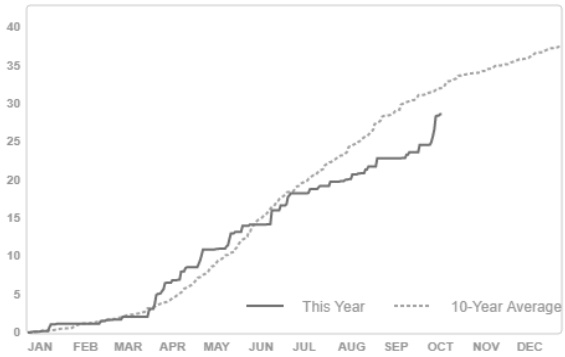
Evaluating Corn Relative Maturity for Improving Cover Crop Establishment

Study ID: 701147201701
County: Richardson
Soil Type: Pohocco silty clay loam 6-11% slopes, eroded; Marshall silty clay loam 6-11% slopes, eroded; Zook silty clay loam occasionally flooded; Judson silt loam 2-6% slopes; Marshall silty clay loam 2-6% slopes
Planting Date: 5/8/17
Harvest Date: 10/3/17
Population: 27,500
Row Spacing (in): 30
Reps: 6
Previous Crop: Soybean
Tillage: No-Till
Herbicides: ***Pre:*** Banvel® and 2,4-D ***Post:*** Roundup®, Atrazine, and Callisto®

Fertilizer: 130 lb N/acre
Irrigation: None
Rainfall (in):



Introduction: Cover crops have the potential to provide several ecosystem services, which is why more corn producers are finding ways to 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. Recent small plot research at the University of Nebraska found that shorter season comparative relative maturity (CRM) (95 CRM) corn hybrids have similar yields to longer season CRM hybrids (111 CRM). This research also showed the potential for greater cereal rye biomass accumulation following the 95 CRM hybrid compared with the 111 CRM hybrid. Based on these results our objective is to evaluate corn growth, development, and yield for different CRM hybrids using on-farm research. In this study four different CRM corn hybrids were evaluated.

95 day CRM = DKC 45-65 RIB (GENSS RIB)
105 day CRM = DKC 55-20 RIB (GENSS RIB)
111 day CRM = DKC 61-54 RIB (GENSS RIB)
115 day CRM = 215-83STXRIB (GENSS RIB)

Results:

	Corn Stand Count at Harvest (plants/ac)	Corn Test Weight (lb/bu)	Corn Moisture (%)	Corn Yield (bu/acre)†	Marginal Net Return‡ ($/ac)
95 Day CRM	22,426 B*	57 B	13.4 D	178 B	561.58 B
105 Day CRM	25,479 A	58 A	14.7 C	204 A	642.80 A
111 Day CRM	26,172 A	59 A	16.6 B	216 A	680.06 A
115 Day CRM	24,168 AB	56 B	18.1 A	202 A	635.35 A
P-Value	0.005	0.0001	<0.0001	0.005	0.005

*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 $3.15/bu corn and assumes hybrids have same cost.

Summary:

- Some portions of the field had ground squirrel damage and planter skips for part or all of the length of the study area. Plots where these instances occurred were removed from the analysis.
- There were significant moisture differences with the longest CRM (115) having the wettest corn at the time of harvest and the shortest CRM (95) having the driest corn at harvest.
- There were significant differences in test weight, but they did not follow a pattern with relation to the CRM.
- Yields were adjusted to a standard moisture of 15.5 percent. Significant yield differences were observed between the CRMs tested. The 95 day corn was significantly lower yielding than the other three CRMs. There was no significant yield difference between the 105, 111, and 115 day corn.
- Stand counts at harvest were significantly different between the CRMs. To determine if this impacted yield, a covariate analysis was conducted. Including actual treatment populations as a covariate did not affect the yield analysis.
- The 95 day CRM hybrid had a significantly lower marginal net return than the other three treatments.

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