



COVER CROPS AND CORN

CARDINAL CREEK FARM BELMOND, IOWA

Farm background

- * Fifth-generation farm, working along side two uncles, a cousin and my mom. We lost Dad in 2022.
- * Farm in northeast Wright County, roughly an hour by car north of Ames.
- * Primarily a corn-soybean operation. Also raise some small grains and cover crop seed, with plans on moving into relay crop beans/rye in 2024.
- * Raise feeder pigs and cattle as well.



Cover crop evolution

- * Started using covers in 2015 ahead of soybeans as a means of building soil organic matter and reducing erosion.
- * Primarily focused on aerially seeding rye ahead of beans, no-till planting green and pushing back termination dates.
- * Started experimenting with oats, rye and brassicas ahead of corn in 2017.
- * Now focused on ways to keep living roots in the ground all year.
- * Partnered cover crops with hog manure and chicken litter to maximize benefits of both.



COVER CROPS THROUGH THE

PROJECT

YEARS

A PROCESS OF TRIAL AND ERROR, BUT MOSTLY

ERROR

of Iowa

Lessons in “unexpected outcomes”

- * Lesson one: Go slow and take small bites.
- * Lesson two: Plans are good, until Mother Nature has her say.
- * Lesson three: Respect the carbon penalty.
- * Lesson four: Context is king.
- * Lesson five: Pay attention to soil moisture.



Corn + Covers, the early years

- * Aerially seeded cover crops the fall of 2020 into standing beans, at a rate of 55 lbs. cereal rye, 2 lbs. rapeseed. Goal was to keep a living root year-round instead of having it winter kill.
- * Planted no-till corn green into a healthy stand of rye on April 28, 2021 terminated that same day using a burndown, plus residual and 28 percent for the corn.
- * Next few weeks turned cold and wet. Not ideal for seedling corn.



REALLY NOT IDEAL CONDITIONS FOR CORN MOST OF THE YEAR.
LIKE, NOT AT ALL.

Lessons learned, year one

- * Poor germination, coupled with cold growing conditions and a frost on May 28 set the stage for a poor corn stand count.
- * Key details include planter set-up, speed, soil temps and making sure there is adequate plant nutrition.
- * Front-loading too much nitrogen does you no good.
- * Can't out-guess Mother Nature.

Corn + Cover, Year Two

- * Hired custom strip-till application for better fertilizer placement and improved stand.
- * Focused more on proper timing and rates for nutrient applications.
- * Spent more time on planter set-up, including making sure to stop continually to adjust in the field.
- * Started using Haney tests to really hone in on soil health and fertility.



Year two lessons

- * Personal record for corn yield that year, one of the highest for the farm overall, and a personal best nitrogen-used efficiency ratio.
- * Strip-till works better as a transition to soil health systems than cold-turkey no-till.
- * Biologicals can bridge the gap to higher yields, but good management will propel you further.
- * Mother Nature still holds all the cards.

Year Three, the humbling season

- * Accelerated soil health practices.
- * Planted a four-way multi-species cover crop mix ahead of corn.
- * Continued strip-till/no-till planting corn, added foliar feeding, plant sap testing and stress mitigation techniques.
- * Continued to fight prolonged droughts.



Corn + Covers, year three lessons

- * Get covers in early. My multi-species mix of clover, vetch, camelina, and rye didn't get enough growth in the fall.
- * Nothing will fix a lack of moisture at planting or a poor job of planting.
- * Long-term covers helped keep soil moisture and suppress weeds longer than conventional systems.
- * Address nutrient deficiencies early.

Corn + Covers, 2024 plans

- * Tailored cover crop plans to field conditions, paying close attention to goals, soil types and whether manure was applied.
- * Strip-tilled into the mixes.
- * Looking at adding a planter specifically built for planting into heavy residue situations.



Sponheim
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1399 320th St.
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400# Winter Wheat

150# Buckwheat

100# Hairy Vetch

50# Med. Red Clover

50# Balansa Clover

50# Kale

Net Wt: 950 LBS





Corn + Cover Key Takeaways

- * Soil health is based on principles, not commandments. Adapt them to your situation and context.
- * Tread carefully when planting corn into green covers. Make sure you and your team are on the same page for management.
- * Pay attention carbon:nitrogen ratios when designing cover crop blends. Lean toward less carbon when possible.
- * Pay special attention to how well your corn planter is doing going into the covers. Nothing will fix a poor job of planting.

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