10, 2025

Harvested: Oct. 9, 2025

RESULTS AND DISCUSSION:

Establishing this pilot trial presented several challenges. Without a GPS system installed on the tractor, maintaining consistent twinned-row spacing proved difficult, resulting in various spacings across the plots. In addition, ground conditions at the time of seeding prevented the planter's closing wheels from properly covering the corn seed, requiring us to manually close the rows, likely resulting in inconsistent cover and seed to soil contact. Pre-tillage may have helped mitigate this issue. Finally, a drain plug on one of the seed containers failed to seal properly, resulting in one of the 12-inch corn rows being seeded at a significantly higher rate than the rest of the trial. Later in the growing season, herbicide drift caused damage to some of the cover crops, resulting in significant yield losses in 2-3 plots.

Due to the many challenges faced throughout this trial, reliable data could not be collected. This trial ultimately provided a valuable learning experience, giving us deeper insight into the performance of our new corn seeder and helping us evaluate alternative intercropping methods to explore in the future.

FUTURE RECOMMENDATIONS:

Going forward, GRO hopes to repeat the corn intercropping trial, once again evaluating different twinned row spacings but focusing on only one or two cover crop options. Dairy producers have shown the greatest interest in incorporating pulses to increase the protein content of chopped silage, while cow-calf operators are more interested in diverse cover crop blends to support late-season winter or early spring grazing. Earlier corn planting and later intercrop seeding will help reduce herbicide constraints, improve weed control, and support stronger corn establishment in future trials. GRO also plans to purchase a GPS system soon, which will significantly improve the precision and accuracy of these types of trials.

PRODUCER INTERCROPPED CORN:

As in the previous year, GRO once again assisted Colby Hansen and Byron Long in estimating the yield from their corn intercropping fields. Colby planted corn in 60-inch twin rows, a cover crop blend seeded in between in the Tawatinaw area. Byron planted corn in rows spaced 30 and 90 inches apart, also with a cover crop blend seeded in between in the Barrhead area

At Byron's farm, both spacing treatments ultimately produced roughly 13 tonnes per acre. Although corn planted at narrower spacing yielded more than corn at wider spacing when considered alone, this difference disappeared once cover crop biomass was added. It is also worth noting that the growing season was quite dry, which likely limited overall yield potential and reduced the advantage previously observed with wider spacing. On a positive note, improvements in feed quality were observed, including higher crude protein and increased total digestible nutrients.

Further replicated research is needed to confirm whether these observed trends are consistent and reproducible. GRO aims to build on insights from its corn intercropping trial with varying row spacings by collaborating with producers to conduct replicated, field-scale trials that will generate more reliable data in the future.

