Hybrid Corn Trials

effect of summer temperatures on corn maturity in Santa Barbara County

Harwood L. Hall

Temperature differences may be so great between relatively nearby areas as to cause hybrid corn varieties to perform in widely different ways.

Hybrid corn trials conducted during the past few years showed clearly that hybrids will perform quite differently in the coastal area of Lompoc, in the intermediate area of the Santa Ynez Valley, and in the inland area of the Cuyama Valley. Maturity observations at Bakersfield supported the Santa Barbara County trials. However, in general the early varieties tested proved the most profitable for grain purposes in the coastal area.

In the Santa Barbara County areas, corn is a major crop whether for silage or grain.

Considering only the months of June, July, and August—when most of the corn growth takes place—records of weather stations in the trial areas show the following comparison of temperatures for three-year averages:

Temperature averages

	1952	1953	1954	Av.
Lompoc	60.50	60.27	59.87	59.88
Santa Ynez	64.50	66.10	65.60	65.40
Cuyama	70.10	71.10	70.70	70.63
Bakersfield Kern County	78.27	79.12	78.57	78.65

From one station to the next the change is about five degrees—except for the eight degree difference between Cuyama and Bakersfield.

In 1952, duplicate trials were established in the Santa Ynez and Cuyama valleys. To cover the range of maturity, six varieties of DeKalb hybrid corn were used in the trials, with one Northrup King variety as a check. The DeKalbs ranged from the early DeKalb 240 to the late 1022; K3A was the Northrup King variety.

At each location, varieties were planted in the same field and at the same time. Maturity was judged by the moisture content of the whole plant, considering 67% moisture the proper condition for the best silage. Sampling was done every five days until the optimum was reached.

The following results were obtained:

Time from Planting to Harvest at 67% Moisture. 1952 Trials.

Variety	Santa Ynez Days	Cuyama Days
DeKalb 240	133	127
DeKalb 459	140	131
DeKalb 666	140	132
DeKalb 850	143	134
DeKalb 1002	152	135
DeKalb 1022	155	137
K3A	137	129

In 1953, similar trials were conducted at Lompoc and Santa Ynez except that fewer varieties were used. These results were as follows:

Time from Planting to Harvest at 67% Moisture. 1953 Trials.

Variety	Lompoc Days	Santa Ynez Days
DeKalb 459	156	141
DeKalb 666	164	147
DeKalb 1002	169	154
K3A	156	

In these trials, the DeKalb 459 was considered the early variety, and the days from planting to maturity compared very favorably with the previous year's record. The K3A responded similarly to DeKalb 459, as it had the previous year. The other varieties also responded to the climatical conditions very much as they had the previous year.

From these records and those of several others taken at the same time, the following general statement of maturity in the various districts can be made:

Approximate Maturity of Hybrid Corn in Various Areas of Production. (Days from Planting to Harvest for Silage—67% Moisture.)

Varieties	Lompoc area	Santa Ynez Valley	Cuyama Valley	Bakersfield
Early				
DeKalb 459	145	140	130	110
Midseason				
DeKalb 666	165	145	132	115
Late				
DeKalb 1002	169	154	135	120

At the same time that the maturity records were being kept for the several varieties, replicated plots to determine grain yield were maintained. The 1952 and 1953 trials were on the same ranch in the Santa Ynez Valley; the 1954 trial was located in the Cuyama Valley. The results of these trials were as follows:

Results in Pounds Per Acre.

Variety	1952 4 rep.	1953 8 rep.*	1954 4 rep.
Early			
FM Grain	9,125	8,603	9,078
Pfister 347	9,250	8,549	7,924
DeKalb 459	....	7,986	8,416
Midseason			
DeKalb 666	7,385	7,714	....
Pfister 381	8,960	7,423	8,678
Late			
DeKalb 1002	9,125	6,970	8,209
Pioneer 302	9,480	8,748	8,641

* Least significant difference 798 pounds.

It can be reasonably concluded that many of the early maturing varieties produced equally well as the later ones.

Yields being equal, other characteristics become the determining factors in selection of varieties in the coastal areas when grain, not silage, is the end product.

Early varieties could be harvested 10 days earlier than the midseason and 20 to 25 days earlier than the late varieties. Under field conditions this is an advantage since fall winds and early rains cause severe lodging, especially of some of the taller, later maturing varieties.

Picking is easier on man and machine with earlier varieties. The average height of the early varieties, in these trials, was 8.5′; of the midseason, 9.5′; and of the later varieties, over 10′. Mechanical difficulties were greater and harvesting was slower with the greater bulk of the later varieties.

Harwood L. Hall is Farm Advisor, Santa Barbara County, University of California.

COMBINE

Continued from preceding page

with the header attachment. The feed rate is shown in pounds per minute and does not include the weight of the shelled corn. The loss ratio was about 4-to-1 for feed rates of 350 to 150 pounds per minute.

The number of ears lost by the snapper unit was related to the per cent of ear-bearing stalks that were lodged. Also, the forward speed had some influence on loss. Under conditions where 35% of the corn was lodged, the ear loss at a forward speed of two miles per hour was approximately 12%.

Roy Bainer is Professor of Agricultural Engineering, University of California, Davis.

J. R. Goss is Assistant Specialist, Agricultural Engineering, University of California, Davis.

R. G. Curley is Extension Agricultural Engineer, University of California, Davis.

D. G. Smeltzer is Assistant Professor of Agronomy, University of California, Davis.

W. M. Lawson, Farm Advisor, Riverside County, University of California; W. N. King, Farm Advisor, Kern County, University of California; and George Abernathy and Bruce Campbell, students at the University of California, Davis, co-operated in the above-reported tests.