



Nebraska On-Farm Research Network Corn CRM Hybrids for Improving Cover Crop Establishment

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Objective: Identify the actual on-farm yield of six different comparative relative maturity (CRM) corn hybrids.

Rationale: 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) (Figs 1&2). This research also showed the potential for greater cereal rye biomass accumulation following the 95 CRM hybrid compared to the 111 CRM hybrid (Figs 3&4). Based on these results our objective is to evaluate corn growth, development, and yield results for different CRM hybrids using on-farm research. Our sub-objective is to track development stages of the differing hybrids at these different locations to help us understand why yield differences do or do not occur among this wide range of CRM hybrids. Results from this research would allow us to provide more confident recommendations to Nebraska corn growers about the yield potential of shorter season CRM hybrids. In addition, this information could help improve the possible benefits from fall planted cover crops following corn.

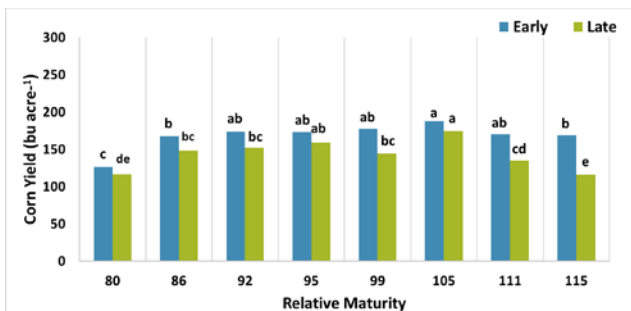


Fig 1. Corn yield as affected by planting date and relative maturity at Havelock (rain-fed, Northeast side of Lincoln) in 2016. Bars with the same letter(s) are not different (Significant at $P \leq 0.05$).

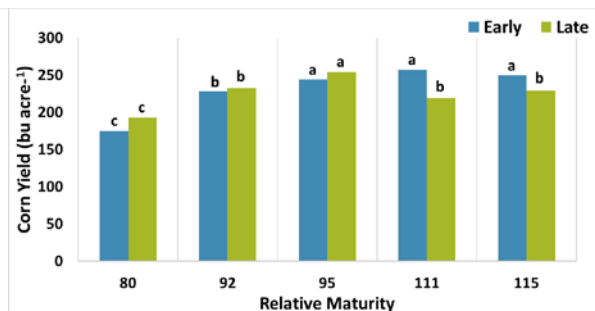


Fig 2. Corn yield as affected by planting date and relative maturity at SCAL (irrigated, near Clay Center) across both years (2015 & 2016). Bars with the same letter(s) within same planting date are not different (Significant at $P \leq 0.05$).

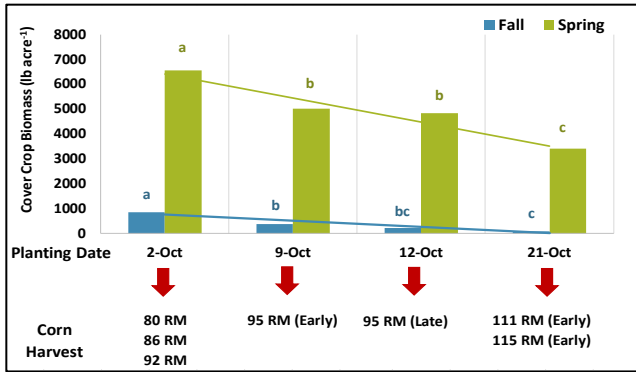


Figure 3. 2015 fall and 2016 spring biomass production as affected by the planting date at SCAL (irrigated) and estimated corn RM harvest maturities. Bars with the same letter(s) within same sampling are not different (Significant at $P \leq 0.05$). Sampling dates: 12/08/2015 and 04/14/2016.

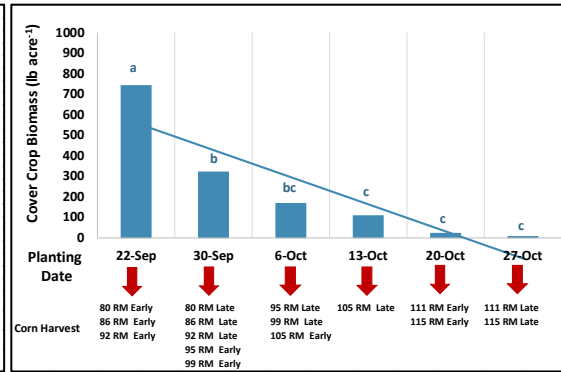


Figure 4. 2015 fall biomass production as affected by the planting date at SCAL (irrigated) and estimated corn RM harvest maturities. Bars with the same letter(s) are not different (Significant at $P \leq 0.05$). Sampling date: 11/15/2016 (Year 2).

Procedure: To determine the actual yield of different CRM corn hybrids we suggest that six CRM hybrids be tested. These will be replicated in the field and, ideally evaluated over multiple years.

The following corn CRM hybrids will be provided, however, participants may choose to add their own hybrids in addition.

Hybrids provided by On-Farm Research	
CRM	Description
DKC 42-37 RIB	92-day
DKC 45-65 RIB	95-day
Channel 199-29STXRIB	99-day
DKC 55-20 RIB	105-day
DKC61-54RIB	111-day
DKC64-34 RIB	114-day

Below is a list of proposed on-farm research locations.

Location
Rainfed/dryland West of Hwy 281
Rainfed/dryland East of Hwy 281
Irrigated option 1 (all locations)
Irrigated option 2 (all locations)

Treatment Design: The following is an example treatment design for a four hybrid trial. At least 4 replications are needed for this trial. The same management practices should be used across the entire study area.

NOTE: Rows planted in each treatment need to be equal to or greater than corn head width.

Replication 1	Hybrid 1	Yield:
	Hybrid 2	Yield:
	Hybrid 3	Yield:
	Hybrid 4	Yield:
	Hybrid 5	Yield:
	Hybrid 6	Yield:
Replication 2	Hybrid 2	Yield:
	Hybrid 4	Yield:
	Hybrid 3	Yield:
	Hybrid 1	Yield:
	Hybrid 6	Yield:
	Hybrid 5	Yield:
Replication 3	Hybrid 2	Yield:
	Hybrid 1	Yield:
	Hybrid 4	Yield:
	Hybrid 3	Yield:
	Hybrid 5	Yield:
	Hybrid 6	Yield:
Replication 4	Hybrid 3	Yield:
	Hybrid 1	Yield:
	Hybrid 2	Yield:
	Hybrid 5	Yield:
	Hybrid 4	Yield:
	Hybrid 6	Yield:

Grower Requirements:

1. Flag or mark GPS location of each treatment.
2. Provide all necessary inputs for crop production.
3. Complete background agronomic form about site and practices.
4. Collect yield data and grain moisture with weigh wagon. Contact UNL Extension if assistance with this process is needed.
5. Collect stand counts at harvest.
6. Estimate potential harvest date at 15% grain moisture for each CRM hybrid (all hybrids be harvested together)
7. Submit harvest data to UNL Extension within 30 days of harvest or by Dec. 15.
8. Allow UNL Extension to use submitted and collected data for research, educational, and informational purposes.

Nebraska On-Farm Research Network will:

1. Provide one unit (80,000 kernels) of seed for each of the six CRM corn hybrids.
2. Provide technical assistance in setting up replicated and randomized experimental design.
3. Provide assistance upon request with treatment implementation, flagging, stand counts, and recording yield.
4. Analyze raw data using statistical analysis and provide this information to the grower.

Disclaimer: The Nebraska On-Farm Research Network does not endorse the use of products tested in on-farm replicated strip trials. While treatments are replicated within trials and may be replicated across multiple sites under various conditions, your individual

results may vary.

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