Evaluating Corn Relative Maturity for Improving Cover Crop Establishment

Study ID: 0701147201803
County: Richardson
Soil Type: Marshall silty clay loam 2-6% slopes; Pohocco silty clay loam 6-11% slopes, eroded; Geary silty clay loam 7-11% slopes, eroded
Planting Date: 5/7/18
Harvest Date: 9/24/18
Population: 27,500
Row Spacing (in): 30
Reps: 6
Previous Crop: Soybean
Tillage: No-Till
Herbicides: ***Pre:*** 8 oz/ac Banvel® and 6 oz/ac of 6# 2,4-D ***Post:*** 2.5 lb/ac generic mesotrione, 1 pt/ac Atrazine, and 12 oz/ac of 5.4 lb Roundup®

Fertilizer: 260 lb N/ac as 32% UAN
Irrigation: None
Rainfall (in):

Soil Test (Dec. 2018):

Soil pH 1:1	Buffer pH	CEC	OM	Bray P1 Weak Bray	Bray P2 Strong Bray	K	Mg	Ca	S	Zn	K	Mg	Ca	H
		mg/100g	*%*	*ppm*	*ppm*	*----------(ppm)----------*					*----% Base Saturation---*			
6.6	6.8	21.1	2.8	47	68	298	402	3130	7	4.8	3.6	15.9	74.2	6.3
6.9		19.7	2.9	28	43	267	364	3206	7	6.0	3.5	15.4	81.1	0.0

Introduction: Cover crops have the potential to provide several ecosystem services; therefore, many corn and soybean producers are looking for ways to better integrate them into their cropping systems. One of the primary limitations to fall planted cover crops in Nebraska is the limited growing window following corn and soybean harvest. One way to increase the growing window for cover crops following corn and soybean harvest is to plant earlier maturing corn and soybean varieties. Recent small plot research at the University of Nebraska found that shorter season comparative relative maturity (CRM) (95 CRM) corn hybrids had yields similar to longer season CRM hybrids (111 CRM). This research also showed the potential for greater cereal rye biomass accumulation following the shorter season hybrids. Two on-farm research studies in 2017 found that while the 95 day CRM was lower yielding, there were no yield differences between the 105, 111, and 115 day CRM. In this study, five different CRM corn hybrids were evaluated. Yield data from the yield monitor is displayed in Figure 1. Yield data reported in the table below is from weigh wagon measurements.

95 day CRM = Dekalb® DKC 45-65 RIB
99 day CRM = Channel 199-29STX RIB
105 day CRM = Dekalb® DKC 55-20 RIB
111 day CRM = Dekalb® DKC 61-54 RIB
114 day CRM = Dekalb® DKC 64-34 RIB

Results:

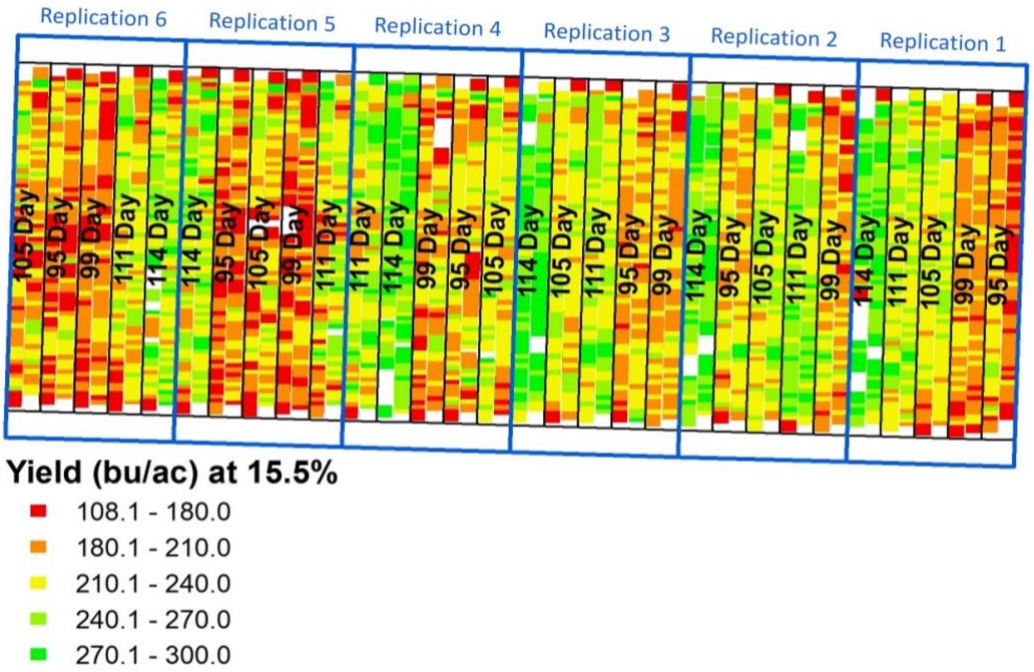

Figure 1. Yield from combine yield monitor for five corn hybrids evaluated.

	Harvest Stand Count (plants/ac)	Test Weight	Moisture (%)	Yield† (bu/ac)	Marginal Net Return‡ ($/ac)
95 Day CRM	26,466 A*	57 C	14.0 D	179 D	482.25 D
99 Day CRM	26,693 A	58 B	13.9 D	176 D	475.57 D
105 Day CRM	26,466 A	58 B	15.0 C	198 C	544.56 C
111 Day CRM	26,466 A	60 A	16.1 B	209 B	594.57 B
114 Day CRM	27,262 A	59 A	17.5 A	226 A	655.82 A
P-Value	0.881	<0.0001	<0.0001	<0.0001	<0.0001

*Values with the same letter are not significantly different at a 90% confidence level.
†Bushels per acre corrected to 15.5% moisture.
‡Marginal net return based on $3.23/bu corn, $250/unit DKC 45-65 RIB, $240/unit Channel 199-29STX RIB, $263/unit DKC 55-20 RIB, $250/unit DKC 61-54 RIB, and $272/ac DKC 64-34 RIB with 80,000 seeds/unit.

Summary:

- There were no differences in harvest stand counts between the five hybrids evaluated.
- Moisture and test weight were significantly different at harvest. The shorter season hybrids had lower test weight and were drier; the longer season hybrids had higher test weights and were wetter at the time of harvest.
- Yields were significantly lower for the 95 and 99 CRM and increased with increasing CRM. The highest yielding hybrid (114 CRM) was 47 bu/ac higher than the 95 day CRM.
- Net return also increased with increasing CRM.
- Due to the increase in yield and net return for increasing CRM, the results of this study do not align with the results from the 2017 on-farm research studies. The results of this study do not support the idea that an earlier maturing hybrid could be planted without sacrificing yield, allowing for earlier crop harvest and subsequent earlier cover crop establishment.

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