NITROGEN MANAGEMENT

Description:

The use of biological products in crop production is becoming common place on many operations. The products that we looked at in this study work with the corn plant and provide nitrogen from the atmosphere. Utrisha™ N is a foliar product applied at V5 and colonizes the corn plant through the stomata, the bacteria in Utrisha N then fixes nitrogen from the atmosphere and makes it available to the corn plant while living off methanol given off by the plant. PROVEN® 40 by Pivot Bio is applied in furrow at planting and colonizes the roots of corn and works to supply the corn plant Nitrogen from the atmosphere while living off root exudates. We tested these products with 3 different total nitrogen rates. Yield expectations at Wabash, IN are 250 bushels per acre and 215 bushels per acre at St. Johns, MI.

Methods:

- Hybrid - DS-4878AM™ (Wabash)
  DS-3900AM™ (St. Johns)
- Utrisha N - 5oz/acre applied at V5 with only water as carrier
- PROVEN 40 - 12.8oz/acre applied in furrow with only water as carrier
- All treatments were planted with same amount of N at planting, and nitrogen rates were reduced at side dress.

Treatments:

Wabash

1. N rate total 175#
2. N rate total 155#
3. N rate total 135#
4. 175 # total N + PROVEN 40
5. 155# total N + PROVEN 40
6. 135# total N + PROVEN 40
7. 175# total N + Utrisha N
8. 155# total N + Utrisha N
9. 135# total N + Utrisha N
10. 175# total N + PROVEN 40 + Utrisha N
11. 155# total N + PROVEN 40 + Utrisha N
12. 135# total N + PROVEN 40 + Utrisha N

St. Johns

1. N rate total 210#
2. N rate total 190#
3. N rate total 170#
4. 210# total N + PROVEN 40
5. 190# total N + PROVEN 40
6. 170# total N + PROVEN 40
7. 210# total N + Utrisha N
8. 190# total N + Utrisha N
9. 170# total N + Utrisha N
10. 210# total N + PROVEN 40 + Utrisha N
11. 190# total N + PROVEN 40 + Utrisha N
12. 170# total N + PROVEN 40 + Utrisha N





NITROGEN MANAGEMENT (Continued)

Results:

Wabash only

ROW LABELS	ESTIMATE OF YIELD	YIELD DIFF (LSD(0.10)=5.1)	ESTIMATE OF MOISTURE	MOISTURE DIFF (LSD(0.10)=0.49)	ESTIMATE OF TEST WEIGHT	TW DIFF (LSD(0.10)=0.39)
Both	248	NS	18.63	NS	56.71	B
None	244.5	NS	18.49	NS	56.63	B
PROVEN 40	247.4	NS	18.63	NS	56.67	B
Utrisha N	248.5	NS	18.51	NS	57.34	A

ROW LABELS	ESTIMATE OF YIELD	YIELD DIFF (LSD(0.10)=4.5)	ESTIMATE OF MOISTURE	MOISTURE DIFF (LSD(0.10)=0.42)	ESTIMATE OF TEST WEIGHT	TW DIFF (LSD(0.10)=0.35)
135	248	NS	18.63	NS	56.71	AB
155	248.7	NS	18.6	NS	56.88	A
175	251.5	NS	19.02	NS	56.45	B

Wabash and St. Johns

ROW LABELS	ESTIMATE OF YIELD	YIELD DIFF (LSD(0.10)=4.2)	ESTIMATE OF MOISTURE	MOISTURE DIFF (LSD(0.10)=0.35)	ESTIMATE OF TEST WEIGHT	TW DIFF (LSD(0.10)=0.26)
Both	251.9	NS	18.94	NS	56.6	B
None	248.9	NS	18.88	NS	56.54	B
PROVEN 40	248.6	NS	18.85	NS	56.58	B
Utrisha N	251.4	NS	18.88	NS	57	A

ROW LABELS	ESTIMATE OF YIELD	YIELD DIFF (LSD(0.10)=3.6)	ESTIMATE OF MOISTURE	MOISTURE DIFF (LSD(0.10)=0.30)	ESTIMATE OF TEST WEIGHT	TW DIFF (LSD(0.10)=0.23)
High	251.9	NS	18.94	NS	56.6	NS
Low	249	NS	18.67	NS	56.74	NS
Med	249.9	NS	18.65	NS	56.82	NS

Conclusion:

As often happens when conducting these types of trials, the results were not what we expected to see. The anticipated result was a significant increase in yield with the addition of more nitrogen as well as both biological products. When we apply statistical analysis to our findings, we see no significant difference in yield across any of the treatments or nitrogen rates, and the knee jerk reaction is to think that we did not learn much from this study but that is not the case. We can see that because there was no significant decrease in yield when nitrogen rates were decreased with the application of either Utrisha N or PROVEN 40, that these products did help protect our yield in reduced nitrogen application scenarios. It is important to remember that the addition of a singular product or practice is unlikely to significantly add yield unless there is a known need for that product or practice determined through testing such as soil or tissue tests. These products claim to provide nitrogen for plants when nitrogen would otherwise be unavailable and in this study, this year, in these 2 locations we saw that these products did insure yield even in reduced nitrogen scenarios.