

Multi-Hybrid Planting for Corn Hybrid Placement

Study ID: 078155201702

County: Saunders

Soil Type: Judson silt loam; Nodaway silt loam; Yutan, eroded-Aksarben silty clay loam; Yutan, eroded-Judson complex

Planting Date: 5/9/17

Harvest Date: 11/2/17

Population: 28,000

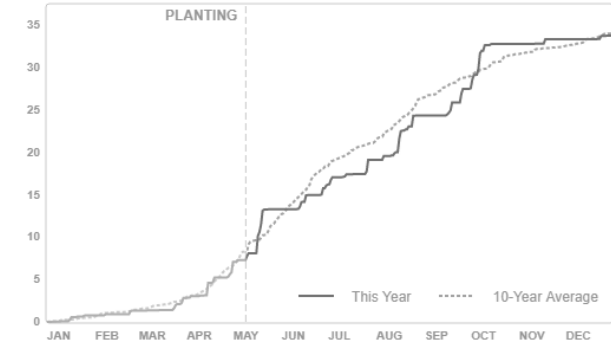
Row Spacing (in): 30

Previous Crop: Soybean

Tillage: No-Till

Irrigation: None

Rainfall (in):



Introduction: Using a multi-hybrid planter, hybrids can theoretically be placed to optimize production in stable management zones. This study compares two contrasting hybrids, one with a drought tolerant trait and one geared towards high production, placed in defined management zones (*Figure 1*).

- The drought tolerant/**defensive hybrid**, 830-39AMX, was placed in portions of the field that typically had lower water retention (dark grey).
- The **offensive hybrid**, 5F-709AM, was placed in portions of the field that normally maintained adequate moisture across the growing season (light grey).
- Check strips of the opposing hybrid were placed in each zone as shown in *Figure 1*.

Management Zone Creation: Five years of yield data, elevation, slope, wetness potential, deep and shallow EC were used for clustering in Management Zone Analyst Version 1.0 (USDA-ARS, University of Missouri, Columbia, MO).

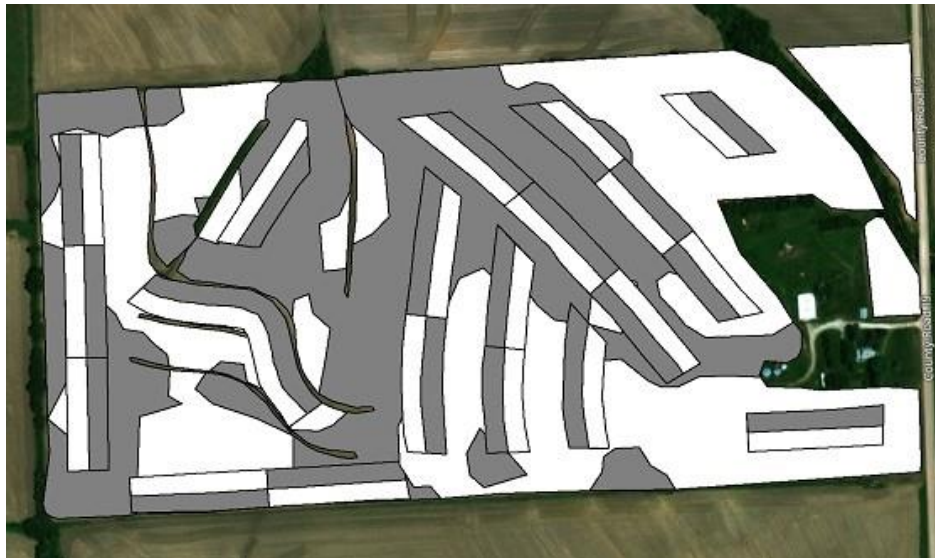


Figure 1. Management zones for defensive hybrid (dark grey), and offensive hybrid (light grey) with check strips of the opposing hybrid.

Results: Within each zone, success of the offensive and defensive hybrid was evaluated by comparing the yield of the check strips to the yield in an adjacent strip of the hybrid assigned to that zone. Data were analyzed using the GLIMMIX procedure in SAS 9.4 (SAS Institute Inc., Cary, NC). Mean separation for hybrids within a zone was performed with Fisher's LSD. Letters below apply for differences within a zone.

Treatment	Curry 830-39AMX (defensive hybrid)	NuTech 5F-709AM (offensive hybrid)	P-Value
<i>Yield (bu/ac) †</i>			
Defensive Zone	163 A*	162 A	0.860
Offensive Zone	167 A	171 A	0.356
<i>Marginal Net Return (\$/ac)‡</i>			
Defensive Zone	455.14	457.12	
Offensive Zone	466.50	486.62	

*Values with the same letter are not significantly different at a 95% confidence interval. Letters apply within zone.

†Bushels per acre corrected to 15.5% moisture.

‡Net return calculated using \$3.20/bu corn and seed costs of \$190/bag for Curry 830-39AMX and \$175/bag for NuTech 5F-709AM.

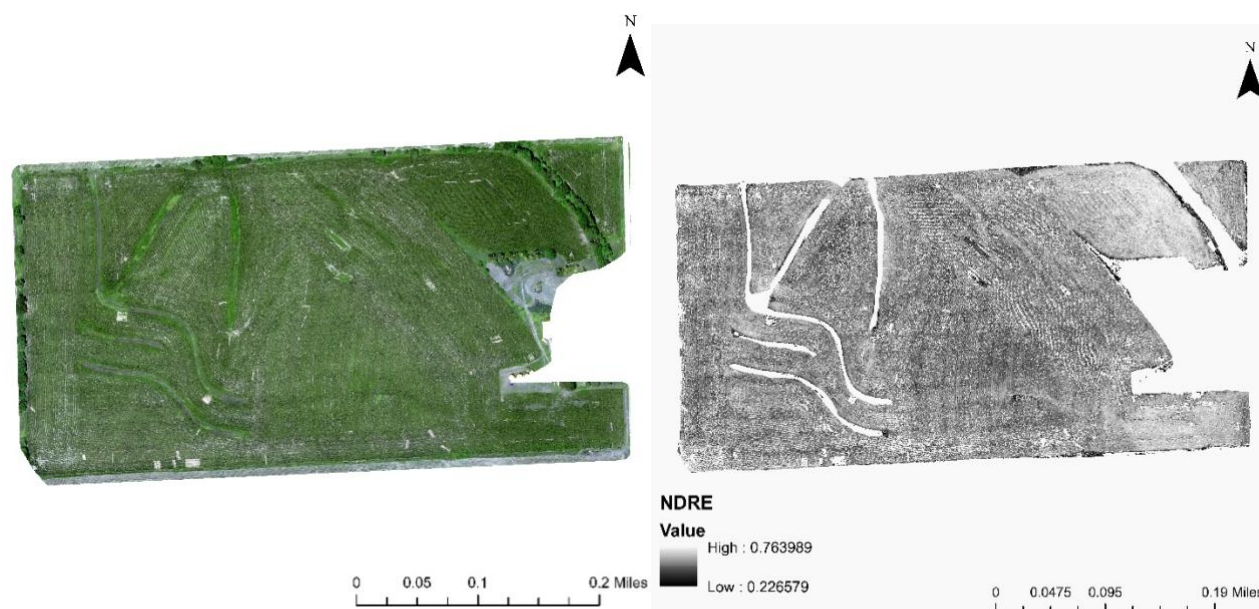


Figure 2. True color (left) and NDRE (right) imagery from the field area from July 6.

Aerial imagery was collected on July 6 with a drone (*Figure 2*). No hybrid differences were apparent in either the true color or NDRE (normalized difference red edge index) images. Some planter skips are evident.

Summary: The offensive hybrid, 5F-709AM, performed similarly to the defensive hybrid, 830-39AMX, in the offensive and defensive zone. Although not statistically analyzed, a yield gap between the offensive and defensive zone may be present, indicating that perhaps zone structure was correct. A large amount of variability was present at this field site in both zones. Growing season rainfall was 2.4" above the 30-year average, providing adequate water during the growing season.

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