Effect of Plant Population and Hybrid Maturity on Corn Performance

Blaine G. Schatz

Table 1. Influence of plant population on field agronomic traits, seed yield and quality of corn.

Target Plant Population	Established Population	Canopy Firing	Early Lodge	Days to Silk	Ear Ht	Plant Ht	Harvest Moisture	Test Weight	Grain Yield
plants ac^{-1}	plants ac^{-1}	0 to 9	0 to 9		inch	inch	%	lb/bu	bu/ac
20,000	19,873	1.0	0.0	70.9	44.2	102.4	15.4	57.7	151.5
24,000	25,045	1.2	0.1	71.1	45.4	104.3	15.4	57.7	182.8
28,000	26,996	1.2	0.0	71.3	46.1	104.9	15.2	57.9	186.1
32,000	33,757	2.6	0.1	70.9	46.5	105.5	15.1	58.0	187.4
36,000	37,228	2.4	0.4	70.9	44.8	102.6	15.9	58.1	189.8
40,000	42,355	3.1	1.3	71.1	47.2	105.8	15.4	58.1	183.1
44,000	44,487	3.6	0.7	71.1	48.1	106.0	15.8	57.9	170.1
MEAN	32,820	2.2	0.4	71.0	46.0	104.5	15.5	57.9	178.9
C.V. (%)	5.2	34.9	150.0	0.8	5.1	2.8	7.5	1.7	8.1
LSD 0.05	1,647	1.1	0.7	NS	NS	NS	NS	NS	19.8
LSD 0.01	2,256	1.5	NS	NS	NS	NS	NS	NS	27.1
#OBS	16	16	16	16	16	16	16	16	16
Pr > F	<.0001	0.0002	0.0148	0.9952	0.0954	0.6957	0.2647	0.8872	0.0085

Table 2. Field agronomic traits, seed yield and quality of corn hybrids utilized in plant population study.

RM	Corn Hybrid	Average Plant Population	Canopy Firing	Early Lodge	Days to Silk	Ear Ht	Plant Ht	Harvest Moisture	Test Weight	Grain Yield
		plants ac^{-1}	0 to 9	0 to 9		inch	inch	%	lb/bu	bu/ac
83	Dekalb DKC 33-77	33,199	2.8	0.3	69.8	45.2	107.1	15.1	59.3	179.3
85	Mycogen 2P174	32,603	1.6	0.6	71.6	44.1	104.3	14.9	60.2	173.6
87	Dairyland 9487	32,214	1.2	0.2	70.4	45.7	103.4	16.3	55.7	172.8
90	Wensman 7110VT3PRO	33,264	3.0	0.4	72.4	49.2	103.2	15.5	56.6	188.9
	LSD 0.05	NS	0.4	NS	0.3	1.2	1.6	0.6	0.5	7.7
	LSD 0.01	NS	0.5	NS	0.4	1.7	2.1	0.8	0.7	10.2
	#OBS	28	28	28	28	28	28	28	28	28
	Pr > F	0.0749	<.0001	0.0539	<.0001	<.0001	<.0001	0.0001	<.0001	0.0002

Planting Date = May 10 ; Harvest Date = October 10 ; Previous Crop = Field Pea

Table 3. Field agronomic traits, seed yield and quality of corn hybrids across the plant populations evaluated.

Plant Population	RM	Corn Hybrid	Canopy Firing 0 to 9	Early Lodge 0 to 9	Days to Silk	Ear Ht inch	Plant Ht inch	Harvest Moisture %	Test Weight lb/bu	Grain Yield bu/ac
20,000	83	Dekalb DKC 33-77	1.8	0.0	69.8	42.5	106.0	15.0	59.1	149.1
	85	Mycogen 2P174	0.8	0.0	71.3	40.9	98.9	14.9	60.2	150.0
	87	Dairyland 9487	0.0	0.0	70.5	45.5	103.1	15.9	56.0	153.4
	90	Wensman 7110VT3PRO	1.5	0.0	72.3	47.8	101.8	15.9	55.8	153.4
24,000	83	Dekalb DKC 33-77	1.8	0.0	69.8	43.3	107.8	15.0	58.9	178.6
	85	Mycogen 2P174	0.8	0.3	72.0	43.5	103.9	15.0	59.9	181.5
	87	Dairyland 9487	0.3	0.0	70.0	45.3	102.2	16.4	55.8	175.1
	90	Wensman 7110VT3PRO	2.0	0.0	72.5	49.5	103.4	15.3	56.3	196.2
28,000	83	Dekalb DKC 33-77	2.0	0.0	70.0	44.0	105.0	15.1	59.1	185.9
	85	Mycogen 2P174	0.5	0.0	71.8	45.4	106.2	14.6	60.4	170.7
	87	Dairyland 9487	0.3	0.0	70.8	44.7	103.4	15.5	55.7	195.9
	90	Wensman 7110VT3PRO	2.0	0.0	72.8	50.2	104.9	15.4	56.3	192.0
32,000	83	Dekalb DKC 33-77	3.0	0.3	70.0	45.3	107.4	15.3	59.4	187.8
	85	Mycogen 2P174	1.8	0.0	71.5	46.3	105.9	14.1	60.4	177.0
	87	Dairyland 9487	1.8	0.0	70.3	45.7	105.4	16.1	55.4	185.8
	90	Wensman 7110VT3PRO	4.0	0.3	72.0	48.8	103.3	14.8	57.3	198.9
36,000	83	Dekalb DKC 33-77	3.0	0.3	69.5	44.5	107.8	15.2	59.4	200.0
	85	Mycogen 2P174	2.0	0.8	71.5	43.7	103.1	15.8	60.2	185.7
	87	Dairyland 9487	1.5	0.3	70.3	43.5	99.8	17.0	56.2	173.4
	90	Wensman 7110VT3PRO	3.3	0.3	72.3	47.6	99.8	15.7	56.7	200.1
40,000	83	Dekalb DKC 33-77	4.0	1.5	69.8	47.6	107.2	14.9	59.7	182.0
	85	Mycogen 2P174	2.0	1.5	71.8	42.9	105.1	14.4	60.3	182.2
	87	Dairyland 9487	2.3	0.8	70.5	48.0	105.8	16.8	55.3	168.8
	90	Wensman 7110VT3PRO	4.0	1.3	72.5	50.2	104.9	15.7	56.9	199.4
44,000	83	Dekalb DKC 33-77	4.0	0.0	69.8	49.0	108.3	15.4	59.8	172.0
	85	Mycogen 2P174	3.3	1.5	71.8	46.1	106.7	15.6	59.9	168.4
	87	Dairyland 9487	2.5	0.3	70.3	47.2	104.4	16.5	55.2	157.4
	90	Wensman 7110VT3PRO	4.5	1.0	72.5	50.2	104.5	15.7	56.7	182.5
		LSD 0.05	NS	NS	NS	NS	NS	NS	NS	NS
		LSD 0.01	NS	NS	NS	NS	NS	NS	NS	NS
		#OBS	4	4	4	4	4	4	4	4
		Pr > F	0.9515	0.3354	0.954	0.2149	0.2683	0.9775	0.8678	0.3817