

N-TIME™ IMPACTS

REDUCE RISK McCool Junction, NE - 2022



CASE STUDY SUMMARY

Near McCool Junction, NE, during the 2022 growing season, a farm operation implemented N-Time™ on half of a pivot irrigated field. The original crop was hailed out on June 7, 2022, and the field was replanted on June 18. While the field typically produces nearly 250 bu/ac, this late replant significantly curbed yield potential – and thereby crop nitrogen need. The farmer used N-Time™ to determine crop nitrogen needs and maximize profit in a replanted corn crop. Ultimately, this farmer was able to achieve a yield of 190 bu/ac while applying only 123 lb-N/ac.

They improved nitrogen use efficiency by 15%, saved an average of 67 lb-N/ac, and outpaced expected yield by 58 bu/ac. This case study will show how they did it.

OPERATION OVERVIEW

Field 1 Profile

Crop: Corn
Soil Type(s): Silt Loam & Silty Clay Loam
Topography: Some significant slopes
Previous Crop: Soybeans

MCCOOL JUNCTION WEATHER APRIL-SEPTEMBER 2022

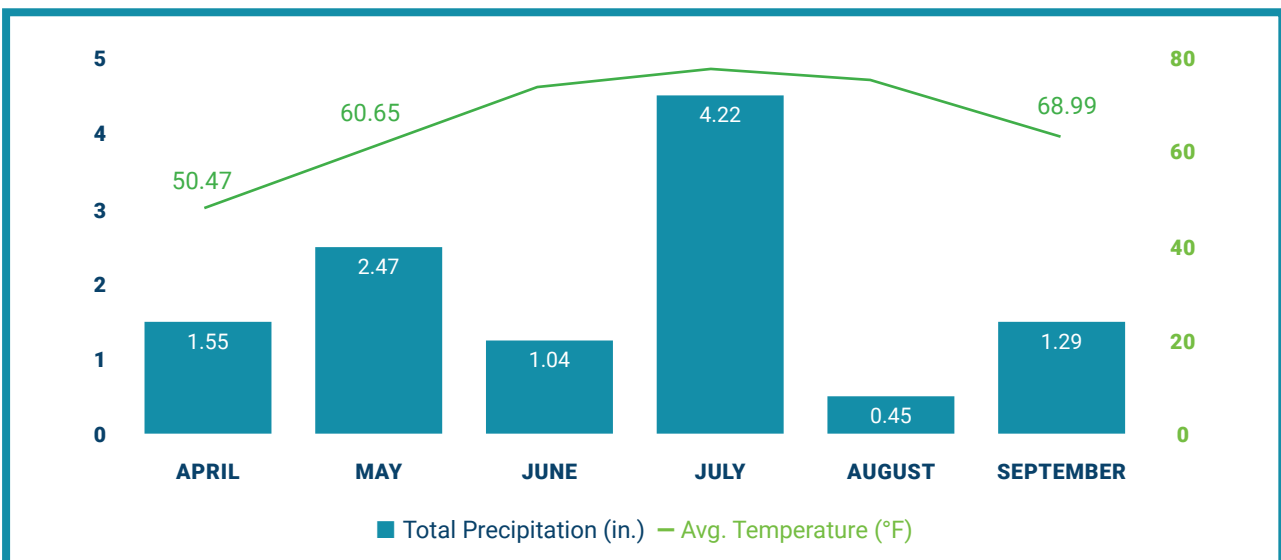


FIG. 1

STANDARD NITROGEN MANAGEMENT

Following a soybean crop, this field typically receives a total of 190 lb-N/ac to produce a 250 bu/ac corn crop. Of the total nitrogen, 100 lb-N/ac is applied prior to planting as anhydrous ammonia (NH₃). An additional 90 lb-N/ac is applied via fertigation in three 30 lb-N/ac applications of 32% UAN.



N-TIME™ IMPLEMENTATION

Sentinel generated two management zones using grid soil samples and elevation and slope data, then uploaded those zones into N-Time™. Zones were used to define sectors to receive independent recommendations for site-specific nitrogen applications. Zones also informed the placement of indicator blocks within each sector. Indicator blocks were established using a prescribed pre-plant application of NH₃ (82-0-0) at 100 lb-N/ac on March 27, 2022. As-applied data were collected, indicator block locations were adjusted as needed.

After blocks were established, the farmer monitored N-Time™ to determine when to apply nitrogen during the season. They decided to continue using N-Time™ even though the crop was hailed and replanted, and indicator blocks triggered a recommended fertigation application late in the growing season.

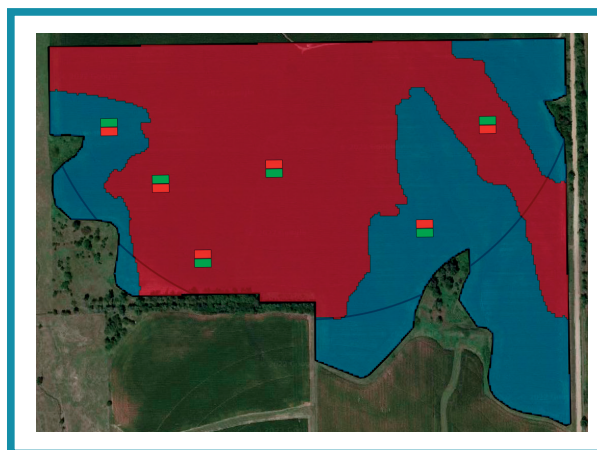


FIG. 2

NITROGEN NARRATIVE

Nitrogen applications under this operation's typical management program without N-Time™ are shown in the diagram below.

Typically, the farmer applied nitrogen uniformly and at the same time for the entire field. In 2022, they varied applications with site-specific application schedules. Nitrogen applications for sectors 1, 2, and 3 are shown in the diagram below. For sectors 1 and 3, both with eroded slopes, N-Time™ recommended a 30 lb/ac nitrogen application at R2. However, N-Time™ did not recommend any in-season nitrogen application for sector 2. With lower yield potential following replant and more productive soils in this region of the field, the soil was able to supply sufficient nitrogen to the crop. With the N-Time™ driven application regimen in 2022, total nitrogen applied was 130 lb-N/ac for sectors 1 and 3 and 100 lb-N/ac for sector 2. Without N-Time™, the farmer would have eliminated one 30-pound nitrogen application following hail and replant to adjust for yield potential.

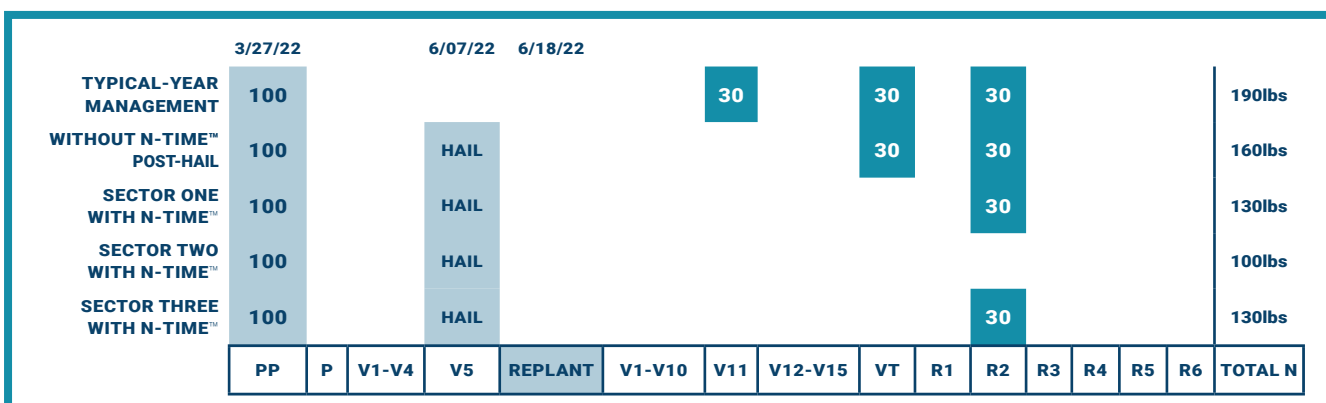


FIG. 3

N-TIME™ RESULTS

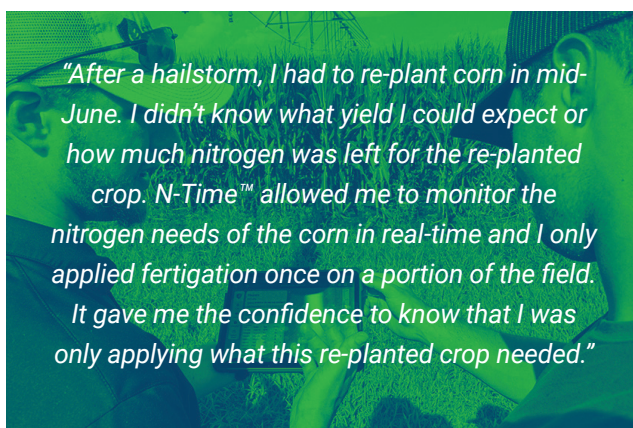
When this farmer's crop was hailed out on June 7, 2022, the potential for the season looked bleak. But this farmer had left approximately half the original crop's planned nitrogen to be applied in-season. Using data-driven insights from N-Time™, they adjusted their nitrogen program to the needs of the replanted crop. Instead of making 3 nitrogen applications via fertigation in-season on replanted corn, the farmer followed the N-Time™ recommendation: make a single nitrogen application via fertigation at R2, but only on the field's east and west sectors. As a result of that shift, this operation maximized its nitrogen use efficiency (NUE) in a replanted crop: up to 0.53 in sector 2 and an average NUE of 0.65 for the field. With N-Time™ recommendations, this operation saved 67 lb-N/ac on average. At a nitrogen price of \$0.63/lb, this operation saved \$2,744 using N-Time™. Considering a nitrogen price of \$1.02/lb in 2022, this equates to \$5,095. Following battles with severe weather, replanting, and high input prices, N-Time™ mitigated risk and helped ensure profitability.

	TYPICAL MANAGEMENT	WITH N-TIME™ POST-HAIL
Yield (bu/ac)	250	190
N Applied (lb/ac)	190	123
NUE (lb/bu)	0.76	0.65
N Spent (\$/ac)	119.70	77.49

FIG. 4

NUE INCREASED BY 15% WITH N-TIME™

FARMER'S THOUGHTS



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