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THE DATE TO PLANT CORN IN COLORADO

By D. W. ROBERTSON, ALVIN KEZER and G. W. DEMING



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THE DATE TO PLANT CORN IN COLORADO

By D. W. ROBERTSON, ALVIN KEZER and G. W. DEMING

In the irrigated sections of Weld, Boulder and Larimer counties some 30,000 acres¹ of corn are grown annually, yielding about 936,000 bushels of corn. The entire acreage is not harvested for grain.

There seems to be some question as to the proper time to plant corn in this section, the dates varying all the way from the first to the twentieth of May. In looking over the weather records² at Fort Collins for the last 10 years (Table 1) it will be seen that 5 times in the last 10 years the temperature fell below freezing from May 1 to 10, and 4 times in 10 years from May 11 to 20, inclusive. Date-of-planting-corn experiments were started at the Colorado Experiment Station in 1921 and in no year from that date to 1929 has the early planted corn been killed by frost. In Table 1 the first temperature below freezing in September is also given for the same period of years.

SUMMARY

1. The average planting date to obtain the highest yield and best quality of corn is about May 1 for conditions similar to those found at Fort Collins.
2. Early planted corn matures earlier in the fall as indicated by the increased weight per measured bushel.
3. In a 9-year period, from 1921 to 1929 inclusive, no permanent damage was caused by frost to early planted corn.
4. Late-planted corn (after May 10) falls off rapidly in bushel weight and yield of grain.
5. Insect damage to corn planted after corn on irrigated land would indicate that this is not a safe practice.

¹Colorado yearbooks for 1924, 1925, 1926, 1927, and 1928-29.

²These data were kindly given by Mr. R. E. Trimble, Meteorologist, Colorado Experiment Station, Fort Collins.

Table I. The Minimum Temperature from May 1 to 10 and from May 11 to 20 for the 10-Year Period, 1920 to 1929, Inclusive.

Year	Temperature Degrees F. May 1-10	Day of Month	Temperature Degrees F. May 11-20	Day of Month	Temperature Degrees F. September	Day of Month
1920	32.0	1	33.8	17	26.2	26
1921	30.0	2	35.0	11	29.0	21
1922	33.0	2	27.7	16	36.4	11
1923	33.0	2	28.2	16	31.4	29
1924	33.6	7	27.7	15	31.3	19
1925	28.1	1	39.4	13	36.6	26
1926	35.2	10	35.0	14	28.8	24
1927	30.0	10	31.2	11	28.0	26
1928	31.1	4	36.0	13	31.8	21
1929	24.3	2	32.6	19	28.0	9

The data in this table were kindly furnished by Mr. R. E. Trimble, Meteorologist, Colorado Experiment Station, Fort Collins.



June 10

April 20

May 1

Corn planted at different dates on the Colorado Agricultural Experiment Station, Fort Collins, in 1921. Picture taken about July 1.

EXPERIMENTAL DATA

Date-of-planting-corn experiments were started in 1921. In 1921 and 1922, Northwestern Dent corn was used but all plantings matured and little difference was obtained except in the June 10 planting which gave the lowest yield in both years of the test. The May 30

planting also was low but yielded better than the June planting. From 1923 to 1929, Minnesota No. 13 corn from a strain selected at the station was used.

The corn was planted in hills and thinned to three stalks per hill. The following dates were used: April 20, May 1, May 10, May 20, May 30, and June 10. The corn was planted at as near the above dates as weather conditions would permit.

IRRIGATION.—The plats were furrowed crosswise and irrigated twice. There may be some error from the difference in stage of growth when the plats were irrigated. This is particularly true of the two late plantings which were usually irrigated before silking. The three earlier plantings were in about the same stage of growth when irrigated. In 1928 part of the plats were over-irrigated. The yields for this year are left out of the discussion. In 1925 the season was exceedingly dry and no corn came up until after all the plantings were made. No yields were obtained in 1925.

INSECT ENEMIES.—In 1924 the date-of-planting plats were located on land which had been in corn the previous year. In June it was noticed that the plats were suffering from lack of moisture. The plats were immediately irrigated but no recovery was noticed. On examining the plants it was found that the roots had been eaten off. Many plants were held in the ground by only one root stalk. The damage had been done by the Western Corn Root worm (*Diabrotica virgifera*) which was very abundant and had been carried over and multiplied from the previous corn crop.



A field of corn following corn showing Western Corn Root worm damage in 1924.

This indicates that it is not safe to grow corn following corn in this section of the state on irrigated land.

YIELD OF CORN.—The yield data are given in Table 2. The yields are in bushels (56 lbs.) of shelled corn per acre.

Table 2. Yield of Corn in Bushels of Shelled Corn Per Acre from the Date-of-Planting Plats at Fort Collins.

Date Planted	Years Grown					5-Year Average	4-Year Average
	1929	1927	1926	1924	1923		
	Bus. Per Acre						
April 20	45.8	47.0	34.5	85.7	53.31	59.52
May 1	57.2	42.1	47.5	32.1	77.8	51.3	56.2
May 10	54.9	43.4	48.7	20.1	79.0	49.2	56.5
May 20	50.6	38.1	51.8	9.7	78.1	45.7	54.7
May 30	39.1	31.4	46.4	7.8	81.4	41.2	49.6
June 10	25.4	23.4	25.8	2.3	77.6	30.9	38.1

¹ 4-year average. No corn was planted on this date in 1929 due to adverse weather conditions.

² 3-year average.

The yield data clearly show that corn can be planted as early as April 20. However, this date was too early in 1929 to plant, due to adverse weather conditions. Corn planted at this date usually emerges about the same time as corn planted on the first of May and no advantage in yield is gained by this early planting. The yield begins to fall off in corn planted as late as May 20 and drops quickly after that date. The insect damage to corn increases as the date of planting grows later in the season. The data indicated that best yields of corn can be obtained from planting corn from April 20 to May 10.

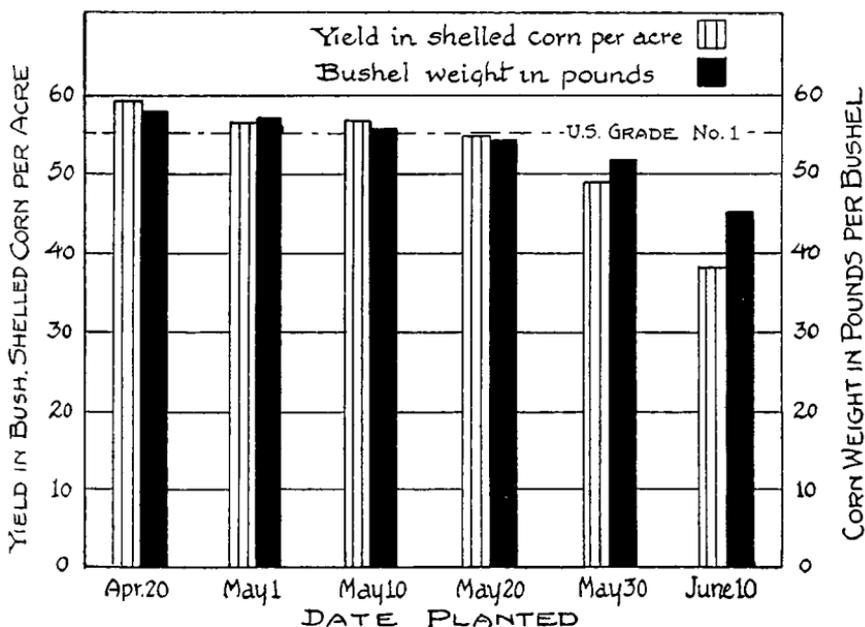
BUSHEL WEIGHT AN INDEX OF MATURITY.—The weight per measured bushel may be taken as an indication of maturity. The earlier-planted corn was more mature than the late-planted corn at the time of harvest. This was more pronounced in the short growing seasons than in the longer growing seasons. In a short season like that of 1929, when the first killing frost stopped corn growth on September 9, only the corn planted before May 10 would grade U. S. No. 1. The best quality corn was obtained from plantings on April 20 and May 1. The plantings on May 10 still averaged above U. S. Grade No. 1. The corn planted after that date rapidly fell off in weight and was much more immature when harvested. Table 3 gives the weight per measured bushel for the corn harvested in the different seasons. In 1924 all the weights were low due to the retarding effect of the insect damage previously mentioned.

Table 3. Weight per Measured Bushel of Shelled Corn Planted at 10-Day Intervals from April 10 to June 10.

Date Planted	Years Grown					5-Year Average	4-Year Average	U. S. Grade ¹	
	1929	1927	1926	1924	1923				
		Bushel weight in pounds							
April 20		59.3	57.5	55.5	58.8		57.8	No. 1	
May 1	55.1	58.0	57.0	54.0	58.1	56.4	56.8	No. 1	
May 10	55.2	56.6	56.3	50.0	57.9	55.2	55.2	No. 1	
May 20	52.4	55.2	56.3	48.0	56.3	53.6	54.0	No. 2	
May 30	47.7	52.5	52.5	46.0	55.3	50.8	51.6	No. 3	
June 10	44.7	45.5	42.0	42.5	51.6	45.3	45.4	No. 6	

¹ Handbook of Official Grain Standards, U. S. Dept. of Agr., Bureau of Agricultural Economics. Revised Jan., 1928. The grades given are based on bushel-weight requirements alone.

The data in Tables 2 and 3 indicate that corn should be planted between April 20 and May 10 in the irrigated sections of Weld, Boulder and Larimer counties. The increase in quality as indicated by the bushel weight shows that the earlier plantings give a more mature corn than the later plantings. An average date would be somewhere around the first of May. Plantings after May 10 fall off rapidly in yield and bushel weight.



The 4-year average yield and bushel weight of shelled corn planted at different dates at the Colorado Agricultural Experiment Station, Fort Collins, Colorado.

It has been found in previous work that local adapted strains are the best to be grown in the different sections of Colorado. Due to the difference in climatic conditions different varieties respond differently in different sections. In the eastern and southern sections of the state, east of the mountains, later varieties can be grown.

The above data, while fitting more closely to irrigated conditions in Larimer, Boulder and Weld counties, can be applied in principle to other eastern and southern counties. That is, the date of planting corn can be advanced to May 1 and probably to the last week in April without running too great a risk of killing from freezing. Early planting will insure a more mature crop in the fall particularly if the season were shortened by an early frost.