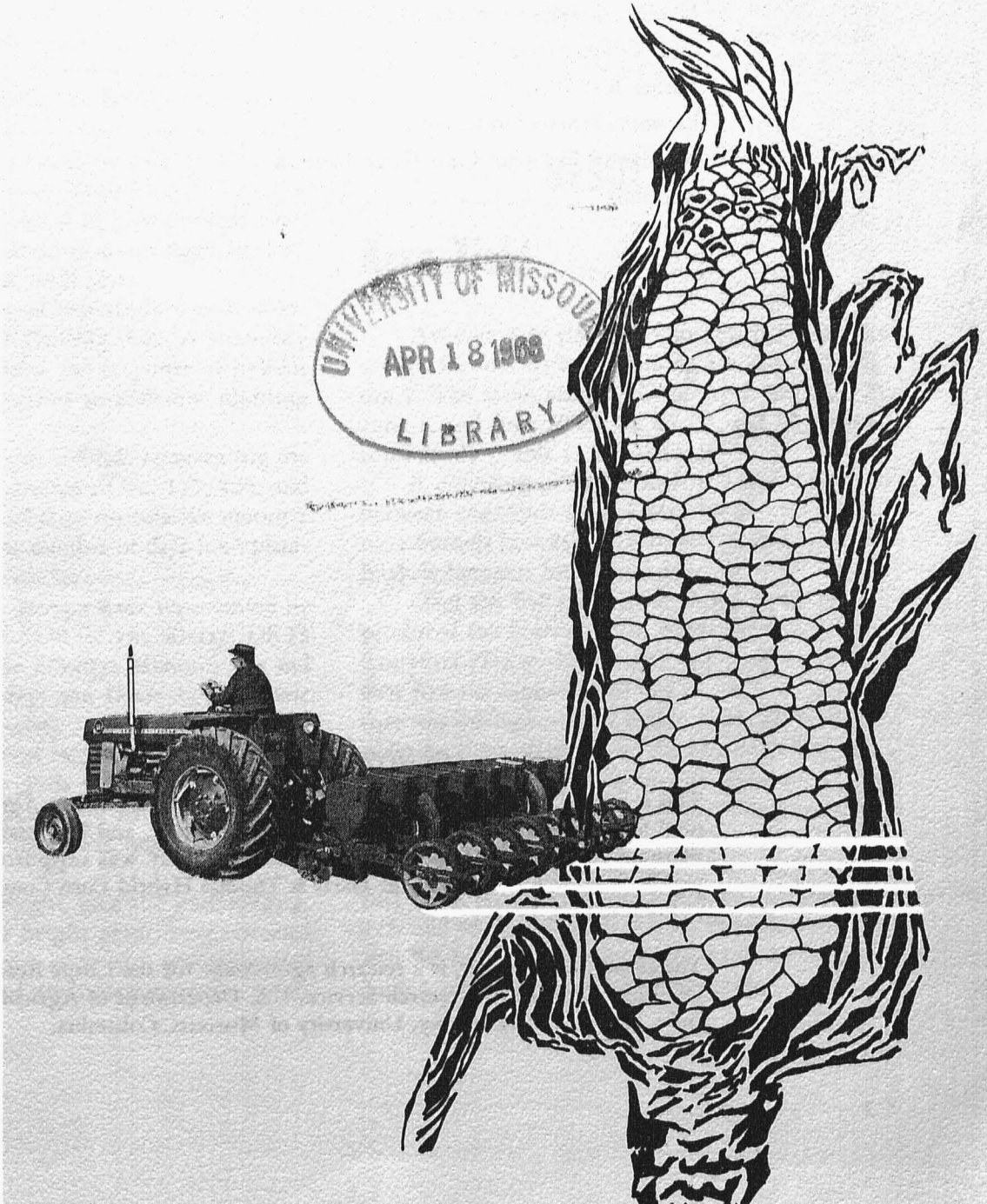
DATE-OF-PLANTING STUDIES WITH CORN IN CENTRAL MISSOURI



by M. S. Zuber

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Agricultural Experiment Station
University of Missouri
Columbia

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ACKNOWLEDGEMENT

This is a joint contribution from the Crops Research Division, Agricultural Research Service, U.S. Department of Agriculture, and University of Missouri Agricultural Experiment Station. The study was supported in part by a research grant from the Garst & Thomas Hybrid Corn Company of Coon Rapids, Iowa.

The author, M. S. Zuber, is a research agronomist for the Crops Research Division, Agricultural Research Service, U.S. Department of Agriculture, and a professor of agronomy, University of Missouri, Columbia.

Date-of-Planting Studies With

Corn in Central Missouri

By M. S. Zuber

Corn date-of-planting studies have been conducted at three locations in Missouri. The results for the Delta Center (southeast Missouri) studies were reported in University of Missouri Bulletin 862 and for the North Missouri Center (Spickard) in Bulletin 832. Date-of-planting studies in central Missouri were conducted on the South Farm location near Columbia for the five-year period of 1960 through 1964. Four plantings were made on or about April 20, May 10, June 1, and June 20, each year.

The main objective of this study was to determine the most suitable planting date. A secondary objective was to determine the response of hybrids representing four maturities to different planting dates.

For this we used eight hybrids representing the four relative maturity groups of 90, 115, 125, and 140 days. The number of days for relative maturity indicates the approximate number of days from planting to physiological maturity.

The four maturity groups were represented by hybrids Iowa 4376 and 4570 for the 90-day; US 13 and Kansas 1639 for the 115-day; Missouri 804 and US 523W for the 125-day; and Dixie 22 and Dixie 33 for the 140-day maturity.

Hybrids were planted in 2 by 5 hill plots with four replications. Five seeds were planted in each hill and emerging plants were thinned to three. Usually harvest for all dates was made at the same time.

Data for ear corn weight, root and stalk lodging, grain moisture, and ear height grade were obtained at harvest. Ear corn from each plot was processed later for determination of earworm penetration grade, shelling percent, and test weight per bushel. European corn borer readings were made from the stalks after the ear corn had been removed.

RESULTS

Acre Yield

Average acre yields of four relative maturity groups for four dates of planting are shown in Figure 1. The mean acre yields for April 20, May 10, June 1, and June 20 are 88, 86, 77, and 72 bushels, respectively (Table 1, Appendix).

A difference of two bushels per acre was noted between the April 20 and May 10 planting dates, nine bushels between May 10 and June 1, and five bushels between June 1 and June 20.

Over the five-year period, April 20 to May 10 produced the highest mean yields for three out of five years (Figure 2). In 1961, the June 1 planting date had the highest yield and in 1963 the June 20 date was the highest. The higher yields for these two planting dates were due to the optimum and well-distributed rainfall in August and September.

Acre yields for the four maturity groups followed about the same pattern (Figure 3). The 125-day maturity hybrids had the highest yield for the first three planting dates. Differences between the 125- and 90-day maturity hybrids were 16.2, 9.3, 7.4 and 2.2 bushels for each of the April 20, May 10, June 1, and June 20 dates, respectively.

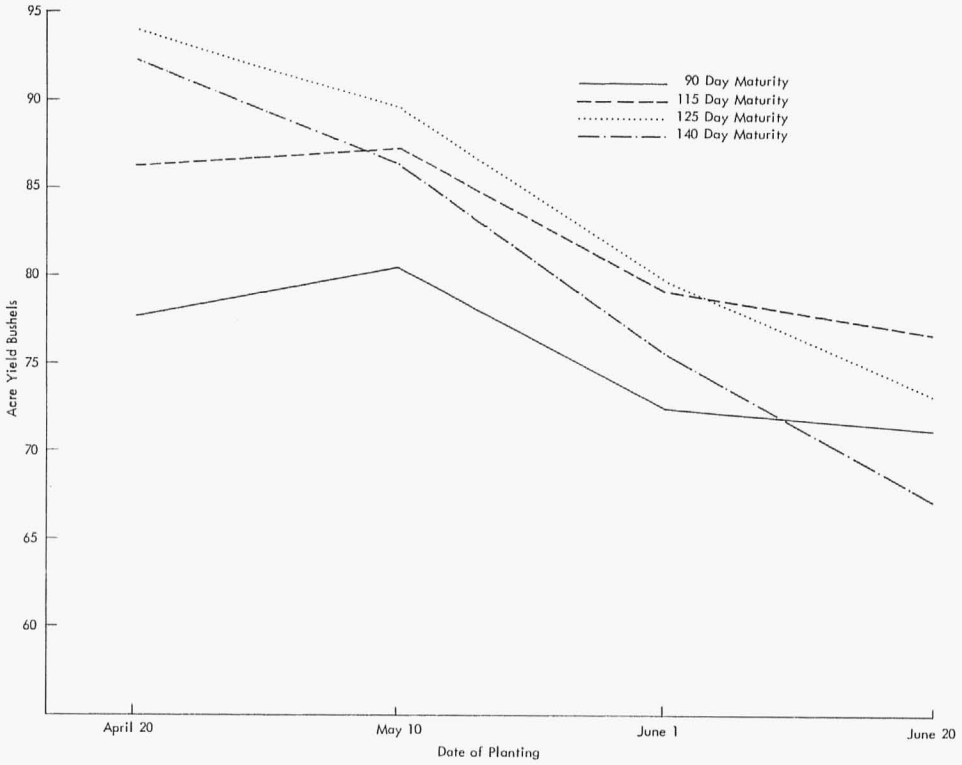

Figure 1. Average yield in bushels per acre of hybrids representing four maturity groups planted at four dates. Missouri Agricultural Experiment Station, Columbia.

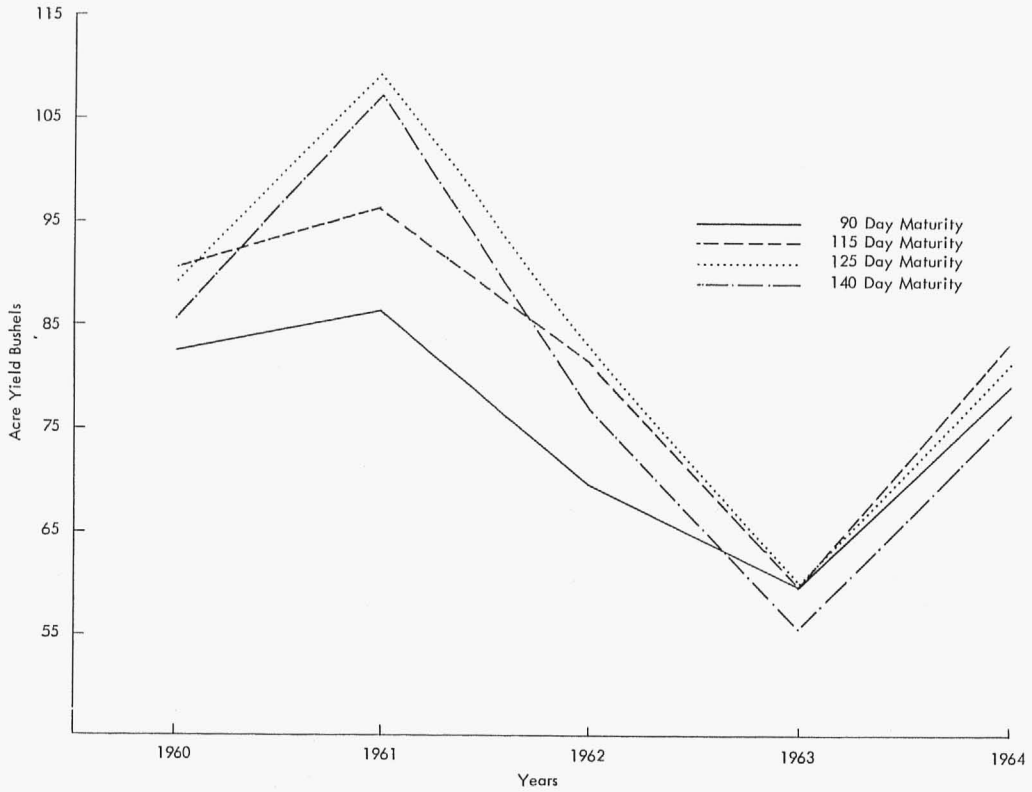

Figure 2. Average yield in bushels per acre of four dates of planting for each of five years. Missouri Agricultural Experiment Station, Columbia.

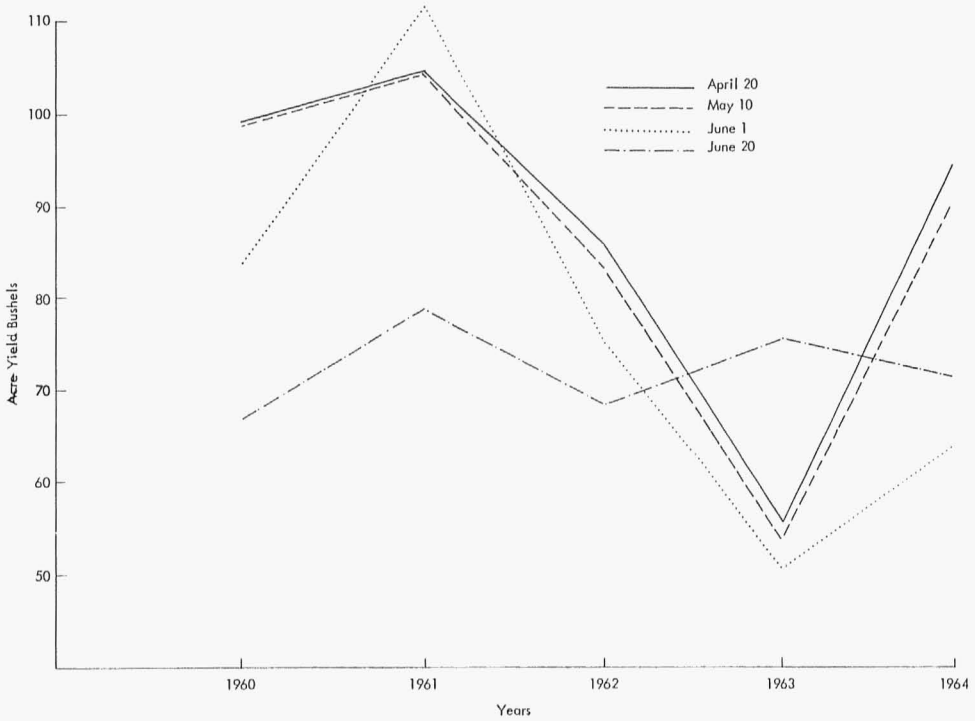

Figure 3. Average yield in bushels per acre of hybrids representing four maturity groups for each of five years. Missouri Agricultural Experiment Station, Columbia.

SUMMARY:

1. The optimum planting dates were April 20 and May 10, with a decrease in yield for planting dates after May 10.
2. The relative yield response for the four maturity groups was about the same for the four planting dates; the 125-day maturity group hybrids gave the highest yields at the earlier planting dates while the earlier maturity groups yield relatively better at the later planting dates.

Root Lodging

The amount of root lodging for the first two plantings was low but increased substantially at the last two dates (Figure 4). The 140-day maturity group had the highest root lodging for all four planting dates (Table 2, Appendix). Root lodging for the four planting dates for each of the five years (Figure 5) indicates excessive root lodging in 1961. Whenever excessive root lodging occurred, it tended to be highest for the later planting dates. The relative root lodging was about the same among the four maturity groups (Figure 6).

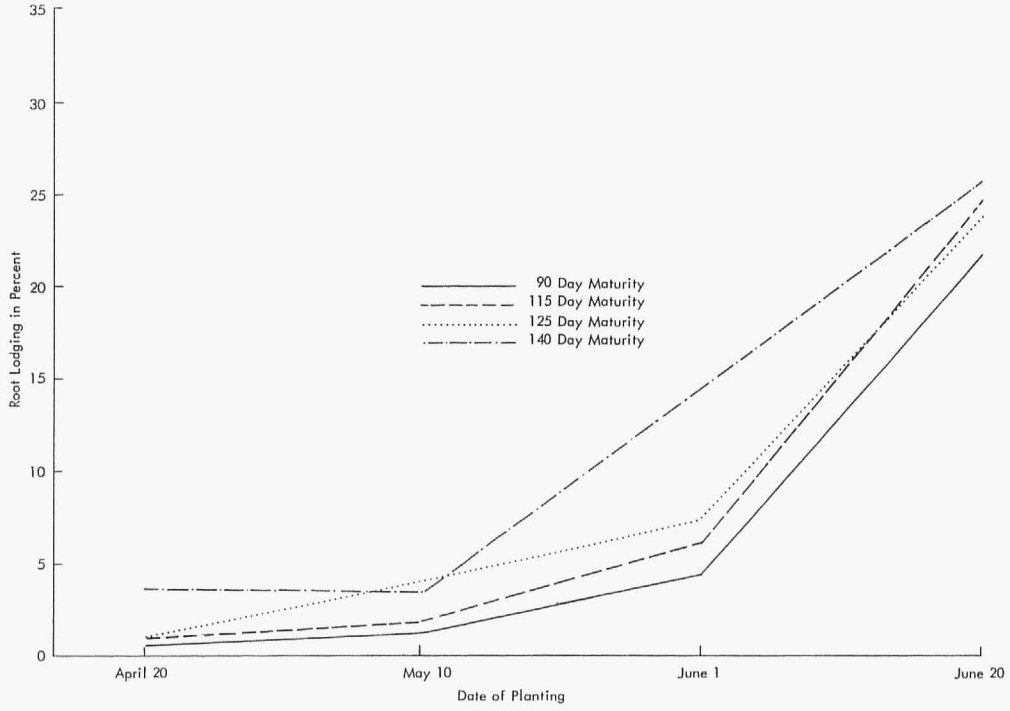

Figure 4. Average root lodging in percent of hybrids representing four maturity groups planted at four dates. Missouri Agricultural Experiment Station, Columbia.

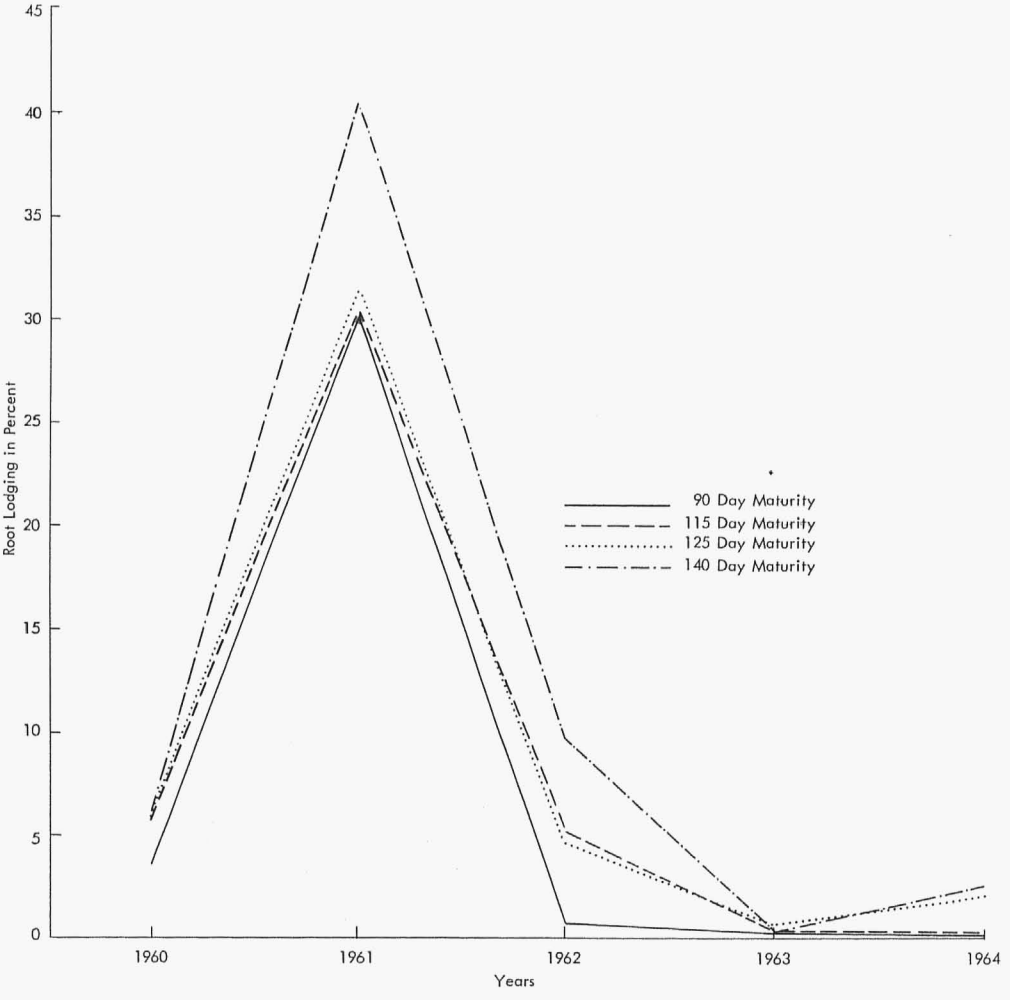

Figure 5. Average root lodging in percent for four dates of planting for each of five years. Missouri Agricultural Experiment Station, Columbia.

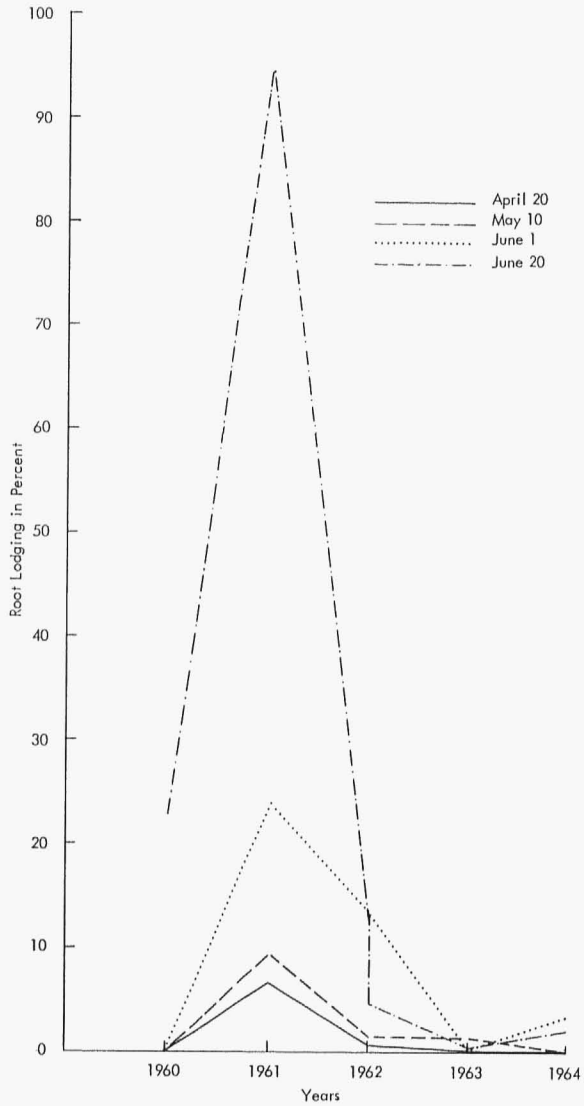

Figure 6. Average root lodging in percent of hybrids representing four maturity groups for each of five years. Missouri Agricultural Experiment Station, Columbia.

CONCLUSIONS:

1. Root lodging was least for the first two planting dates and increased three-fold over the first two dates for the third date and 10-fold for the last date.

2. The two later maturing groups root-lodged more than the earlier two maturity groups.

Stalk Lodging

Average stalk lodging was about the same for the first three planting dates, yet was twice as high for the June 20 date (Table 3, Appendix). The large increase in stalk lodging was attributed in part to stalk damage as the result of European corn borer. The 125-day maturity group had the highest stalk lodging for three of the four dates (Figure 7), and the 90-day had the least. All four maturity groups had the greatest amount of lodging for the last date, June 20. The mean stalk lodging percentage during the five years ranged from a low of 8.4 in 1963 to a high of 15.7 in 1961. Stalk lodging for the four maturity groups and the four planting dates over the five years (Figures 8 and 9) did not appear to follow any consistent trend.

CONCLUSIONS:

1. Stalk lodging was lowest for the first three planting dates and increased two-fold for the last date.
2. The 125-day maturity group had the highest stalk lodging for all four dates of planting, and in general the later maturing hybrids had more stalk lodging than the earlier maturing hybrids.

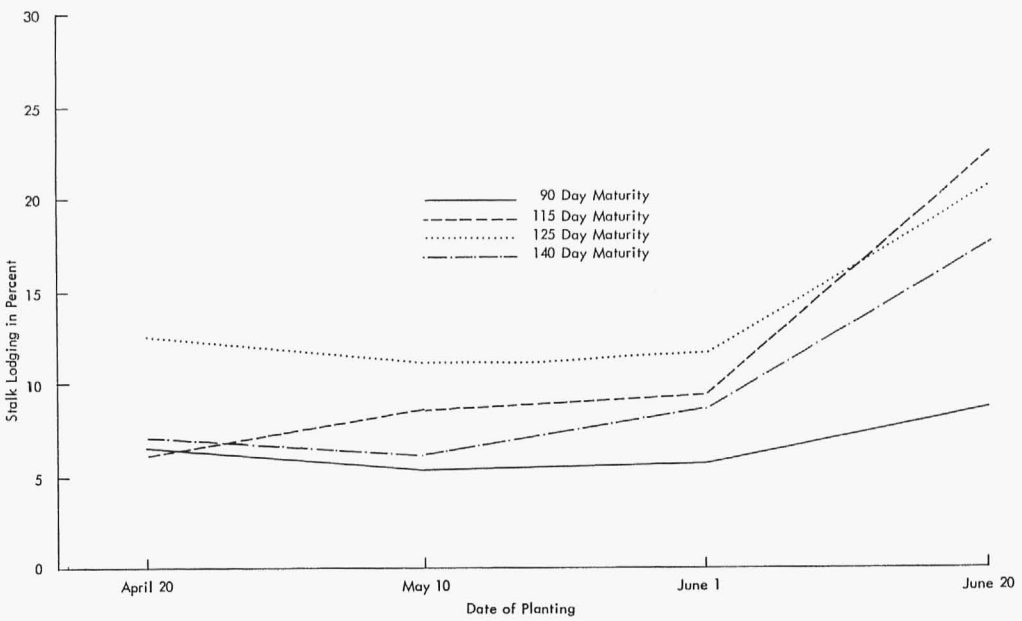

Figure 7. Average stalk lodging in percent of hybrids representing four maturity groups planted at four dates. Missouri Agricultural Experiment Station, Columbia.

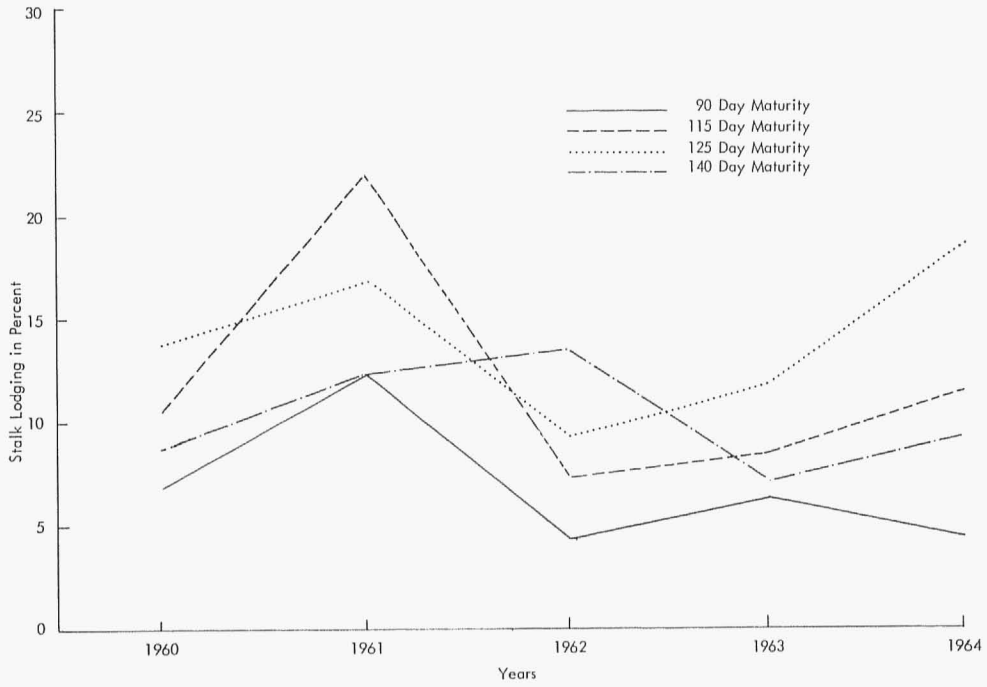

Figure 8. Average stalk lodging in percent for four dates of planting for each of five years. Missouri Agricultural Experiment Station, Columbia.

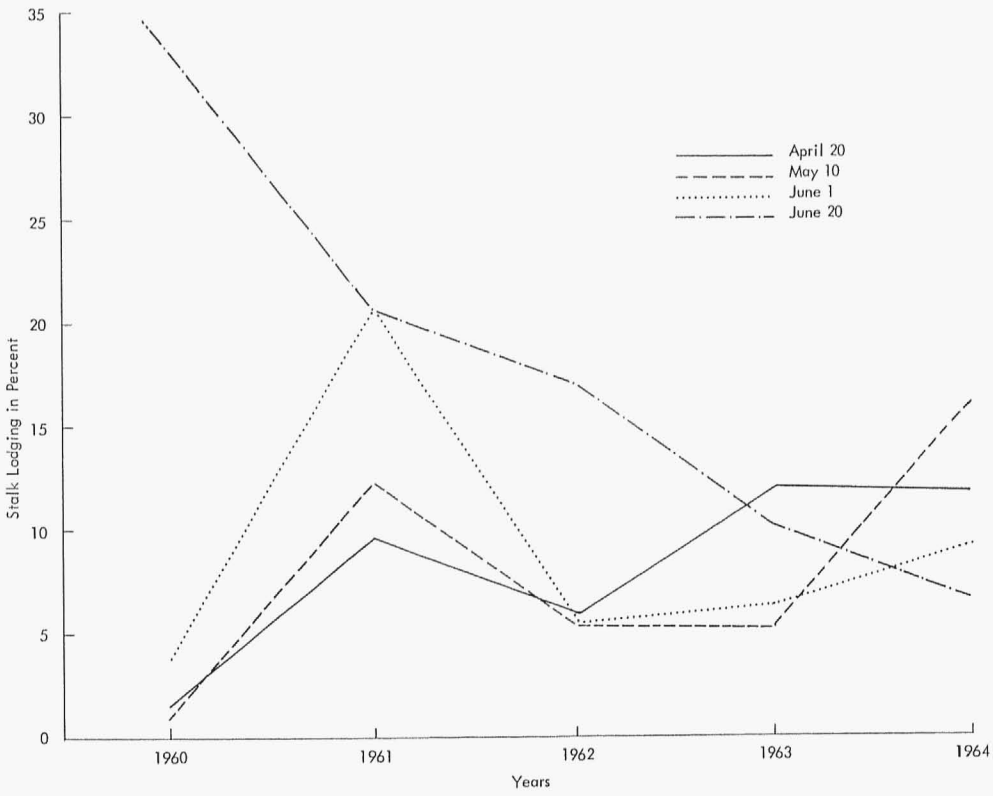

Figure 9. Average stalk lodging in percent for hybrids representing four maturity groups for each of five years. Missouri Agricultural Experiment Station, Columbia.

Ear Height Grade

Ear height grades were lowest for the April 20 planting date and increased for each of the next two dates and remained the same for the June 1 and June 20 date (Table 4, Appendix). Ear height grades for the four relative maturity groups over planting dates are shown in Figure 10. The grades were directly associated with the four relative maturity groups. In general, ear height grades for the four planting dates for each of the five years followed about the same trend (Figure 11). Figure 12 shows the grades for the four maturity groups over the five years.

CONCLUSIONS:

1. Ear height grades were lowest for the earliest planting date and increased as planting dates were delayed.
2. Ear height grades were directly associated with maturity groups and in general this relationship was maintained over planting dates and years.

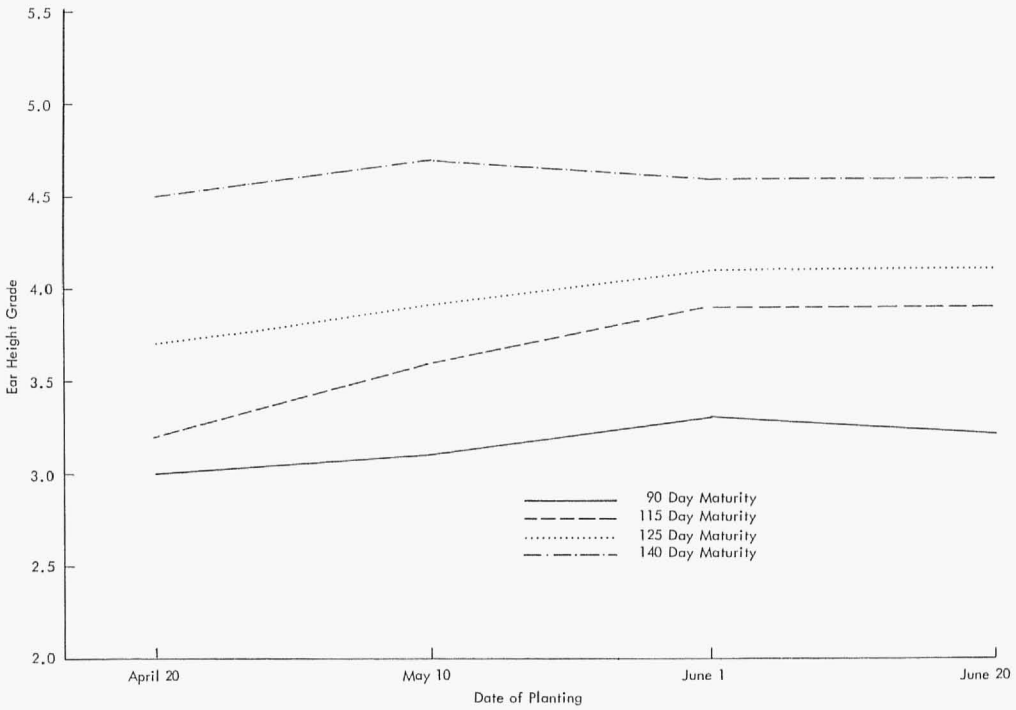

Figure 10. Average ear height grade of hybrids representing four maturity groups planted at four dates. Missouri Agricultural Experiment Station, Columbia.

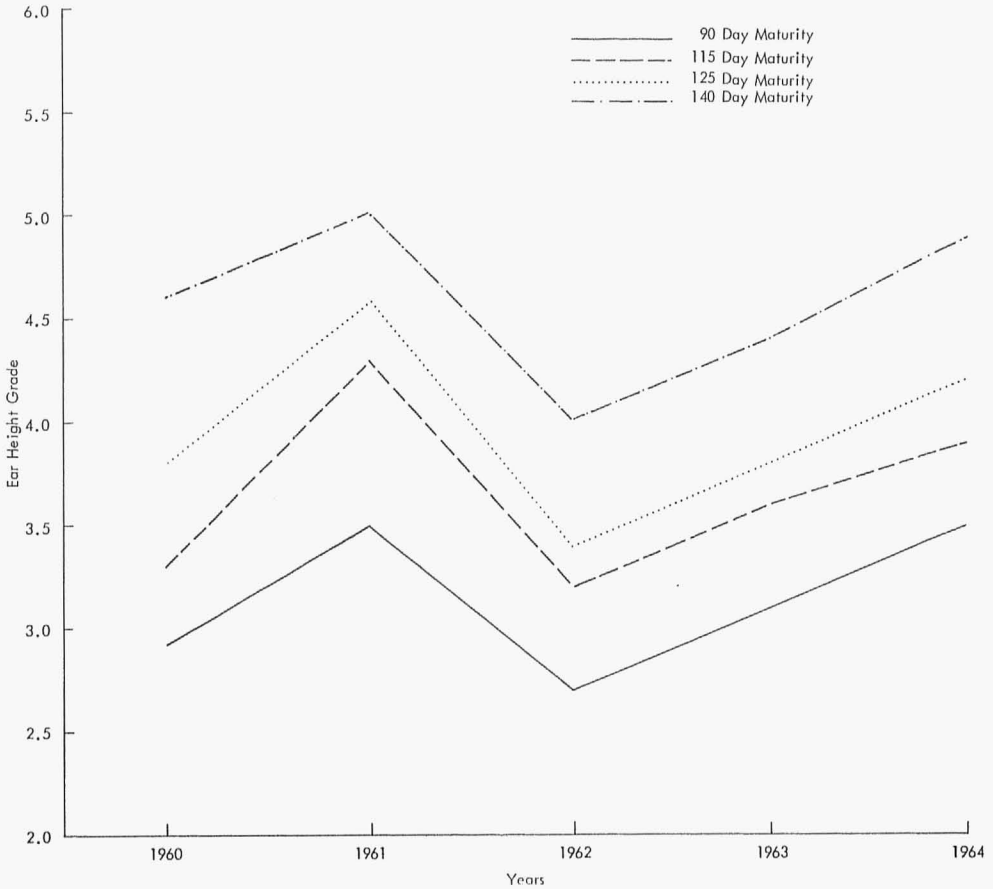

Figure 11. Average ear height grade for four dates of planting for each of five years. Missouri Agricultural Experiment Station, Columbia.

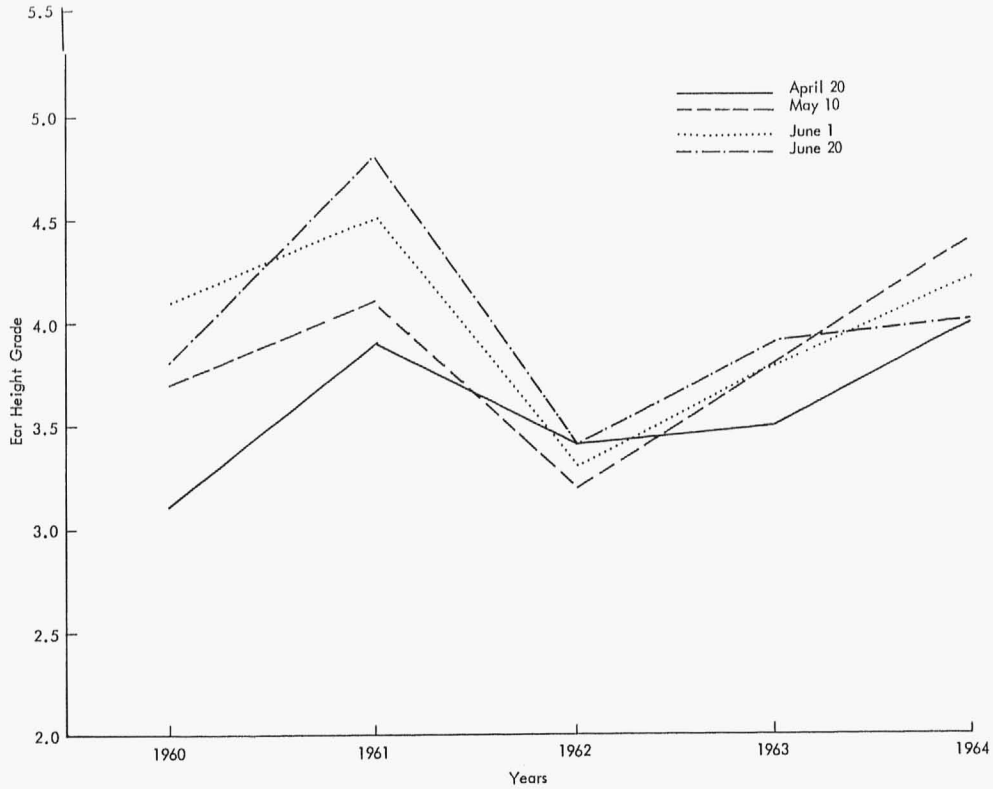

Figure 12. Average ear height grade of hybrids representing four maturity groups for each of five years. Missouri Agricultural Experiment Station, Columbia.

Number of Days from Planting to Tasseling

A plot was recorded as tasseled when approximately 50 percent of the plants had tassels showing anthers. Number of days from planting to tasseling was calculated by subtracting the planting date from the tasseling date. The number of days from planting to tasseling was greatest for the April 20 planting date; the number decreased for each 20-day delay in planting (Table 5, Appendix). The four maturity groups showed the same relative number of days from planting to tasseling over the four planting dates (Figure 13). Number of days from planting to tasseling for the four planting dates (Figure 14) and four relative maturity groups (Figure 15) was consistent over years.

CONCLUSIONS:

1. Number of days from planting to tasseling was longest for the April 20 planting date and decreased for each subsequent planting date.
2. Number of days from planting to tasseling corresponded closely with the four relative maturity groups and over years.

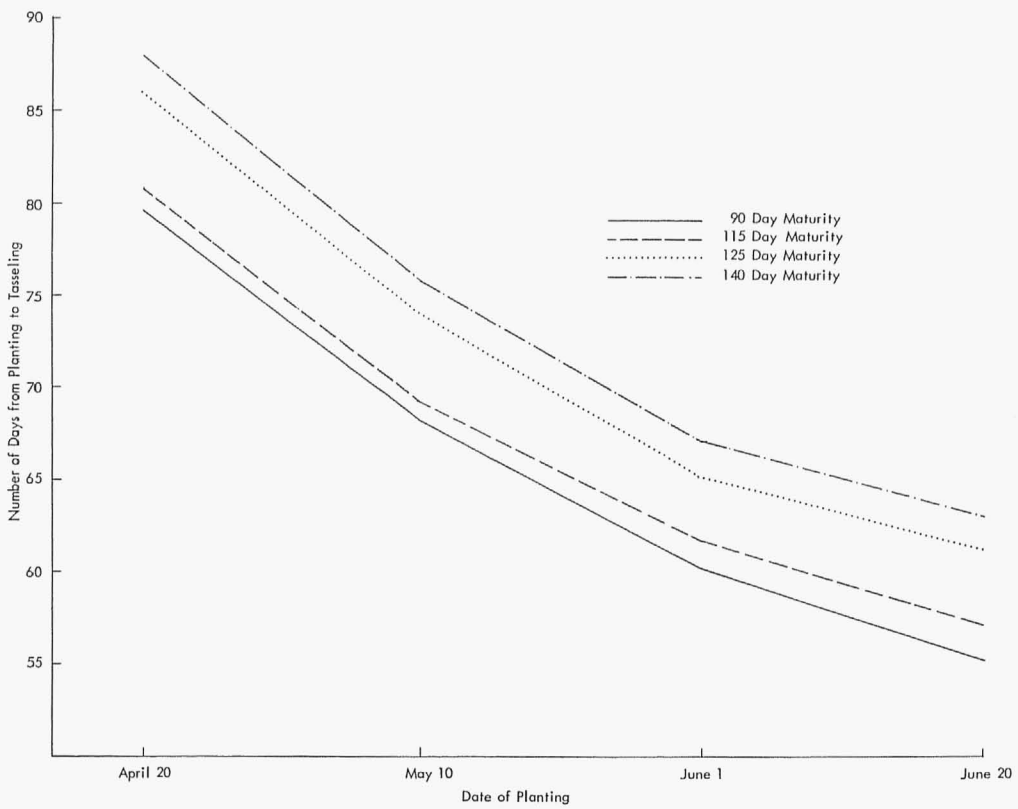

Figure 13. Average number of days from planting to tasseling of hybrids representing four maturity groups planted at four dates. Missouri Agricultural Experiment Station, Columbia.

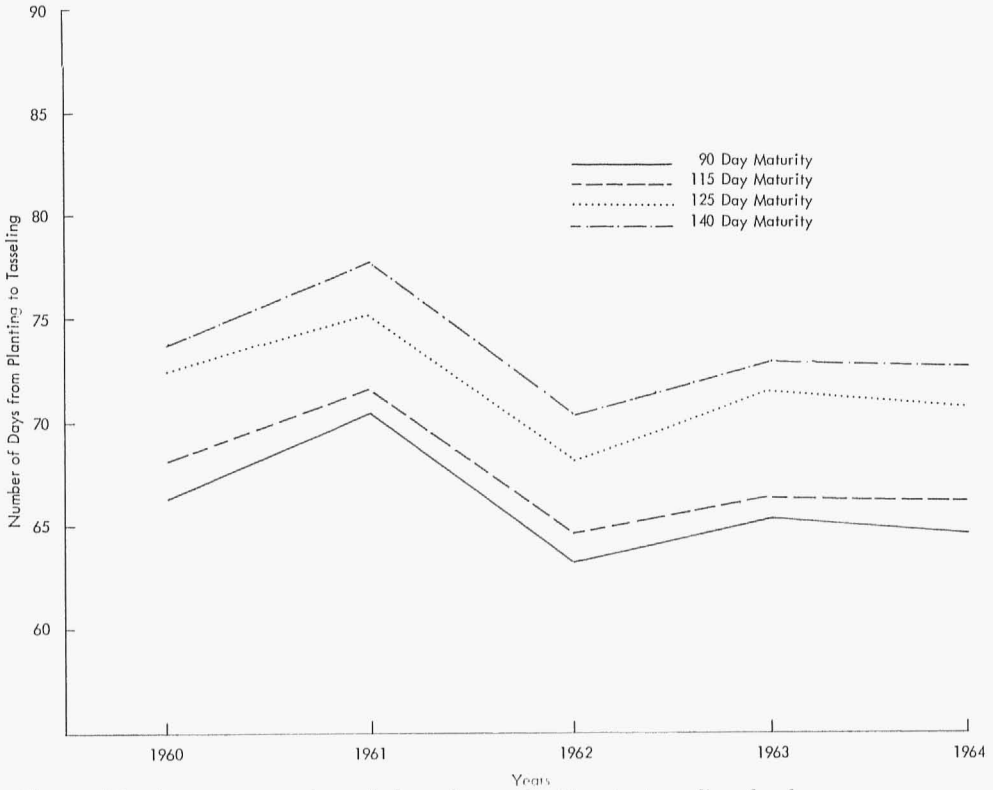

Figure 14. Average number of days from planting to tasseling for four dates of planting for each of five years. Missouri Agricultural Experiment Station, Columbia.

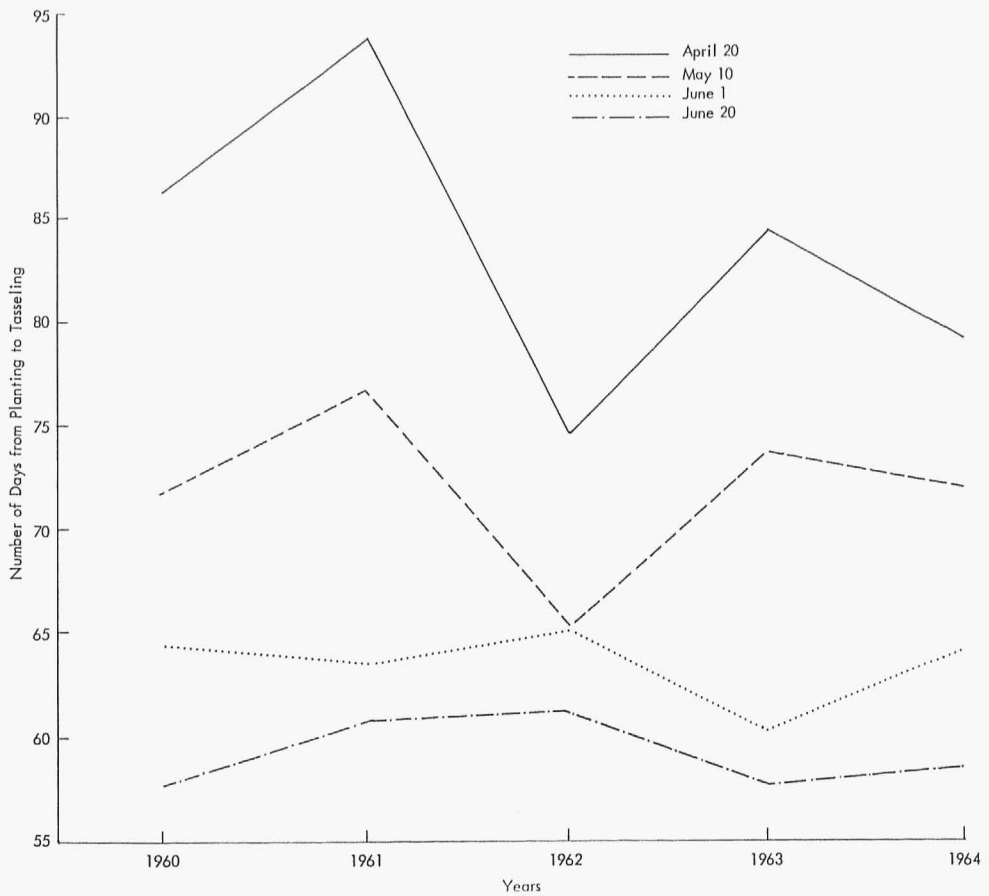

Figure 15. Average number of days from planting to tasseling of hybrids representing four maturity groups for each of five years. Missouri Agricultural Experiment Station, Columbia.

Number of Days from Planting to Silking

A plot was recorded as silked when 50 percent of the plants showed silks. Number of days from planting to silking was computed by subtracting the date of planting from the silking date. The number of days from planting to silking followed the same trend as the number of days from planting to tasseling (Figures 16, 17 and 18). To insure good seed sets, tasseling and silking must be synchronized. Wide differences between tasseling and silking are usually the results of stress conditions such as drouth. The difference between the number of days from planting to silking and to tasseling for the four planting dates were 2.2, 2.5, 2.3, and 1.9 days for the April 20, May 10, June 1, and June 20 planting dates, respectively. The differences between tasseling and silking for each of the five years were 1.9, 1.4, 1.8, 3.5, and 2.4 days for the years 1960, 1961, 1962, 1963, and 1964, respectively. Many stress periods during the growing season for 1963 and 1964 are reflected in larger differences between tasseling and silking. The 90-day maturity hybrid had the smallest differences (1.5 days) with the 140-day maturity group having the greatest (3.0 days).

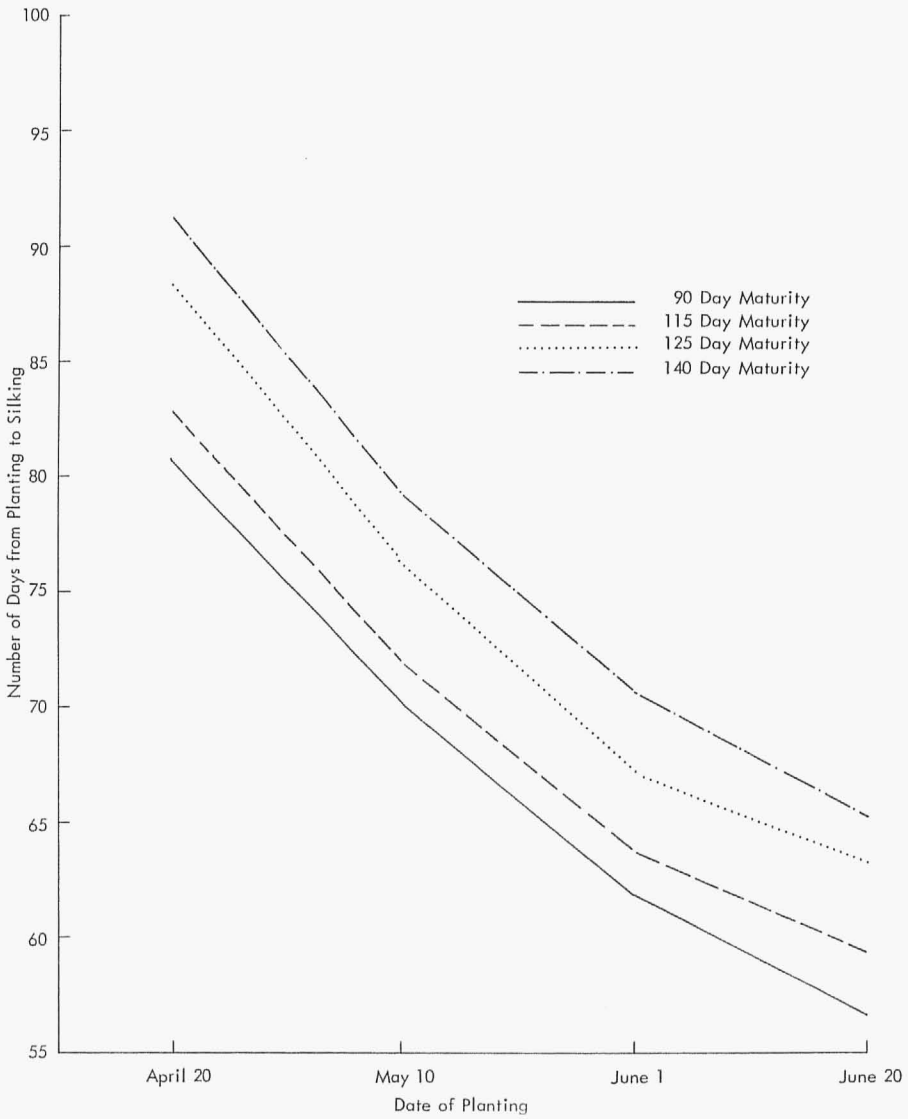

Figure 16. Average number of days from planting to silking of hybrids representing four maturity groups planted at four dates. Missouri Agricultural Experiment Station, Columbia.

CONCLUSIONS:

1. Number of days from planting to silking followed the same trend as the number of days from planting to tasseling.
2. Very small differences were noted between number of days from planting to tasseling and planting to silking.
3. Largest differences between number of days from planting to tasseling and planting to silking were noted for those years that had conditions of stress during the growing season.

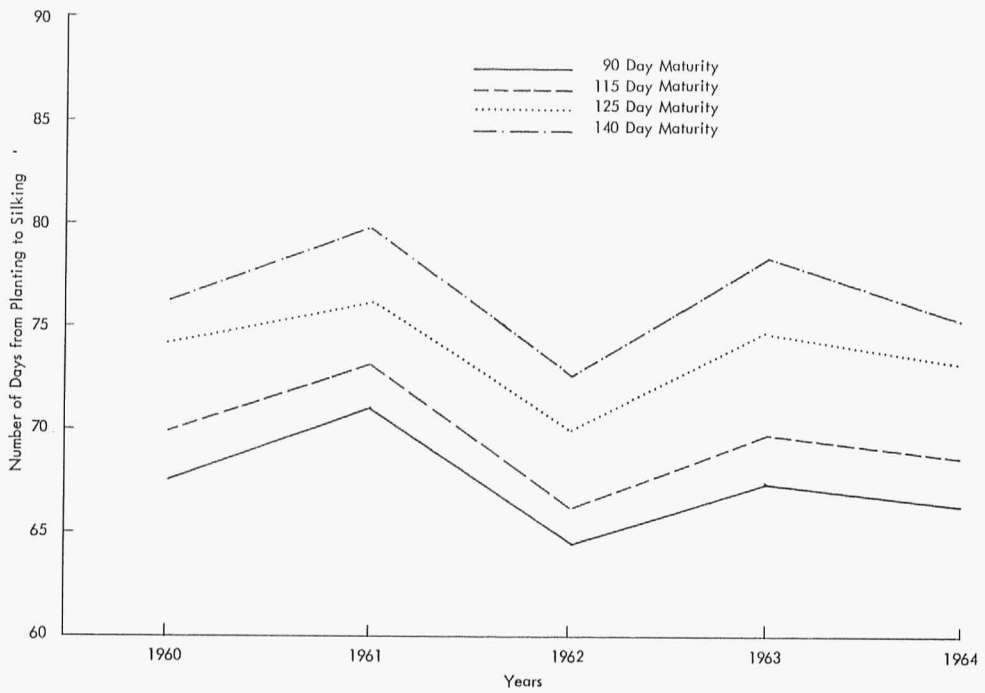

Figure 17. Average number of days from planting to silking for four dates of planting for each of five years. Missouri Agricultural Experiment Station, Columbia.

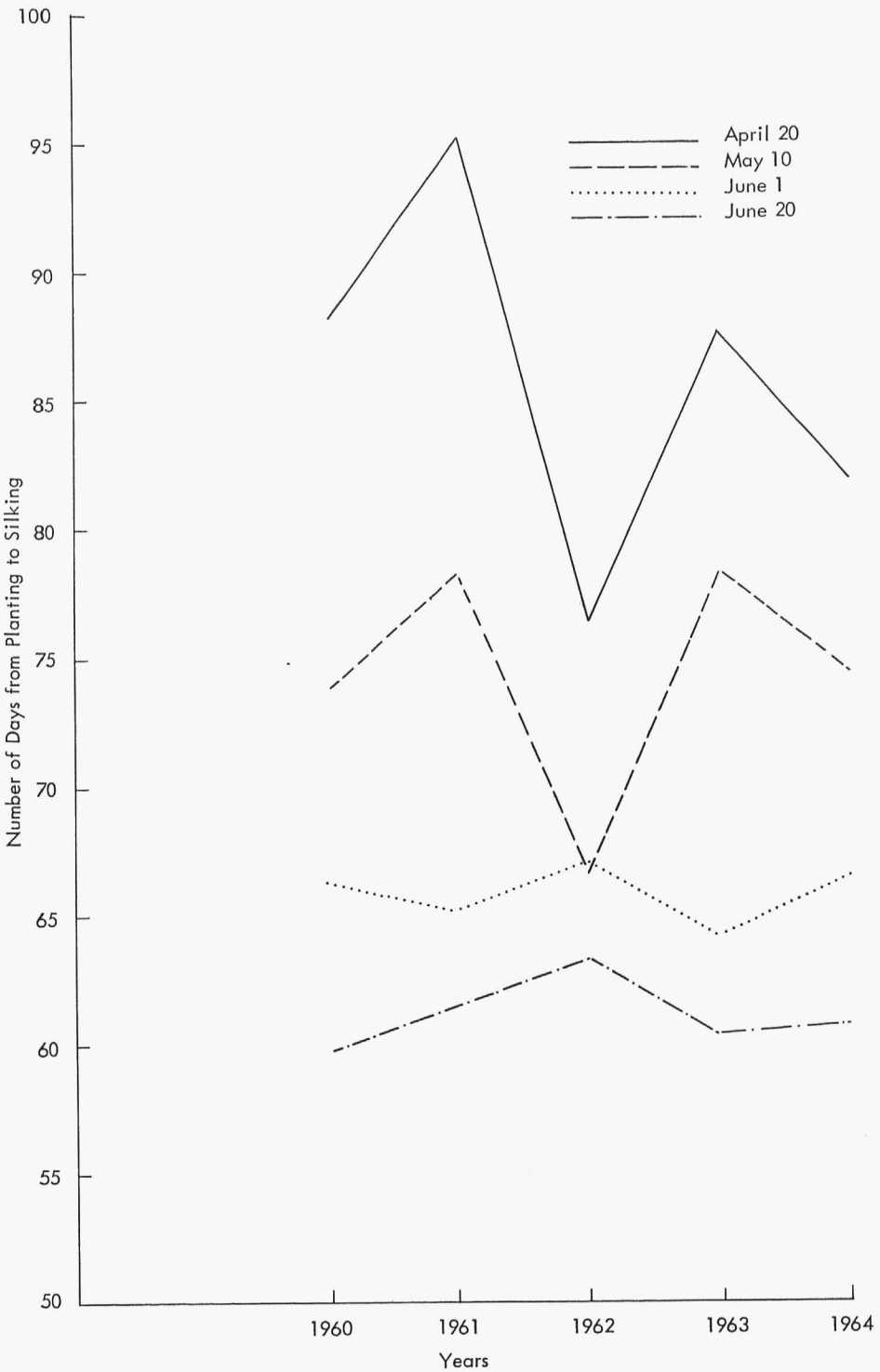

Figure 18. Average number of days from planting to silking of hybrids representing four maturity groups for each of five years. Missouri Agricultural Experiment Station, Columbia.

Shelling Percentage

A very small range in shelling percentage was found among the four planting dates (Table 7, Appendix). The later planting dates had a slightly lower shelling percentage for some years (Figure 21). Shelling percentages for the four maturity groups over dates of planting gave the same relative trends with the 90-day maturity having the highest shelling percentage at each date and the 115-day maturity the lowest for three of the four dates (Figure 19). The range in shelling percentage among years was small (79.9 to 83.9 percent), with the excellent corn growing season of 1961 giving the highest percentage and the drouthy year of 1963 the lowest (Figure 21).

CONCLUSIONS:

1. Shelling percentage was not affected by planting dates and the range among maturity groups and each of the five years was small.
2. Shelling percentages were highest in years with optimum growing condition and lowest in years of stress.

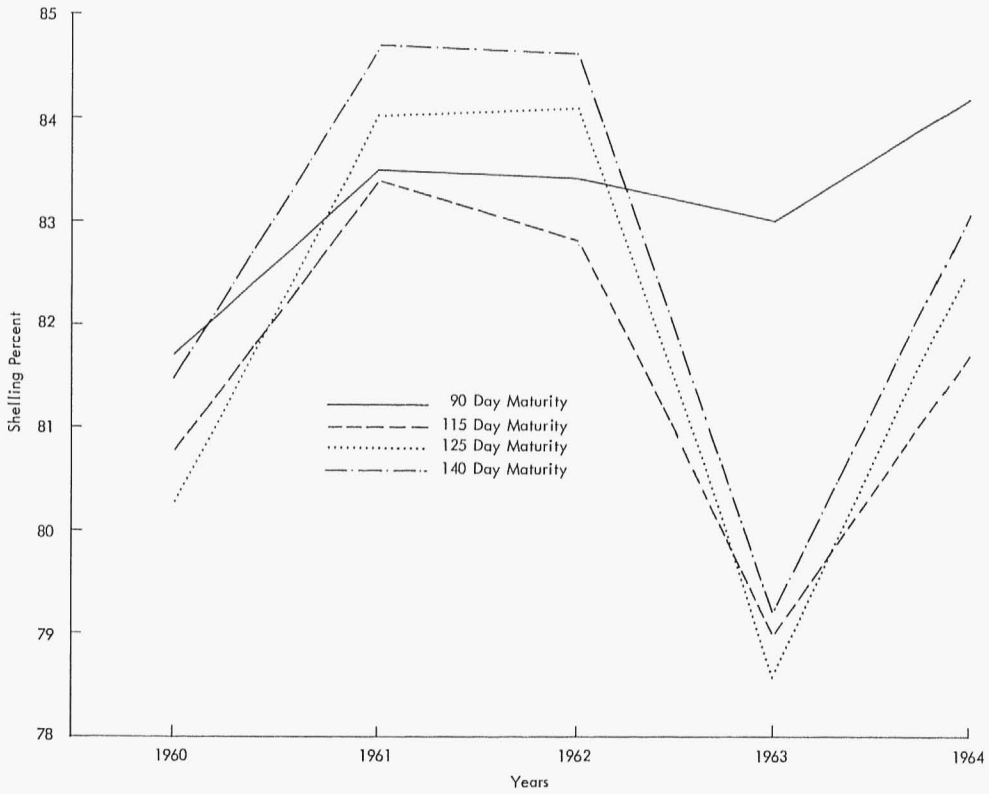

Figure 19. Average shelling percent of hybrids representing four maturity groups planted at four dates. Missouri Agricultural Experiment Station, Columbia.

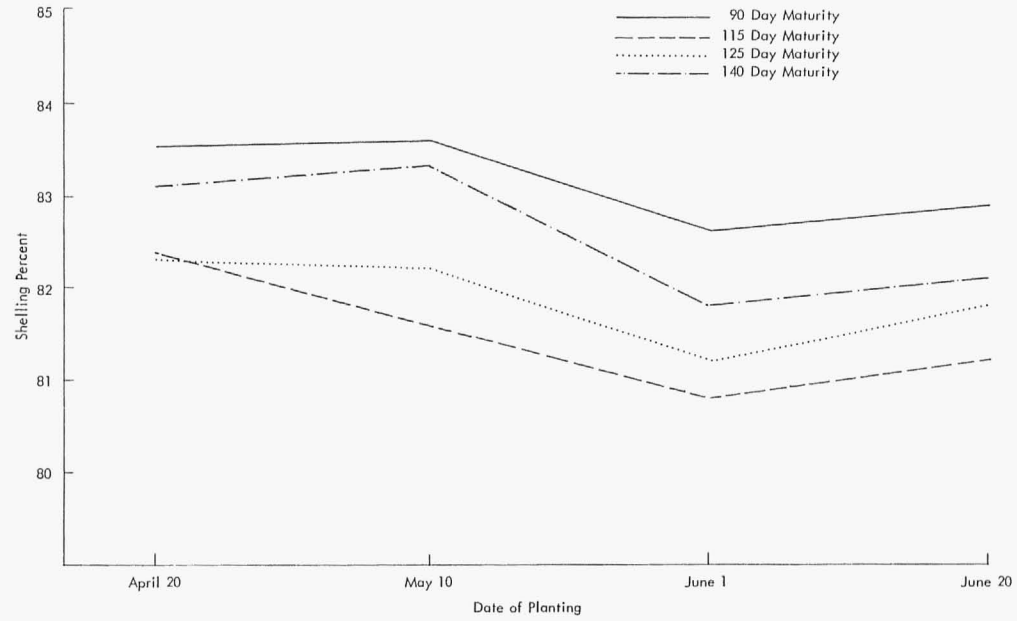

Figure 20. Average shelling percent of hybrids representing four maturity groups for each of five years. Missouri Agricultural Experiment Station, Columbia.

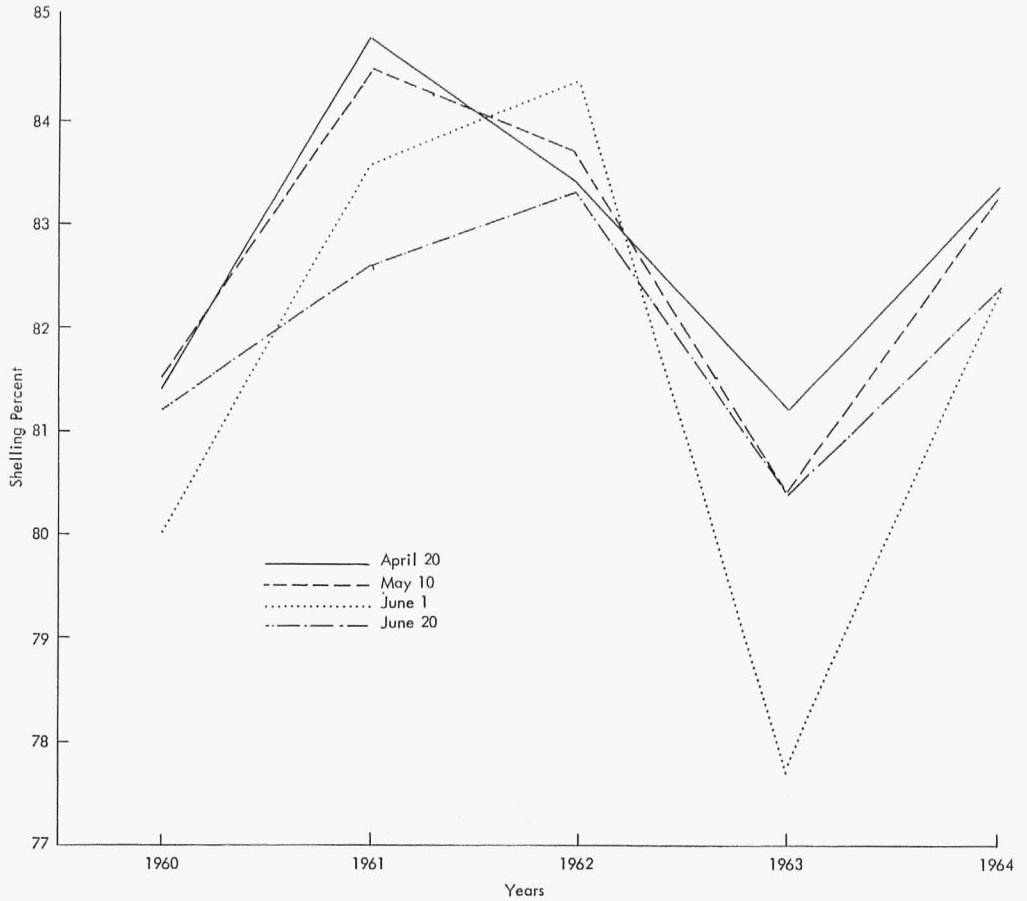

Figure 21. Average shelling percent for four dates of planting for each of five years. Missouri Agricultural Experiment Station, Columbia.

Bushel Test Weight

Bushel test weight was determined at the time shelling percentages were determined when the moisture of the grain for each sample had reached equilibrium of about 8 percent.

Test weights were about the same for the first three dates and declined 1.4 pounds to 56.9 pounds for the June 20 date of planting (Table 8, Appendix). The 115-day and 125-day maturities had the highest test weight over the four dates and the 90-day and 140-day had the lowest (Figure 22). It is interesting to note that the maturity groups with the highest test weight had the lowest shelling percentage and conversely, the ones with low test weights had the highest shelling percentages (compare Figures 19 and 22). Over the five-year period the June 20 planting date had the lowest test weight for each year while only small differences were noted for the other three maturity groups (Figure 23). The test weights for the four maturity groups followed about the same trend over the five-year period (Figure 24).

CONCLUSIONS:

1. Only small differences in test weights were found for the first three planting dates and decreased for the June 20 date.
2. Test weights were lowest for the 90- and 140-day maturity groups regardless of planting dates.

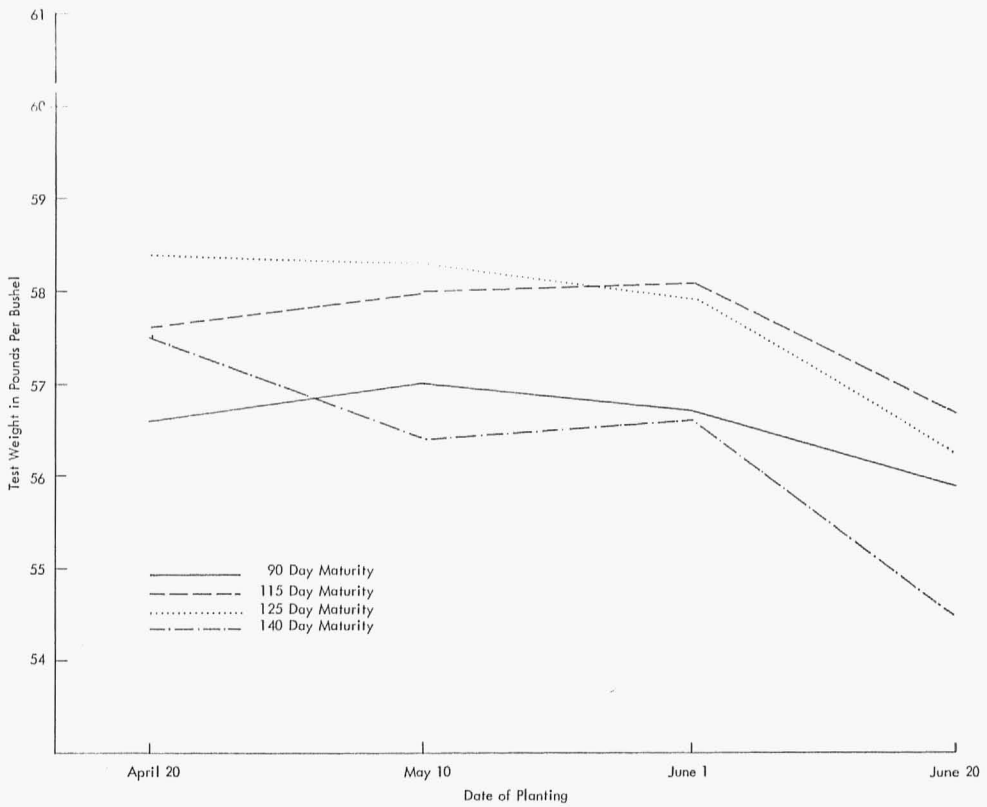

Figure 22. Average test weight in pounds per bushel of hybrids representing four maturity groups planted at four dates. Missouri Agricultural Experiment Station, Columbia.

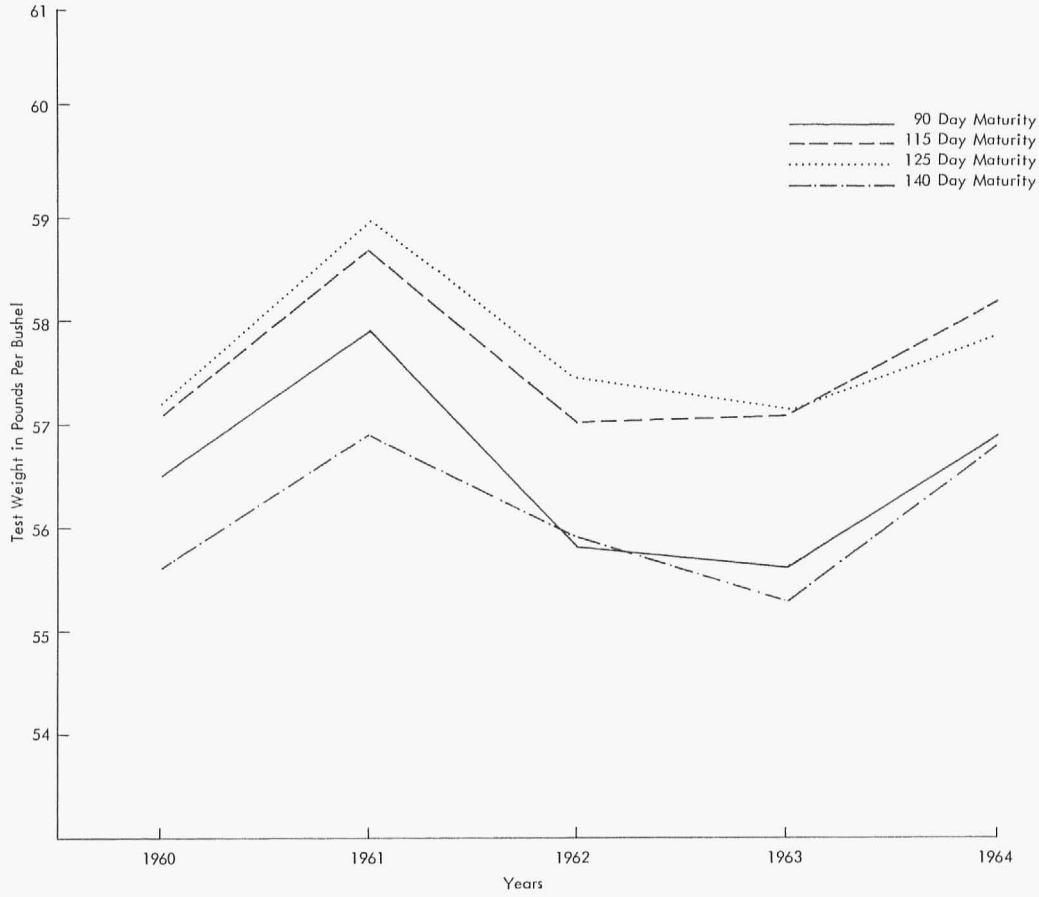

Figure 23. Average test weight in pounds per bushel for four dates of planting for each of five years. Missouri Agricultural Experiment Station, Columbia.

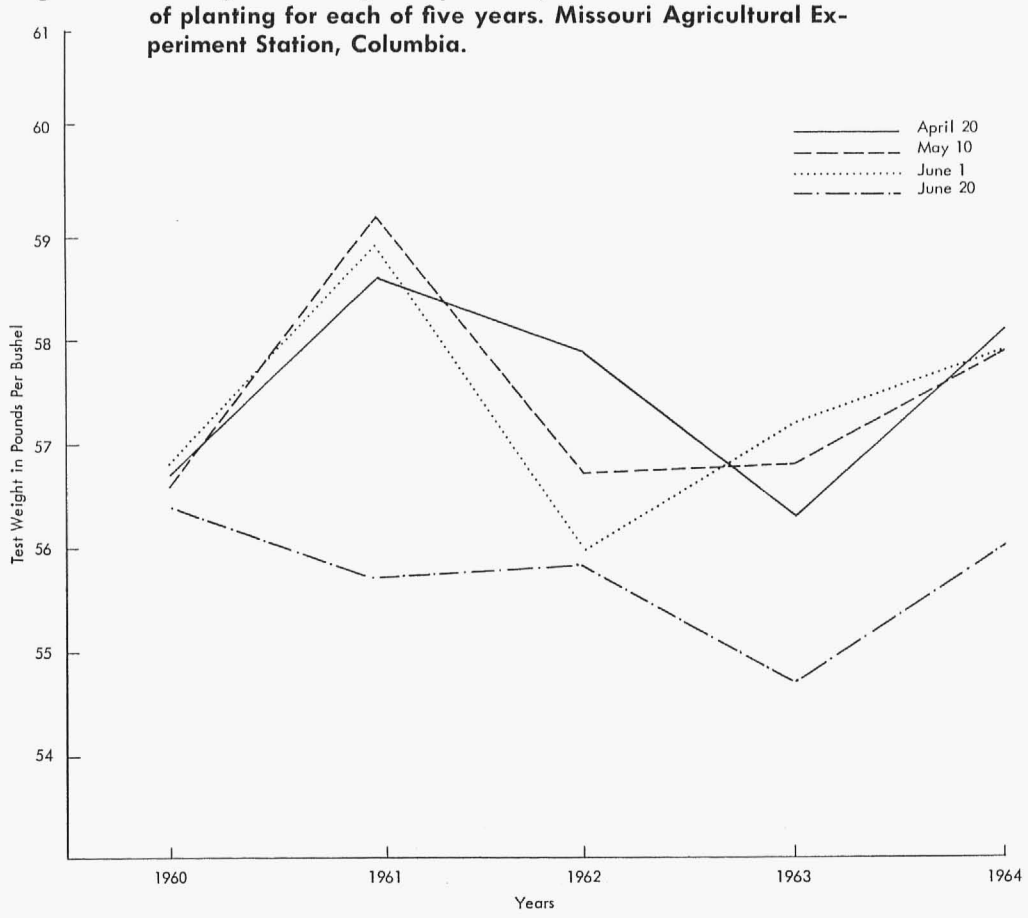

Figure 24. Average test weight in pounds per bushel of hybrids representing four maturity groups for each of five years. Missouri Agricultural Experiment Station, Columbia.

Earworm Penetration Grade

Ears harvested from each plot were graded for earworm damage by measuring the depth of penetration by the earworm larvae on a scale from 1 (small) to 5 (high). The grade represents the average for all ears rated within a plot.

Earworm damage was least for the April 20 planting date and gradually increased for each subsequent planting date (Table 9, Appendix). All four maturities follow the same trend over planting dates (Figure 25) with the 140-day maturity group showing the least damage. Planting dates over the four years (data were not taken in 1962) showed the same pattern (Figure 26). The greatest damage occurred in 1963 and the least in 1960. Earworm damage for the four maturity groups over years indicated the same general trends for each group, ranging from the least damage in 1960 to greatest in 1963.

CONCLUSIONS:

1. Earworm damage increased as planting dates were delayed.
2. The four maturity groups showed about the same relative response over planting dates and over years.

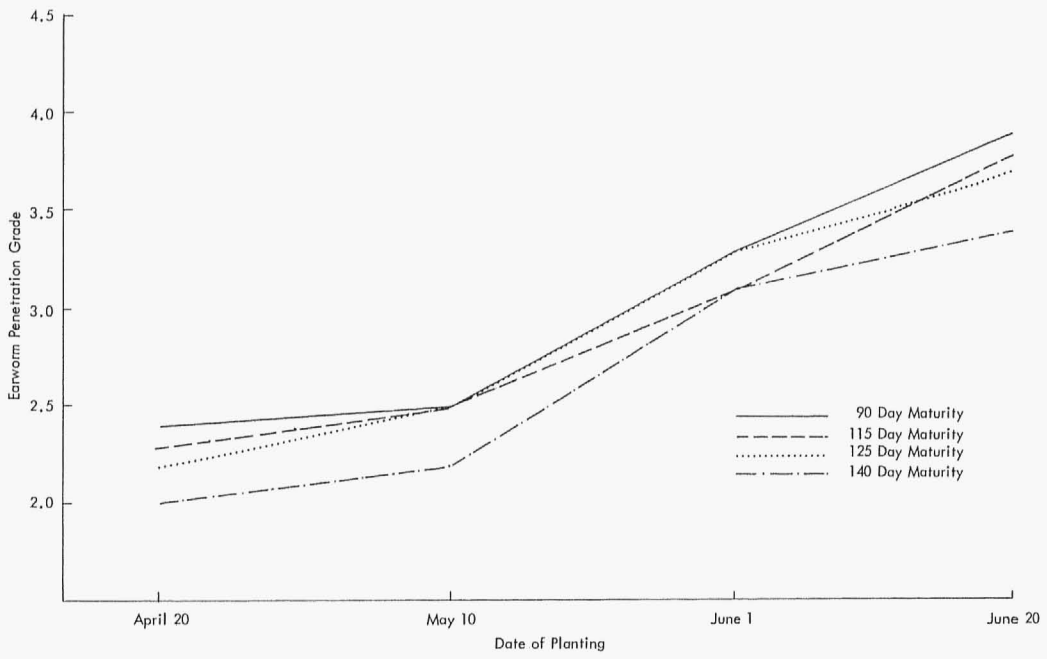

Figure 25. Average earworm penetration grade of hybrids representing four maturity groups planted at four dates. Missouri Agricultural Experiment Station, Columbia.

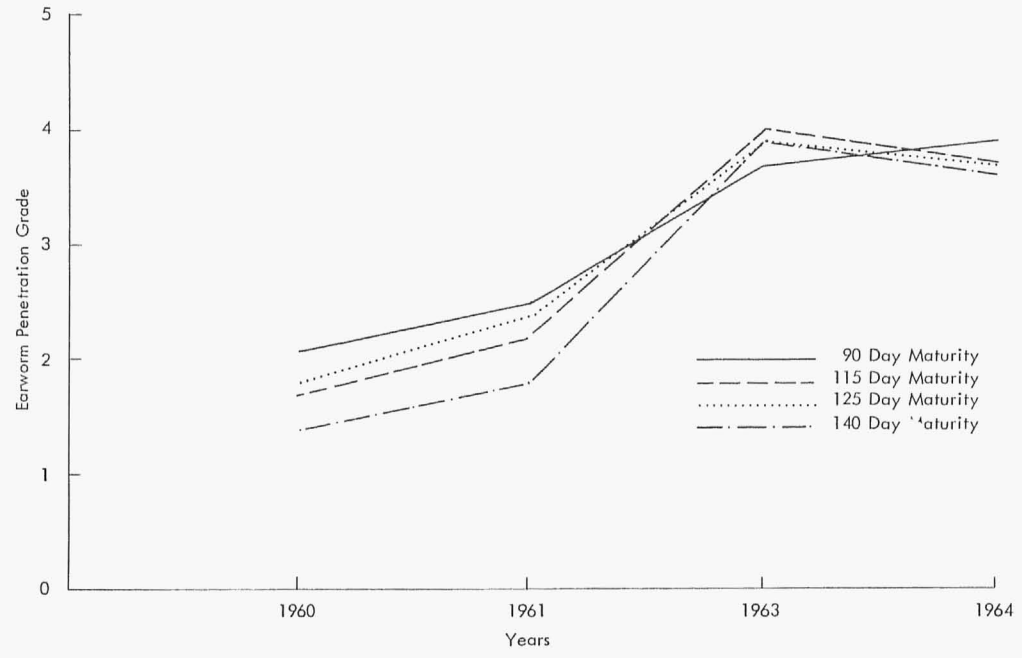

Figure 26. Average earworm penetration grade for four dates of planting for each of four years. Missouri Agricultural Experiment Station, Columbia.

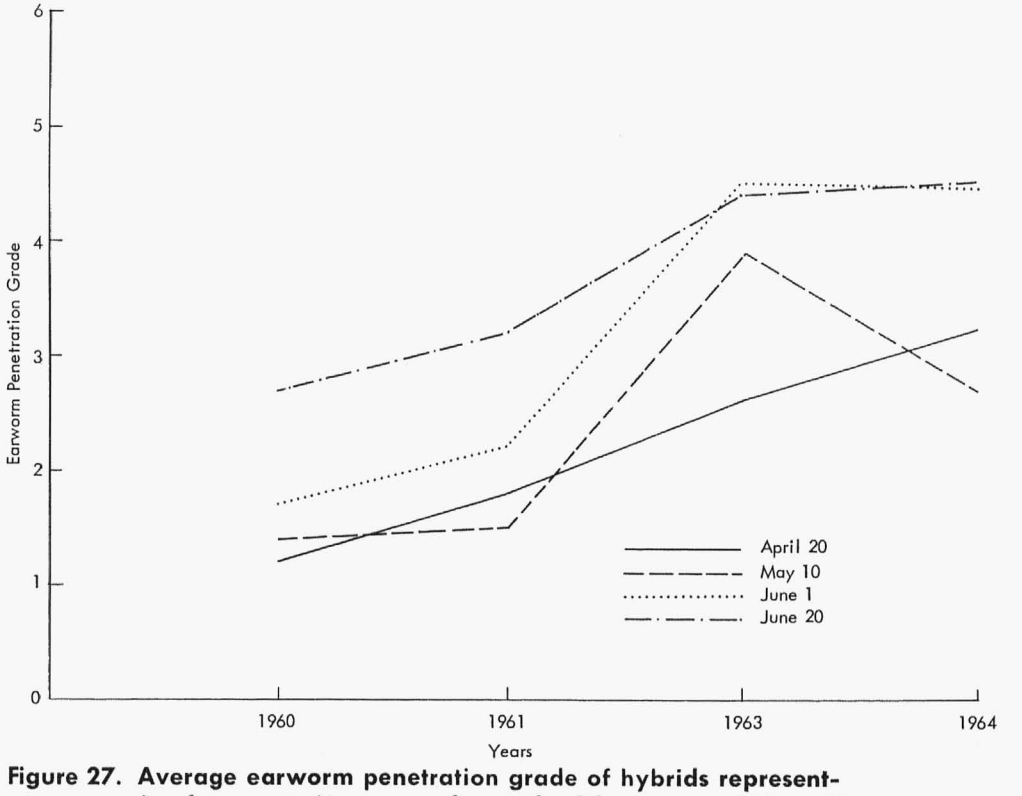

Figure 27. Average earworm penetration grade of hybrids representing four maturity groups for each of four years. Missouri Agricultural Experiment Station, Columbia.

Number of European Corn Borer Tunnels

Number of European corn borer tunnels was determined by splitting the stalks from 10 plants of each plot shortly after harvesting.

The number of tunnels was least for the first two dates of planting and greatest for the last two dates (Table 10, Appendix). The 90-day maturity groups had the lowest number of tunnels for the April 20 and May 10 planting date and the highest for the June 1 date. The more vigorous 140-day maturity hybrids were among the highest for all four dates (Figure 28). Over the five-year period the four maturity groups gave about the same relative response (Figure 29). European corn borer tunnels were the smallest in 1961 and the greatest in 1963 (Figure 30).

CONCLUSIONS:

1. Number of European corn borer tunnels was the the smallest for the first two dates of planting.
2. The 90-day maturity hybrids had the least number of tunnels planted at the first two dates and the highest for the June 1 date.
3. The more vigorous 140-day maturity group had the largest number of tunnels for each of the four dates.

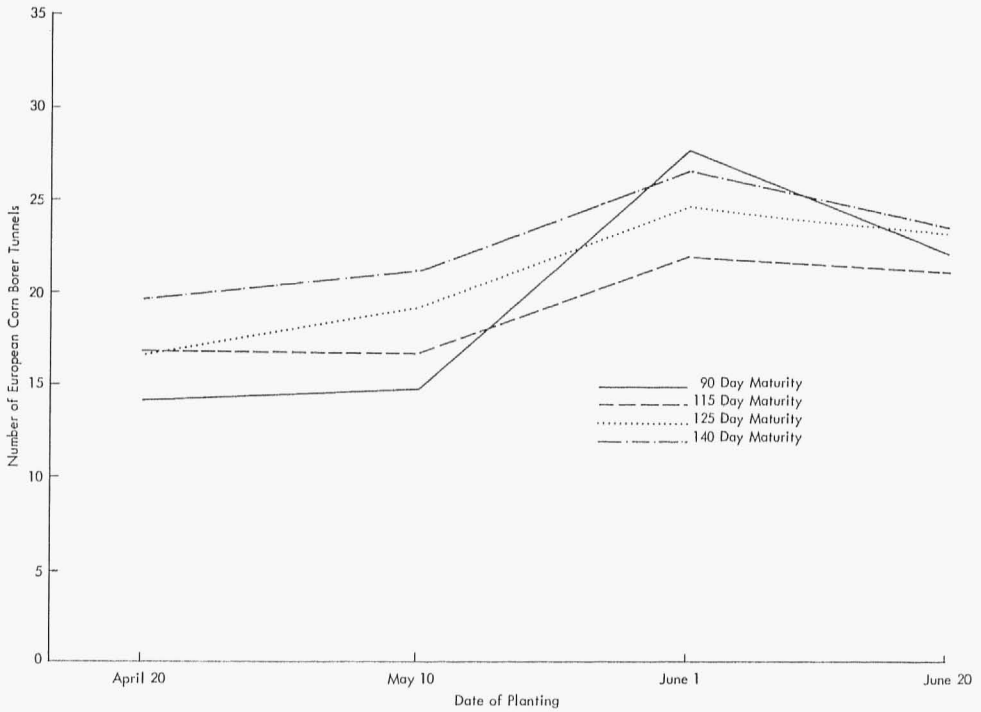

Figure 28. Average number of European corn borer tunnels per 10 plants of hybrids representing four maturity groups planted at four dates. Missouri Agricultural Experiment Station, Columbia.

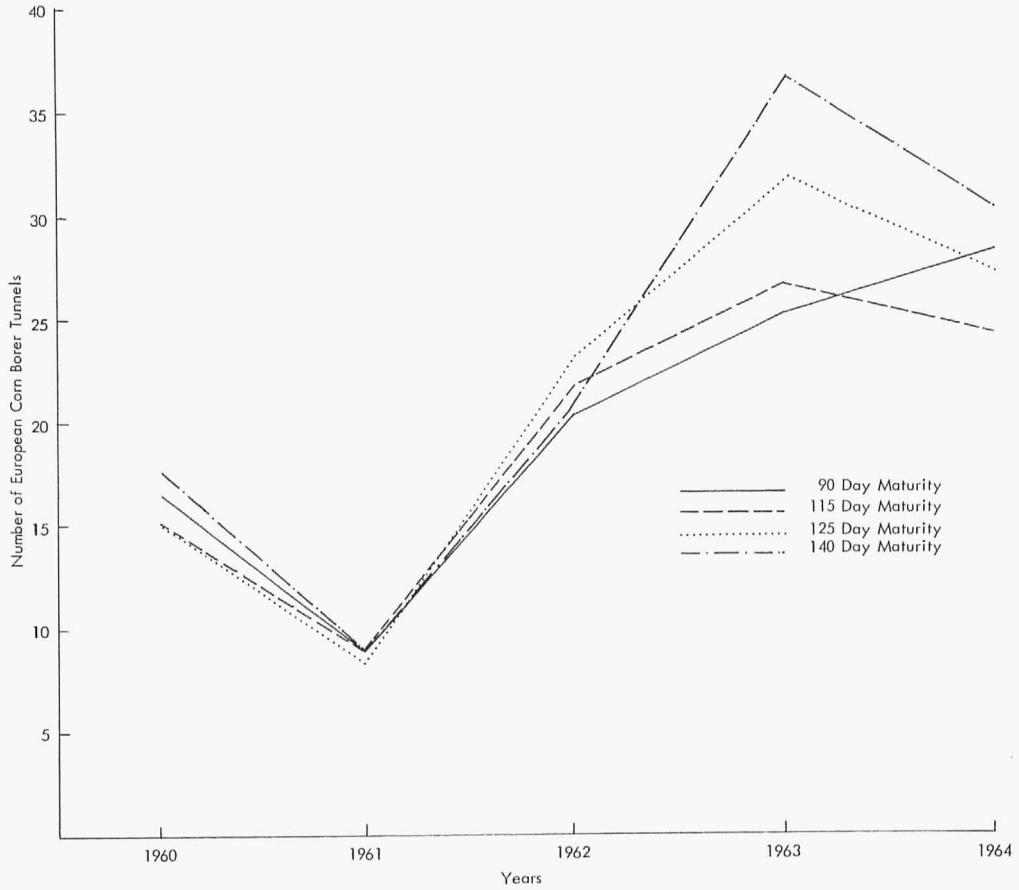

Figure 29. Average number of European corn borer tunnels per 10 plants for four dates of planting for each of five years. Missouri Agricultural Experiment Station, Columbia.

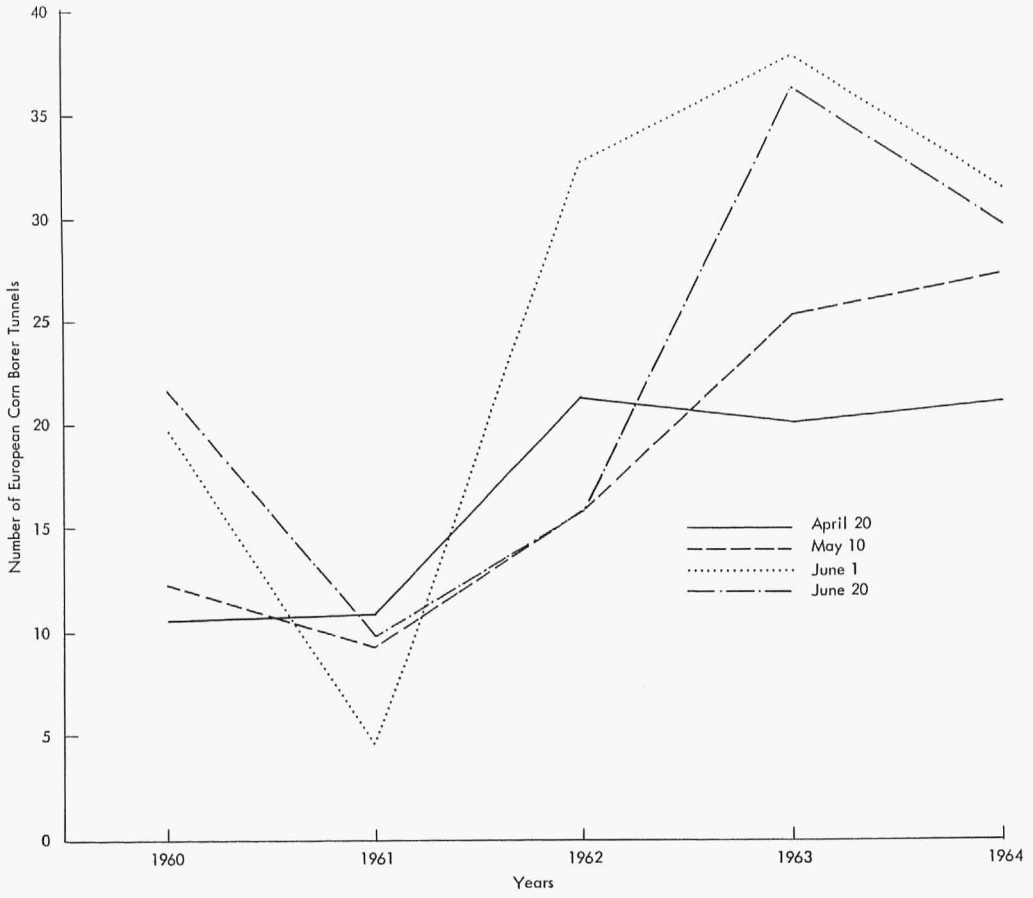

Figure 30. Average number of European corn borer tunnels per 10 plants representing four maturity groups for each of five years. Missouri Agricultural Experiment Station, Columbia.

APPENDIX

APPENDIX TABLE 1 -- SUMMARY OF AVERAGE YIELD IN BUSHELS PER ACRE FOR DATES-OF-PLANTING STUDY CONDUCTED FOR THE FIVE-YEAR PERIOD (1960-1964) AT THE MISSOURI AGRICULTURAL EXPERIMENT STATION, COLUMBIA

Maturity Group	Planting Date			
	Apr. 20	May 10	June 1	June 20
90-day	77.8	80.5	72.5	71.1
115-day	86.2	87.2	79.2	76.6
125-day	94.0	89.8	79.9	73.3
140-day	92.2	86.4	75.6	67.1
Mean	87.6	86.0	76.8	72.0

Planting Date	Year				
	1960	1961	1962	1963	1964
Apr. 20	98.9	104.2	85.2	55.1	94.4
May 10	98.8	104.0	82.6	53.9	90.5
June 1	83.3	111.5	74.9	50.3	64.0
June 20	66.9	78.7	68.3	75.2	71.1
Mean	87.0	99.6	77.8	58.6	80.0

Year	Maturity Group			
	90-Day	115-Day	125-Day	140-Day
1960	82.8	90.5	89.0	85.6
1961	86.2	96.1	109.1	107.0
1962	69.8	81.8	82.3	77.0
1963	59.3	59.7	59.6	55.8
1964	79.3	83.3	81.2	76.3
Mean	75.5	82.3	84.2	80.3

APPENDIX TABLE 2 -- SUMMARY OF AVERAGE ROOT LODGING FOR DATES-OF-PLANTING STUDY CONDUCTED FOR THE FIVE-YEAR PERIOD (1960-1964) AT THE MISSOURI AGRICULTURAL EXPERIMENT STATION, COLUMBIA.

Maturity Group	Planting Date			
	Apr. 20	May 10	June 1	June 20
90-day	0.5	1.2	4.4	21.9
115-day	0.9	1.7	6.1	24.6
125-day	1.1	3.7	7.4	23.6
140-day	3.6	3.4	14.5	25.8
Mean	1.5	2.5	8.1	24.0

Planting Date	Year				
	1960	1961	1962	1963	1964
Apr. 20	0.0	6.7	0.8	0.0	0.0
May 10	0.0	9.8	1.5	1.2	0.0
June 1	0.0	23.6	13.7	0.1	3.1
June 20	21.2	92.0	4.5	0.3	2.0
Mean	5.3	33.0	5.1	0.4	1.3

Year	Maturity Group			
	90-Day	115-Day	125-Day	140-Day
1960	3.9	5.5	5.9	5.9
1961	30.0	30.2	31.4	40.5
1962	0.7	5.3	4.8	9.7
1963	0.3	0.1	0.8	0.4
1964	0.1	0.4	2.0	2.5
Mean	7.0	8.3	9.0	11.8

APPENDIX TABLE 3 -- SUMMARY OF AVERAGE STALK LODGING FOR DATES-OF-PLANTING STUDY CONDUCTED FOR THE FIVE-YEAR PERIOD (1960-1964) AT THE MISSOURI AGRICULTURAL EXPERIMENT STATION, COLUMBIA.

Maturity Group	Planting Date			
	Apr. 20	May 10	June 1	June 20
90-day	6.7	5.5	5.9	8.9
115-day	6.3	8.9	9.6	22.8
125-day	12.6	11.1	11.7	20.6
140-day	7.2	6.3	8.9	17.8
Mean	8.2	8.0	9.0	17.5

Planting Date	Year				
	1960	1961	1962	1963	1964
Apr. 20	1.5	9.6	6.0	12.0	11.9
May 10	0.9	12.1	5.4	5.2	16.0
June 1	3.6	20.4	5.6	6.3	9.0
June 20	33.3	20.6	17.0	10.1	6.6
Mean	9.8	15.7	8.5	8.4	10.9

Year	Maturity Group			
	90-Day	115-Day	125-Day	140-Day
1960	6.7	10.4	13.6	8.6
1961	12.2	21.8	16.8	12.1
1962	4.3	7.3	9.1	13.4
1963	6.1	8.5	11.9	7.0
1964	4.4	11.5	18.5	9.1
Mean	6.7	11.9	14.0	10.0

APPENDIX TABLE 4 -- SUMMARY OF AVERAGE EAR HEIGHT GRADE FOR DATES-OF-PLANTING STUDY CONDUCTED FOR THE FIVE-YEAR PERIOD (1960-1964) AT THE MISSOURI AGRICULTURAL EXPERIMENT STATION, COLUMBIA.

Maturity Group	Planting Date			
	Apr. 20	May 10	June 1	June 20
90-day	3.0	3.1	3.3	3.2
115-day	3.2	3.6	3.9	3.9
125-day	3.7	3.9	4.1	4.1
140-day	4.5	4.7	4.6	4.6
Mean	3.6	3.8	4.0	4.0

Planting Date	Year				
	1960	1961	1962	1963	1964
Apr. 20	3.1	3.9	3.4	3.5	4.0
May 10	3.7	4.1	3.2	3.8	4.4
June 1	4.1	4.5	3.3	3.8	4.2
June 20	3.8	4.8	3.4	3.9	4.0
Mean	3.7	4.3	3.3	3.8	4.2

Year	Maturity Group			
	90-Day	115-Day	125-Day	140-Day
1960	2.9	3.3	3.8	4.6
1961	3.5	4.3	4.6	5.0
1962	2.7	3.2	3.4	4.0
1963	3.1	3.6	3.8	4.4
1964	3.5	3.9	4.2	4.9
Mean	3.1	3.7	4.0	4.6

APPENDIX TABLE 5 -- SUMMARY OF AVERAGE NUMBER OF DAYS FROM PLANTING TO TASSELING FOR DATES-OF-PLANTING STUDY CONDUCTED FOR THE FIVE-YEAR PERIOD (1960-1964) AT THE MISSOURI AGRICULTURAL EXPERIMENT STATION, COLUMBIA.

Maturity Group	Planting Date			
	Apr. 20	May 10	June 1	June 20
90-day	79.9	68.4	60.1	55.2
115-day	80.8	69.4	61.8	57.1
125-day	85.8	74.0	65.1	61.3
140-day	88.0	75.9	67.2	63.1
Mean	83.6	71.9	63.6	59.2

Planting Date	Year				
	1960	1961	1962	1963	1964
Apr. 20	86.3	93.6	74.6	84.5	79.2
May 10	71.8	76.9	65.3	73.8	72.0
June 1	64.5	63.5	65.1	60.3	64.4
June 20	57.9	60.8	61.3	57.6	58.5
Mean	70.1	73.7	66.6	69.1	68.5

Year	Maturity Group			
	90-Day	115-Day	125-Day	140-Day
1960	66.1	68.0	72.5	73.8
1951	70.4	71.5	75.1	77.8
1962	63.3	64.5	68.1	70.4
1963	65.3	66.4	71.5	73.0
1964	64.6	66.1	70.7	72.7
Mean	65.9	67.3	71.6	73.5

APPENDIX TABLE 6 -- SUMMARY OF AVERAGE NUMBER OF DAYS FROM PLANTING TO SILKING FOR DATES-OF-PLANTING STUDY CONDUCTED FOR THE FIVE-YEAR PERIOD (1960-1964) AT THE MISSOURI AGRICULTURAL EXPERIMENT STATION, COLUMBIA.

Maturity Group	Planting Date			
	Apr. 20	May 10	June 1	June 20
90-day	80.9	70.2	61.8	56.6
115-day	82.9	72.0	63.9	59.3
125-day	88.2	76.3	67.1	63.2
140-day	91.1	79.1	70.6	65.2
Mean	85.8	74.4	65.9	61.1

Planting Date	Year				
	1960	1961	1962	1963	1964
Apr. 20	88.3	95.1	76.1	87.5	81.9
May 10	73.8	78.4	66.9	78.4	74.4
June 1	66.2	65.3	67.0	64.3	66.5
June 20	59.6	61.5	63.4	60.3	60.7
Mean	72.0	75.1	68.4	72.6	70.9

Year	Maturity Group			
	90-Day	115-Day	125-Day	140-Day
1960	67.5	70.0	74.2	76.2
1961	71.0	73.1	76.3	79.9
1962	64.5	66.3	70.0	72.6
1963	67.4	69.8	74.9	78.4
1964	66.4	68.6	73.1	75.4
Mean	67.4	69.6	73.7	76.5

APPENDIX TABLE 7 -- SUMMARY OF SHELLING PERCENT FOR DATES-OF-PLANTING STUDY CONDUCTED FOR THE FIVE-YEAR PERIOD (1960-1964) AT THE MISSOURI AGRICULTURAL EXPERIMENT STATION, COLUMBIA.

Maturity Group	Planting Date			
	Apr. 20	May 10	June 1	June 20
90-day	83.5	83.6	82.6	82.9
115-day	82.4	81.6	80.8	81.2
125-day	82.3	82.2	81.2	81.8
140-day	83.1	83.3	81.8	82.1
Mean	82.8	82.7	81.6	82.0

Planting Date	Year				
	1960	1961	1962	1963	1964
Apr. 20	81.4	84.8	83.4	81.1	83.3
May 10	81.5	84.5	83.7	80.4	83.3
June 1	80.0	83.6	84.4	77.7	82.4
June 20	81.1	82.6	83.3	80.4	82.4
Mean	81.0	83.9	83.7	79.9	82.9

Year	Maturity Group			
	90-Day	115-Day	125-Day	140-Day
1960	81.7	80.8	80.3	81.5
1961	83.5	83.4	84.0	84.7
1962	83.4	82.8	84.1	84.6
1963	83.0	79.0	78.6	79.2
1964	84.2	81.7	82.5	83.0
Mean	83.2	81.5	81.9	82.6

APPENDIX TABLE 8 -- SUMMARY OF AVERAGE TEST WEIGHT FOR DATES-OF-PLANTING STUDY CONDUCTED FOR THE FIVE-YEAR PERIOD (1960-1964) AT THE MISSOURI AGRICULTURAL EXPERIMENT STATION, COLUMBIA.

Maturity Group	Planting Date			
	Apr. 20	May 10	June 1	June 20
90-day	57.6	58.0	57.7	56.9
115-day	58.6	59.0	59.1	57.7
125-day	59.4	59.3	58.9	57.3
140-day	58.5	57.4	57.6	55.5
Mean	58.5	58.4	58.3	56.9

Planting Date	Year				
	1960	1961	1962	1963	1964
Apr. 20	57.7	59.6	58.9	57.3	59.1
May 10	57.6	60.2	57.7	57.8	58.9
June 1	57.8	59.9	57.0	58.2	58.9
June 20	57.4	56.7	56.8	55.7	57.0
Mean	57.6	59.1	57.6	57.3	58.5

Year	Maturity Group			
	90-Day	115-Day	125-Day	140-Day
1960	57.5	58.1	58.2	56.6
1961	58.9	59.7	60.0	57.9
1962	56.8	58.0	58.5	56.9
1963	56.6	58.1	58.1	56.3
1964	57.9	59.2	58.9	57.8
Mean	57.5	58.6	58.7	57.1

APPENDIX TABLE 9 -- SUMMARY OF AVERAGE EARWORM PENETRATION GRADE FOR DATES-OF-PLANTING STUDY CONDUCTED FOR THE FOUR-YEAR PERIOD (1960-63-64) AT THE MISSOURI AGRICULTURAL EXPERIMENT STATION, COLUMBIA.

Maturity Group	Planting Date			
	Apr. 20	May 10	June 1	June 20
90-day	2.4	2.5	3.3	3.9
115-day	2.3	2.5	3.1	3.8
125-day	2.2	2.5	3.3	3.7
140-day	2.0	2.2	3.1	3.4
Mean	2.2	2.4	3.2	3.7

Planting Date	Year			
	1960	1961	1963	1964
Apr. 20	1.2	1.8	2.6	3.2
May 10	1.4	1.5	3.9	2.7
June 1	1.7	2.2	4.5	4.4
June 20	2.7	3.2	4.4	4.5
Mean	1.8	2.2	3.9	3.7

Year	Maturity Group			
	90-Day	115-Day	125-Day	140-Day
1960	2.1	1.7	1.8	1.4
1961	2.5	2.2	2.4	1.8
1963	3.7	4.0	3.9	3.9
1964	3.9	3.7	3.7	3.6
Mean	3.1	2.9	2.9	2.7

APPENDIX TABLE 10 -- SUMMARY OF THE NUMBER OF EUROPEAN CORN BORER TUNNELS PER 10 PLANTS FOR DATES-OF-PLANTING STUDY CONDUCTED FOR THE FIVE-YEAR PERIOD (1960-1964) AT THE MISSOURI AGRICULTURAL EXPERIMENT STATION, COLUMBIA.

Maturity Group	Planting Date			
	Apr. 20	May 10	June 1	June 20
90-day	14.1	14.9	27.7	22.3
115-day	16.9	16.8	22.0	21.3
125-day	16.6	19.2	24.7	23.4
140-day	19.7	21.2	26.6	23.7
Mean	16.8	18.0	25.3	22.7

Planting Date	Year				
	1960	1961	1962	1963	1964
Apr. 20	10.6	10.9	21.4	20.1	21.1
May 10	12.3	9.3	15.8	25.4	27.4
June 1	19.8	4.6	32.6	37.8	21.4
June 20	21.9	9.8	15.7	36.4	29.6
Mean	16.2	8.7	21.4	29.9	27.4

Year	Maturity Group			
	90-Day	115-Day	125-Day	140-Day
1960	16.5	15.2	15.0	17.9
1961	8.7	8.7	8.2	8.9
1962	20.3	21.6	23.0	20.6
1963	25.1	26.5	31.6	36.5
1964	28.1	24.2	27.1	30.1
Mean	19.7	19.2	21.0	22.8