Corn Hybrid Evaluations in Cochise County, 1989

L. J. Clark and E. Schwennesen

Abstract

Corn yields were decreased in 1989 compared to 1988. The highest yielding yellow corn produced less than 10,000 pounds per acre. The weather was considered the largest factor in the yield reduction. Yellow corn hybrids were grown in two sites with two different cooperators. Yield differences may have been due to cultural practices. An auxiliary study on plant populations is also included in this report.

Introduction

For the past several years the corn varietal evaluations have been conducted in the Bonita area, which has climatic conditions and soils that are different from the other corn growing areas in Cochise county. This year three trials were conducted in central and south central part of the county from Sunsites to Elfrida.

Materials and Methods

Crop History - Ed Curry Farm in Sunsites

Elevation: 4200 feet above sea level
Soil: Cogswell clay loam
Planting date: 24 April, 1989 Rate: 31,800 seeds/acre
Irrigation: Center pivot, ca, 33 acre inches
Herbicide: Surpass
Fertilizer: 49 units P_2O_5, 260 units of N (all in the water)
Insecticide: Lorsban + miticide
Field variety: Pioneer 3183
Plot size: 6-36 inch rows approximately 1,200 feet in length
Harvest date: 26 September

This was a strip trial with check plots every two planter passes. Plots were harvested with a John Deere 7720 combine, weighed in a weigh wagon and sampled for bushel weight and moisture. Stalk, ear and lodging counts were taken immediately prior to harvest.

Data from this trial are found in Table 1.

Crop History - Rainbow's End Ranch, Elfrida

Elevation: 4300 feet above sea level
Soil type: Sandy clay loam
Planting date: 6 April, 1989 Rate: 30,800 seeds/ac yellow corn
27,700 seeds/ac white corn
Irrigation: Center pivot, ca. 41 acre inches
Herbicide: Sutan and atrazine
Fertilizer: 227 lbs of N, 69 lbs of P_2O_5, 4 lbs of Zinc, 1 lb of Boron per acre
Insecticide: Lannate and Penncap-M
Plot size: 6-30 inch rows by approximately 2200 feet long
Field variety: DK 656 and DK 77W, respectively
Harvest date: 9 October

This was a "Fact plot" design with a check plot every other plot. Plots were harvested with a John Deere 7720 combine, weighed in a weigh wagon and sampled for bushel weight and moisture. Stalk, ear and lodging counts were taken prior to harvest. This trial was conducted in cooperation with Mark Brooks of Kamprath Seed Co. Data from this trial are found in Tables 2 and 3.

Discussion

1989 was hotter and drier than normal and was not as good a corn year as 1988, consequently, yields were down compared the 1988 (1). The Garst twin pack 4445 was the top hybrid in Sunsites with one of its components, Garst 8345, following close on its heels and Pioneer 3168 coming in third place. Garst 8345 was the top yielding hybrid in 1987 and Pioneer 3168 was first in 1988, so even though the trials were in Bonita in 1987 and 1988, it appears that the top hybrids come to the top in all locations in Cochise county, during good years and bad.

In Elfrida the yields were somewhat lower than in Sunsites, this could be due to the difference in nitrogen fertilizer applied or due to the earlier planting date in Elfrida. Looking at DeKalb 656, which was in both sites, the pounds of grain produced per pound of nitrogen fertilizer was 34.4 at both sites. The same comparison with Pioneer 3183 was not quite as close with 34.0 and 37.5 pounds of grain per pound of nitrogen fertilizer, respectively, for Sunsites and Elfrida. The evidence is appealing, but not clear cut that the yield differences are due to nitrogen fertilizer.

In the white corn trial, Table 3, DeKalb 77W was the outstanding variety at this site, and even yielded more than the DeKalb 703W in the trial in Sunsites. Bushel weights were very good for all varieties even though they were more moist than the yellow corn hybrids.

Figures 1 and 2 show the relationship between corn yield and planting population. A regression analysis of data was performed for both yellow and white corn, both indicating that yields increase with higher seeding rates. Data variability make it impossible to know if a maximum seeding rate was obtained, but it is doubtful. The regression analyses indicated an increase of 127 and 89 pounds of grain per 1,000 seeds for yellow and white corn, respectively.

References

1. Clark, L.J. and E. Schwennesen. 1989. Corn Hybrid Evaluation in Bonita, Cochise County, 1988. Forage and Grain, A College of Agriculture Report, The University of Arizona, Tucson, AZ. Series P-79, pp. 24-5.

2. Clark, L.J. and E. Schwennesen. 1988. Corn Variety Trial in Bonita, Cochise County, 1987. Forage and Grain, A College of Agriculture Report, The University of Arizona, Tucson, AZ. Series P-74, pp. 133-4.

Table 1. Yield and other agronomic data from yellow corn varieties grown in Sunsites, 1989.

Variety	% M	Bu Wt	Pl/ac	% Bare	% Ldg	--------Yield*------- Lbs/ac	Bu/ac
Garst 4445	17.5	59.0	28133	6.5	9.7	9685.1	172.9
Garst 8345	17.4	55.0	31763	2.9	14.3	9626.5	171.9
Pio 3168	22.5	58.0	32670	0.0	0.0	9193.0	164.2
DK 656	19.0	56.0	31763	5.7	34.3	8961.4	159.8
Asg RX807	21.0	56.0	33578	2.7	2.7	8949.3	159.8
Pio 3183	21.0	56.5	32670	0.0	0.0	8849.2	158.0
NK 8505	23.3	54.0	31763	2.9	21.9	8819.9	157.5
SX 352	19.8	56.0	31763	0.0	2.9	8795.2	157.1
Crgl 7990	17.9	56.0	35393	7.7	2.6	8572.6	153.1
Asg RX908	23.5	56.0	32670	2.8	5.6	8145.1	145.4
DK 703W	19.3	60.0	26318	0.0	6.9	8005.8	143.0
NK 8645	24.5	58.0	31763	5.7	11.4	7776.3	138.9
Average	20.6	56.7	31657	3.1	9.4	8779.4	156.8

* Yields adjusted to 15.5% moisture.

Table 2. Yield and other agronomic data from yellow corn varieties grown in Elfrida in 1989.

Variety	% M	Bu Wt	Pl/ac	% Bare	% Ldg	--------Yield*------- Lbs/ac	Bu/ac
DK X863	14.5	56.0	22652	3.8	0.0	9097	162.4
Pio 3183	14.8	60.0	21781	4.0	0.0	8509	151.9
DK X887	14.8	59.0	29662	17.6	0.0	8419	150.3
DK X972	15.2	58.0	25266	0.0	3.4	8251	147.3
Pio 3181	12.7	62.0	25266	0.0	0.0	7963	142.2
DK 656	12.9	60.0	26137	5.9	5.1	7806	139.4
KSRS1115	12.4	62.0	23523	3.7	0.0	7616	136.0
Conlee 202	14.4	62.0	20910	20.8	33.3	6412	114.5
Average	14.0	59.9	24400	7.0	5.2	8009	143.0

* Yields are corrected to 15.5% moisture.

Table 3. Yield and other agronomic data from white corn varieties grown in Elfrida in 1989.

Variety	% M	Bu Wt	Pl/ac	% Bare	% Ldg	--------Yield*------- Lbs/ac	Bu/ac
DK 77W	19.2	60.0	23349	1.1	8.8	8322	148.6
KS 3118W	17.7	61.0	22652	-7.7	0.0	6966	124.4
Asg RX405W	22.9	62.0	25266	0.0	13.8	6797	121.4
Conlee 113W	19.2	60.0	24394	0.0	10.7	6777	121.0
Conlee 115W	17.8	60.0	20038	4.3	8.7	6682	119.3
Asg RX965W	18.3	62.0	23523	0.0	0.0	6278	112.1
Average	19.2	60.8	23204	-0.4	7.0	6970	124.4

* Yields are corrected to 15.5% moisture.

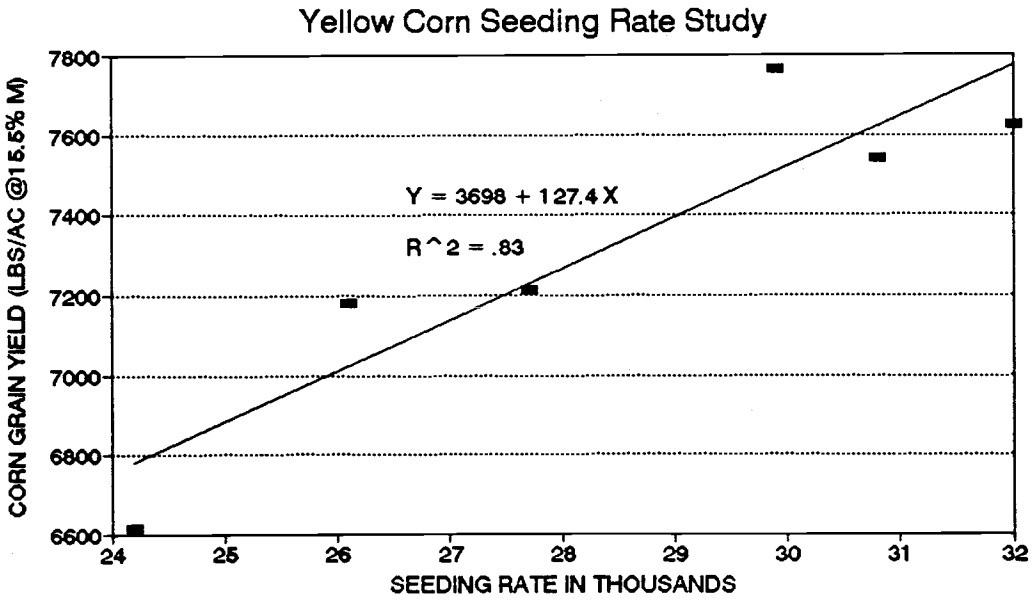

Figure 1. Seeding rate study on yellow corn grown in Elfrida, 1989.

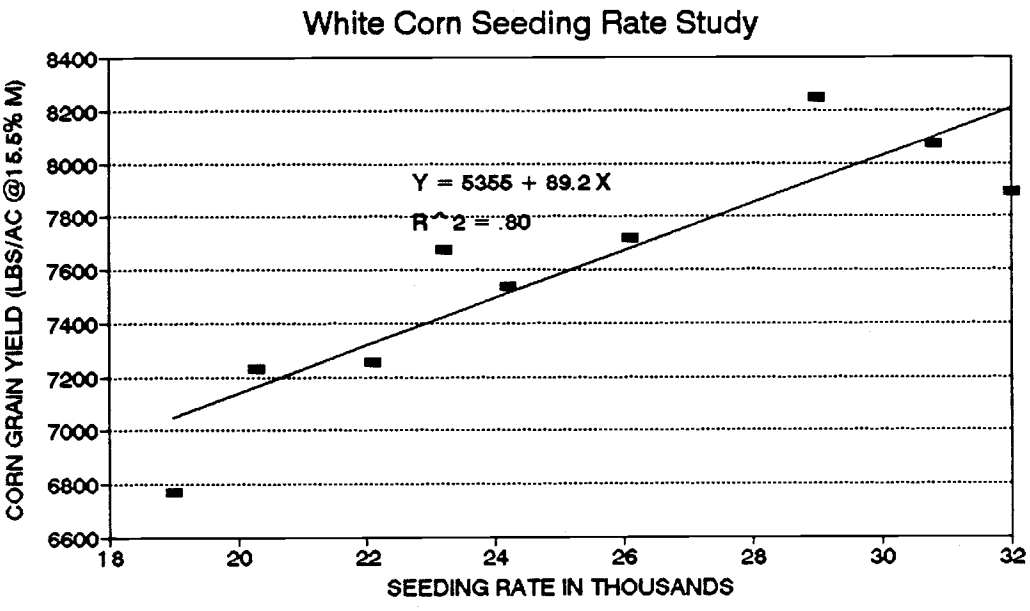

Figure 2. Seeding rate study on white corn grown in Elfrida, 1989.