

SOME FACTORS WHICH INFLUENCE THE JULY PRICE OF NO. 2  
MIXED CORN AT KANSAS CITY

by

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## I. INTRODUCTION

### 1. A Problem in Corn Prices

It is well known that prices of corn vary from day to day, from week to week, from month to month and from season to season. The causes of day to day and week to week price variation are frequently obscure, and are due to changing speculative demand as well as to supply and to consumptive demand. These related influences serve as the causes of seasonal price changes. No attempt will be made in this study to show a way of finding how high or low the price of corn will go on any given day or within any given week. Periods of longer duration only, will be considered.

The market frequently looks upon a large price advance as a sign of future weakness. If average prices over a period of years are studied this view is upheld. If, however, the price variation within individual years is considered it appears that a strong price often precedes a further advance. June is the high month previous to July on several occasions in the group of years included in this study and yet, as will presently be shown, a high June price for corn is frequently one of the surest signs of a further advance in July.

Shrinkage, interest and other storage charges are not considered in this thesis. Lacey F. Rickey has made studies

on this phase of holding corn. (Rickey 1927) G. S. Shephard and W. J. Hart also studied this phase of holding corn at the Iowa Agricultural Experiment Station. (Shephard and Hart 1925)

## 2. The Purpose

An attempt is made in this thesis to analyze the factors which influence the price of corn in July, as well as certain price relationships and a few other factors. No doubt some factors of importance have been overlooked or neglected because their influence is obscure. The main purpose is to determine the efficiency of certain price relationships in reflecting causal factors that operate in subsequent periods.

July is chosen for study because it is frequently a turning point in the corn market. Old crop influences meet new crop influences in this month. New crop coarse grains come on the market in this month to some extent. Corn held on farms for the summer market begins to appear in market channels at this time and considerable inroads have been made on visible supplies.

Prices of corn sometimes reach their highest level in July and often continue to advance into August and September. The trend of prices in the spring previous to July often indicates conditions necessary for strength or weakness in July.



The market influences that appear in the months preceding July are more easily observed and interpreted than those which come later. This is because the effect of the old corn crop upon corn prices is more apparent than that of the prospective corn crop. The influence of spring prices upon July price levels is therefore more apparent than the influence of prices in the months following July.

### 3. The Data

The price data used in this study are the monthly top prices of No. 2 mixed corn at Kansas City, Missouri, as given by the Kansas City Daily Drivers Telegram (1923 and 1927) from November 1891 to October 1926 inclusive. Production data for corn are taken from United States Department of Agriculture Yearbooks. (1923 and 1926) The data for United States visible supply of corn are taken from the Chicago Board of Trade, Thirty-fifth Annual Report of the Trade and Commerce of Chicago (1891 to 1926) to the Sixty-ninth Annual Report inclusive. The data for receipts of hogs at nine markets in the United States are taken from United States Department of Agriculture Statistical Bulletin No. 18 (1927) and from current issues of Crops and Markets. (1928)

#### 4. The Method

The method of handling the data presented in this study is mainly graphic and a non-Pearsonian type of statistical analysis. Selective comparison and historical interpretation also enter into the method of handling data.

The following assumptions were made when this study was started. Since corn produced in the United States enters into foreign trade in relatively small quantities it was assumed that this portion of demand could be neglected. The effect of foreign supplies on price in this country has been neglected since relatively small quantities of corn are imported.

The term "crop year" as used in this thesis includes a portion of two calendar years — it refers specifically to the period from November first of one year to October thirty-first of the year following. This is the corn "crop year" used by the United States Department of Agriculture, because the first of November marks the point at which supplies of new crop corn can be expected to appear in quantity.

The crop years from 1891-92 to 1925-26 inclusive constitute the 35 years with which this thesis is concerned.

The terms "spring price rise" and "spring price decline" refer to price changes within the period from January to June whenever they are used in this study.

Secular trends of corn production, visible supply of

corn, corn prices and hog receipts were all determined by the method of least squares.

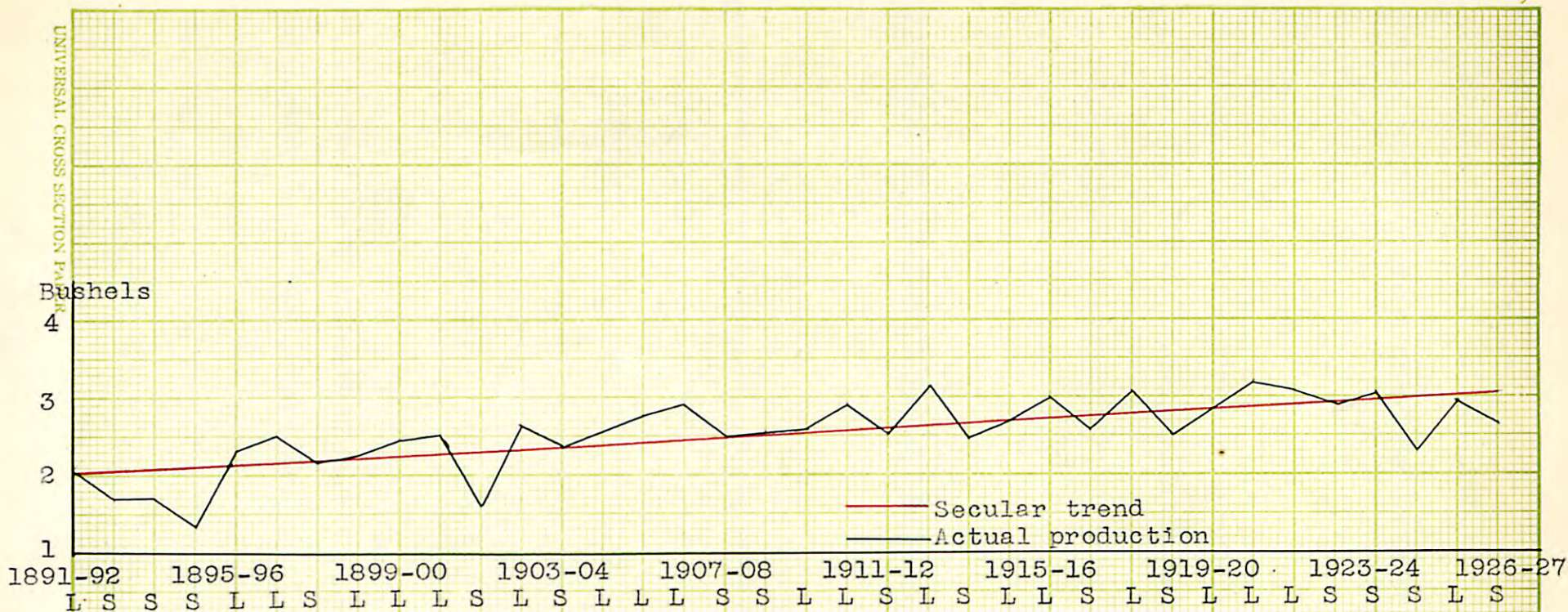
## 5. Acknowledgment

The writer wishes to express his sincere thanks to Professor R. M. Green under whose direction this study was made. Also, thanks are due Doctor W. E. Grimes for criticism of the work and for the aid of the departmental organization in the preparation of materials.

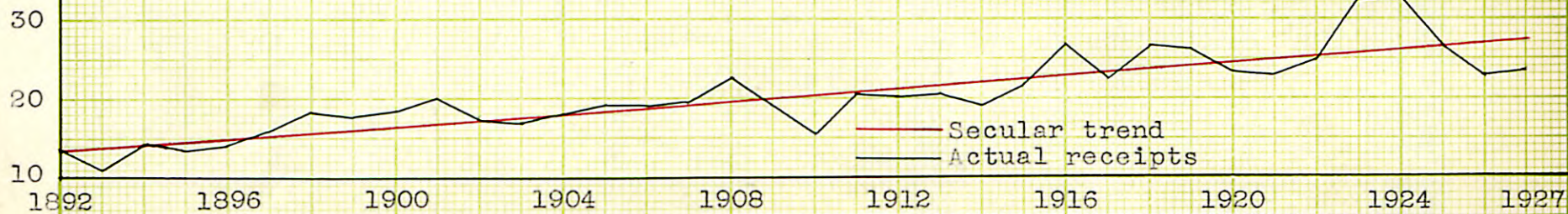
## II. FACTORS WHICH INFLUENCE CORN PRICES SEASONALLY

### 1. The Effect of Corn Production on Prices

Corn production in the United States varies from year to year but has been tending upward at an uneven rate throughout the period covered by this study. When the years are divided into years of large production and years of small production by comparing actual production to secular trend (see Fig. 1) it is at once apparent that production in some years can be called either large or small. Since hogs contribute a material portion of the demand for corn in the United States, the receipts of hogs at nine markets have been compared to corn production for the time when hogs received at any market use corn from a given corn crop. Turning to Figure 1 and comparing hog receipts in 1908 to corn production in the crop year 1907-08 it is evident that corn production is so close to secular trend in production



Corn Production in Billions of Bushels



Hog Receipts in Millions — At Nine Markets

Figure 1. — The Size of the United States Corn Crop.

that this crop cannot be definitely called large or small without referring to some element of demand; in this case a glance at the lower graph shows hog receipts well above the secular trend in receipts so that it appears safe to call this crop a small corn crop.

The size of the corn crop has been similarly determined in other crop years when actual corn production is close to the straight line trend.

A study of the sequence of large and small corn crops as differentiated in Figure 1 reveals four situations:

(a) Five years of small corn crops following small corn crops. (Fig. 2) (Table I)

(b) Ten years of small corn crops following large corn crops. (Fig. 2) (Table II)

(c) Nine years of large corn crops following large corn crops. (Fig. 3) (Table III)

(d) Eleven years of large corn crops following small corn crops. (Fig. 3) (Table IV)

These combinations of the years included in the study are chosen because they seem most likely to clarify the effect of the size of the corn crop upon price changes which occur in the months following corn harvest. Mr. B. H. Pubols (1927) in some unpublished corn studies in the Department of Agricultural Economics of the Kansas State Agricultural College, classified corn crops by a similar method

to see how prospective large or small corn crops affect prices.

(a) In four of the five years of small corn crops following small corn crops the price of corn advanced more than twenty per cent from January to June (Table I); and the July price was higher than the previous spring high price in two of the four years and lower in two. The fifth year (1924-25) in this group is characterized by declining prices and continued weakness in July. The downward tendency of prices in the spring, in this fifth year, is occasioned, in part, by the high level of prices the previous fall and, in part, by a lessened demand for corn as indicated by the moderate receipts of hogs in 1925. When the price level of corn is low and demand is not cut down too far it would appear likely that a considerable spring price advance might occur in years of a small corn crop following a small corn crop. The level of July prices in years with this type of corn production appears to be the result of mere chance or of the influence of the next crop.

(b) Spring prices advanced every year except one in the ten years of small corn crops following large corn crops. The per cent of advance shows considerable variation.

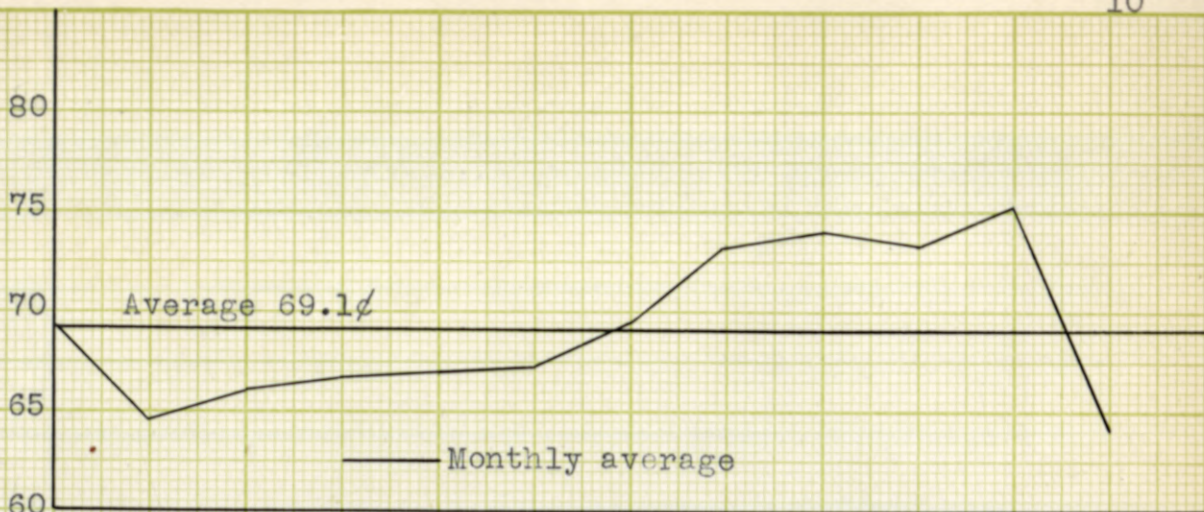
(Table II) (Fig. 2) In the nine years of advancing spring prices in this group of years, July price was higher than the previous spring high price in four instances and lower

Table I. Price Changes from January to July in Five Years of Small Corn Crops Following Small Corn Crops.

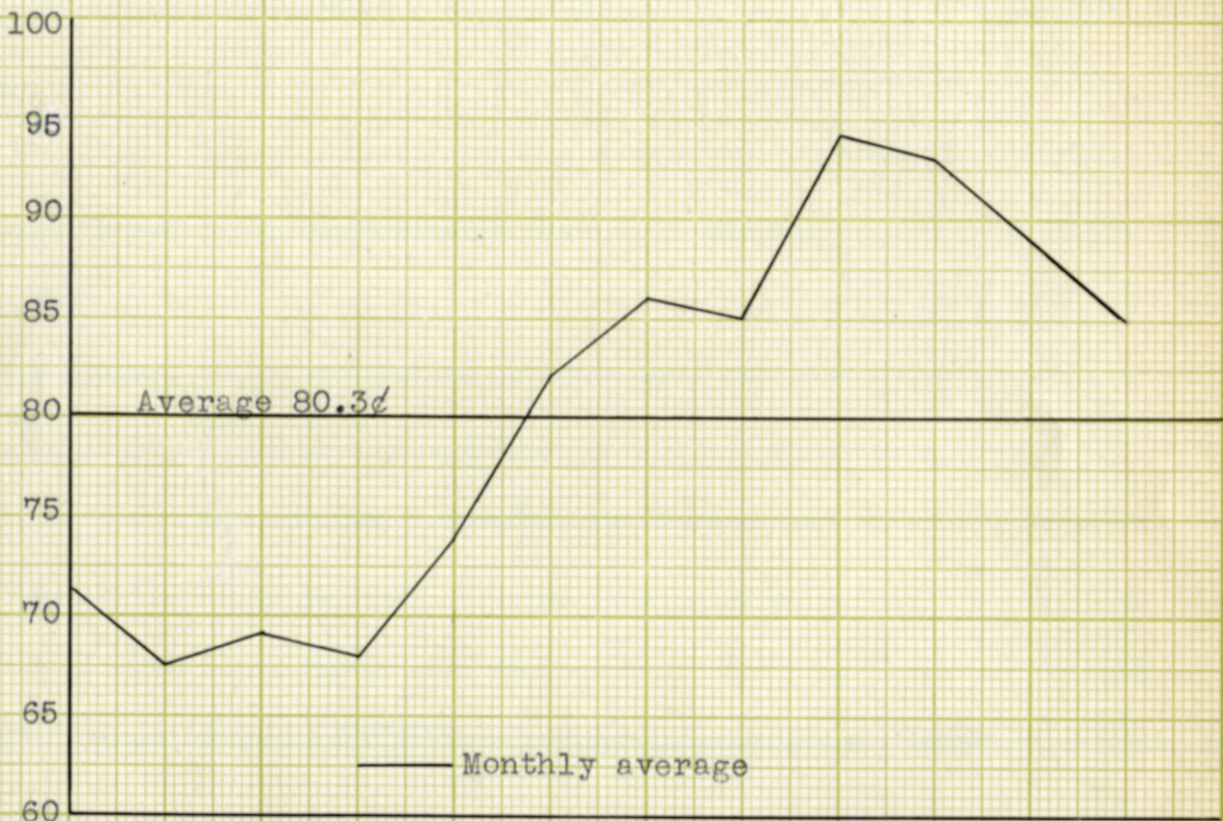
Year	Per cent of spring rise	Per cent of spring decline	Per cent that July is over spring high price	Per cent that July is under June	Per cent that July is under spring high price
1893-94	23.02	--	4.51	--	--
1894-95	22.89	--	--	--	18.62
1908-09	27.11	--	--	--	6.66
1923-24	30.69	--	15.31	--	--
1924-25	--	19.29	--	.45	--

Table II. Price Changes from January to July in Ten Years of Small Corn Crops Following Large Corn Crops.

Year	Per cent of spring rise	Per cent of spring decline	Per cent that July is over spring high price	Per cent that July is over June	Per cent that July is under spring high price
1892-93	8.57	--	--	--	11.86
1897-98	45.24	--	--	--	10.96
1901-02	--	7.69	--	3.82	--
1903-04	28.92	--	--	--	.93
1907-08	40.74	--	3.28	--	--
1911-12	21.02	--	--	--	5.39
1913-14	15.38	--	2.00	--	--
1916-17	71.80	--	31.97	--	--
1918-19	28.67	--	10.33	--	--
1922-23	25.87	--	--	--	3.97



Nov. Dec. Jan. Feb. Mar. Apr. May June July Aug. Sept. Oct.  
 Average monthly top price of No. 2 mixed corn at Kansas City.  
 Five years of small corn crops following small corn crops.  
 (See Table I)



Nov. Dec. Jan. Feb. Mar. Apr. May June July Aug. Sept. Oct.  
 Average monthly top price of No. 2 mixed corn at Kansas City.  
 Ten years of small corn crops following large corn crops.  
 (See Table II)

Figure 2.—The two price situations following small corn crops.



in five. The year of declining spring prices (1901-02) in this group is no doubt occasioned by the high price level for corn in the preceding fall (See December, 1901-02, Fig. 6, page 41, Appendix) and the moderate demand as indicated by hog receipts. (Fig. 1)

(c) Spring price advances occurred in eight of the nine years when large corn crops followed large corn crops. (Table III) Average prices in this group of years show a nearly continuous price advance from January to July inclusive. (Fig. 3) Seven of the nine years in this group are characterized by an advance in July prices to levels even with or above the previous spring high price. July price was lower than the previous spring high price in one year. (1906-07) The July decline, however, was less than two per cent and is in part explained by the large spring price advance and in part by the relative abundance of visible supply. (See July, 1906-07, Fig. 10, page 45, Appendix) One year (1920-21) in this group was characterized by declining spring prices with some recovery in July. No doubt the spring price decline in that year was merely a continuation of the general depression which began in 1920. July prices appear to have a favorable chance for advances over previous spring high prices in years of large corn crops following large corn crops.

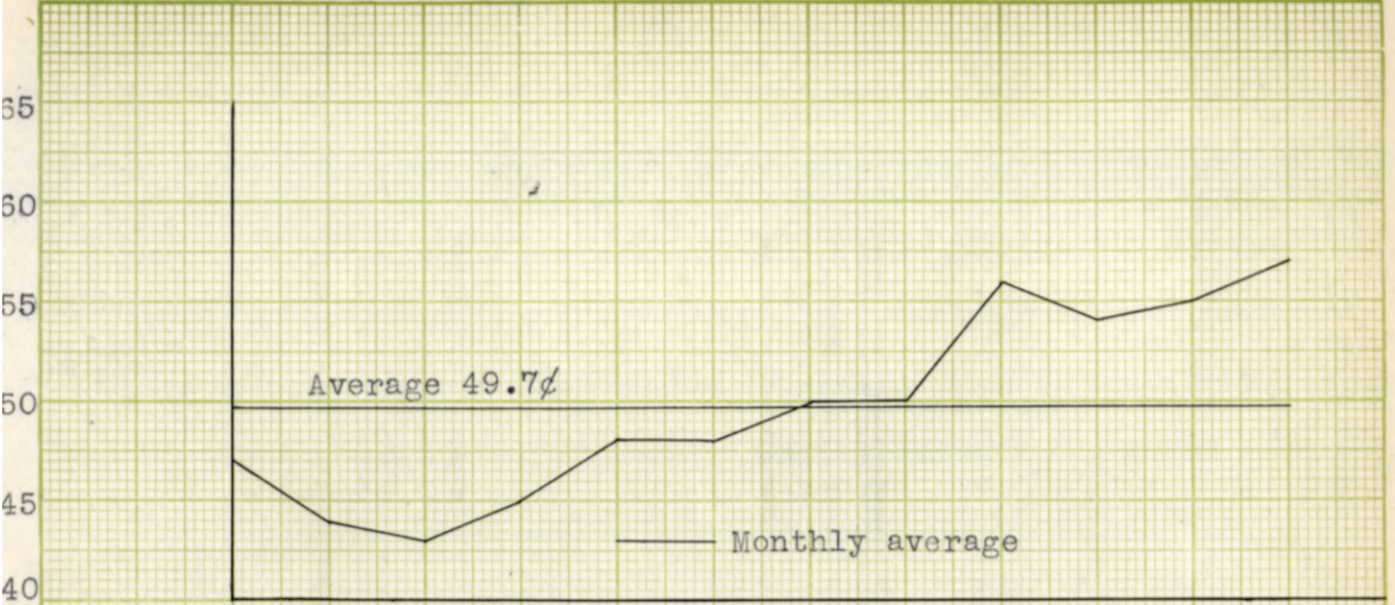
(d) Spring price declines occurred in four of the

Table III. Price Changes from January to July in Nine Years of Large Corn Crops Following Large Corn Crops.

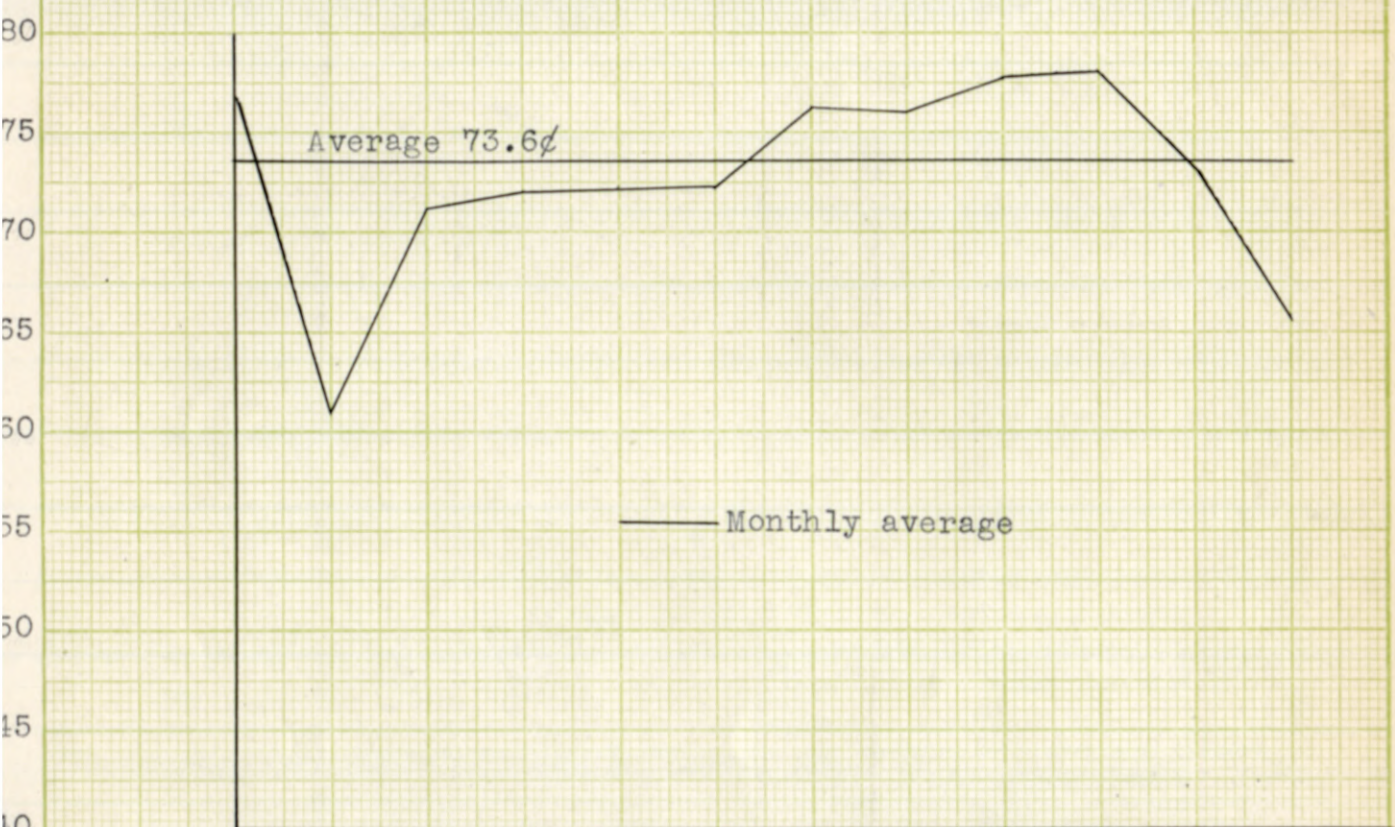
Year	Per cent of spring rise	Per cent of spring decline	Per cent that July is over spring high price	Per cent that July is over June	Per cent that July is under spring high price
1896-97	37.14	--	2.08	--	--
1899-00	35.00	--	11.11	--	--
1900-01	24.47	--	40.45	--	--
1905-06	29.32	--	1.94	--	--
1906-07	31.68	--	--	--	1.88
1910-11	20.78	--	35.81	--	--
1915-16	7.27	--	9.15	--	--
1920-21	--	17.83	--	8.00	--
1921-22	35.20	--	Even	--	Even

Table IV. Price Changes from January to July in Eleven Years of Large Corn Crops Following Small Corn Crops.

Year	Per cent of spring rise	Per cent of spring decline	Per cent that July is over spring high price	Per cent that July is over or under June	Per cent that July is under spring high price
1891-92	37.68	--	--	--	5.26
1895-96	4.25	--	--	--	6.12
1898-99	13.06	--	--	--	13.53
1902-03	46.66	--	--	--	9.09
1904-05	19.54	--	4.80	--	--
1909-10	--	6.67	--	5.56	--
1912-13	25.51	--	13.01	6.66	--
1914-15	--	6.11	--	12.12	--
1917-18	--	15.38	--	--	--
1919-20	27.58	--	--	--	11.05
1925-26	--	10.53	--	18.36	--



Nov. Dec. Jan. Feb. Mar. Apr. May June July Aug. Sept. Oct.  
 Average monthly top price of No. 2 mixed corn at Kansas City.  
 Nine years of large corn crops following large corn crops.  
 (See Table III)



Nov. Dec. Jan. Feb. Mar. Apr. May June July Aug. Sept. Oct.  
 Average monthly top price of No. 2 mixed corn at Kansas City.  
 Eleven years of large corn crops following small corn crops.  
 (See Table IV)

Figure 3. The Two Price Situations Following Large Corn Crops.

eleven years of large corn crops following small corn crops. (Table IV) The seven years of advancing spring prices in this group had enough strength to give a steady to slightly upward trend to average prices. (Fig. 3) July price was lower than the previous spring high price five times and higher twice in the seven years when spring prices advanced. In the four years when spring prices declined, July price was higher than June every time. Years with this type of production give little intimation as to what can be expected of July prices until late in the spring months. If prices are advancing in the spring in years with this type of production July prices appear to have a poor chance to make gains over high prices earlier in the season. If prices are declining in the spring in years with this type of production July prices of corn are in a favorable position for improvement over June.

## 2. The Effect of Price Level upon Following Prices

The various crop years included in the period from 1891-92 to 1925-26 have been grouped into three types of years on the basis of the extent of price advances or declines in the spring. The problem presented under this heading is to determine December price levels which precede

- (a) A spring price advance of twenty-five per cent or more,
- (b) A spring price advance of less than twenty-five per cent,

and (c) A spring price decline.

(a) The December top price of No. 2 mixed corn at Kansas City was lower than the average of top prices for the previous year twelve times and higher four 1 times in the seventeen years when spring price advanced twenty-five per cent or more. (Table V)

(b) The December top price of No. 2 mixed corn at Kansas City was lower than the average top price for the preceding crop year, seven of the eleven years when the spring price advance was less than twenty-five per cent. In four of these years the December top price was higher than the average of top prices for the previous year. (Table VI)

(c) The seven years when spring prices declined were characterized by December top prices which were lower in four instances and higher in three than average prices in the preceding crop year. (Table VII)

Tables V, VI, and VII serve to point out the fallacy of complete reliance upon price levels as an indication of price in the future. The fact that spring price advances more frequently following a low December price is evident from the figures presented in these tables. It is necessary to consider other factors than price alone if the direction of spring price is to be determined.

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1. Average top prices of No. 2 mixed corn were not available for the crop year preceding December 1891.

Table V. Relation that December Price Levels Bear to Prices the Following Spring in 17 Years When the Spring Price Rise was 25 Per Cent or More.

Year	Per cent that Dec. top price is under or over average top price for the previous year		Amount of spring price rise in years of 25% or more rise
	Over the average	Under the average	
1891-92	(a)	(a)	37.68
1896-97	--	22.63	37.14
1897-98	5.98	--	45.24
1899-00	--	9.58	35.00
1902-03	--	49.36	46.66
1903-04	--	11.25	28.92
1905-06	--	16.42	29.32
1906-07	--	17.17	31.68
1907-08	7.43	--	40.74
1908-09	--	10.50	27.11
1912-13	--	55.46	25.51
1916-17	16.06	--	71.80
1918-19	--	24.04	28.67
1919-20	--	7.59	27.58
1921-22	--	36.74	35.20
1922-23	24.06	--	25.87
1923-24	--	18.16	30.69

(a) Average top prices of No. 2 mixed corn at Kansas City for the crop year preceding December 1891 were not available.

Table VI. Relation that December Price Levels Bear to Prices the Following Spring in 11 Years When the Spring Price Rise was Less than 25 Per Cent.

Year	Per cent that Dec. top price is under or over average top price for previous year		Amount of spring price rise 0-25 per cent
	Over the average	Under the average	
1892-93	--	22.31	8.57
1893-94	--	13.22	23.02
1894-95	10.35	--	22.89
1895-96	--	78.26	4.25
1898-99	13.86	--	13.06
1900-01	--	8.90	24.47
1904-05	--	5.55	19.54
1910-11	--	37.17	20.78
1911-12	17.61	--	21.02
1913-14	15.89	--	15.38
1915-16	--	6.28	7.27

Table VII. Relation that December Price Levels Bear to Prices the Following Spring in 7 Years When Spring Prices Declined.

Year	Per cent that Dec. top price is under or over average top price for previous year		Per cent of decline from early high price to early low price
	Over the average	Under the average	
1901-02	33.90	--	7.69
1909-10	--	1.76	6.67
1914-15	--	7.48	6.11
1917-18	10.34	--	15.38
1920-21	--	110.39	17.83
1924-25	23.71	--	19.29
1925-26	--	36.52	10.53



### 3. Changes Observed in Seasonal Price Trend

A study of the extremes in secular trend of prices by months (Table XIV Appendix and Figs. 6 to 11 inclusive, Appendix) for the crop years 1891-92 to 1925-26 indicates that prices of corn in working to higher levels than in the nineties advanced unequally in the different months of the year. The greatest secular price advance occurred in October and there was a large secular price advance in February. Comparison of secular price at the high time in recent years to secular price at the low time indicates a tendency in the latter part of the period studied for corn prices to hold up better as the crop year draws to a close than was the case in the early years of the period. The months of November and April show less strength in the latter portion of the period than was apparent in the earlier portion. November shows the greatest secular weakness of any month in the crop year. This tendency is no doubt due to increased marketing of corn the first half of the crop year. This increased marketing of corn the first half of the year, in turn, is due largely to increase in corn production in less important livestock sections, and to the greater use of forage crops and other supplementary feeds, especially in the case of hogs.

### III. THE RELATION OF MARCH TO MAY PRICE CHANGES TO JULY PRICE

#### 1. When March to May Price Advance is Ten Per Cent or More

There are seventeen crop years in the period from 1891-92 to 1925-26 when top prices of No. 2 mixed corn at Kansas City in May are ten per cent or more above March top prices. (Table VIII) In this group of years the top price of corn in July was lower than the May high price in nine instances and higher in eight. Six of the instances when July was lower than May occurred in years when large corn crops were in prospect and in three instances the crop estimates indicated small production. Five of the instances when July prices were higher than May occurred in years when crop estimates indicated small production in the fall and three of the July advances occurred in years when large production was indicated by crop estimates. This analysis shows that when large production of corn appears likely the chances are in favor of July declines from May price levels for the years when May prices are ten per cent or more above March prices. If small production appears likely the chances are in favor of improvement in July prices.

If the advance from March to May alone is considered, when it is ten per cent or more, the chances of further advance or decline in July are about equal. Other factors

Table VIII. — Seventeen Years When the March to May Price Advance was Ten Per Cent or More.

Year	Per cent of March to May advance	July price above May in cents per bushel	July price below May in cents per bushel	Size of the following crop (a)
1891-92	37.68	--	2½	s
1893-94	12.30	4½	--	s
1894-95	17.24	--	9½	l
1896-97	15.00	1½	--	s
1897-98	36.35	--	4	l
1898-99	12.22	--	5 1/8	l
1902-03	10.43	5	--	s
1903-04	15.68	--	½	l
1905-06	15.48	4	--	l
1906-07	25.45	--	1	s
1907-08	18.03	6½	--	s
1908-09	15.83	--	5	l
1910-11	16.84	17¼	--	s
1912-13	14.02	8½	--	s
1916-17	36.74	58½	--	l
1919-20	14.72	--	18	l
1922-23	18.42	--	3	s

(a) s - small; l - large.

enter into price changes at this season. For example, in the crop year 1916-17 corn prices advanced fifty-eight and one-half per cent above the May high price in the face of large crop estimates. The influence of the world war and an advancing general price level were no doubt the contributing causes which sent corn prices up in this instance.

## 2. When March to May Price Advances Less than Ten Per Cent

There are thirteen crop years in the period from 1891-92 to 1925-26 when top prices of No. 2 mixed corn at Kansas City in May are less than ten per cent above March top prices. (Table IX) Eleven of these years are characterized by further price improvement in July while in two years July prices are lower. Eight of these years ran into large crops and in five the following crops were small. Of the two years when July price went down one was followed by a small corn crop and the other was followed by a large crop. When price advances less than ten per cent from March to May the chances are favorable for further price improvement in July. As will appear later (Fig. 4) there is some seasonal tendency for corn prices to advance in July. This tendency is favored by small advances from March to May.

## 3. When Price Declines from March to May

There are five crop years in the period from 1891-92

Table IX. Thirteen Years when the March to May Price Advance was Less than Ten Per Cent.

Year	Per cent of March to May advance	July price above May in cents per bushel	July price below May in cents per bushel	Size of the following crop (a)
1892-93	8.57	--	4 $\frac{1}{2}$	s
1899-00	8.33	6	--	l
1900-01	6.09	19	--	s
1901-02	4.76	2	--	l
1904-05	6.38	4 $\frac{1}{2}$	--	l
1909-10	3.17	1 $\frac{1}{2}$	--	l
1911-12	9.87	--	4 $\frac{1}{2}$	l
1913-14	4.89	1 $\frac{1}{2}$	--	l
1914-15	4.79	3 $\frac{1}{2}$	--	l
1915-16	4.72	8 $\frac{1}{2}$	--	s
1918-19	9.72	23	--	l
1921-22	2.65	2 $\frac{1}{2}$	--	s
1923-24	2.66	36	--	s

(a) s - small; l - large.

to 1925-26 when prices of No. 2 mixed corn at Kansas City declined from March to May (Table X). Four of these years ran into large crops and one into a small corn crop. July price was higher than May top price in three instances and lower in two. March to May price declines in 1917-18 and 1924-25 followed a December price that was well above average prices for the preceding year. (Table VII) March to May price declines in 1895-96, 1920-21, and 1925-26 were preceded by large crops and only moderate demand for corn was evident in the market in these years. (Fig. 1) These facts in a measure account for the weakness which prevailed from March to May. The factors which influence July prices when this type of price change occurs are obscure. Something further will be said later of a situation similar to the one here considered.

#### IV. PRICE CHANGES FROM JANUARY TO JUNE AND THEIR RELATION TO JULY PRICE OF CORN

##### 1. When Spring Prices Advance Twenty-five Per Cent or More

Seventeen crop years in the period 1891-92 to 1925-26 show price advances of twenty-five per cent or more in the months from January to June inclusive. (Table XI) (Fig. 4) The July top price of No. 2 mixed corn at Kansas City was higher than the previous high spring price in eight instances, lower in eight and in one instance the July top

Table X. Five Years When Price Declined from March to May.

Year	Price decline from March to May in per cent	July price above May in cents per bushel	July price below May in cents per bushel	Size of the following crop (a)
1895-96	3.09	--	$\frac{1}{2}$	1
1917-18	11.05	16	--	1
1920-21	6.55	--	3	1
1924-25	11.29	1	--	s
1925-26	.69	$15\frac{1}{2}$	--	1

(a) s - small; 1 - large.

Table XI. Relation of the June Price of No. 2 Mixed Corn at Kansas City to the July Price for 17 Years when the Spring Price Rise was 25 Per Cent or More.

Year	Amount of spring price rise from low to high 25 per cent or more in per cent	June price below spring high price or even with it in per cent	July price above spring high price in per cent	July price below spring high price in per cent
1891-92	37.68	3.15	--	5.26
1896-97	37.14	5.73	2.08	--
1897-98	45.24	9.59	--	10.96
1899-00	35.00	even	11.11	--
1902-03	46.66	even	--	9.09
1903-04	28.92	3.71	--	.93
1905-06	29.32	even	1.94	--
1906-07	31.68	1.88	--	1.88
1907-08	40.74	even	3.28	--
1908-09	27.11	2.66	--	6.66
1912-13	25.51	even	13.01	--
1916-17	71.80	even	31.97	--
1918-19	28.67	even	10.33	--
1919-20	27.58	even	--	11.05
1921-22	35.20	even	even	even
1922-23	25.87	3.68	--	3.97
1923-24	30.69	even	15.31	--



price was even with the previous spring top price. This preliminary analysis of the effect of high spring price on the July price level offers no certain way of predicting in the spring what may be expected in July.

Further analysis shows that in ten of the seventeen crop years included in this group, the high spring price was attained in June. Eight of the ten years when the high spring price occurred in June were characterized by steady to higher prices in July. One year (1902-03) of these ten was characterized by unfavorable weather conditions at corn planting time as well as by disastrous floods in some sections of the corn belt. Spring prices in this year advanced most in the months of April and May so that by June a spring price advance of forty-six and two-thirds per cent had occurred. (Table XI) In June, however, the weather was more favorable for planting corn and by July crop conditions were such as to warrant a bearish attitude on corn. The other year (1919-20) when July price declined below a June top spring price can be explained by the fact that the depression following the World war started in July 1920.

July price was higher than the previous high spring price in one year (1896-97) when the top spring price came earlier than June. The prospect of a small crop in the fall of 1897 coupled with a good demand for corn to feed hogs (see Table I) explains the bullish tendency of the July corn

market in July of that year.

The July top price was lower than the top spring price in every instance, with the exception of that noted in the foregoing paragraph, when spring price reached its highest level earlier than June. If the exceptions just noted and their causes are kept in mind it appears reasonably safe to say that July price improvement can be expected when spring price reaches a peak in June. Otherwise price improvement in July is unlikely when the spring price advances twenty-five per cent or more.

The average price trend in this group of years indicates that July is the month of greatest strength. (Fig. 4) When the three war years included in this group are excluded and an average of prices taken, there appears to be but little difference in the trend of prices except that a tendency for some decline occurs in October. Whether the war years are included or excluded, a peak in average price is reached in July while the low point comes in December and January. This fact constitutes the reason for including war years in this study.

An average of visible supplies of corn in the United States for the first day of each month indicates that, in years when spring prices advance twenty-five per cent or more, the greatest quantity of corn is in this position in the month of March. (Fig. 5) When spring price has ad-

cents

60

50

40

Monthly average

Eleven years when spring prices advanced less than 25 per cent. (See Table XII for years included)

80

70

60

50

40

Monthly ave. (3 war yrs. included)

Monthly ave. (3 war yrs. excluded)

Seventeen years when spring prices advanced 25 per cent or more. (See Table XI for years included)

100

90

80

70

60

Monthly average (1 war yr. included)

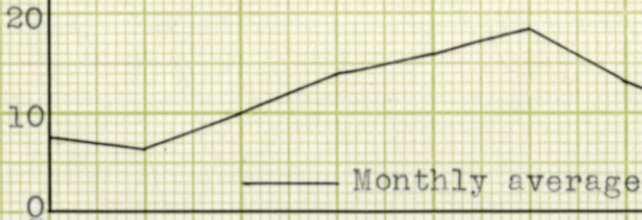
Monthly average (1 war yr. excluded)

Nov. Dec. Jan. Feb. Mar. Apr. May June July Aug. Sept. Oct.

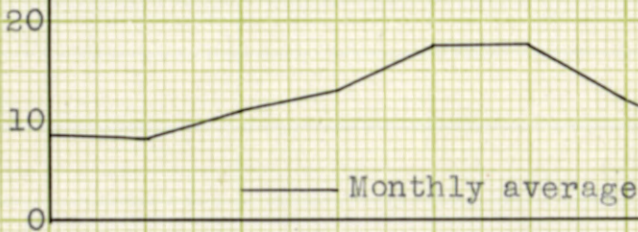
Seven years when spring prices declined. (See Table XIII for years included)

Figure 4. — Kansas City Monthly Top Prices Averaged for Three Price Situations.

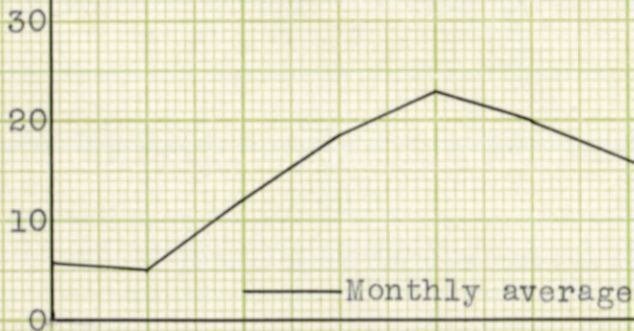
Millions of bus.



Eleven years when spring price advanced less than 25 per cent. (See Table XII for years included)



Seventeen years when spring price advanced 25 per cent or more. (See Table XI for years included)



Nov. Dec. Jan. Feb. Mar. Apr. May June July Aug. Sept. Oct.

Seven years when spring prices declined. (See Table XIII for years included)

Figure 5. — United States Visible Supply of Corn the First of Each Month Averaged for Three Price Situations.

vanced only slightly up to March and visible supply holds relatively steady throughout March with a greater quantity in this position than the February 1 figure, it is a good indication of further spring advance. It is, however, only an indication of advancing prices and does not mean a certain advance.

## 2. When Spring Price Advances Less than Twenty-five Per Cent

Eleven crop years of the period from 1891-92 to 1925-26 were characterized by a spring price advance of less than twenty-five per cent. (Table XII) None of the war years are included in this group yet the trend of average prices is essentially the same as in the group of years just considered. (Fig. 4) December average price is slightly higher in this group of years than in the group where the spring price advance is twenty-five per cent or more. Average price in the months following December tends down slightly in January and thereafter a moderate price rise occurs which reaches a peak in July and August after which slight declines occur in September and October.

Average visible supplies of corn are greatest on April 1 in this group of years. (Fig. 5) The quantity of corn in this position is an indication of price trends that should not be overlooked. The regularity with which a moderate spring price advance occurs in years when visible supply is

Table XIII. Relation of the June Price of No. 2 Mixed Corn at Kansas City to the July Price for 11 Years when the Spring Price Rise was Less than 25 per cent.

Year	Spring price rise from low to high 0-25 per cent	Amount June price was below spring high price or even with it in per cent	July price above spring high price in per cent	July price below spring high price in per cent
1892-93	8.57	6.58	--	11.86
1893-94	23.02	even	4.51	--
1894-95	22.89	6.86	--	18.62
1895-96	4.25	4.08	--	6.12
1898-99	13.06	12.21	--	13.53
1900-01	24.47	even	40.45	--
1904-05	19.54	even	4.80	--
1910-11	20.78	3.72	35.81	--
1911-12	21.02	5.39	--	5.39
1913-14	15.38	3.33	2.00	--
1915-16	7.27	even	9.15	--

greatest about the first of April makes this factor an important one.

July price improvement over previous spring high price was manifest in six instances in this group of years and July price was lower than the previous spring high price in five instances. (Table XII) Four of the six July price advances occurred in years when June was the month of high spring price. The other two years (1910-11 and 1913-14, Table XII) when July top price was above spring top price show June declining less than four per cent from previous levels. Neither of these June declines was more than two and one-half cents and for this reason may be considered as insignificant. The other five years when price declines began in June were characterized by continued depression in July. These facts tend to show that when June price is the high spring price a continued advance may be expected in July. A declining price trend in June does not indicate such certainty of July price depression in this group of years as in years when the spring price advance is larger.

### 3. When Spring Price Declines

Seven instances of declining spring prices occur in the period from 1891-92 to 1925-26. (Table XIII) Price tends to decline from January to sometime in April on the average with some improvement coming in May followed by a

Table XIII. Relation of the June Price of No. 2 Mixed Corn at Kansas City to the July Price for Seven Years when Spring Prices Declined.

Year	Per cent of decline from early high price to early low price	Per cent of rise from early low point to second high point in the spring	Per cent that June is below or even with second spring high	Per cent that July is over June high price
1901-02	7.69	6.35	.22	3.82
1909-10	6.67	3.17	3.07	5.56
1914-15	6.11	5.48	2.59	6.66
1917-18	15.38	8.33	15.39	12.12
1920-21	17.83	7.54	12.28	8.00
1924-25	19.29	4.76	.90	- .45 (a)
1925-26	10.53	2.79	even	18.36

(a) July decline from June.



lower June price in years when this type of spring price change occurs. July and August prices tend to reach higher levels than June and thereafter, on the average, prices fall. (Fig. 4)

It is worth noting that visible supplies of corn are greatest in quantity about February 1 in years when spring prices decline. (Fig. 5) This no doubt results from the unwillingness of terminal elevator men and others to hold corn in this position in the face of lower prices.

In this group of years June top prices are even with or lower than the slight price rise which generally occurs after spring prices have declined for some time. In six instances the July top price of corn was higher than the previous June top price. One year (1924-25) July top price was lower than June top price. A high price level at this time and crop estimates indicating large corn production in the fall of 1925 seem to have been the causes behind this July decline. If the exception just noted is kept in mind it would appear relatively safe to say that declining spring prices are followed by July top prices that are higher than June top prices.

## V. CONCLUSIONS

A study of average price trends indicates that July corn prices are frequently higher than preceding or succeed-

ing corn prices. Sometimes July prices derive their strength from low estimates of the new crop and sometimes July high prices result when the preceding corn crop has been small.

The level of corn prices in December can often be used as a basis for judgment as to the direction spring prices will take, but this factor is too distant to serve in estimating the direction of July prices. With December price levels known and the trend of visible supply up to April 1 known it should be possible to tell something about the probable extent of the spring price rise when the size of the preceding corn crop and current demand for corn is kept in mind.

The duration of the spring price rise appears to give the most reliable indication as to the probable price level of corn in July. When the peak in spring price comes previous to June in years of advancing spring prices, July price seems to have a very small chance of reaching levels above the spring top price. Under the influence of good demand and the prospect of small corn production, July prices may recover from lowered June levels. Generally, however, July price depression can be expected when June price levels are under the spring top price in years when advances occur in the spring. In brief, unless June prices rise above best prices earlier in the season, prices are likely to weaken

in July.

In the case of declining spring prices it is apparent that July prices are likely to reach a higher level than June prices, although there is little likelihood that the July top price will attain the level from which spring prices have declined.

Human judgment and the errors into which it falls have not been considered in this thesis. This element may sometimes be the deciding factor in determining the direction corn prices take when other factors appear to be in conflict. In a critical time like July, when it is necessary to take stock of old crop influences and estimate the strength of new crop influences, errors in judgment may occur more frequently than at almost any other time.

## VI. SUMMARY

(1) The probability of spring price advance is high in years when: (A) Small corn crops follow small crops; (B) Small corn crops follow large crops; (C) Large crops follow large crops.

(2) Spring price declines are most likely in years of large crops following small corn crops.

(3) July price advance can be expected most frequently in years when large corn crops follow large corn crops.

(4) High price levels in December may indicate spring

price declines while low December price levels precede about two-thirds of the spring price advances.

(5) There is a tendency for price advances to come later in the season in the latter portion of the period 1891-92 to 1925-26 than was the case in the early years of the group.

(6) When corn prices advance ten per cent or more from March to May, and in June crop estimates indicate large production, this tends to depress July prices, while estimates of small production tend to improve July price.

(7) July price advance is probable in years when the March to May price advance is less than ten per cent.

(8) Declining prices from March to May give little indication as to probable prices in July.

(9) In years when spring price advances twenty-five per cent or more, July top price is likely to be lower than the spring top price unless June is the month of highest spring price.

(10) In years when spring price advances less than twenty-five per cent, July is practically certain to go higher than the previous high price if June is the month when top spring price occurs. July may occasionally reach higher levels than the previous high spring price even if it occurs earlier than June.

(11) July price advance over June is relatively certain in years when spring price declines.

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Table XIV. Changes in Seasonal Price Trends Indicated by a Comparison of Secular Price Trend to Secular Trend of Visible Supply.

Month	Price (cents per bushel)			Visible Supply (millions of bu.)	
	Low Secular Price 1891-92	High Secular Price 1925-26	Price Spread by Months	Secular trend of visible supply shows that the tendency is for	
				Increase	Decrease
Nov.	37.93	71.85	33.92	--	9.2
Dec.	23.44	80.02	56.58	--	9.7
Jan.	23.42	80.26	56.84	--	1.6
Feb.	23.16	81.44	58.28	.07	--
Mar.	24.82	81.43	56.61	10.1	--
Apr.	29.69	80.71	51.02	10.2	--
May	31.44	83.52	52.08	4.2	--
June	30.25	85.51	55.26	4.9	--
July	38.00	93.88	55.88	4.3	--
Aug.	29.94	90.51	60.57	--	3.8
Sept.	28.84	89.64	60.80	--	7.5
Oct.	25.64	90.66	65.02	1.0	--

APPENDIX

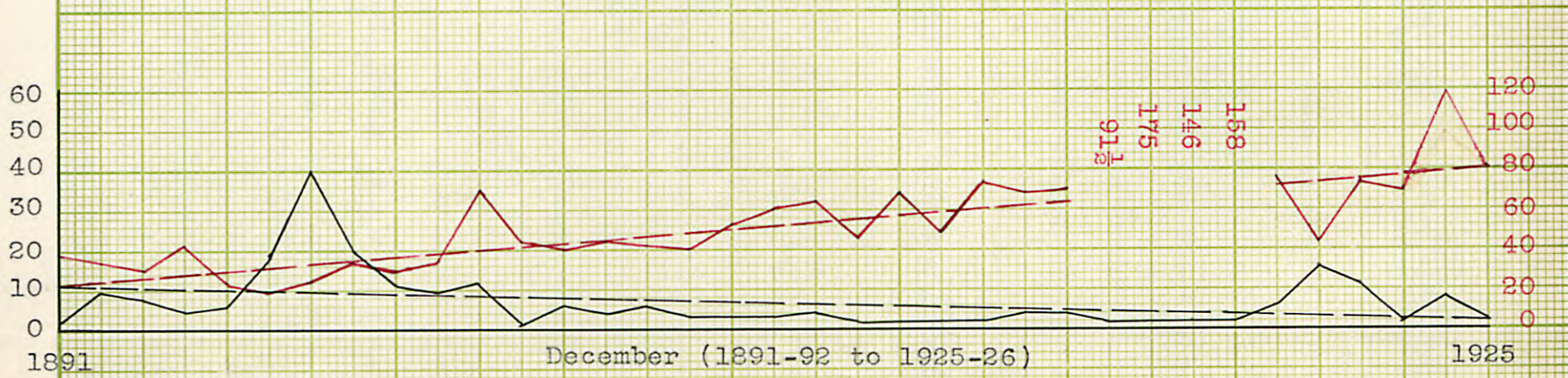
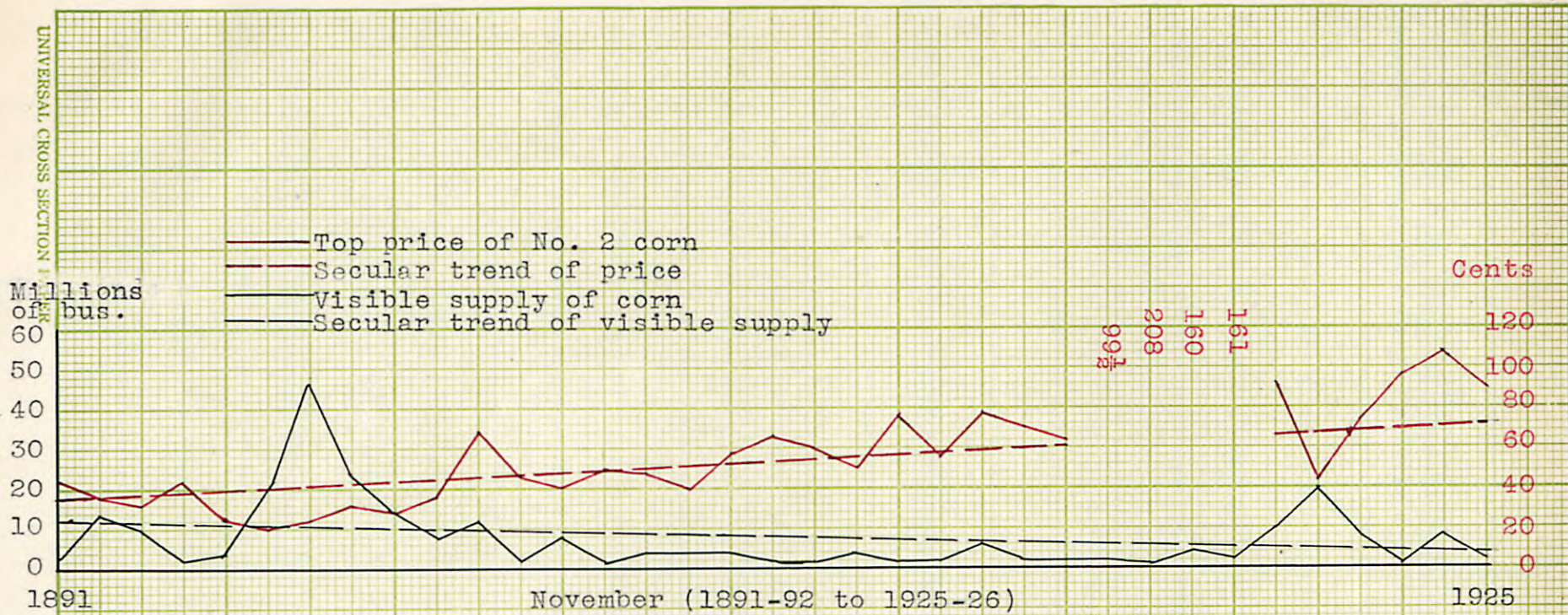


Figure 6. Visible Supplies of Corn in the United States Compared to Top Prices of No. 2 Mixed Corn.

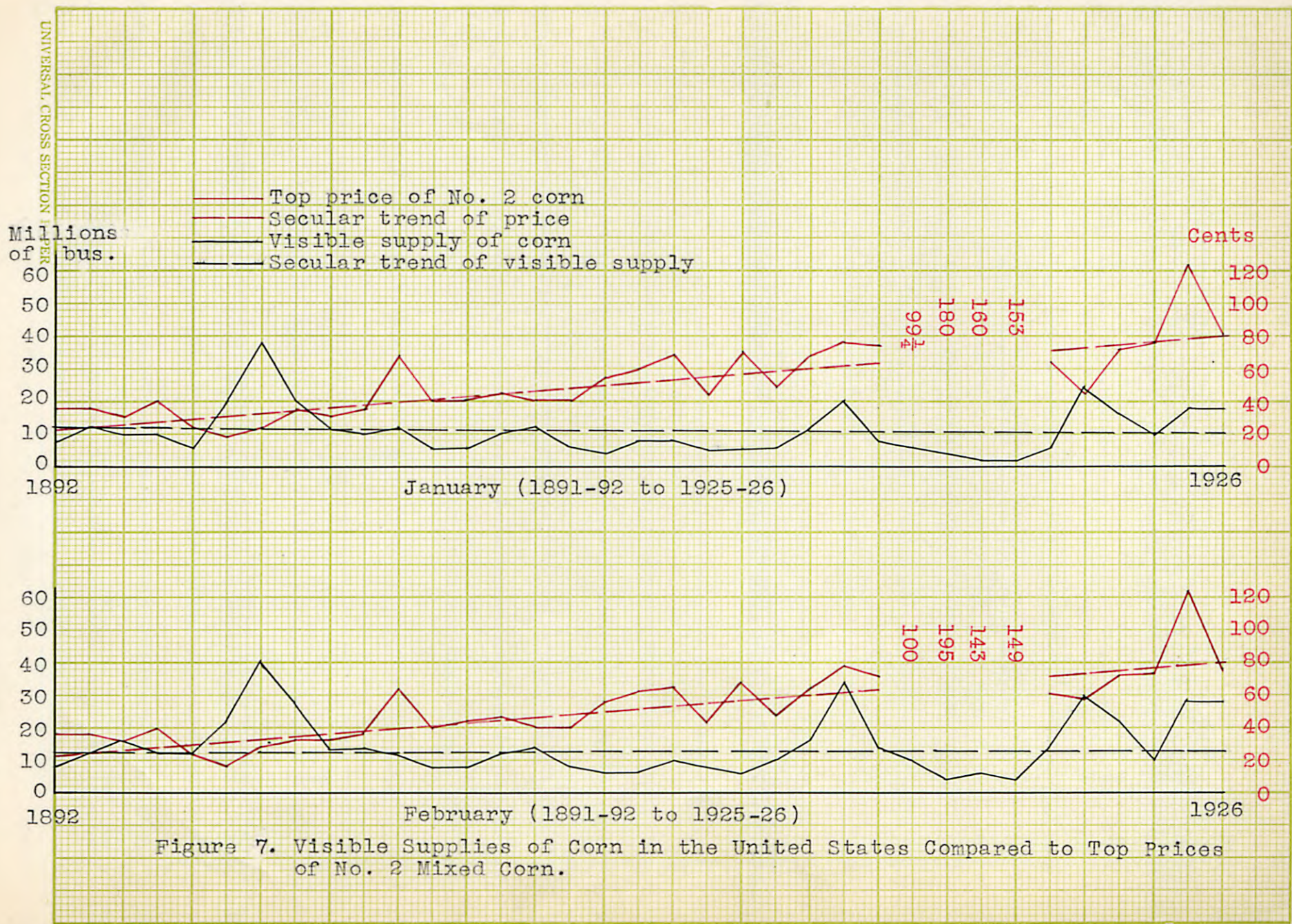


Figure 7. Visible Supplies of Corn in the United States Compared to Top Prices of No. 2 Mixed Corn.



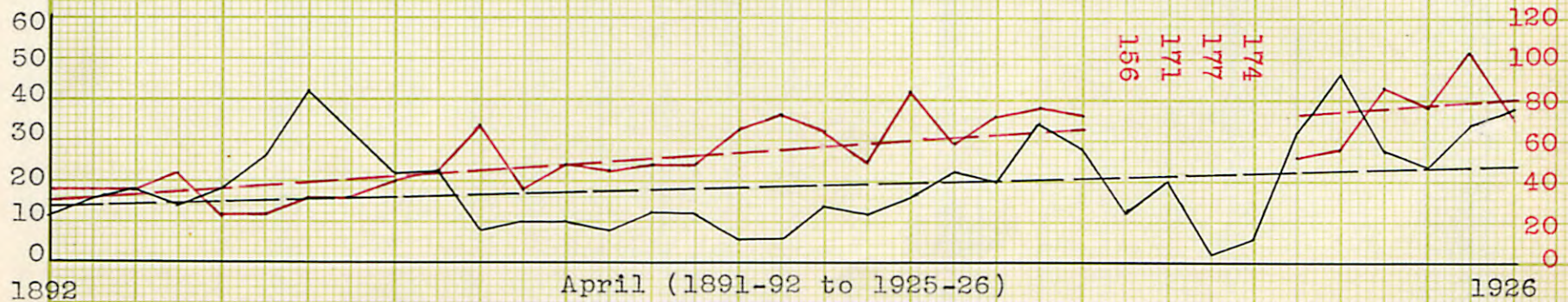
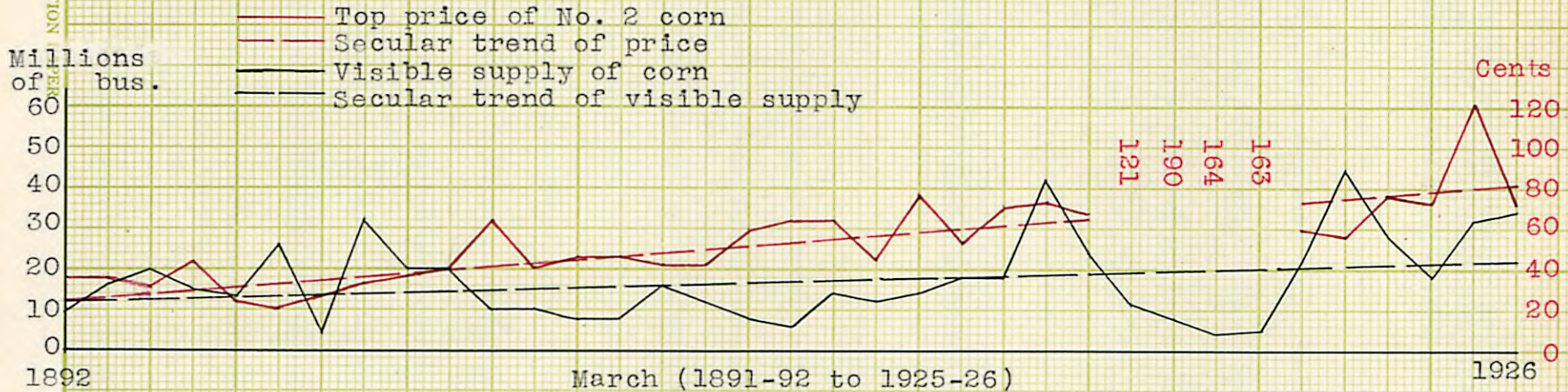


Figure 8. Visible Supplies of Corn in the United States Compared to Top Prices of No. 2 Mixed Corn.

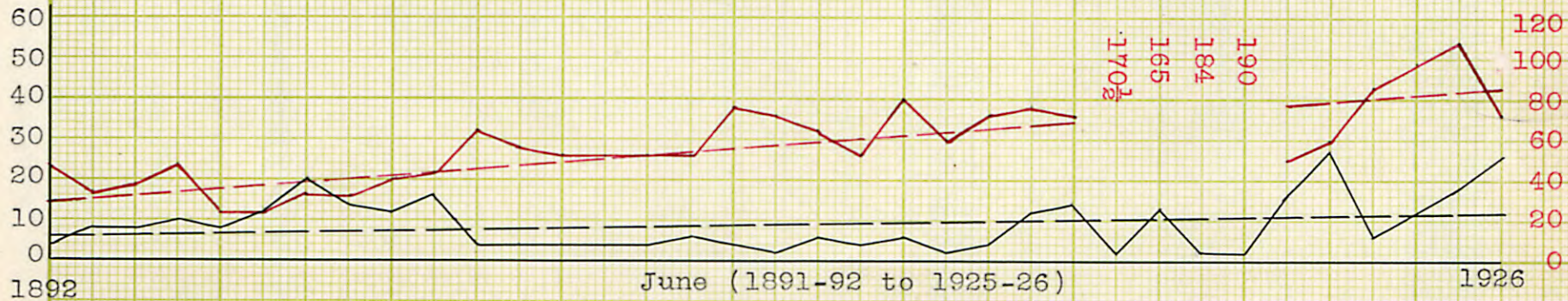
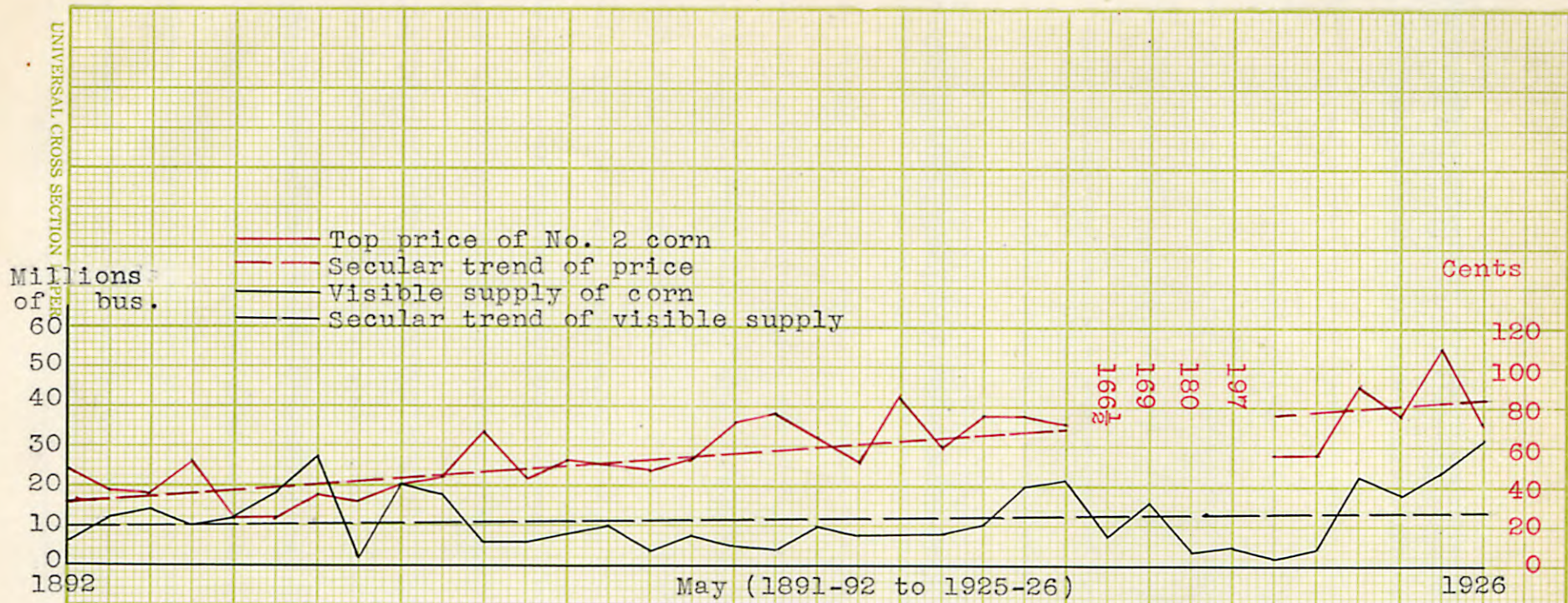


Figure 9. Visible Supplies of Corn in the United States Compared to Top Prices of No. 2 Mixed Corn.

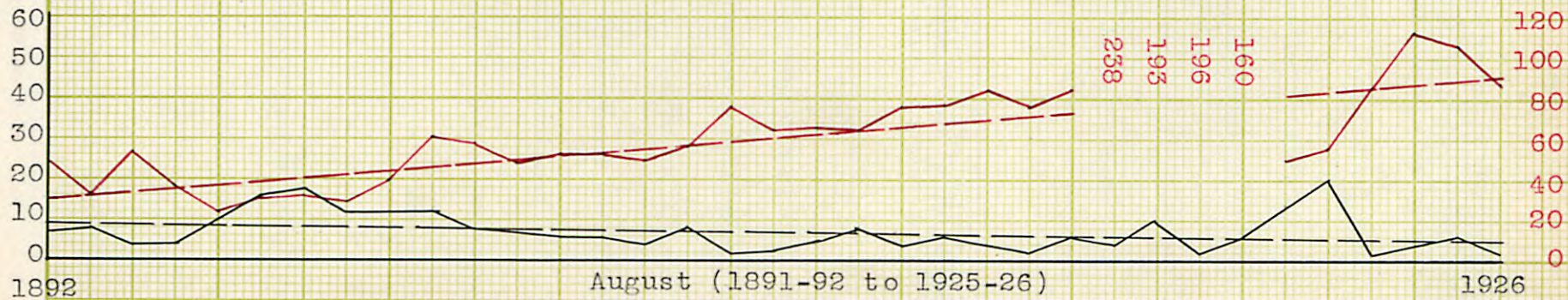
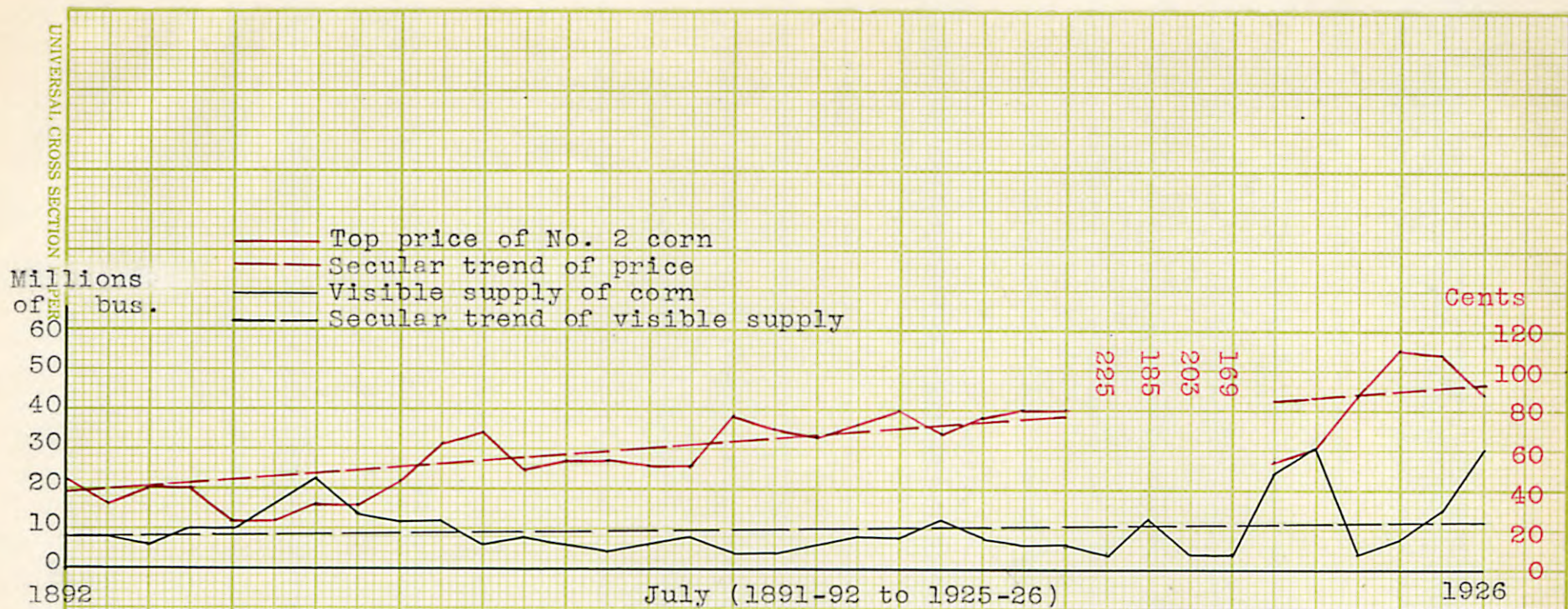


Figure 10. Visible Supplies of Corn in the United States Compared to Top Prices of No. 2 Mixed Corn.

UNIVERSAL CROSS SECTION

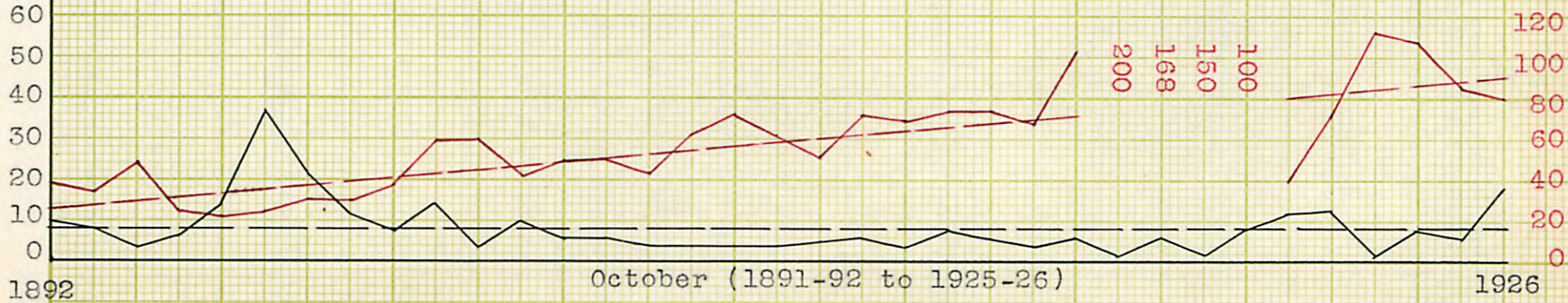
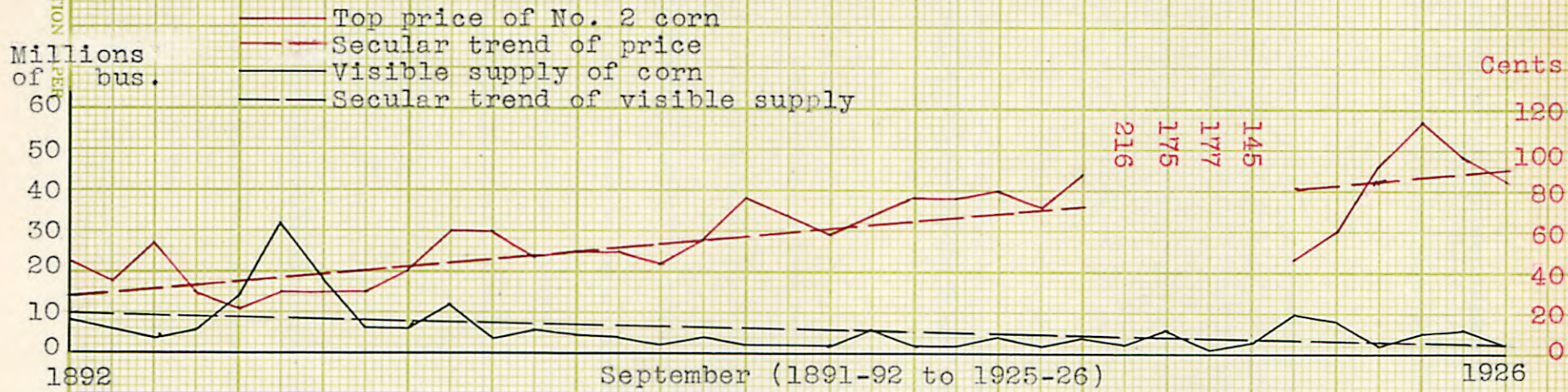


Figure 11. Visible Supplies of Corn in the United States Compared to Top Prices of No. 2 Mixed Corn.

Table XV. Corn Production in the United States. (a)

Year	Production in bushels	Year	Production in bushels
	<u>000,000 omitted</u>		<u>000,000 omitted</u>
1891	2,055	1909	2,572
1892	1,713	1910	2,886
1893	1,707	1911	2,531
1894	1,339	1912	3,124
1895	2,310	1913	2,446
1896	2,503	1914	2,672
1897	2,144	1915	2,994
1898	2,261	1916	2,566
1899	2,454	1917	3,065
1900	2,505	1918	2,502
1901	1,613	1919	2,811
1902	2,619	1920	3,208
1903	2,346	1921	3,068
1904	2,528	1922	2,906
1905	2,748	1923	3,053
1906	2,897	1924	2,309
1907	2,512	1925	2,916
1908	2,544	1926	2,650

(a) United States Department of Agriculture, Year-book of Agriculture (1923 and 1926).

Table XVI. Receipts of Hogs at Nine Markets. (a)

Year	Number	Year	Number
	<u>000 omitted</u>		<u>000 omitted</u>
1891	14,318	1909	18,926
1892	13,307	1910	15,582
1893	11,013	1911	20,720
1894	14,428	1912	20,382
1895	13,620	1913	20,576
1896	13,942	1914	19,044
1897	16,055	1915	21,840
1898	18,247	1916	26,781
1899	17,613	1917	22,360
1900	18,324	1918	26,607
1901	20,135	1919	26,237
1902	17,291	1920	23,187
1903	16,861	1921	22,798
1904	17,816	1922	24,601
1905	19,262	1923	32,320
1906	18,939	1924	32,612
1907	19,251	1925	26,415
1908	22,677	1926	23,412
		1927	23,115

(a) Data from United States Department of Agriculture Statistical Bulletin No. 18 (1927), and Crops and Markets (1928).

Table XVII. Monthly Top Prices of No. 2 Mixed Corn at Kansas City, Missouri, 1891-92 to 1925-26. (a)  
In Cents Per Bushel.

Year	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Average
1891-92	45	38 $\frac{1}{4}$	35	35 $\frac{1}{4}$	34 $\frac{1}{2}$	36 $\frac{1}{2}$	47 $\frac{1}{2}$	46	45	47	44 $\frac{1}{2}$	38	41.2
1892-93	36 $\frac{1}{2}$	34 $\frac{1}{2}$	36	36 $\frac{1}{4}$	35	35	38	34 $\frac{1}{2}$	33 $\frac{1}{4}$	32	36	34	35.1
1893-94	32	31	31 $\frac{1}{2}$	32	32 $\frac{1}{2}$	36 $\frac{1}{2}$	36 $\frac{1}{2}$	38 $\frac{1}{2}$	40 $\frac{1}{2}$	53 $\frac{1}{2}$	54	47	38.1
1894-95	44	42 $\frac{1}{2}$	41 $\frac{1}{2}$	41 $\frac{1}{2}$	43 $\frac{1}{2}$	45 $\frac{1}{2}$	51	47 $\frac{1}{2}$	41 $\frac{1}{2}$	38 $\frac{3}{4}$	30 $\frac{1}{2}$	26 $\frac{1}{4}$	41.0
1895-96	23 5/8	23	24 $\frac{1}{2}$	23	24 $\frac{1}{4}$	24 $\frac{1}{2}$	23 $\frac{1}{2}$	23 $\frac{1}{2}$	23	22	22	22 $\frac{1}{4}$	23.3
1896-97	21	19	18 $\frac{1}{2}$	17 $\frac{1}{2}$	20	24	23	22 5/8	24 $\frac{1}{2}$	30	29	25	22.8
1897-98	24	24 $\frac{1}{4}$	25 1/8	27 $\frac{1}{2}$	26 $\frac{3}{4}$	32 $\frac{1}{2}$	36 $\frac{1}{2}$	33	32 $\frac{1}{2}$	32 $\frac{1}{2}$	29	30 $\frac{3}{4}$	29.5
1898-99	31 $\frac{3}{4}$	34	35	33 $\frac{1}{2}$	33 $\frac{3}{4}$	33 $\frac{3}{4}$	32 7/8	33 $\frac{1}{4}$	32 $\frac{3}{4}$	29 $\frac{3}{4}$	30	31	32.6
1899-00	29 $\frac{1}{2}$	29 $\frac{1}{2}$	30	32 $\frac{1}{2}$	36	39	39	40 $\frac{1}{2}$	45	40	39	38 $\frac{1}{4}$	37.3
1900-01	35	34 $\frac{1}{4}$	35 $\frac{5}{8}$	37 $\frac{1}{4}$	41	43	43 $\frac{1}{2}$	44 $\frac{1}{2}$	62 $\frac{1}{2}$	61	61 $\frac{1}{2}$	61	46.6
1901-02	68	70 $\frac{1}{2}$	68 $\frac{1}{4}$	63 $\frac{1}{2}$	63	67	66	65 $\frac{1}{2}$	68	58 $\frac{1}{2}$	59	59	64.6
1902-03	46 $\frac{1}{2}$	43 $\frac{1}{4}$	40	40 $\frac{1}{2}$	40 $\frac{5}{8}$	37 $\frac{1}{2}$	45	55	50	47	47 $\frac{5}{8}$	42 $\frac{1}{4}$	44.5
1903-04	40 $\frac{1}{2}$	40	41 $\frac{1}{2}$	45	46 $\frac{1}{4}$	49	53 $\frac{1}{2}$	51	53	51	50	50	47.5
1904-05	50 $\frac{1}{2}$	45	43 $\frac{1}{2}$	47 $\frac{5}{8}$	47	46 $\frac{1}{4}$	50	52	54 $\frac{1}{2}$	51 $\frac{1}{4}$	50 $\frac{1}{4}$	49 $\frac{1}{2}$	48.9
1905-06	47 $\frac{1}{2}$	42	40 $\frac{1}{2}$	39 $\frac{1}{2}$	42	48 $\frac{1}{2}$	48 $\frac{1}{2}$	51 $\frac{1}{2}$	52 $\frac{1}{2}$	49 $\frac{1}{2}$	44	43 $\frac{1}{4}$	45.7
1906-07	41 $\frac{1}{2}$	39	40 $\frac{1}{4}$	41 $\frac{1}{2}$	42 $\frac{1}{4}$	47 $\frac{1}{2}$	53	52	52	55	57 $\frac{1}{2}$	62	48.6
1907-08	58	52 $\frac{1}{2}$	54	56	61	65	72	76	78 $\frac{1}{2}$	75	76	72 $\frac{1}{2}$	66.3
1908-09	66	60	59	62	64 $\frac{5}{8}$	72 $\frac{5}{8}$	75	73	70	64 $\frac{1}{2}$	68	62 $\frac{1}{2}$	66.4
1909-10	61	65 $\frac{1}{4}$	67 $\frac{1}{2}$	64 $\frac{1}{2}$	63	65	65	63	66 $\frac{1}{2}$	66	58	51 $\frac{1}{4}$	63.1
1910-11	50 $\frac{1}{2}$	46	45 $\frac{1}{2}$	44 $\frac{1}{2}$	46	50	53 $\frac{5}{8}$	51 $\frac{5}{8}$	71	63	67 $\frac{1}{2}$	73 $\frac{1}{2}$	55.2
1911-12	76	67	69	69 $\frac{1}{2}$	76	83 $\frac{1}{2}$	83 $\frac{1}{2}$	79	79	78 $\frac{1}{2}$	75 $\frac{1}{2}$	69	75.4
1912-13	57	48 $\frac{1}{2}$	49	49 $\frac{1}{2}$	53 $\frac{1}{2}$	59	61	61 $\frac{1}{2}$	69 $\frac{1}{2}$	77 $\frac{1}{2}$	77 $\frac{1}{2}$	73 $\frac{1}{2}$	61.4
1913-14	78	73	67	65	71 $\frac{1}{2}$	72	75	72 $\frac{1}{2}$	76 $\frac{1}{2}$	83	79 $\frac{1}{2}$	74	73.9
1914-15	71 $\frac{1}{2}$	68 $\frac{5}{8}$	75 $\frac{1}{2}$	77 $\frac{5}{8}$	73	77	76 $\frac{1}{2}$	75	80	78	72 $\frac{1}{2}$	67 $\frac{1}{2}$	74.4
1915-16	63	70	73	73	69 $\frac{5}{8}$	72 $\frac{1}{2}$	72	73 $\frac{5}{8}$	80 $\frac{1}{2}$	85	87	102	76.8
1916-17	99 $\frac{1}{2}$	91 $\frac{1}{2}$	99 $\frac{1}{4}$	100	121	156 $\frac{1}{2}$	166 $\frac{1}{2}$	170 $\frac{1}{2}$	225	238	216	200	156.9
1917-18	208	175	180	195	190	171	169	165	185	193	175	168	181.1
1918-19	160	146	160	143	164	177	180	184	203	196	177	150	170.0
1919-20	161	158	153	149	163	174	197	190	169	160	145	100	159.9
1920-21	92	76	64 $\frac{1}{2}$	61	61	53	57	50	54	50	46	41	58.8
1921-22	44	43	44 $\frac{3}{4}$	58 $\frac{1}{2}$	56 $\frac{1}{2}$	56 $\frac{5}{8}$	58	60 $\frac{1}{2}$	60 $\frac{1}{2}$	56	61	72 $\frac{1}{2}$	56.0
1922-23	74 $\frac{1}{2}$	73 $\frac{5}{8}$	71 $\frac{1}{2}$	72 $\frac{1}{4}$	76	86	90	86 $\frac{1}{2}$	87	86	91	112	83.9
1923-24	95	71	75	74 $\frac{1}{2}$	73 $\frac{1}{2}$	76 $\frac{1}{2}$	75	98	110	113	114	109	90.375
1924-25	109 $\frac{1}{2}$	118 $\frac{1}{2}$	124	123 $\frac{1}{2}$	121	105	110	109	108 $\frac{1}{2}$	106 $\frac{1}{2}$	95	86	109.875
1925-26	89	80 $\frac{1}{2}$	81	76	72	71 $\frac{1}{2}$	71	73 $\frac{1}{2}$	87	87	84 $\frac{1}{2}$	79 $\frac{1}{2}$	79.375

(a) Data from Kansas City Daily Drivers Telegram (1923 and 1928).

Table XVIII. The United States Visible Supply of Corn the First Day of the Month,  
November 1891 to October 1926. (a)

(000 omitted)

Year	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1891											2,972	2,626
1892	7,082	7,386	10,385	11,508	5,956	3,724	7,844	7,004	8,471	10,945	13,290	10,720
1893	11,839	12,534	15,596	15,315	11,539	8,188	8,075	8,020	5,546	8,071	9,174	7,104
1894	9,526	15,351	19,107	18,538	13,114	7,495	6,441	3,973	3,151	4,305	2,658	4,866
1895	10,672	12,720	13,676	13,407	9,354	10,763	9,060	4,664	5,407	5,451	4,854	5,517
1896	5,838	11,976	13,036	16,989	11,319	8,905	9,100	10,752	13,964	13,877	19,340	17,405
1897	19,852	21,938	26,408	25,318	16,997	12,494	15,997	15,677	31,220	37,048	45,958	40,949
1898	38,421	40,581	4,870	42,647	27,044	20,115	22,575	17,575	16,854	21,406	24,808	20,362
1899	19,126	27,139	31,821	32,737	25,811	13,302	13,870	11,646	6,738	12,490	13,716	11,712
1900	11,598	14,583	19,666	21,558	21,918	12,378	11,019	12,320	5,313	7,492	7,983	9,442
1901	10,420	14,825	19,764	22,287	18,665	16,413	15,158	12,604	12,676	13,489	12,900	11,227
1902	11,702	11,632	10,335	8,799	6,243	4,227	5,687	7,281	3,077	3,075	2,584	2,937
1903	6,584	8,290	10,219	9,841	6,459	4,886	7,218	6,992	5,888	9,090	7,332	5,867
1904	5,783	7,190	8,793	9,679	7,830	3,740	6,277	5,849	3,934	5,979	3,049	3,181
1905	9,577	11,682	8,524	8,790	9,981	4,558	3,560	5,310	4,615	5,774	3,456	6,392
1906	12,819	14,850	16,208	11,391	3,881	3,370	6,059	4,338	2,258	4,178	3,750	2,910
1907	5,823	7,314	11,102	11,977	8,102	5,595	8,694	7,556	3,894	3,796	3,361	2,535
1908	4,482	6,542	8,756	5,989	5,016	4,796	3,259	2,078	1,955	3,527	1,221	2,651
1909	7,165	6,467	6,254	6,923	3,601	2,841	3,288	2,705	1,773	3,365	2,653	3,289
1910	8,465	9,764	13,480	13,778	10,603	5,490	5,164	3,770	2,157	5,011	3,510	1,451
1911	5,099	8,068	12,348	11,166	7,047	3,888	7,482	7,100	6,724	6,339	2,527	1,591
1912	5,140	5,522	13,301	15,914	8,012	5,699	8,204	3,636	1,823	3,101	3,040	1,525
1913	5,879	9,717	17,918	21,494	7,270	2,549	11,479	6,389	2,612	8,122	6,206	2,026
1914	12,126	16,505	18,374	19,755	9,380	4,409	7,589	3,208	3,923	5,855	3,114	3,382
1915	19,703	34,156	41,238	33,877	20,203	12,795	5,225	2,306	2,382	3,444	3,288	4,389
1916	8,919	14,773	24,605	27,697	21,004	14,505	6,870	5,167	3,330	5,093	2,361	2,677
1917	5,838	10,671	12,931	11,974	7,173	2,629	3,277	3,458	2,471	1,136	1,277	1,932
1918	3,155	4,623	8,939	19,016	16,111	13,038	11,487	9,466	5,232	5,511	4,733	2,611
1919	2,415	5,549	4,483	2,514	4,245	2,600	4,038	2,461	956	2,050	1,484	1,477
1920	2,921	3,575	4,951	5,669	5,035	2,740	4,364	6,152	2,898	7,587	10,085	5,634
1921	5,409	14,297	22,333	32,896	23,018	15,103	24,304	14,584	10,050	11,765	18,935	15,518
1922	23,279	30,778	44,792	46,889	35,564	27,046	29,337	19,509	7,314	12,206	8,806	11,072
1923	16,760	21,658	27,529	28,742	22,339	6,734	3,366	2,373	1,587	2,052	809	2,690
1924	9,708	9,379	18,898	24,176	17,978	12,288	7,142	4,887	5,070	7,154	8,097	7,563
1925	18,573	27,571	32,292	34,010	23,379	17,140	15,021	6,093	6,524	5,470	1,790	2,461
1926	17,861	28,092	33,878	37,197	32,408	25,453	30,333	24,930	20,537	17,381		

(a) Data from Trade and Commerce of Chicago. Chicago Board of Trade, 1891-1926.