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**Innovation Grant Final Report**

PROJECT TITLE: Yield Costs or Benefits Associated with Different Conventional Tillage Practices.

REPORTING PERIOD: Final Report

FARMER INNOVATOR: Kent Luthi/Adam Bjerketvedt

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1. PROJECT ACTIVITIES COMPLETED DURING THE REPORTING PERIOD.

Collection and Analysis of Data collected from harvest as well as soil tests, plant tissue tests, Drone imagery and satellite imagery collected from Climate FieldView.

1. IDENTIFY ANY SIGNIFICANT FINDINGS AND RESULTS OF THE PROJECT.

* We determined that while both the 14” and 7” points do seem to do a superior job of tilling up the soil hardpan and lifting and mixing soil with air, there seems to be a very small impact on yield.
* Soil Residue counts seem very similar on our residue counts but we noticed at planting that while 14” and 7” had very manageable amounts of residue, at times we experienced troubles on our tripped shanks portion of the plot due to large clumps of residue that occasionally would cause pushing or plugging.
* Stand counts seem to only vary slightly and show no consistency one way or the other (residue was managed at planting with row cleaners).
* With the results we gathered from both Agvise Lab results as well as 360 SoilScan the soil nitrate levels appear to have some variability but there is no consistency across test plots to tie results to tillage practices. Tissue Samples all show to be pretty consistent as well with all levels within sufficient nutrient amounts.
* Home 5&6 test has an issue with manure application that caused a streak of poor yield in the 7” ripper point zone. It is clearly reflected on the yield map.
* Yaggies shows some significant differences in overall yield but when Dorian broke it down and pulled data from randomized areas for comparison there is very little yield difference.

1. CHALLENGES ENCOUNTERED.

* Creating a trial that is statistically sound for this scenario. For farm practicality we had to do this test in large blocks since we are trying to create a contestant sample are while going over the test areas with multiple pieces of equipment that are different widths (example ripper=18’ and planter=44’). This makes it very hard to replicate multiple tests across the field as we would have liked to help eliminate other variables. We were expecting to see a lot more significant yield variability one test to the next especially between the tripped shanks vs 14” or 7” points.
* Weather is always a constant struggle, we put in these plots to the best of our abilities and every year we seem to always battle weather in one form or another. This year we had small areas of stand loss due to excessive rainfall that caused some trash to wash up and cover small areas.

1. EDUCATION AND OUTREACH ACTIVITES.

* Sharing results with other Growers at Precision AG 360 Agronomy Meeting.
* Did news Article with MN Corn.

1. HOW CAN WE HELP?

Keep supporting farmers the way you always have, if most guys operate the way we do year to year most the farm becomes a test plot before the season is over and it’s nice to have your website as a hub to track findings from others across the state.