

## Multi-Hybrid Planting for Corn Hybrid Placement

**Study ID:** 150053201701

**County:** Dodge

**Soil Type:** Fillmore silt loam; Moody silty clay loam; Crofton silt loam; Nora silt loam

**Planting Date:** 5/14/17

**Harvest Date:** 11/10/17

**Population:** 32,500

**Row Spacing (in):** 30

**Reps:** 8

**Previous Crop:** Corn

**Tillage:** No-Till

**Herbicides:** 3 qt/ac Resicore™ on 5/25/17; 22 oz/ac Roundup PowerMAX® on 6/25/17

**Seed Treatment:** Acceleron® Extra

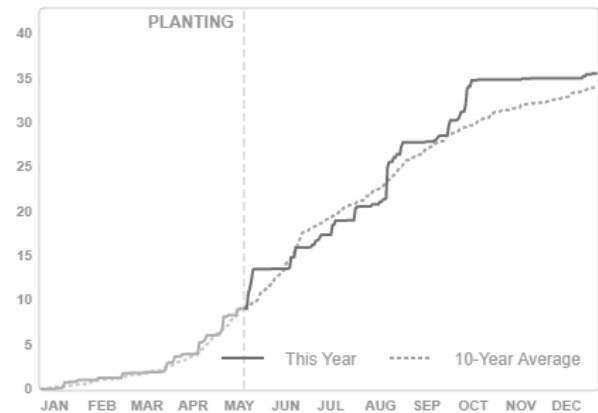
**Foliar Insecticides:** None

**Foliar Fungicides:** 10.5 oz/ac Quilt Xcel® on 8/1/17

**Fertilizer:** 102 lb N/ac as pre-plant dry spread ammonium nitrate on 5/5/17; 82 lb N/ac as UAN coulters applied on 6/27/17

**Irrigation:** None

**Rainfall (in):** Actual measured growing season rainfall was 22.65"



### Soil Test (May 2017):

OM	pH	BpH	CEC	N (0-6")	P1	P2	K	Mg	S	Zn	Mn	Fe	Cu	B	Ca	CO <sub>2</sub> C Burst
				-----ppm-----												
%																
3.1	5.9	6.6	19.7	42	29	41	317	311	18	1.3	8	55	0.8	0.4	2573	148

**Introduction:** Using a multi-hybrid planter, hybrids can ideally 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**, Channel 211-35STXRIB, was placed in portions of the field that typically had lower water retention (dark grey).
- The **offensive hybrid**, Channel 209-53STXRIB, 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:** Four years of yield data 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.

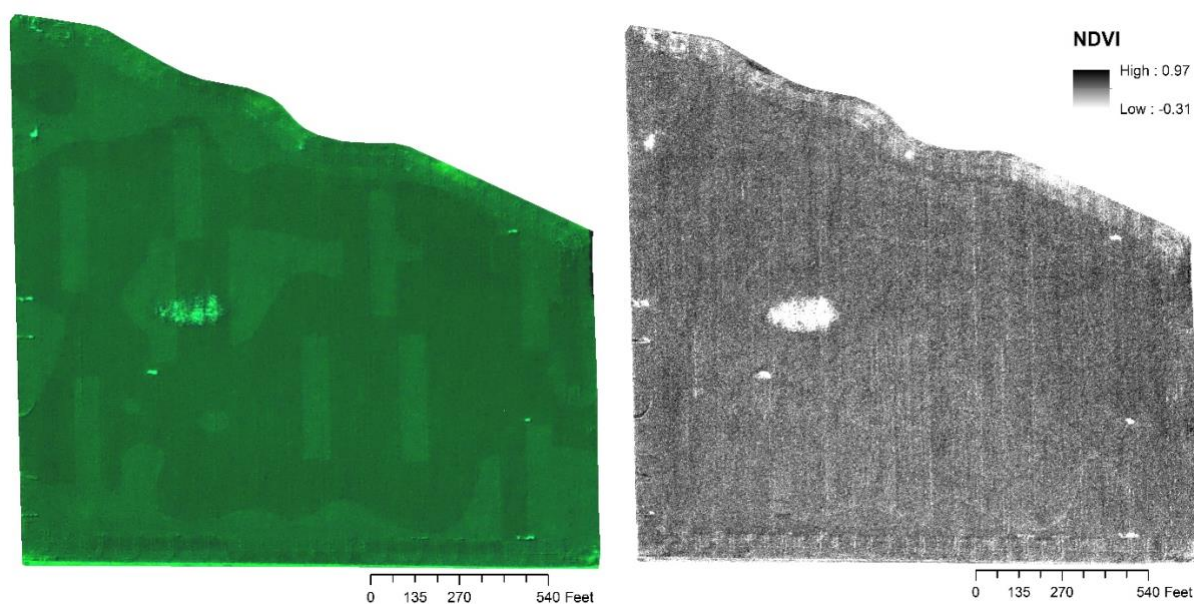
**Results:** Within each zone, success of the offensive and defensive hybrid was evaluated by comparing the yield of the check strips to the yield in an adjacent strip of the hybrid assigned to that zone. Data were analyzed using the GLIMMIX procedure in SAS 9.4 (SAS Institute Inc., Cary, NC). Mean separation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

Treatment	Channel 211 (defensive hybrid)	Channel 209 (offensive hybrid)	P-Value
<i>Yield (bu/ac) †</i>			
Defensive Zone	223 A*	213 A	0.223
Offensive Zone	242 A	237 A	0.116
<i>Marginal Net Return (\$/ac)‡</i>			
Defensive Zone	577.99	542.29	
Offensive Zone	640.17	626.44	

\*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 \$322/bag for Channel 209 and \$322/bag for Channel 211.



**Figure 2.** True color (left) and NDVI (right) imagery of the plot area from August 31, 2017.

Aerial imagery was collected with an airplane throughout the growing season. The hybrid zones and check strips were apparent in the true color imagery from July 15 through the end of the growing season. Imagery from August 31 (*Figure 2*) shows these differences in the true color imagery. Differences were not apparent in the NDVI imagery.

**Summary:** There was no difference between hybrid yields in the defensive or offensive zone. This is consistent with the research results of this same study conducted on this field in 2016. The 2017 growing season was the second year of corn in a row, which provided an opportunity for greater effectiveness of a defensive hybrid. In a corn following corn system, a defensive hybrid may help with issues such as disease and insect resistance and lodging or standability which may result from a lack of crop rotation. Emergence can also be compromised with increased residue leading to cool, wet soils and slower emergence. The defensive hybrid may have provided some of these features, but ultimately, there was no difference in hybrids. Rainfall recorded at this site was 4" above the 30-year average for the growing season; subsequently, a defensive hybrid was not likely needed.

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