



1

New Technologies to Apply N

- Wider N application window
- Placement options relative to the row.
- Farmers want to understand the value...

2

Objective

Understand the effect of fertilizer placement on maize yield and grain moisture at harvest, for late-season nitrogen management approach.



3

Methods

- 3-year study in central Ohio with maize (*Zea mays*)
- Randomized complete block design (RCBD) with 4 replications
- N source = UAN28
- Local N application in corn: 202 Kg N/ha, split-applied (planter + side-dress)
- High-clearance agricultural sprayer used to apply liquid UAN28, late-season (V14-R).
- **4 Treatments** (applied 112 kg N/ha at planting)
 1. Control = 90 kg N/ha at side-dress (V4-V5)
 2. Late-season 90 kg N/ha using y-drops,
 3. Late-season 90 kg N/ha using a coulter / injection setup
 4. Late-season 90 kg N/ha surface applied between rows using drop down tubes
- Collected grain yield and moisture then used ANOVA for comparisons.

4



5



6



7

Center-Drop

A close-up photograph of the center-drop planter units. Two black metal frames are visible, each supporting a hopper filled with seeds. Below the hoppers are the drop arms, which are currently in the 'up' position, allowing seeds to fall into the furrows. The planter is in a grassy field, and a paved road is visible in the background under a cloudy sky.

8

Late-season Placement Treatments

Droptube



Coulter Injection



Y-drop

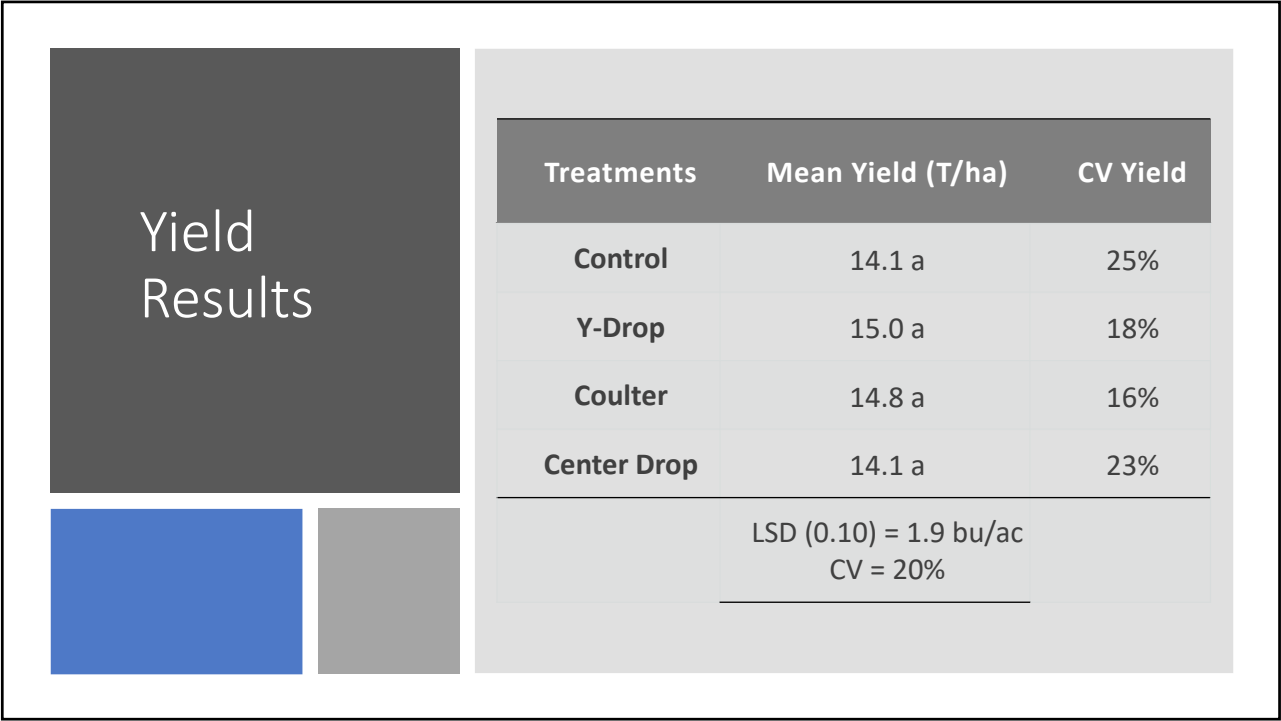


9

Yield Results
(T/ha)

Treatments	Year 1	Year 2	Year 3*
Control	10.4 b	14.5 b	17.4 a
Y-Drop	11.9 a	15.7 a	17.3 a
Coulter	12.1 a	15.6 a	16.7 a
Center Drop	10.7 b	14.4 b	17.3 a
	Dry Season	Above AVG yield; sufficient rain.	High mineralization; record yields

10



11

Summary

- No significant yield difference between the 4 treatments though practically speaking Y-drop and coulter placed N (late-season) tended to yield higher.
 - Surface-center drop yielded similar to the control (side-dress)
 - N uptake efficiencies for late-season?
 - Yield varied between years due to differences in growing conditions in particular rain events and intensity.
- Next steps includes economic analysis.

12



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