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SEASONAL FLUCTUATIONS OF WHEAT PRICES¹

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TABLE OF CONTENTS

	PAGE		PAGE
A PROBLEM IN MARKETING WHEAT.....	1	PERIODS OF WEAKNESS AND OF STRENGTH	
SEASONAL FLUCTUATIONS IN THE PRICE OF		IN THE WHEAT MARKET.....	10
TOP NO. 2 HARD WINTER WHEAT AT		CHANGES IN SEASONAL MOVEMENT OF	
KANSAS CITY.....	2	COMPETITIVE SUPPLIES IN RECENT	
MONTH BY MONTH FLUCTUATIONS.....	4	YEARS.....	11

A PROBLEM IN MARKETING WHEAT

Investigations in industry have revealed the fact that more than half of business profit is the result of changes in fundamental conditions.² Changes in the market contribute in no small way to the farmers' profit or loss. To a large extent the farmers' markets are influenced by changes in the fundamental facts of supply and demand and only occasionally and for short periods by heedless buying and selling.

The time to sell wheat is a practical question confronting the wheat grower each year. If judgment on this question is to be based on anything substantial, a number of complex factors, including current market news, must be considered. The first step in answering this question, however, need not be so complex. It involves determining what particular conditions influence the broader seasonal fluctuations in wheat prices.

1. Contribution No. 22 from the Department of Agricultural Economics.
 2. Babson, Roger W. Business Fundamentals. 258 pp. B. C. Forbes Publishing Company, New York. 1923. (Reference, page 8.)

SEASONAL FLUCTUATIONS IN THE PRICE OF TOP No. 2 HARD WINTER WHEAT AT KANSAS CITY

All classes of wheat do not show the same seasonal fluctuations, nor do wheat prices at different markets show the same fluctuating tendencies. For this reason, top No. 2 hard winter wheat on the Kansas City market is discussed. This wheat is likely to be of good milling quality and to be absorbed by domestic mills. If, however, it gets low enough in price it is subject to export bidding.

What seasonal tendencies has the price of this wheat shown? A common way of picturing the answer to this question would be to show an average of monthly prices for a period of years. This is

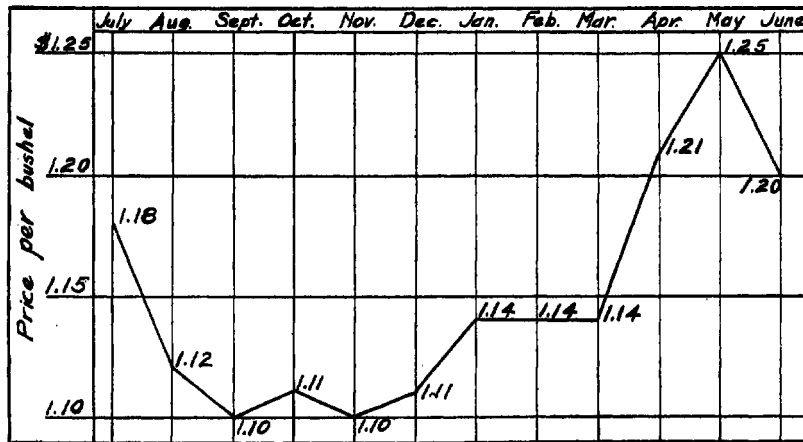


FIG. 1.—Average of monthly high prices of No. 2 hard winter wheat at Kansas City by months for 32 years (1892-'93 to 1923-'24, inclusive)

done in figure 1 which shows the 32-year average (1892-'93 to 1923-'24) of the monthly high prices for this wheat.

Such averages, however, do not tell the whole story. They often cover up some of the things it is most important to know. For instance, the average price for January, February, and March was \$1.14 a bushel for each month. Such statistics might very easily be interpreted to mean that, "on the average" (whatever that may mean), there is little difference in the January, February, and March prices for this kind of wheat. The fallacy in any such interpretation is indicated by the fact that, during the 32 years, the February price was equal to the January price only twice; it was higher 15 times and lower 15 times. Likewise the March price has

FLUCTUATIONS OF WHEAT PRICES

been the same as that of February two times in 32 years, higher 11 times, and lower 19 times. This indicates the futility of trying to draw practical conclusions solely from a comparison of composite monthly prices.

The March average of \$1.14, for instance, is influenced greatly by large advances in price in March of three years. Although the March price was higher than the February price only 11 times in 32 years, in three of these 11 years the advances were 7 cents, 21½ cents, and 28 cents a bushel. When these large advances are aver-

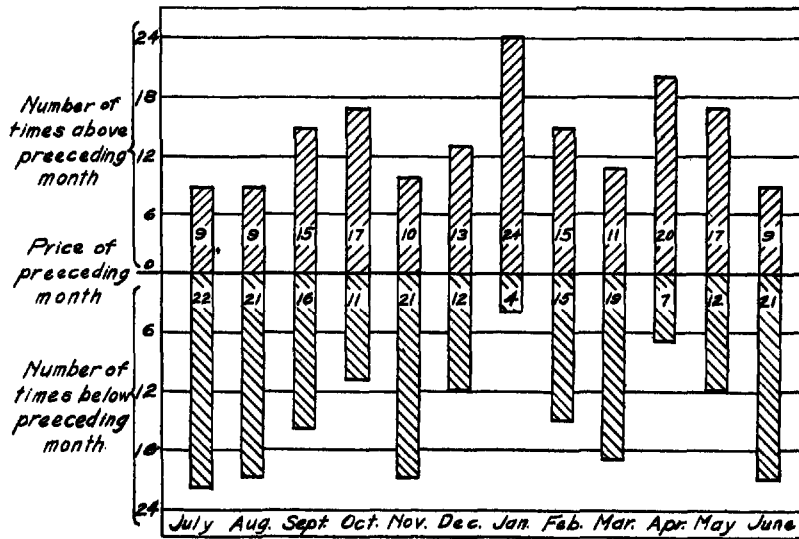


FIG. 2.—Number of times the monthly high prices of No. 2 hard winter wheat at Kansas City during the month were higher or lower than for the preceding month for 32 years (1892-'93 to 1923-'24, inclusive).

aged with the monthly advances of 1 to 3 cents in the other eight years, the effect is to raise the level of the March average to that of February.

For these reasons figure 1 needs to be supplemented with the additional information given in figure 2. The latter shows how frequently the price of one month has risen above the price of the preceding month.

Figure 1 shows that the January average price is \$1.14 as compared with the December price of \$1.11. The increase is due, not so much to a few exceptionally high January prices, but to the consistency with which wheat prices improve in January. January price has improved over December in 24 out of 32 years. On the

other hand, the average March price held up to the February level of \$1.14 because of three exceptional March advances. This comparison of average prices indicates the need for careful analysis of the underlying factors influencing such averages.

MONTH BY MONTH FLUCTUATIONS

Supplies of wheat available at a given time do not entirely determine the price of wheat, but they do affect the price. Knowledge of total supplies and the possibility of contracting ahead either to receive or deliver wheat at some future date acts as a buffer against the effects of currently available supplies. Such knowledge and the possibility of contracting future sales or purchases do not, however, entirely eliminate the effects of the movement of supplies into market channels. Consequently, the month by month movement of supplies into market channels indicates some of the reasons for price fluctuations.

Figures 1 and 2 show that there are definite tendencies in the wheat market in each month of the year. The conditions causing these tendencies can be studied best by considering each month separately. July is considered first since the United States crop year begins with this month.

July.—Figure 2 shows that the July price was higher than the preceding June price only nine times in 32 years. In June of these nine exceptional years, omitting three war years, wheat prices were lower than prices of other commodities, on the basis of 1910 to 1914 price levels. These nine years were either war years or years in which the new crop outlook was poor.

August.—Likewise, only nine times in 32 years was there any improvement in August over July levels. In 23 out of 32 years August price either remained steady or declined. The frequency with which the August price for Kansas City wheat weakens is explained largely by the primary or initial movement of winter wheat to the central markets. As an average of six recent crop years Kansas farmers marketed in August approximately twice as much wheat as mills ground and exporters were able to export during the month.

September.—In September, however, there is a noticeable increase in the frequency with which price improves although here the improvement has taken place about one-half the time.

There are several reasons for this tendency. In the first place, there is usually a slackening up in deliveries to country elevators

FLUCTUATIONS OF WHEAT PRICES

in the winter wheat belt at this season of the year. During August farmers sell much of the early marketed wheat. By September farmers are busy preparing to put in the next year's crop. It is still too early for heavy movement of the spring wheat crop of the United

Month	Canada	British India	Argentina	Australia	Rumania	Total
July	7	8	6	2	3	26
August	6	4	4	2	7	23
Sept.	4	3	3	2	6	18
Oct.	12	3	2	2	4	23
Nov.	17	2	2	1	4	26
Dec.	18	2	2	2	3	27
Jan.	4	2	4	6	1	17
Feb.	3	1	11	6	1	22
March	5	2	14	6	3	30
April	5	2	12	4	2	25
May	10	4	9	3	2	28
June	8	7	8	2	1	26

FIG. 3.—Data and graphical representation, average monthly exports of wheat (1908-'09 to 1917-'18) from countries competing with the United States in the world market. (In millions of bushels.)

States. All these things check the movement of supplies in the United States.

In addition to these circumstances, movement, of wheat from our five competitor countries slackens at this time. In figure 3 the combined September exports from Canada, British India, Argentina, Australia, and Rumania were 18 million bushels compared with 26 million bushels in July and 23 million bushels in August.

October.—The tendency for October prices to rise above September 17 years out of 32 is supported by several circumstances. In the first place Kansas City receipts, in the hard winter wheat belt, frequently lighten in October. Chicago, in the soft wheat belt, shows the same tendency in October. The 1910 to 1919 averages for Kansas City and Chicago have been as follows:

	KANSAS CITY (Bushels)	CHICAGO (Bushels)
August	10,200,000	10,600,000
September	6,900,000	8,500,000
October	5,400,000	4,900,000
November	5,800,000	4,900,000

In the spring wheat section of the United States, while the movement is usually at its height in October, it is frequently the latter half of October before this movement is very heavy. This is indicated in a way by the slow "pick-up" in visible supply at Minneapolis. The 10-year average visible wheat supply (1910-1919) has been as follows:

(MILLIONS OF BUSHELS)				
July	August	September	October	November
5.6	3.3	2.1	4.8	9.0

In the second place new crop Canadian wheat is usually not ready to move in volume before the last of October. Harvest comes in September, and by that time old crop wheat is pretty well cleaned up. The effect of this factor will be seen by referring to the average monthly exports from Canada and other competing countries as shown in figure 3. Exports from our competitor countries increased from 18 million bushels in September to 23 million bushels in October.

Figure 4 showing price fluctuations by 10-day periods indicates that the influence of this factor on prices is felt most frequently toward the end of October.

It is the third 10 days of October and the first 10 days of November that show the most frequent tendency toward lower prices. Prices the third 10 days of October have shown improvement over those of the second 10 days only five times in 15 years. Prices the first 10 days of November have shown improvement over the last 10 days of October only four times in 15 years. This indicates that movement of new supplies of wheat at this season most frequently affects price the latter part of October and the first part of November. Frequently, therefore, there is a time after the heavy movement of wheat in the United States winter wheat area and before the heavy

FLUCTUATIONS OF WHEAT PRICES

movement of Canadian wheat when pressure from cash wheat supplies lightens.

November.—Turning to the next month, November, price improvement over October has shown itself only 10 times in 32 years. The November price remained the same as October once and declined from the October level 21 times.

Why the strong tendency for prices to weaken in November? This is the period of heavy movement of new crop Canadian wheat. How heavy the movement will be and how long it will continue depends

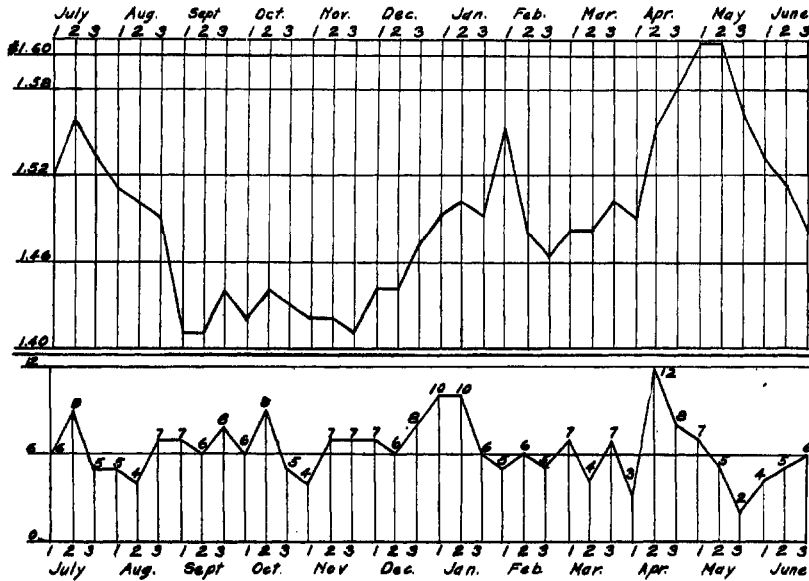


FIG. 4.—Upper, Average of high prices of No. 2 hard winter wheat at Kansas City by 10-day periods for 15 years (1910-'41 to 1924-'25). Lower, Number of times the highest price of No. 2 hard winter wheat at Kansas City, in 10-day periods, was higher than the highest price of the preceding 10-day period for 15 years (1910-'11 to 1924-'25).

upon the size of the Canadian crop. Usually the movement is heavy enough to affect Kansas City hard winter wheat prices for a time at least. Even in the strong fall market of 1924 the price of top No. 2 hard winter wheat at Kansas City broke from \$1.57 on October 15, to \$1.41 November 3. The recovery was quicker than usual and more prolonged. A small Canadian crop and speculation totalling an unusual volume contributed their support,

December.—In December there is a trace of an increasing tendency toward improvement in price. Such improvement has come in this month, however, less than one-half the time. Usually by

the middle of December the Great Lakes are frozen over and consequently closed to navigation, thus checking the movement of Canadian wheat across the lakes. By the latter part of December, therefore, competition from Canadian supplies is beginning to lighten.

January.— In January there has been at least some price advance in 24 out of 32 years. In other words, only eight times in 32 years has the price improvement failed to come in January. A factor that lends strength to the January wheat market is the fact that movements of supplies from our competitor countries are frequently the lightest at this season of the year. (Fig. 3.) The low total exports of 17 million bushels in January are due mainly to the big drop in exports from Canada, the decline in average exports from that country being from 18 million in December to 4 million in January. This shows the effects of closing the Great Lakes to navigation. The export figures in figure 3 show that Argentine and Australian shipments of new crop wheat, are just beginning to increase in January.

February. — February, unlike January, shows no such pronounced tendency toward advancing prices. Only 15 times in 82 years has the February price been above that of January. In 10 of these 15 Februarys there was only slight price improvement over January, all these 10 advances being less than $2\frac{1}{4}$ cents a bushel. Of the five Februarys in which there was a substantial advance over January, three were in war years. There was a February advance of 19 cents a bushel in 1904 and five cents a bushel in 1905. This was during the Russo-Japanese war. Also the United States wheat crops of 1903 and 1904 were small ones. There was a February advance of 16 cents in the spring of 1915 following the beginning of the World War in August, 1914. The other two of the five years showing material February advances were years marked by corners or near corners in the speculative market. One of these years was 1909, the year of the Patten corner, The other was 1922 when there was heavy speculative trading in the spring of the year.

Studying exceptional years in this manner, it is apparent that February prices are likely to show marked improvement over those of January only under exceptional circumstances. There must be some ordinary or normal circumstance, therefore, that frequently contributes to an underlying weakness in prices at this season of the year.

Reference to figure 3 shows total exports from competitor countries creeping up from 17 million bushels in January to 22 million

bushels in February. This is due to the increase in shipments from Argentina and Australia. If, in addition, as in January, 1925, the price advance which comes so frequently in that month, results in pushing prices to a high level, the market in February will be even more sensitive to increased competition from Argentina and Australia.

March.—The next month, March, shows even less tendency than February toward price improvement. Only 11 times in 32 years has the March price been above that of February. Only four of these 11 years showed advances of as much as 2 cents a bushel. Two of these years were the war years of 1917 and 1919 and the other two were the speculative seasons of 1909 and 1922.

The average monthly exports from competing countries (fig. 3) indicate that competition in March has usually been the heaviest of the year. With Argentine and Australian wheat usually near the peak of its movement in March, there is sure to be pressure on the export market for cash wheat, if these two countries have crops of average or better than average size.

April.—April has shown some price improvement over March 20 times in 32 years. By April the volume of wheat moving from Argentina and Australia usually is shrinking. Figure 3 shows that this shrinkage lightens the total exports competing with United States wheat supplies during April. Also it is yet too early for the heavy spring movement of Canadian wheat. The Great Lakes, which are closed to navigation about December 15, are not again opened for navigation before April 15 to May 1. These factors, together with some others in the home market, contribute to the frequent price strength shown in April where 20 times in 32 years (fig. 2) there has been at least some price improvement.

May.—May has shown advances over April 17 times in 32 years. Total exports from competing countries begin to pick up in May. (Fig. 3.) The increase in total May exports is due to increased shipments from Canada. By May the Great Lakes are open to navigation and the spring movement of Canadian wheat is on. If there was a large Canadian crop the September before and there is a big supply of Canadian wheat to move in the spring, this factor may be very important.

June.—June prices have been higher than those of May only 9 years in 32. In June there is less competition from competitor countries but prices are under the influence of new crop conditions and respond less to foreign competition. Results of the harvest of winter

wheat in the United States and the growing condition for spring wheat in the northern states and Canada are usually the dominant factors causing price fluctuations in this month.

PERIODS OF WEAKNESS AND OF STRENGTH IN THE WHEAT MARKET

Periods of Weakness.— Whatever the wheat price trend any season, there are, underlying the price structure, three potential weak spots. (Fig. 2.) The first in June, July, and August is affected by the prospective and actual movement of new crop wheat in the winter wheat belt of the United States. The second, in November, is influenced by the movement of new crop Canadian wheat and spring wheat in the United States. The third period coming in February and March is affected by the movement of wheat from Argentina and Australia.

Periods of Strength.— Likewise, the price structure in any season is marked by three potential strong spots. The first in September and October is influenced by the decrease in movement of wheat from farms in the winter wheat belt, by a decreased movement from countries competing with the United States and by the fact that with ordinary weather conditions it is too early for spring wheat in the United States or Canadian new crop wheat to be moving in volume.

The second possible strong spot in the market is in January. Potential strength at this point is attributable in a large measure to the shutting off of the movement of Canadian wheat about December 15 when the Great Lakes are closed to navigation. Furthermore, it is too early for Argentine and Australian wheat to be moving in volume. Competition from other countries has frequently been the lightest of the season at this time.

The third period showing potential strength is in April. Argentina and Australia have usually passed the peak of their shipments. By the end of March farmers of these two countries have usually sold the bulk of their wheat just as the farmers of the United States do in August and the Canadian farmers do in November. It is usually April 15 to May 1 before the Great Lakes are open for navigation. Then the spring movement of Canadian wheat starts. For this reason, competition in export trade may lighten in April, especially the fore part of April. Prices in the first part of April are most likely to be affected by this as is indicated in figure 4. The second 10-day period in April has shown prices higher than those of the first 10 days in 12 of 15 years.

Influence of Existing Price Levels. — Obviously the existing price level at the time one of these periods approaches determines in a large measure how sensitive price will be to fundamental influences present at that season of the year. For instance, in January, 1925, after the price of wheat had been pushed so high, it was much more likely that fundamental conditions underlying the cash wheat market in February and March would make themselves felt.

The factors mentioned are not the sole determinants of price although they are important. The mistake should not be made of always expecting prices to follow the chart. The very fact that the chart itself records certain exceptional years, such as the 10 Novembers when prices went up instead of down, indicates that strict "chart" or "calendar" trading is not making the best use of one's judgment. Other factors should be studied but studied in relation to these fundamental underlying influences.

CHANGES IN SEASONAL MOVEMENT OF COMPETITIVE SUPPLIES IN RECENT YEARS

The elimination of Russia and to some extent Rumania from the world's wheat export trade, and the substitution of increased acreage in Canada, Argentina, Australia, and the United States have been the main factors causing a change in the seasonal movement of competitive supplies of wheat in recent years.

Although the seasonal character of the movement is still much the same as pictured in figure 3, there is an increased movement of competitive supplies from Canada, Argentina, and Australia. The effect has been to lessen competition early in the season and add to the competition to be met later in the season. This is shown in Table I.

TABLE I.—Exports of wheat by months from countries competing with the United States (a).
(Average in millions of bushels, 1920-'21 to 1923-'24.)

MONTH.	Canada.	British India.	Argentina.	Australia.	Total.
July	10	2	18	4	29
August	10	1/2	7	4	21
September	8	2/8	5	4	18
October	29	1/8	4	5	38
November	49	1	3	4	57
December	47	1	3	4	55
January	14	1/2	9	11	35
February	12	1	17	11	41
March	14	1	18	11	44
April	8	1	21	11	41
May	22	1 1/2	15	10	48
June	20	3 1/2	14	5	42

(a) Data from customs reports including flour expressed as wheat. Trade Information Bulletin No. 850, page 8, Bureau of Foreign and Domestic Commerce. May, 1925.