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AGRICULTURAL EXTENSION DIVISION  
UNIVERSITY OF MINNESOTA

F. W. Peck, Director

MINNESOTA FARM BUSINESS NOTES

No. 94

September 20, 1930

Prepared by the Division of Agricultural Economics  
University Farm, St. Paul, Minnesota

FARM INCOME IN MINNESOTA  
Prepared by D.D. Kittredge

The annual amounts of gross cash income from the sales of Minnesota agricultural products during the last four or five years, serve as one indicator of the level at which Minnesota agriculture appears to have been stabilized in the post war readjustment. For the years 1925-1929, these amounts average 382 million dollars a year with a variation of not more than 17 million for any one year. The preliminary estimate for 1929 varies least from the five-year average. The lack of variation in the present period is striking if a comparison is made with periods which include the spectacular increases of 1917-18 or the steep declines of 1921-22. The level of gross cash income from agriculture during the last five-year period is not as high as the peak years of 1918 and 1919, but it averages well above 1917, and is more than double the general level maintained through the period 1910 to 1915. Such comparisons as these are facilitated by the total income figures of the past 20 years which follow.

Gross Cash Income from the Sales of Principal Farm Products  
Minnesota 1910-1929

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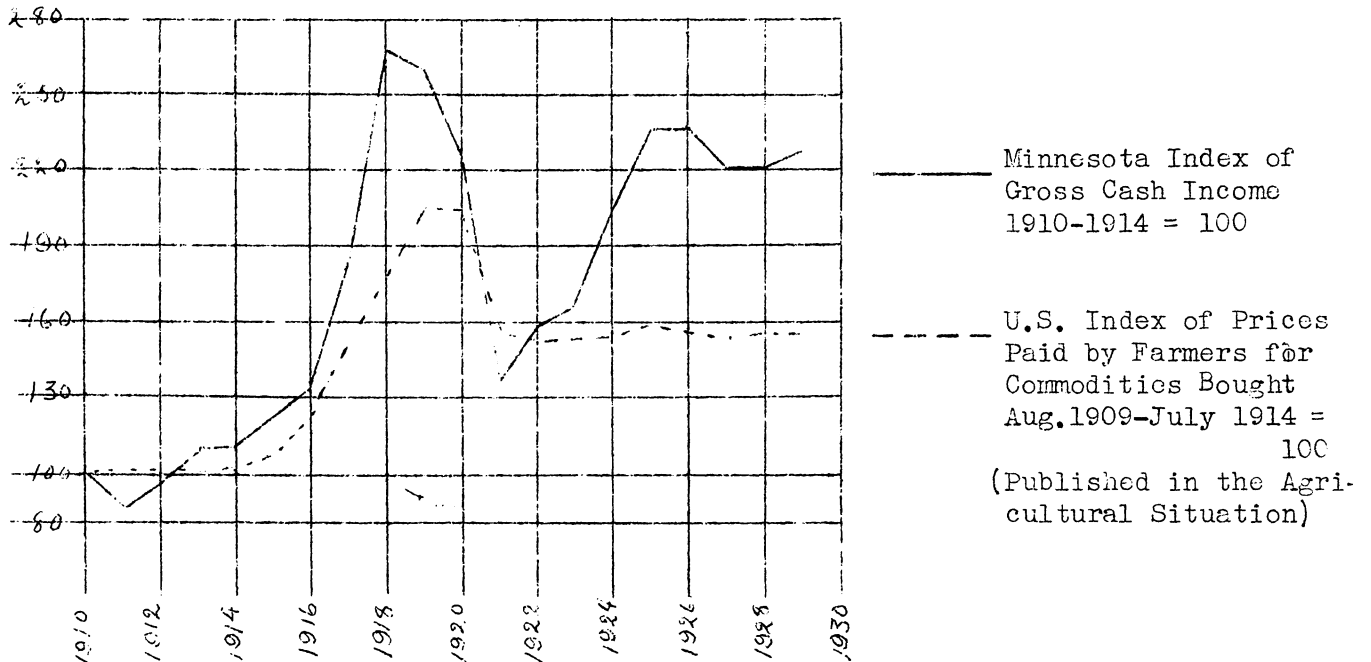
1910 - \$165,860,607	1917 - \$308,264,475	1924 - \$342,026,061
1911 - 144,112,960	1918 - 450,868,816	1925 - 395,217,696
1912 - 162,630,686	1919 - 437,552,586	1926 - 397,611,900
1913 - 182,399,079	1920 - 379,230,509	1927 - 365,777,310
1914 - 184,387,240	1921 - 229,308,384	1928 - 367,124,340
1915 - 201,367,393	1922 - 256,402,446	1929 - 384,663,250(prelimin-
1916 - 227,722,957	1923 - 286,589,477	ary)

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The foregoing figures are made up from the sales of wheat, corn, oats, barley, rye, flax, hay, potatoes, hogs, cattle, calves, lambs-sheep, chickens, eggs, butterfat, and milk. A number of minor crops have been omitted from the calculations. The amounts of the principal products sold each month multiplied by the farm price constituted the cash income for each month. The sum of the 12 calendar months was taken as the estimated annual cash income. These figures do not represent the total value of agricultural production and no allowance has been made either for the value of farm products used by the farm family or for changes in inventory of livestock or crops.

## Purchasing Power of Minnesota Agricultural Income

These total cash income figures may give a wrong impression of the economic position of farmers in the state unless the changes which have taken place in the prices of things which farmers purchase are considered in conjunction with the amounts they receive from the sale of their products. The U.S.D.A. has computed an index of retail prices paid by farmers for commodities bought for use in living and production, and the relation between this index and the index of gross cash income is shown in the following graph:



The two series are not strictly comparable. The retail price series is for the U. S. as a whole and the income series represents Minnesota alone. The retail price index is based on a list of standard commodities weighted by constant quantities of the period between 1920-25, so that it is not designed to show changes due to increased family expenditures which result from improved standards of living. If an index of farmers' total expenditures for living and production were available, the relationship between such a series and the index of gross cash income would give a fairly accurate picture of agricultural purchasing power. This comparison is not possible, however, and the nearest approach is that given in the accompanying chart, where it will be seen that the index of Minnesota income has usually been conspicuously above the index of prices paid by farmers for commodities purchased. If an index of total family and production expenditures were added to the graph, it would doubtless follow more closely the index of total income. When the index of income was higher than the index of expenditures the purchasing power in that period would be above normal, and vice versa. The real condition of agriculture in the current period, however, cannot be portrayed correctly by this method, because no provision is made to show the circumstances where the excess of income over expenditures must be diverted from the current period to the payment of investments of land, etc., made at war prices.

### Effects of Shifts in Production on Total Cash Income

The upward trend in total cash income of Minnesota which prevailed up to the post war depression, and was renewed again in 1922, may result largely from changes in the type of commodities produced, a condition probably not found in many other states. Many of the important products of the earlier years have decreased in amount or increased slightly, while a striking increase has taken

place in the amounts of livestock and livestock products. These shifts in the type of commodities produced have played a considerable part in the upward trend of the amount of products sold, which in turn frequently have been the dominant factor in income. Total income results from the price of the various commodities multiplied by the quantities sold, and periods have been found when, notwithstanding a low price level, total cash income continued to rise as a consequence of the greater total of agricultural products marketed by the farmer.

From 1910 to 1918, wheat was unrivaled as the largest contributor to the annual cash income, but in 1919 hogs contributed slightly more than wheat, and from 1920 to date hogs and butterfat have competed for first place with about even chances. During the last three or four years, sales from these two products have been responsible for approximately half of the total agricultural income. For several years cattle and wheat competed for third and fourth places, but since 1927 wheat has dropped definitely below cattle. The percentages of the total income received from the sales of the sixteen principal products in 1910, 1919 and 1928 are shown in the following table:

Percentages of Total Annual Cash Income of Minnesota  
Farmers Received from Sales of Each of the  
Principal Products, 1910, 1919, 1928

1910	Per cent	1919	Per cent	1928	Per cent
Wheat	34.9	Hogs	21.5	Butterfat	27.1
Butterfat	13.8	Wheat	20.6	Hogs	22.0
Hogs	12.1	Butterfat	14.9	Cattle	14.4
Cattle	5.9	Cattle	10.1	Wheat	5.6
Oats	5.6	Potatoes	4.9	Eggs	4.0
Corn	4.8	Corn	4.5	Milk	3.9
Barley	4.7	Barley	4.3	Corn	3.3
Flax	4.1	Oats	3.6	Flax	3.3
Eggs	3.3	Eggs	3.3	Oats	2.7
Potatoes	3.2	Milk	2.9	Barley	2.7
Milk	2.5	Flax	2.7	Potatoes	2.5
Rye	1.4	Rye	2.4	Calves	2.4
Chickens	1.2	Hay	1.4	Chickens	1.9
Hay	1.2	Chickens	1.2	Hay	1.7
Calves	.8	Calves	1.1	Rye	1.4
Lambs-Sheep	.5	Lambs-Sheep	.6	Lambs-Sheep	1.1
	100.0		100.0		100.0

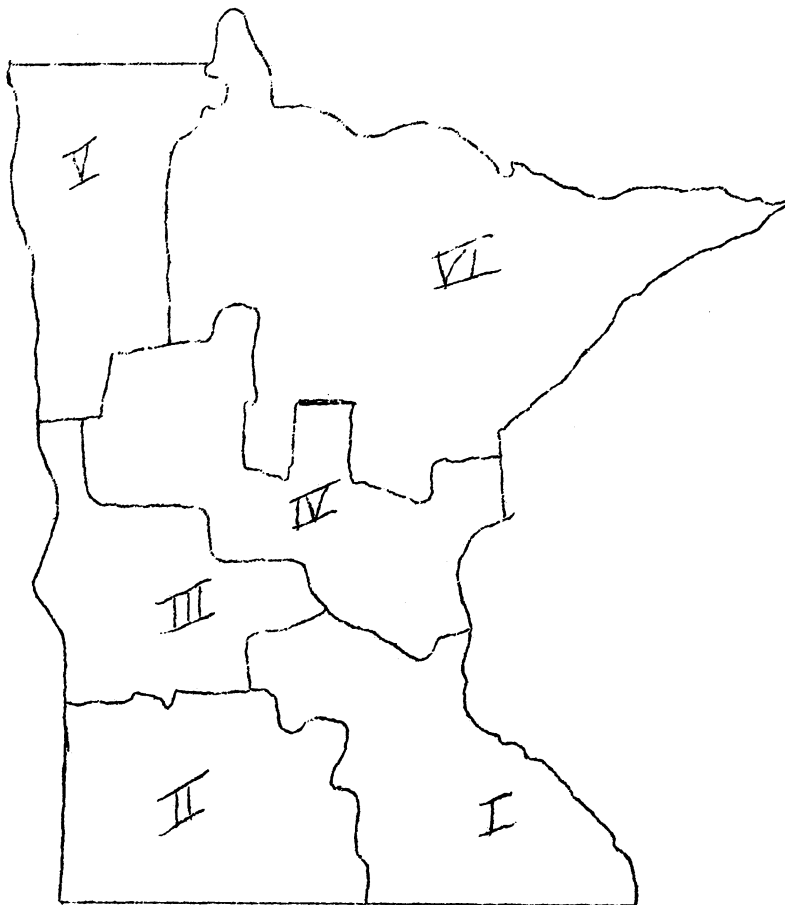
Similar figures have been derived for each year since 1910, but these percentages given at nine-year intervals furnish a cross section view of the gradual transition which has taken place.

#### Price Variations Between Different Sections of the State

The state of Minnesota offers a wide variety in types of agriculture. Because of the extreme differences existing in the different sections of the state, it would be desirable to have an index of cash income for each district which has a similar agricultural background. Data are not available at the present time for this purpose, and the best that can be done is to construct

a price index for similar sections of the state on the basis of the farm price reported for December of each year, weighted by the average sales of each commodity as estimated for the particular districts in the years 1924-25-26. For this purpose, the state has been divided into six districts as shown by the accompanying map and separate price indexes have been computed for District I to V for each year from 1924 to 1929 inclusive. These indexes are based on the prices of the 15 principal products previously enumerated with the single exception of milk.

Map Showing the  
Six Districts into  
Which the State was  
Divided

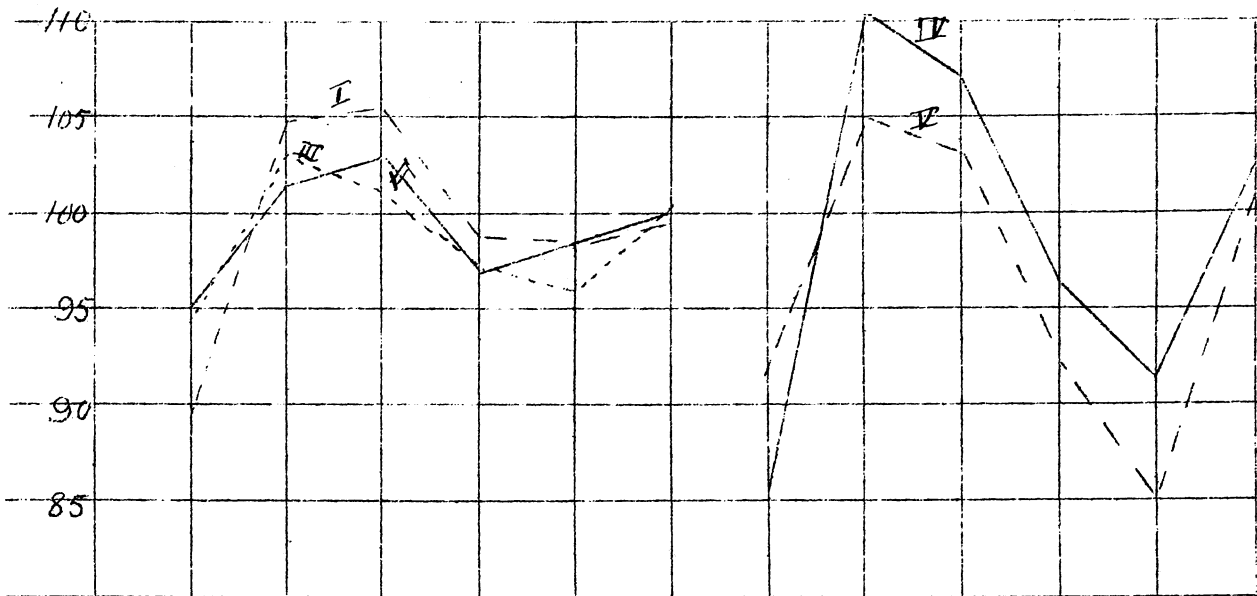


In District I the price level is influenced chiefly by the sales of butterfat, hogs, cattle, wheat and eggs; in District II by hogs, butterfat, cattle, corn oats and wheat; in District III by hogs, butterfat, wheat, cattle and flax; in District IV by butterfat, hogs, potatoes, wheat and eggs; in District V by wheat, butterfat, potatoes, hogs and flax.

The level of prices for all products combined which prevailed in the five districts from 1924 to 1929, expressed on a 1924-25-26 base, is shown by the following graph of the index numbers for each district:

Price Index Numbers for Districts I to V of Minnesota  
from 1924-1929

Average 1924-25-26 = 100



Districts IV and V have experienced variations of the greatest magnitude during the six-year period. This is due in large part to the **extreme** variations in the price of potatoes which receive relatively heavy weightings in these districts. In District IV, for instance, where the sales of potatoes were greater than from any other district, the December price of potatoes for the six years beginning with 1924 were \$.22, \$1.32, \$1.03, \$.52, \$.23, and \$.99, the variations of which are almost apparent in the composite index.

In all districts the peaks of the price level during this period were reached in 1925 and 1926. In Districts III, IV and V the peak occurred in 1925, while in Districts I and II the price level rose slightly until 1926. The price of butterfat which has a heavy weighting in all districts maintained a steady upward trend of a few cents until 1929 when the price broke somewhat, but nowhere in the period were the fluctuations in price of sufficient consequence to influence materially the composite index. The price of hogs which also has a heavy weighting in all districts, except V, contributed noticeably to the high indexes of 1925 and 1926. After this the price of hogs fell to the 1924 level about which it fluctuated to the end of 1929. The prices of cattle were strongly upward until a moderate drop came in 1929. In Districts I, II and III, where cattle are much more important than in the other districts, this influence has been reflected in the higher position of the indexes in 1927 and 1928 as compared with the indexes of Districts IV and V.

No strictly adequate basis is available for a comparison of each district with the State as a whole, but such comparison as can be made reveals only two or three deviations of consequence, - District IV with a price level considerably <sup>above</sup> all other in 1924 and District V considerably below all others in 1928. The general observation on the six-year period for all districts is that the commodities in Districts I, II and III on which the price level depends are those whose prices run in cycles or have long periods of production such as livestock and livestock products, whereas in Districts IV and V the price levels are influenced to a greater extent by commodities which are subject to year to year fluctuations, such as potatoes, wheat and flax. Insofar as this situation is followed in actual practice, the price levels of District IV and V

may be expected to show short time fluctuations of varying amplitude, and those of Districts I, II and III to be characterized by more gradual upward and downward swings of longer duration.

# MINNESOTA FARM PRICES FOR AUGUST 1930

Prepared by D.D. Kittredge

The index number of Minnesota farm prices for the month of August 1930 was 81.5. When the average of farm prices of the three Augusts of 1924-25-26 is represented by 100, the indexes for August of each year from 1924 to date are as follows:

August 1924	-	95.2	
" 1925	-	104.5	
" 1926	-	100.5	
" 1927	-	99.9	
" 1928	-	100.3	
" 1929	-	105.1*	
" 1930	-	81.5*	*Preliminary

The price index of 81.5 for the past month is the net result of increases and decreases in the prices of farm products in August 1930 over the average of August 1924-25-26 weighted according to their relative importance. The increase is 7 per cent for both products and the decreases range from 45 per cent to 5. The products ranked according to the size of their percentage increases or decreases in this comparison are shown in the following list:

## Principal Farm Products which Showed Price Increases and Decreases in August 1930 when Compared with Average Prices in August 1924-25-26 (arranged in descending order of percentage change)

<u>Increases</u>		<u>Decreases</u>
Calves	Wheat	Potatoes
Cattle	Rye	Oats
	Lambs-Sheep	Corn
	Barley	Hay
	Hogs	Flax
	Eggs	Butterfat
	Chickens	Milk

Although the Minnesota index for August 1930, does not measure price changes from July 1930, a comparison of month to month changes in price has been made. The increases range from 32 per cent to 1, and the decreases from 20 per cent to 6. The products ranked according to the size of their percentage increases or decreases in August 1930 over July 1930, are shown in the following list:

## Principal Farm Products which Showed Price Increases and Decreases in August 1930 when Compared with July 1930 (arranged in descending order of percentage change)

<u>Increases</u>		<u>Decreases</u>
Rye	Hay	Potatoes
Corn	Wheat	Lambs-Sheep
Barley	Milk	Cattle
Chickens	Calves	
Eggs	Hogs	
Oats	Flax	
Butterfat		