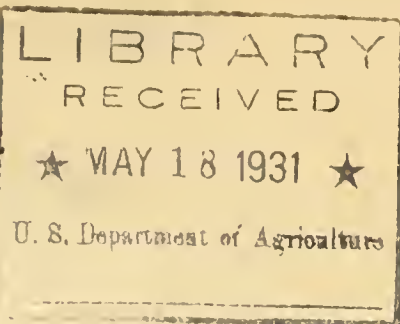


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THE 1930 WHEAT MOVEMENT AS AFFECTED BY
RECENT TRENDS IN MARKETING

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THE 1930 WHEAT MOVEMENT AS AFFECTED BY RECENT TRENDS IN MARKETING

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A significant change is taking place in the marketing of wheat. The principal agencies effecting this change are the combine harvester and the motor truck which enable the farmer to harvest and market his wheat in a much shorter period after the wheat ripens and with much less labor than was possible when the thresher was used with the binder or header.

The 1930 crop year began with very heavy stocks on farms, in country elevators, in commercial mills, and in terminal elevators. The movement from farms began early and reached its peak relatively soon.

The early hard winter wheat States, Texas and Oklahoma, produced less than average crops in 1930, but both of these States had larger-than-average stocks of old wheat at the beginning of the season. The total to be moved from these States, however, was considerably under that of 1929. Normally a large percentage of the wheat produced in this area is exported. Consequently a relatively large part of the crop each year moves to the gulf ports of Galveston and New Orleans. The production in Kansas, Colorado, and Nebraska in 1930 was 266,092,000 bushels as compared with 212,627,000 in 1929 and a 5-year average (1924-1928) of 200,925,000 bushels. A large percentage of the wheat produced in these three States is absorbed by the domestic market. The portion that is exported usually goes first to interior markets and may be held in storage for a longer period than that which is exported through Galveston. The storage problem in connection with the Kansas and Nebraska hard winter wheat crop involves a longer period of time and a much larger quantity of wheat than is the case in Texas and Oklahoma.

The movement of the 1930 hard spring wheat crop was similar in many respects to that of the hard winter area. The combine and motor truck were used more extensively than during any previous year, thus tending to cause a relatively large percentage of the crop to be marketed early in the season. Stocks in store on July 1, 1930 on farms and in country mills and elevators in the four hard spring wheat States of Montana, North Dakota, South Dakota, and Minnesota amounted to 38,385,000 bushels as compared with 36,293,000 bushels on July 1, 1929. The carry-overs in these positions for both years were much larger than usual. Production for 1930 is estimated to have been 188,847,000 bushels for these four States. In 1929, 183,685,000 bushels were harvested and in 1928, 291,248,000 bushels. The quantities of wheat to be marketed from these States for each of the last three years were as follows: 1930, 227,232,000 bushels; 1929, 219,978,000 bushels; and 1928, 308,016,000 bushels.

Facilities for storing the 1930 crop in the areas where it was produced were inadequate. In Montana, for example, only four counties in the State had sufficient farm and country elevator storage to store the locally produced crop. In North Dakota, about five counties had facilities for storing

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the wheat produced within their respective borders in 1930. In Kansas, about half of the 155,385,000 bushels produced in 1930 came from the 32 counties in the southwestern part of the State where there is little farm or country elevator storage space. Consequently wheat moved to market from that area in relatively large quantities very early in the season. Between 35,000,000 and 40,000,000 bushels moved out of that area during July this year. This relatively heavy movement from producing areas severely taxed transportation facilities and terminal elevators.

The facilities at terminals available for storing the new crop of 1930 were limited because of unusually heavy stocks at the beginning of the crop year. Handling the 1930 movement without congestion was facilitated by enlarged terminal elevator capacity, slower movement from farms, and slightly larger exports.

The 14 principal markets of the hard winter and hard spring wheat areas reported a total of 252,273,000 bushels capacity at the beginning of the 1929 harvest. During the following year these same markets increased their capacities 19,374,000 bushels, making a total of 271,647,000 bushels. Receipts at these markets during the period July to October inclusive, though considerably heavier than the 20-year average (1910-1929), were under those for the corresponding period in 1929. United States exports of wheat for the first four months of the 1930-31 crop year amounted to 50,000,000 bushels as compared with 45,000,000 for the corresponding period last year.

The significance to the farmer of wheat movement during any given year is the effect it has on the prices he receives. The congestion at terminals, resulting largely from the unusually heavy early movement, has tended to create a premium for elevator space. This situation has been reflected in cash discounts to the farmer.

The reaction of elevator interests to the recent wheat movements and subsequent premiums for storage space has taken the form of expanding their facilities. It is not likely, however, that there will be as much new space added this year as there was last. Further elevator construction, on a large scale at least, seems inadvisable at this time in view of the fact that the principal factor exerting pressure on storage during 1929 and 1930 has been the unusually heavy carry-overs and there is no assurance that they will continue to be as large.

Marketing Agencies. - Under the old system of marketing the country elevators, railroads, and terminal facilities handling the wheat were adjusted so that an average crop could be handled with the least waste of the equipment of these agencies. Country elevators, whose business it was to receive wheat from the farmers and ship it to market, were of sufficient number and size to handle the average crop if it came in at the usual rate. To have built more or larger elevators at country points would have been a waste of capital because a large part of their handling facilities would not have been used except in years of unusually large crops. Likewise, immediately preceding wheat harvest each year, railroads collected enough box cars from various parts of the United States to haul the crop to market. Since the rate of marketing the crop was fairly uniform the railroads could calculate the number of times a car could be used during a given marketing season and

consequently the number of cars needed to move a crop of given size. The terminal elevators whose duty it is to receive grain from country points and hold it until used by mills, or until exported, were built with storage facilities capable of handling and storing a crop somewhat larger than the average, provided the inflow from country points and the outflow to mills and ports were at a normal rate.

These agencies, in order to adjust their facilities to the demand which changed from year to year, had to take into account only one variable - the size of the crop. During recent years the changing rate of marketing has presented a new variable factor. To meet this factor new and complicated adjustments are required. Country elevators are finding that their facilities are entirely inadequate to handle the increased early-season flow of grain. If they build to establish the same class of service supplied formerly they are likely to find that after the early season rush a much larger part of their investment will stand idle and for a much longer period than formerly. Railroads need a larger number of cars than formerly to move the same sized crop and these cars, because the crop is moved more rapidly, will not be used for hauling wheat for so long a period during the year. Terminal elevators, to meet this unusually high early-season peak, must build additional storage space unless the out-shipments to mills and exports change correspondingly. There are no indications that the peak in out-shipments will change materially from that which has obtained for the last ten years.

If country elevators, railroads, and terminal elevators make these adjustments it will mean larger investments in each case, and except for terminal elevators the period during which the investment will be used will be shorter. Consequently the cost of supplying these services will be higher and may be reflected in discounts in cash prices. The pressure on storage facilities during the marketing period may result in higher storage rates which tend to increase the spread between cash and distant future prices.

Wheat prices are affected by a great many phases of supply and demand. Agencies buying wheat have in the past adjusted their buying to the seasonal supplies, that is, buying for domestic consumption and for export is heavier during the late summer and fall months than at any other time. The fact that a large percentage of the crop is normally put on the market in late summer and fall has not necessarily depressed prices. The visible supply is expected to be relatively large during and immediately after harvest. If, however, an increased rate of marketing causes a larger percentage of the crop to go into store at terminals early in the season, these supplies may unduly affect prices.

There are therefore two major problems arising out of the recent experiences in wheat marketing: (1) The adjustment of marketing agencies to handle a higher early-season peak, and (2) The prevention of abnormal spreads between cash and future prices because of the pressure on inadequate storage facilities. This problem is of a temporary nature existing only during the time the first is being solved.

It is true that an abnormal spread between cash and future prices tends to hasten construction of storage space and thus to solve at least a part of the first problem more quickly. But there is danger in using price

spreads as an indication of the fact that more elevator construction is needed. Any undue pressure on storage facilities and the subsequent high rates for storage space, as evidenced by abnormal price spreads, should be analyzed. Factors other than the abnormal marketing during the early season may have contributed to the unusual demand for storage space. The effect of these factors may be only temporary and thus may require only temporary measures for solution. For example the price spread during the marketing season of 1929 was unusually wide owing to abnormal stocks of old wheat on July 1, 1929 and to the heavy receipts of new wheat during July and August. The result of this stimulus was the building of about 40,000,000 bushels of storage space during the ensuing year. Experience in 1930 suggests that this amount of construction was justified. In fact 40,000,000 bushels added capacity was not sufficient to keep the price spread down to normal.

The carry-over on July 1, 1930 was 275,000,000 bushels or 28,000,000 more than on July 1, 1929, consequently only 13,000,000 bushels of the new construction remained to care for the unusually heavy early-season peak in 1930. The premiums on storage space this year may again stimulate elevator building. If and when the carry-over should drop back to normal, terminal elevator space may be in excess of needs. The carry-over is not likely to continue to increase indefinitely or for that matter continue at the present relatively high level, whereas there are reasons to believe that the effect of the new harvesting and marketing systems on the percentage of the crop to be moved during the early part of this season is a permanent change.

Hard Winter Wheat Movement

The total supply of wheat from Texas and Oklahoma in 1930 was considerably under that of 1929. The movement of the crop from these States began about June 20 which was about a week earlier than in 1929. Approximately 30,000,000 bushels of the crop of these States are consumed each year by domestic mills. A large percentage of the remainder is exported. Galveston, having a rate advantage over New Orleans from the majority of this territory, receives most of the wheat for export. (Figs. 1 and 2.)

The movement of the Kansas crop, as indicated by inspections, began about July 1, in 1929 and reached an early peak on July 7. The movement continued heavy during the following two weeks; a late peak developed on July 21. In 1930, the crop from this area began moving about July 1 and reached its peak during the second week of July. (Fig. 4.) There is a certain amount of over-lapping as between the Oklahoma movement and the Kansas harvest and the Nebraska and Colorado crops begin coming on the market in volume shortly after the Kansas peak is reached. (Figs. 3, 4, and 5.)

The second-early wheat States, Kansas, Colorado, and Nebraska, had a more difficult problem moving their supplies of wheat in 1930 than did Texas and Oklahoma. The quantity to be moved from Kansas, Colorado, and Nebraska was considerably larger than that of 1929. The early movements from the eastern parts of Nebraska and Kansas were much smaller this year than they were last. Reports indicate that only about 25 per cent of the crop from the eastern third of Kansas was marketed early as compared with normal early marketings of over 50 per cent. This attempt at more orderly marketing can be explained by the lower prices of 1930, the prospect of a short corn crop, and by the fact that farmers and shippers in general were cautioned

early in the season against flooding certain terminal markets. By holding back more of the crop in 1930 than in the year before, it was possible to avoid severe congestion at terminals and prevent in a large measure the cash discounts that occurred in 1929.

The lack of adequate farm storage may have caused farmers in certain sections to move their wheat early, in 1930. Recent shifts in wheat acreage have resulted in a larger percentage of the crop being produced in areas in which farm storage is small.

During the last few years wheat production in Kansas has been shifting from the eastern to the western part of the State. The center of production in 1929 and 1930 was in Ford County in the southwestern part of the State. In Nebraska the total cultivated acreage increased during the period 1910-1930 in the southeastern general farming area and in the southern cash grain and livestock area, but in both areas wheat acreage was characterized by a downward trend during the same period. In the southwestern area of Nebraska, however, wheat acreage registered a distinct upward trend along with total cultivated acreage for the last 20 years. The center of production in 1929 and 1930 was in Perkins County in the southwestern part of the State.

Farm storage facilities have not moved with acreage and production. Two factors have contributed toward the lag of storage facilities behind shifts in wheat acreage. Coincident with the shift in wheat acreage has been the introduction of the combine and motor truck. These improved harvesting methods are largely responsible for increased wheat acreage in certain sections of the wheat belt. Farm storage facilities in those sections have not kept pace with increased acreage because less labor is required to market wheat directly from the combine than is required to store it on the farm and market it later. In 1930, for example, about half of the 155,385,000 bushels produced in Kansas came from the 32 counties in the southwestern part of the State where there is little farm storage space. Consequently wheat moved to market from that area in relatively large quantities and very early in the season. Between 35,000,000 and 40,000,000 bushels moved out of that area during July 1930.

The second principal factor contributing to the inadequacy of farm storage space in the wheat belt is the uncertainty of yield. The newer wheat areas are located in the dry sections of western Oklahoma, Kansas, and Nebraska, and in eastern Colorado. Frequently in these areas the yield is very low because of insufficient moisture. Farmers growing wheat under these conditions are reluctant to build storage space that may be used only two or three years out of five.

Table 1.- Wheat: Supply to be marketed compared with storage facilities in hard red winter wheat area 1924, 1929, 1930

Year and State	Stocks July 1			Elevator capacity at		
	On farms	In country: mills and elevators	Current season's crop	Total supply to be moved	Country points	Terminals
	1,000 bushels	1,000 bushels	1,000 bushels	1,000 bushels	1,000 bushels	1,000 bushels
1924						
Texas...	98	800	25,252	26,150		
Oklahoma:	304	650	58,944	59,898		
Kansas...	2,263	3,500	159,964	165,727		
Colorado:	766	1,000	19,520	21,306		
Nebraska:	1,883	1,100	58,519	61,502		
Total	5,334	7,050	322,199	334,583		
1929						
Texas...	444	60	37,800	38,304	23,171	16,260
Oklahoma:	1,192	810	44,478	46,480	11,318	2,540
Kansas...	7,113	2,000	138,060	147,173	31,951	20,342
Colorado:	1,207	400	18,012	19,619	8,496	1,923
Nebraska:	4,195	2,300	56,555	63,050	25,896	13,865
Total	14,151	5,570	294,905	314,626	100,832	<u>1/</u> 54,930
1930 <u>2/</u>						
Texas...	378	600	<u>3/</u> 27,720	28,698	23,171	23,257
Oklahoma:	1,334	1,200	33,696	36,230	11,318	3,228
Kansas...	6,903	2,200	155,385	164,488	31,951	28,115
Colorado:	720	460	22,106	23,286	8,496	1,923
Nebraska:	5,656	1,400	71,262	78,318	25,896	18,865
Total	14,991	5,860	310,169	331,020	100,832	<u>4/</u> 80,588

Statistical and Historical Research.

Compiled and computed by Carlos E. Campbell from office records of Division of Crop and Livestock Estimates and Division of Hay, Feed and Seed.

1/ Capacity as of July 1, 1929. 2/ Preliminary. 3/ Winter wheat reported August, spring wheat October. 4/ Capacity as of September 1, 1930.

Hard spring wheat movement - The more extensive use of the combine and motor truck, together with large stocks of old wheat in 1929 and 1930 caused the movement to market from the spring wheat States to be heavy during the early months of harvest. Prior to 1929 the peak movement of spring wheat occurred in September. In 1929 the July movement, because of heavy carry-over, was above the July movement of either 1927 or 1928. The August movement in 1929 was much above that of either of those previous years and the September movement in 1929 dropped considerably below the September movement of either 1927 or 1928. In 1930, stocks on farms and in interior mills and elevators together with production indicated a larger early movement than

that of the 1929 season. The 1930 movement was similar to the 1929 movement in that the July marketings were heavy, the peak developed in August, and declined in September. (Fig. 3.)

The volume that moved in August 1930, however, was considerably smaller than the 1929 August movement. The smaller movement in the face of larger stocks and larger production can be accounted for by the unfavorable prices and by the tendency of farmers to hold their wheat for feed or to be sold for feed. During August corn in the spring wheat area was selling about 20 cents per bushel above wheat. It is worthy of note, however, that the 1930 movement was characterized by an August peak, as was the 1929 movement; although the peak was lower than that of 1929 for the reasons pointed out above, it was higher than the 1928 August peak. This was true in spite of the fact that there was 36 per cent more wheat to be moved in 1928 than in 1930. These facts lead to the conclusion that there is a tendency toward a permanent change in the marketing peak in the spring wheat States from September to August because of the more extensive use of the combine and motor truck.

The market situation in the spring wheat States is somewhat different from that of the hard winter area. A very large part of the wheat grown in Minnesota, North Dakota, South Dakota and Montana east of Billings, moves to either Minneapolis or Duluth. Because the wheat must move eastward to one or other of these markets some time during the year many farmers reason that there is no object in waiting until roads get bad in winter or spring to ship, consequently, the tendency in the spring wheat area has been to dispose of the wheat as soon as threshed. It is not always sold when shipped or placed in storage, but the burden of storage falls on either country or terminal elevators. An attempt has been made in North Dakota to stimulate farm storage. A law was enacted which made loans on farm stored grain possible, but in 1929 only about 1 per cent of the crop was stored under this law.

Facilities for storing any considerable portion of the 1930 crop in the areas in which it was produced were inadequate. In Montana, for example, only four counties in the State had sufficient country elevator storage to store the locally produced crop. In North Dakota, in 1930, about five counties were capable of storing the wheat produced within their respective borders. The problem of meeting the increased storage demands has been shifted to the terminal elevators where it is being solved by new construction.

Table 2. - Supply of wheat to be marketed compared with storage facilities in spring wheat areas, July 1, 1923, 1929, 1930

Year and State	: Stocks July 1 :				: Elevator capacity at	
	: On farms :	: In coun- :	: try mills: Current :	: Total sup- :	: Country :	: Terminals :
	: :	: and :	: season's crop :	: ply to be moved :	: points :	: :
	: 1,000 :	: 1,000 :	: 1,000 :	: 1,000 :	: 1,000 :	: 1,000 :
	: bushels :	: bushels :	: bushels :	: bushels :	: bushels :	: bushels :
1923	:	:	:	:	:	:
Montana.....	2,109	4,670	47,708	54,487	:	:
North Dakota..	6,331	7,700	71,410	85,441	:	:
South Dakota..	2,201	1,700	27,515	31,416	:	:
Minnesota....	1,473	1,370	23,385	26,728	:	:
Total	12,114	15,940	170,018	198,072	:	:
1929	:	:	:	:	:	:
Montana.....	5,460	4,930	40,098	50,488	16,641	:
North Dakota..	9,321	9,140	93,396	111,857	49,117	:
South Dakota..	2,445	1,575	30,247	34,267	24,197	:
Minnesota....	1,722	1,700	19,944	23,366	30,365	110,785
Total	18,948	17,345	183,685	219,978	120,320	1/110,785
1930 2/	:	:	:	:	:	:
Montana.....	3,208	5,450	3/33,418	42,076	16,641	:
North Dakota..	8,406	12,800	96,922	118,128	49,117	:
South Dakota..	3,025	1,950	36,847	41,322	24,197	:
Minnesota....	1,596	1,950	21,660	25,206	30,365	123,110
Total	16,235	22,150	138,847	227,232	120,320	4/123,110

1/ Rated storage capacity flour mills and elevators as of August 15, 1929.

2/ Preliminary. 3/ Winter wheat reported August, spring wheat October.

4/ Rated storage capacity flour mills and elevators as of September 1, 1930 increased to 136,068,000 bushels November 1, 1930.

Railroads and wheat movement. - Reports indicate that the railroads in both the hard winter and hard spring wheat areas handled the 1930 crop without congestion at shipping points. Congestion at shipping points may have occurred, but inability on the part of the local elevators to handle and load it out is likely to have been the cause more often than lack of empty box cars.

Last year because of congestion at certain terminals it was not possible to unload cars on arrival. Cars were tied up for days and sometimes for weeks in the yards, thus limiting the supplies of empties at country shipping points at the time when the peak movement was on. The railroads

anticipating another high peak in movement early in 1930, because of heavy carry-over and large crop, supplied large numbers of cars to the wheat areas. The 1930 peak was lower than the 1929 peak and cars were not tied up at the terminals, consequently, the railroads had less difficulty in handling the 1930 crop.

High marketing peaks such as those of 1929 and 1930 make heavy demands on railroads to furnish sufficient box cars. Formerly when the marketings of wheat were more evenly distributed over the marketing months each box car could make more trips and consequently haul more of the season's crop than is possible when a large percentage of the crop is marketed during one month and relatively small percentages during each of the other months. To meet the conditions of the latter case more box cars must be supplied to move the crop, but each will be used a shorter period of time. This situation necessitates a larger capital investment for the railroads and a less favorable load factor for their equipment; each of these factors tends to increase the cost to the railroads of hauling each bushel of wheat.

The Problem of the Terminals

Enlarged elevator capacity, slower movement from farms, and slightly larger exports made it possible for elevators at terminal markets to handle the 1930 wheat crop with less congestion than occurred in 1929 in spite of larger wheat crops in most States.

The 14 principal markets of the hard winter and hard spring wheat areas reported a total of 252,273,000 bushels capacity at the beginning of the 1929 harvest. During the following year these same markets increased their capacities 19,374,000 bushels, making a total of 271,647,000 bushels. Total capacities of elevators, however, do not necessarily indicate their ability to handle and store a wheat crop. The capacity that must be taken into account is that which is physically available under actual elevator operating conditions. Much of the rated capacity of an elevator can not be used because a certain amount of space must be left for loading in and out, cleaning, and drying. Furthermore, bins used for storage purposes alone can be filled to capacity only under most favorable conditions. Public elevators are required by law to store wheat by grades. If an elevator receives only a relatively small quantity of wheat of a given grade, the storing of this wheat will often necessitate the use of a bin having a much larger capacity and thus tie up the entire bin. The "working capacity," that is, the capacity physically available for storage, varies with the conditions under which the elevator operates. The elevators at the 14 principal wheat markets reported working capacity ranging from 85 to 91 per cent of rated capacity. Total working capacity at these markets in 1929 was 217,331,000 bushels and in 1930, 237,619,000 bushels.

Table 3.- Storage capacity of elevators at certain terminal markets,
July 1, 1929, July 1, 1930 and September 1, 1930

Market	July 1, 1929		July 1, 1930		Sept. 1, 1930	
	Total	Working	Total	Working	Total	Working
	rated	capacity	rated	capacity	rated	Capacity
	: 1,000	: 1,000	: 1,000	: 1,000	: 1,000	: 1,000
	bushels	bushels	bushels	bushels	bushels	bushels
Kansas City ..	30,260	27,234	31,280	28,152	31,230	28,152
Hutchinson ...	3,400	3,060	6,170	5,553	8,170	7,353
Wichita	2,475	2,236	3,950	3,555	3,950	3,555
Omaha	13,865	11,785	13,865	11,785	18,865	16,035
Chicago	47,303	40,462	52,153	44,530	52,153	44,330
Duluth	43,075	36,614	44,300	40,320	49,300	45,365
Minneapolis ..	66,835	57,000	66,835	57,000	73,310	62,738
Milwaukee	7,575	6,439	7,200	6,430	11,200	10,080
St. Joseph ...	7,950	7,155	8,950	7,807	9,950	8,457
St. Louis	7,618	6,973	9,615	8,653	11,815	10,633
Galveston	4,550	3,867	9,100	8,190	10,050	9,045
New Orleans ..	5,757	4,893	5,472	4,651	5,472	4,651
Fort Worth ...	9,310	7,913	10,757	9,143	12,257	9,143
Houston	2,000	1,700	2,000	1,700	3,000	2,550
Total ..	252,273	217,351	271,647	237,619	301,272	262,067

At the beginning of the crop year, July 1, 1929, stocks of wheat on farms, in country mills and elevators, in terminal elevators, in merchant mills and in transit in the United States totaled 247,000,000 bushels as compared with 128,000,000 bushels in 1928 and a 5-year average (1924-1928) of 111,000,000 bushels. Stocks as of July 1, 1930 amounting to 275,000,000 bushels, were larger than the record carry-over of the previous year. A very large percentage of the heavy carry-over of 1929 and 1930 was in elevators at terminal markets which reduced accordingly the physical space available for handling the respective current season's crop. Stocks of other grains in store at terminal markets were about the same as for previous years.

The 14 principal wheat markets reported stocks of all grain on June 28, 1930 amounting to 135,127,000 bushels as compared with 123,816,000 bushels on the corresponding date in 1929. These markets therefore began the 1930-31 crop year with practically 11,000,000 bushels more grain in store than at the beginning of the 1929-30 crop year. In spite of heavier stocks "available space unfilled" (difference between stocks and working capacity) was about 9,000,000 bushels larger in 1930 than in 1929 because of new construction during the year. The following Table presents the situation on June 29, 1929, and June 28, 1930, as regards the individual markets, referred to above as the 14 principal wheat markets of the hard winter and hard spring wheat areas.

Table 4.- Stocks of all grain, unfilled storage space available for storing new crop and percentage of total space filled at 14 principal markets

Market	June 29, 1929			June 28, 1930		
	Stocks of all grain	Available storage space:		Stocks of all grain	Available storage space	
		Percentage of rated space filled:	Amount unfilled		Percentage of rated space filled:	Amount unfilled
	1,000 bushels	Per cent	1,000 bushels	1,000 bushels	Per cent	1,000 bushels
Kansas City ^{1/}	19,359	64	7,875	18,480	59	9,672
Hutchinson.....	566	17	2,494	1,149	19	4,404
Wichita.....	349	14	1,887	973	25	2,582
Omaha.....	5,891	42	5,894	3,870	28	7,915
Chicago.....	26,058	55	14,404	27,514	53	16,816
Duluth.....	22,043	51	14,571	28,648	65	12,172
Minneapolis.....	40,613	61	16,387	40,877	61	16,123
Milwaukee.....	2,558	34	3,881	1,637	23	4,843
St. Joseph.....	1,101	14	6,054	2,833	32	4,774
St. Louis.....	3,043	40	3,930	2,885	30	5,768
Galveston.....	618	14	3,249	306	3	7,834
New Orleans.....	587	10	4,306	2,185	40	2,466
Fort Worth.....	897	10	7,016	3,598	33	5,545
Houston.....	133	7	1,567	172	9	1,528
Total.....	123,816	49	93,515	135,127	50	102,492

Statistical and Historical Research.

Compiled and computed by Carlos E. Campbell from office records of Division of Crop and Livestock Estimates and Division of Hay, Feed, and Seed.

^{1/} Public elevators only.

It is unnecessary to follow the movement of stocks at each of these markets to compare the 1930 situation with that of previous years. Galveston, Kansas City, Chicago and Minneapolis were selected for analysis of movement of stocks since they are typical of their respective areas.

For a number of years the facilities at Galveston have been taxed to handle the export movement. In 1929, owing to large crops and heavy carry-over of old wheat in Texas and Oklahoma and owing to a restricted export movement, there was considerable congestion at Galveston. As a result of last year's experience, terminal elevator space at Galveston was increased from 4,550,000 bushels to 9,100,000 bushels during the year. There was therefore 100 per cent more space at Galveston to handle the 1930 crop than there had been in 1929. The quantity to be handled in 1930 was smaller and the export movement was somewhat freer. Another factor developed which aided in preventing congestion at Galveston. The wheat in Texas was exceptional in quality, 60.8 per cent grading No. 1 compared with the 5-year average, 1925-1929, of 43.2 per cent. The Oklahoma crop graded high also: 47.8 per cent of the crop grading No. 1 as compared with the 5-year average of 37.8 per cent. Protein content in both States was relatively high in 1930. The unusually high milling quality together with low prices induced millers to buy very large quantities of this wheat as soon as it came to the market. The quantity available for export was accordingly reduced. As the exports

from Galveston during the period of heavy movement were about the same as those for the corresponding period in the previous year, Galveston was in a position to handle without congestion the portion of the 1930 crop that moved into export trade.

In 1929 stocks at Galveston hit an early season peak on July 12; they then receded until the middle of August after which they began to climb and they developed a late season peak on September 28. Had it not been for limited storage space and the embargo that extended from July 16 to November 6 it is probable that stocks at Galveston would have climbed much higher during that period. The 1930 situation was somewhat different. With adequate storage space and no embargo, stocks climbed rapidly from the beginning of harvest, (June 20) through July and reached a peak during the first week of August. After the first week of July stocks of wheat at Galveston were above the level of the year before. From the first week in August to October 15 stocks declined slowly, but at no time during that period did they get down to the 1929 level. In 1924 supply conditions in this area were similar to those of 1929 and larger than those of 1930, but the combine and motor truck were not being used so extensively as in these later years consequently the movement of stocks at Galveston in 1924 was different in character from either that of 1929 or 1930. (Fig. 7)

Stocks of all grain in store at Kansas City on July 1, 1929 were much larger than on that date of any previous year, and on July 1, 1930 they were about the same as in 1929. In both years about 60 per cent of the total rated space (two-thirds of working capacity) was filled when the current crop began to move. Stocks moved upward rapidly during both years and by the end of August practically all the storage space at that market was being utilized. (Fig. 8) For the next two months stocks remained practically unchanged and wheat that otherwise probably would have gone into storage in Kansas City was forced to move on through to other markets. (Fig. 9.) The character of the movement of stocks at Kansas City during 1929 and 1930, although differing somewhat from the movements of previous years, probably did not reflect all of the changes in the market movements of the Kansas City marketing area, because of the limited storage space during both years. Receipts at Kansas City, however, reflect better the characteristic changes in marketing practices.

The Minneapolis market does not begin to receive new wheat as soon as Galveston or Kansas City; the stocks are not materially affected by new crop movements until about the first of August. Stocks as of August 1, 1930, were somewhat lower than they were a year before but were considerably higher than on the same date of previous years. Both 1929 and 1930 stocks increased rapidly reaching a relatively high level early in September after which there was a gradual rise until the peak was reached in November. Except for a more rapid rise in August, the 1930 movement of stocks was about the same as that of 1929 when wheat supplies in the spring wheat area were about the same as those of 1930. (Fig. 10.)

Chicago is farther from the wheat producing areas than the other markets and consequently is more of an overflow market. Very little of the early season rise which has characterized wheat marketing during the last two years has been reflected in stocks movements at Chicago. The large carry-overs of recent years, however, have caused stocks at the beginning of the marketing season to be larger than for previous years. The

characteristic movement of stocks at Chicago has been: Fairly rapid rise during late July and through August; then a gradual rise to October or November; then little change until February or March, after which comes a relatively rapid decline in stocks, the low point for the year being reached about July. (Fig. 9) The 1930 movement from July to November has followed this general outline.

The peak for the year in United States visible supply of wheat usually comes during the latter part of October or early November; a few times it has occurred in December. The peak of wheat stocks for the 1930-31 crop year to November 7 came on September 27 when 223,826,000 bushels were in store in principal markets of the United States. On the corresponding date in 1929, 199,137,000 bushels were in store. The peak in 1929 came during the first week of November when 203,000,000 bushels were in store. The peak in stocks of all grain at the 14 principal wheat markets for the 1930-31 crop year up to date November 7, 1930, came on September 27 and October 4, reports for both dates being practically the same. The most severe test thus far this year of terminal storage facilities at these markets was therefore on these dates. The following Table shows the stocks and storage situation at each of these 14 principal markets.

Table 5.- Stocks of all grain, unfilled storage space available for storing current crop and percentage of total space filled at 14 principal markets about October 1, 1929 and 1930

Market	Oct. 5, 1929			Oct. 4, 1930		
	Stocks of all grain	Available storage space of rated space filled	Amount unfilled	Stocks of all grain	Available storage space of rated space filled	Amount unfilled
	: 1,000 bushels	: Per cent	: 1,000 bushels	: 1,000 bushels	: Per cent	: 1,000 bushels
Kansas City 1/	: 29,377	: 97	: -	: 26,186	: 84	: 1,966
Hutchinson . . .	: 1,922	: 56	: 1,138	: 5,361	: 72	: 1,492
Wichita	: 2,031	: 82	: 205	: 3,525	: 89	: 30
Omaha	: 12,959	: 94	: -	: 17,193	: 91	: -
Chicago	: 41,866	: 88	: -	: 42,932	: 82	: 1,398
Duluth	: 33,772	: 78	: 2,842	: 41,116	: 83	: 4,249
Minneapolis . . .	: 59,910	: 92	: -	: 67,106	: 91	: -
Milwaukee	: 6,000	: 79	: 439	: 8,798	: 79	: 1,282
St. Joseph	: 6,394	: 80	: 761	: 7,733	: 78	: 724
St. Louis	: 5,217	: 68	: 1,756	: 8,920	: 75	: 1,713
Galveston	: 2,971	: 65	: 893	: 5,574	: 56	: 3,371
New Orleans	: 4,507	: 82	: 383	: 4,260	: 73	: 391
Ft. Worth	: 3,948	: 46	: 3,965	: 8,703	: 71	: 440
Houston	: 1,635	: 82	: 65	: 2,048	: 68	: 502
Total	: 211,509	: 84	: 12,453	: 250,055	: 85	: 17,558

Statistical and Historical Research.

Compiled and computed by Charles E. Campbell from office records of Division of Crops and Livestock Estimates and Division of Hay, Feed and Seed.

1/ Public elevators only.

The ability of elevators at terminal markets to handle recent wheat crops has been pointed out by comparing stocks with rated and working capacity of the elevators. The analysis should, however, be carried farther. The rate of inflow and outflow of wheat must be taken into account. If farmers disposed of their wheat at the same rate at which the mills and export trade consume it there would be practically no need for storage elevators. On the other hand, if farmers disposed of all their wheat immediately after harvesting, storage elevators would need to be large enough to hold almost all the crop. Neither of these extremes is practicable nor economical. The most economical marketing arrangement has been vaguely described by the term "orderly marketing". Inadequate research in this field has rendered impossible a satisfactory definition of this term. Twenty years ago the tendency was toward a more uniform distribution over the year of marketings by farmers and consequently of receipts at terminals. As late as five years ago there had been little change from the practices of 1910 in regard to rate of marketing. During more recent years, receipts at terminals have increased during the first month or two of the crop-year and have decreased accordingly during the remainder of the year. It may appear on first analysis that terminal elevators would need to increase their capacity materially to handle this unusually high early peak in receipts. The analysis is not complete, however, until out-of-storage movements have also been taken into account.

Out-of-storage movements are made up of shipments to other markets and takings by local and outside mills. Shipments from the principal wheat markets, especially those near the producing areas, have tended to keep pace with the change in rate of receipts but the change in shipments has not been so marked as that in receipts.

It is the difference between receipts and the out-of-storage movement that has to be stored. These differences accumulated from the beginning of the crop-year to its end when, added to stocks as of the beginning of the year, they represented the total annual demand for storage. The peak of these accumulative differences indicates the peak storage demand which should not be higher than the working capacity of the terminal elevators if they are to handle the crop adequately. If the peak demand for storage during any given year measured by this method should rise above the working capacity of the elevators it does not necessarily follow that these elevators should expand. Before an expansion program is undertaken there should be evidence of recurrences in following years of a similar peak.

During each of the last 20 years elevator construction in Kansas City has been fairly closely correlated with production of wheat in Kansas the previous years. At Minneapolis elevator construction has followed fairly closely production in the spring wheat States. The storage situation at both of these markets in 1929 was similar to that of years when very large crops were being harvested. Minneapolis increased its storage capacity about 10 per cent following the 1929 experience, whereas the increase at Kansas City was relatively small. The 1930-31 peak in storage demand at Kansas City was practically as large as that of 1929; both years it was above the working capacity of the elevators. The unusually large stocks at the beginning of each of the last two years was an important factor contributing to the high peak in storage demand and there is no assurance that carry-overs in the future will be as large.

Minneapolis likewise had a slightly larger peak in storage demand in 1930 but was in a position to handle it easily because of added capacity. At this market the high storage demands during 1929 and 1930 were probably as much the result of large stocks at the beginning of the year as because of changes in marketing practices.

Monthly receipts at Kansas City during the last 20 years have averaged heavy during July, August, September, and October and relatively light for the remainder of the crop year. The change in the character of the monthly receipts from 1910 to 1930 is significant. In 1910 receipts at Kansas City were about normal for July, were above normal during the next three months, and about normal for the remainder of the year. In July, 1930, receipts were considerably above the 20-year average; during August, September, and October receipts were below average.

Receipts at Minneapolis during the 20-year period 1910-1929 have fluctuated with total spring wheat production. Monthly receipts at this market are usually heavy during August, September, October, and November. From 1910 to 1930 the change in monthly receipts at Minneapolis was similar to that which took place at Kansas City, but not so pronounced. Throughout the 1910-11 crop year receipts followed closely the 20-year average. In 1930 the characteristic change can be noted, August receipts were well above the average, September about average and October below. In 1929-30 receipts were below average each month after August, except February, until the end of the crop year. The character of the 1930-31 receipts are likely to be similar to that of 1929-30.

The change in the character of the shipments from these two markets during the 20-year period, 1910-11 to 1929-30, has been similar to that of receipts but less pronounced. At Minneapolis a much smaller percentage of the wheat received is shipped out than is the case at Kansas City because of the large local consumption by mills.

Out-shipments are a fair criterion of wheat movements through interior markets. The comparable movement from ports is exports. Market and storage conditions within the country tend to cause shipments out of interior markets to change with receipts after allowing for a certain amount of lag. Exports on the other hand are affected by a number of other factors many of which are outside the United States. There is no reason therefore to expect changes in exports similar to those that have taken place in intracountry movements. Normally exports are heaviest during the months of August, September, October, and November. That situation has not changed, although during the normally heavy export months in 1929 exports were considerably below average. Exports during the 1930-31 year began slightly earlier than in 1929-30 and up to November 1, continued higher. In 1929, exports of wheat only, from July 1 to November 1, amounted to 43,000,000 bushels as compared with 50,000,000 in 1930. Both years have been considerably below average.

Marketing and Prices

The significance to the farmer of wheat movement during any given year is the effect it has on the prices he receives. Obviously, under most conditions a farmer prefers to dispose of his crop as soon as he finishes combining or threshing. One important factor which tends to encourage holding on the farm is the prospect for higher prices later in the season. A study of farm prices in Kansas for the last 34 years indicates that prices during the winter months are sufficiently higher than prices during July and August to justify holding on the farm only about one-half of the time. In North Dakota during 11 years of the 20 year period, 1910 to 1929, farm prices were higher in February than in the preceding August and twelve times prices were higher in April than for the previous August. During at least two of these 11 years the rise in price from August to February was hardly sufficient compensation for storing.

The spread between cash and future prices during the harvest period indicates to a certain extent the trade's estimate of the probable compensation for holding wheat. An unusually wide spread between cash and future prices during the marketing period (future above cash) may be interpreted as a situation when storing on the farm would be profitable for the farmer. The risk of a price decline between the harvest period and selling time, however, is often too great. Consequently, a price spread of this nature is not a reliable criterion of profitable farm storage unless that spread is insured by hedging.

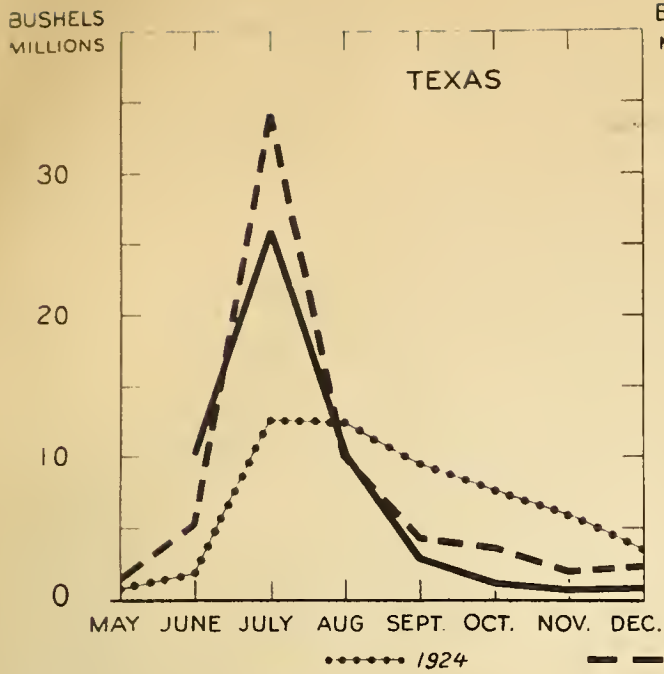
The cash price referred to above is the cash price without protein premiums added. Only in a few cases are the terminal market protein premiums reflected in cash prices paid the farmers during the heavy marketing period. That fact may in some instances be ample justification for storing high protein wheat on the farm during the heavy marketing season. In years when the protein content averages low the premiums paid at the terminal markets for high protein represents a substantial part of the cash prices. Consequently in calculating the price spread at Kansas City the cash price that was used was that of the contract grade with the base percentage of protein (11.25-11.45 per cent.) At Minneapolis the non-protein-premium cash price of No. 1 Northern Spring was used.

A study of spreads between cash and future prices at Kansas City and Minneapolis from 1922 to 1930 indicates that for the years 1922 to 1928 inclusive these spreads were not sufficient to encourage holding wheat on the farm. During the last two years (1929 and 1930), however, these price spreads have been more favorable for farm storage. The pressure on intermediate and terminal storage space exerted by heavy carry-overs and large early-season marketing peaks during 1929 and 1930 brought about a much wider spread between cash and future prices (future above cash) than usual. When an unusually wide price spread of this nature occurs it quite often indicates that the farmer is being penalized for selling his wheat, that is, cash prices are being discounted because of undue pressure on terminal storage facilities. Storing on the farm during the heavy marketing period and selling after terminal storage congestion has been relieved will often prevent the penalty of cash discounts. But as pointed out

above, a price decline may offset this apparent advantage.

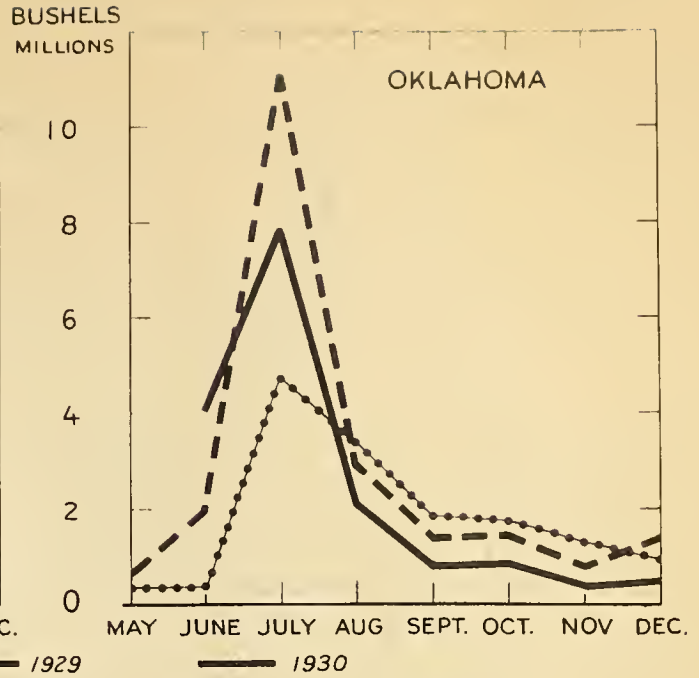
When the future price gets unusually high above cash it may be because of one or more factors depressing cash prices more than futures or because of future prices receiving a stimulus which does not effect cash prices. The former is probably the explanation of the situation in 1929 and 1930. It is possible to explain the relative position of cash and future prices during these two years by large carry-over and early marketing peaks. It is not known how, nor the extent to which, changes in marketing practices have affected the level of wheat prices. It appears probable, however, that an abnormal marketing peak early in the season and the subsequent unusually large visible supply might unduly depress prices for a time. If marketing so as to bring about an early high marketing peak should become the normal method then the supply factors would be expected to exert their usual effect on prices.

There are many factors that may cause farmers to sell their wheat directly from the combine or thresher when the spread between cash and future prices is wide enough to encourage storing on the farm. In a recent survey of the hard winter and hard spring wheat areas farmers reported the following reasons for not storing wheat on farms: 1. More economical to haul directly from combine to local elevator. 2. Must sell to settle financial obligations. 3. Insufficient storage space on farm. 4. Cannot borrow money on farm-stored wheat. From 1922 to 1928 inclusive there was little inducement to store on farms. In 1929 when the price spread was favorable for farm storage many farmers were not prepared to take advantage of it or, because of relatively high prices early in the season, they preferred to sell early rather than store and risk a price decline. Consequently in spite of the inducement to store on farms in 1929 the percentage of the crop moved from farms early in the season was the largest in history. A recurrence in 1930 of a price spread similar to that of 1929, but with a low level of prices associated, resulted in a movement from farms somewhat slower than that of 1929.



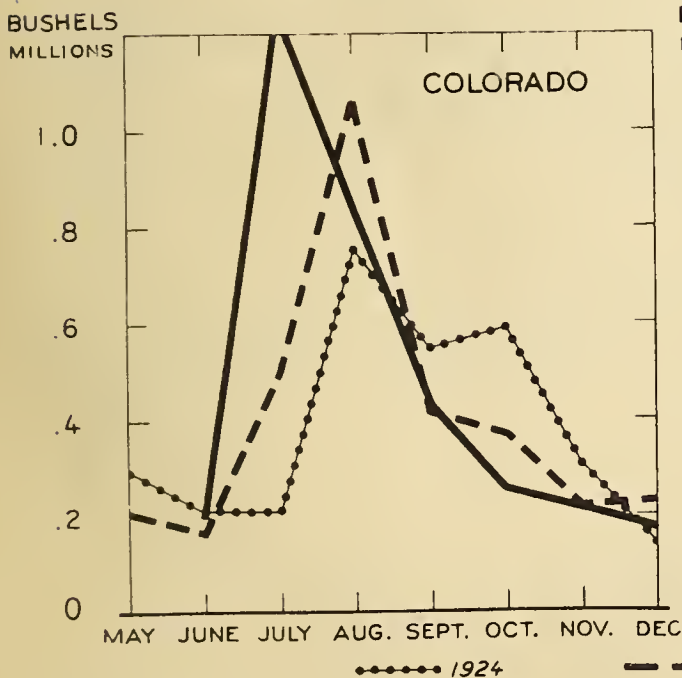
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FIGURE 1 - INSPECTIONS OF WHEAT IN CARLOADS, TEXAS, BY MONTHS, MAY TO DECEMBER, 1924, 1929, AND 1930



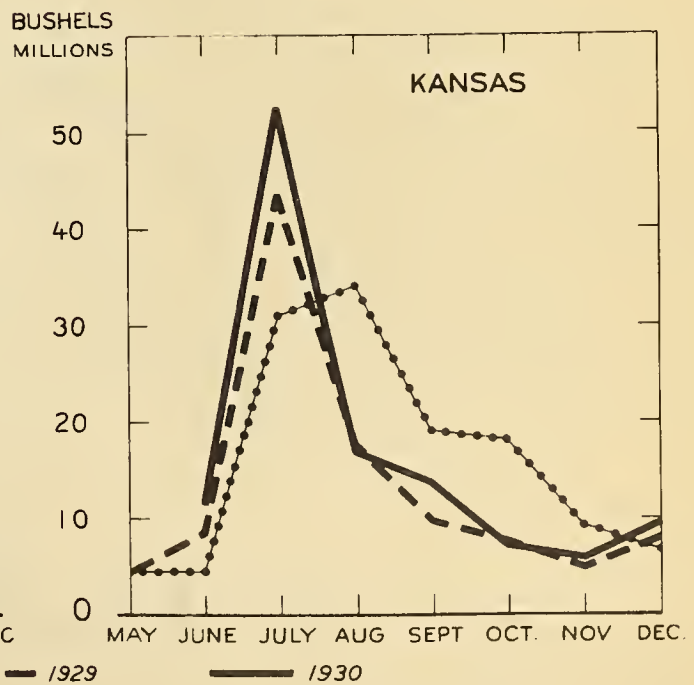
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FIGURE 2 - INSPECTIONS OF WHEAT IN CARLOADS, OKLAHOMA, BY MONTHS, MAY TO DECEMBER, 1924, 1929, AND 1930



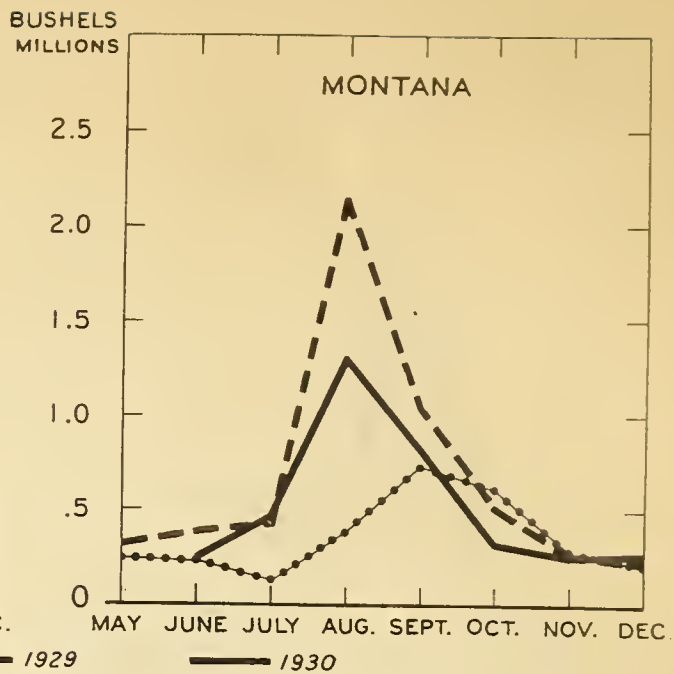
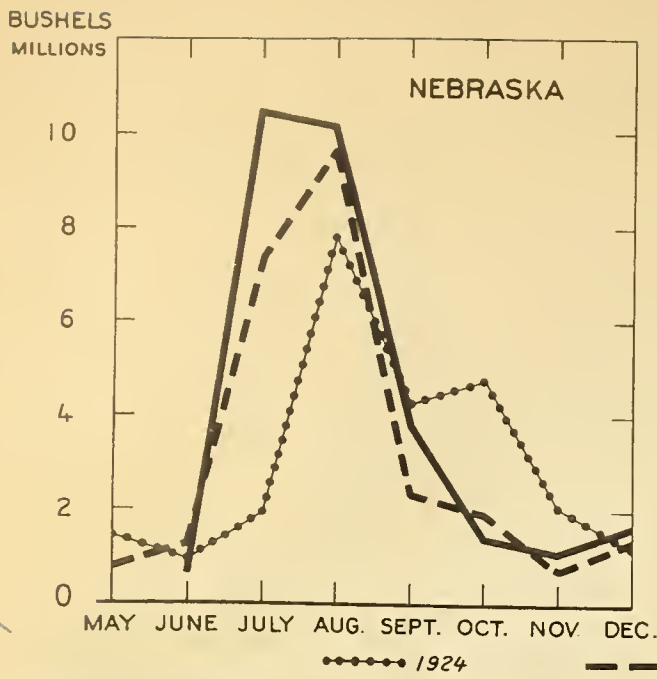
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FIGURE 3 - INSPECTIONS OF WHEAT IN CARLOADS, COLORADO, BY MONTHS, MAY TO DECEMBER, 1924, 1929, AND 1930



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FIGURE 4 - INSPECTIONS OF WHEAT IN CARLOADS, KANSAS, BY MONTHS, MAY TO DECEMBER, 1924, 1929, AND 1930

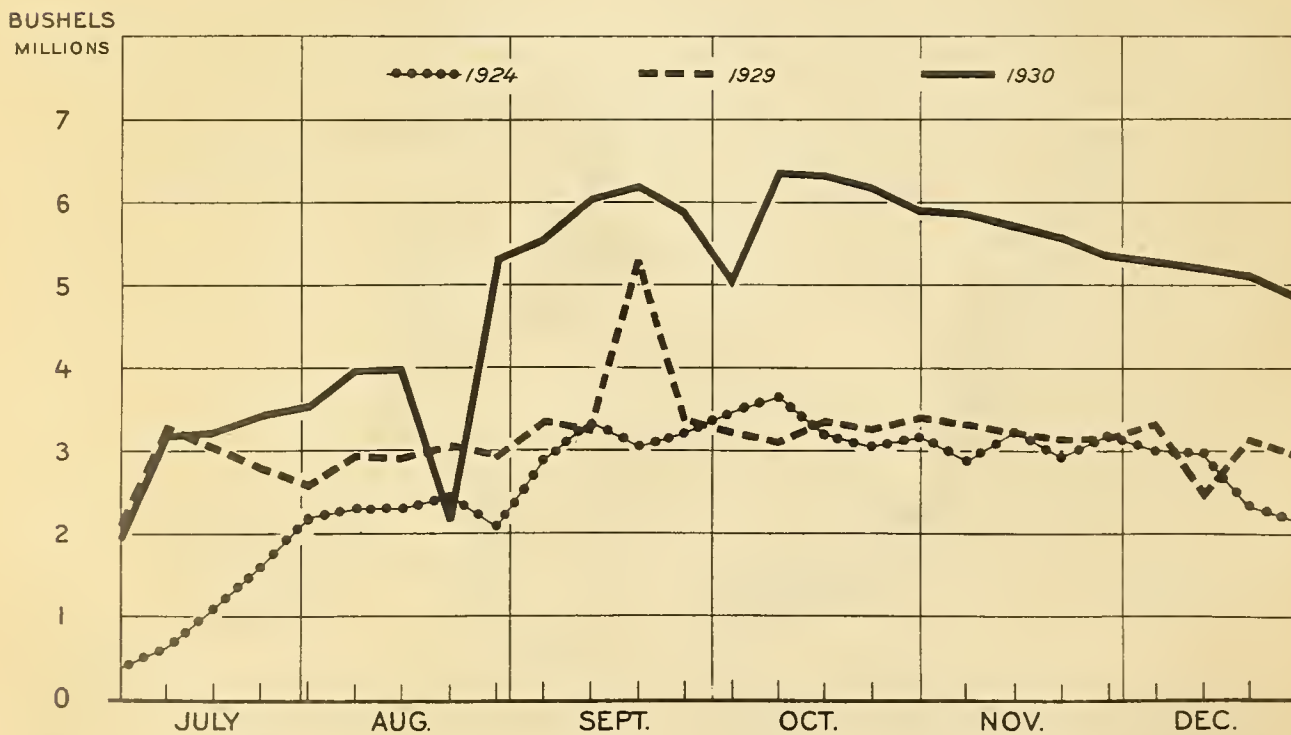


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FIGURE 5 - INSPECTIONS OF WHEAT IN CARLOADS, NEBRASKA, BY MONTHS, MAY TO DECEMBER, 1924, 1929, AND 1930

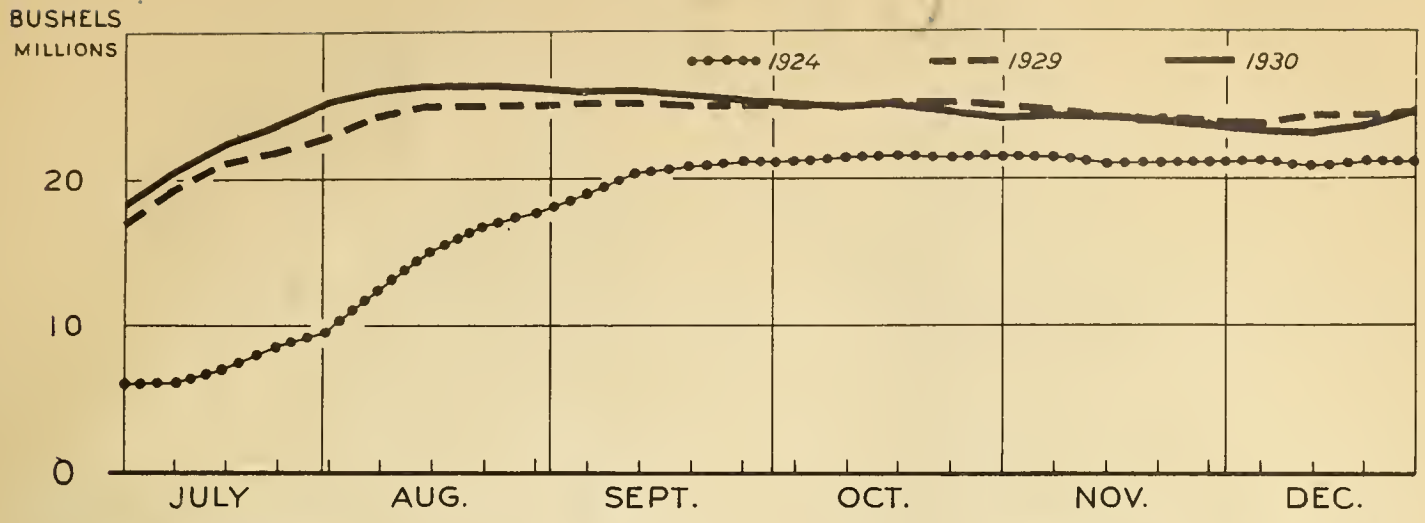
FIGURE 6 - INSPECTIONS OF WHEAT IN CARLOADS, MONTANA, BY MONTHS, MAY TO DECEMBER, 1924, 1929, AND 1930



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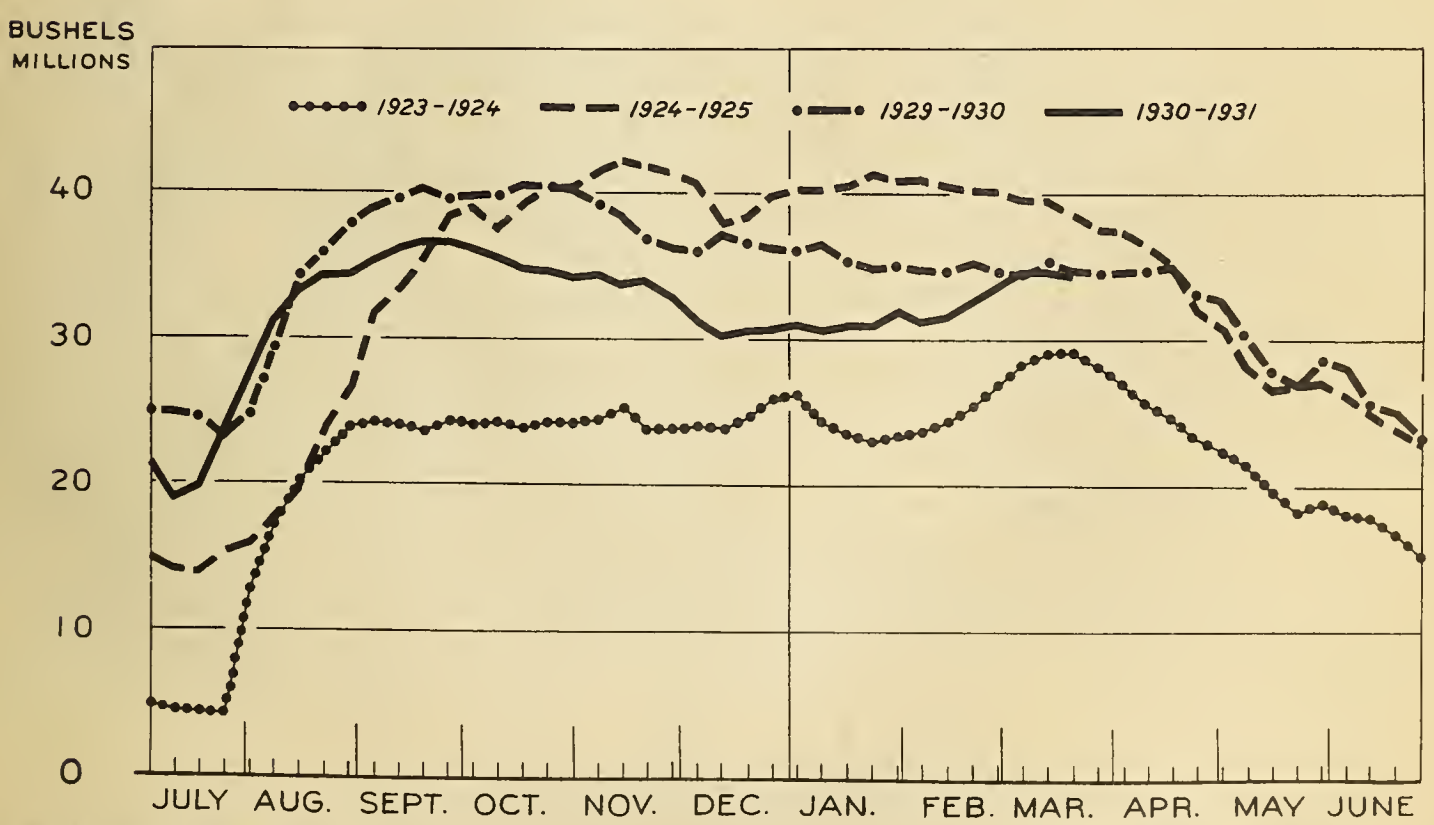
FIGURE 7 - TOTAL STOCKS OF GRAIN AT GALVESTON ON SATURDAY OF EACH WEEK, JULY TO DECEMBER, 1924, 1929, AND 1930



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FIGURE 8 - TOTAL STOCKS OF GRAIN AT KANSAS CITY ON SATURDAY OF EACH WEEK, JULY TO DECEMBER, 1924, 1929, AND 1930

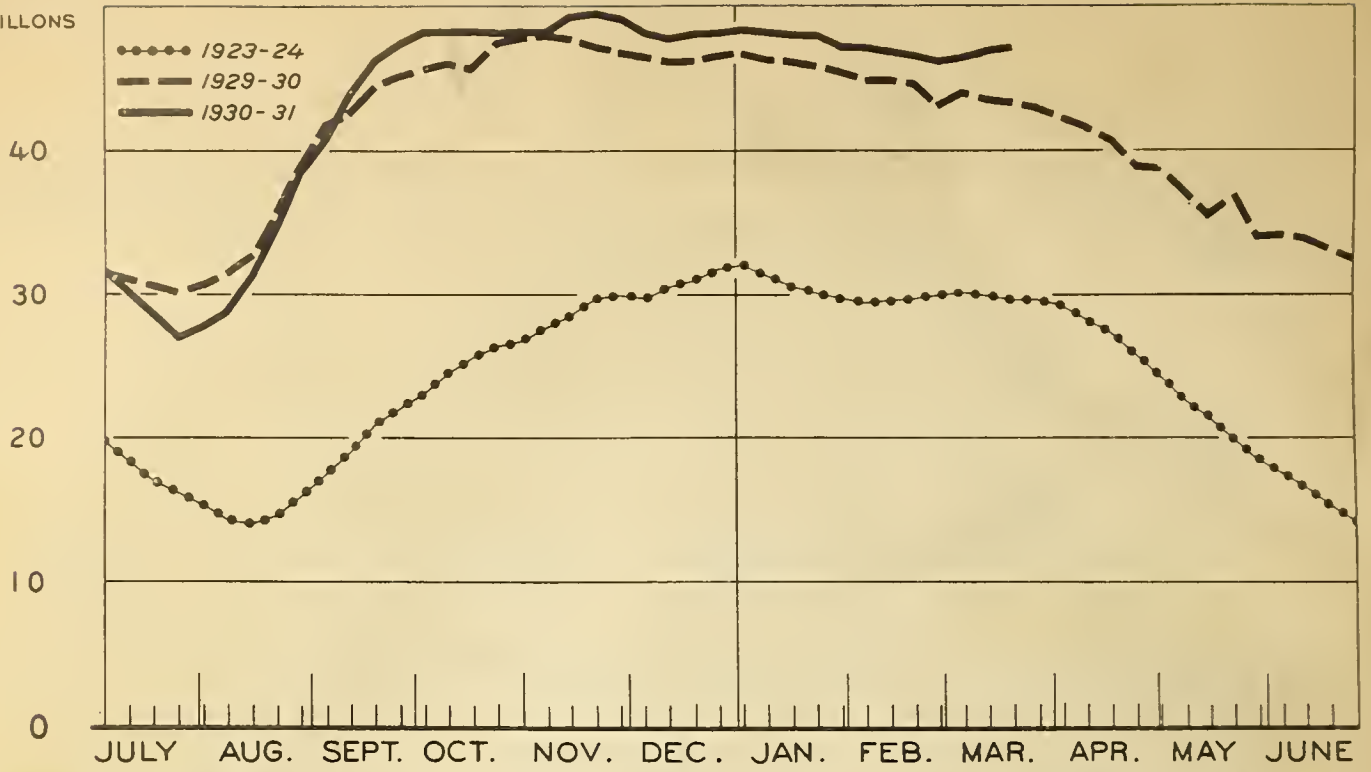


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FIGURE 9 - TOTAL STOCKS OF GRAIN AT CHICAGO ON SATURDAY OF EACH WEEK, 1923-24, 1924-25, 1929-30, AND 1930-31

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FIGURE 10 - TOTAL STOCKS OF GRAIN AT MINNEAPOLIS ON SATURDAY OF EACH WEEK, 1923-24, 1929-30, AND 1930-31