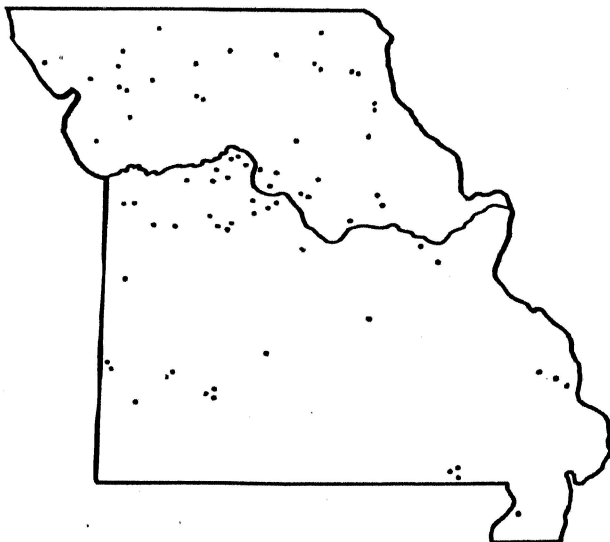


UNIVERSITY OF MISSOURI COLLEGE OF AGRICULTURE  
AGRICULTURAL EXPERIMENT STATION

# THE COSTS OF CROP PRODUCTION IN MISSOURI 1921

BULLETIN 190.



LOCATION OF COOPERATORS IN FARM COST ACCOUNTING

COLUMBIA, MISSOURI

DECEMBER, 1921

## THIS BULLETIN AT A GLANCE

Facts reported in this bulletin were secured from farmers located in all sections of Missouri co-operating directly with the Agricultural Experiment Station over a period of 11 years. (Page 3).

The amount of man and horse labor required to produce the average crop varies but slightly from year to year, and to these requirements the application of current wages at any particular time gives the actual labor cost. (Page 4.)

The wheat crop of 1921, delivered at the local market and reckoned on the basis of a state average of 10.9 bushels an acre, cost \$2.34 a bushel. (Page 4.)

Oats delivered to the local market and averaging 20 bushels an acre, cost 69 cents a bushel. (Page 5.)

The Missouri corn crop of 1921 averaged 30.75 bushels an acre and cost, in the farmer's crib, 62 cents a bushel. (Page 6.)

The hay crop, with a state average of 1.15 tons an acre, was produced and delivered to market at a cost of \$12.60 a ton. (Page 6.)

Increasing the yield is, of course, an effective way to cut down the cost per bushel; but there is a certain yield per acre above which increased production does not decrease the cost per bushel. (Page 10.)

Even the maximum acre-yields in Missouri in 1921 failed to return a profit. Not a single county in the State could have sold its wheat, corn, or oats at the prices prevailing from harvest till the end of the year for enough to pay the cost of production. (Page 13.)

If the Missouri farmer were allowed 10 per cent profit, the prices of wheat, oats, corn and hay would have to be \$2.57, 76c, 68c and \$13.86 respectively. (Page 15.)

The price of farm products must be high enough to return the average producer the cost plus a reasonable profit, in order to maintain adequate production. (Page 14.)

Production costs seem to have reached the peak in 1920 and are now on the decline. (Page 15.)

# THE COSTS OF CROP PRODUCTION IN MISSOURI, 1921.

B. H. FRAME.

Never before in the history of American agriculture have farmers suffered such economic losses as they did in the latter part of 1920 and the first half of 1921. The 1920 crops were produced with high priced labor, seed, fertilizer, twine, etc. When only a small proportion of the wheat crop was disposed of, prices broke and farmers were left with costly crops to dispose of as best they could. The same has been true of live stock. This decrease in the price of farm products was almost continuous up to the middle of 1921.

Since the middle of 1921, according to the United States Bureau of Labor Statistics, farm products in general have advanced somewhat but corn, wheat, oats, and livestock in general have continued to decline. The cost of producing 1921 crops have, with the exception of wheat, shown a decided decrease. Declining costs of production have, however, lagged far behind declining prices so that Missouri farmers are again forced to sell far below the cost of production or market their crops through livestock and take their chances on getting a better return in this way.

It must be understood that the figures given in this bulletin are the results of an effort to arrive at the average cost of production for the entire State, but they do not represent the costs of production of any particular farmer. If every farmer in the State kept accurate cost accounts it is extremely improbable that a single one would agree exactly with the figures given here as the cost of producing wheat, corn, oats and hay in Missouri in 1921. In other words, the average man in every respect is seldom, if ever, met. The cost of the bulk of the crop, however, should vary only slightly from the figures given here.

The data used in this bulletin are partly the result of eleven years of detailed farm records kept by the Department of Rural Life at the Missouri Agricultural Experiment Station in cooperation with representative farmers located in every section of the State, and partly the result of questionnaires sent out by the department to county agricultural agents and farmers.

The map on the cover page shows the location of the farmers who have cooperated with the Rural Life Department in the keeping of farm accounts since the work was started in 1910. While each section of the State is represented in this work, the greater number are located in the central and northern parts. Since the central and northern sections produce the bulk of the crops, the fact that the majority of the cooperators are located in those sections adds weight to the results obtained.

The amount of man and horse labor required to produce the average crop varies so little from year to year that labor factors, or labor require-

ments, which have been obtained from the detailed farm records, are applied to the average farm wage at any particular time to obtain the labor costs. Changing rural economic conditions cause these labor factors to vary, but so slowly that minor and temporary economic fluctuations have very little, if any, effect. A variation of more than 2 or 3 percent has seldom been noted. The amount of seed used per acre is another factor which varies so little as to be almost negligible. The amount of fertilizer used is a factor which more quickly responds to economic conditions. High prices for fertilizers and low prices for farm products have caused a tremendous decrease in the amount of fertilizers used in Missouri the past year. The effect of this decrease in use is partly offset by the increase in price.

Table 1 shows the cost per acre and per bushel of producing wheat in Missouri in 1921. Man labor in the fall of 1920 had not declined to any appreciable extent but harvest labor in 1921 had declined to 30c per hour as compared to 55c per hour in 1920. The cost of horse labor is determined very largely by the price of feed which constitutes approximately 72 percent of the total cost of horse labor. The price of feed during August, September, and October of 1920 had declined considerably from the high peak. This

TABLE 1.—COST OF 1921 WHEAT CROP IN MISSOURI.

(Average Yield of 10.9 Bu.)\*

Breaking:		Shocking:	
3.18 man hours @ 30c,		1.7 man hours @ 30c .....	.510
10.71 horse hours @ 13.6c,		Twine (2.2 lbs. @ 16c) .....	.352
Equipment charge @ 7c ...	\$3.160	Threshing:	
Disking, harrowing, dragging, etc.:		3.16 man hours @ 30c,	
1.77 man hours @ 30c,		4.13 horse hours @ 9.6c,	
6.46 horse hours @ 13.6c,		Equipment charge @ 5c ...	1.551
Equipment charge @ 7c ...	1.862	Threshing, machine without	
Drilling:		crew, 10.9 bu. @ 7.5c ...	.818
1 man hours @ 30c,		Threshing fuel, sacks, etc. ..	.548
3.34 horse hours @ 13.6c,			
Equipment charge @ 7c ...	.988	Cost of Harvesting .....	4.665
Seed: 1.4 Bu. @ \$2.02 .....	2.828	Loss from Abandoned Acreage	
Manure and fertilizer cost ...	1.327	(2.6%)* .....	.507
		Rent on land (2/5 of crop)**	9.341
Total cost of putting in crop			
(fall of 1920) .....	\$10.165	Cost per acre at farm .....	24.678
Cutting:		Cost per bu. at farm .....	2.26
1.19 man hours @ 30c,		Cost of hauling to local eleva-	
3.62 horse hours @ 9.6c,		tor per bu. ....	.08
Equipment charge @ 5c ...	.886	Cost per bu. at local elevator .	2.34

\*E. A. Logan, Bureau of Crop Estimates, Report August 10, 1921.

\*\*Assuming that the landlord pays the threshing charge on his 2/5 of the crop. Where the tenant pays all threshing charges, land rent would be \$9.887 and the cost per bu. at the farm would be increased to \$2.32.

brought the cost of horse labor down from 15c per horse hour in the fall of 1919 to 13.6c per horse hour in the fall of 1920. A further decrease in the price of feed resulted in a charge of 9.6c per horse hour being made in 1921. Practically all equipment is used in connection with horses. This allows a flat equipment charge based on hours of horse labor to be made. It

will be noticed that there was a reduction in the equipment charge from 1920 to 1921. A decided decrease has occurred in threshing charges, coal, sacks and miscellaneous items. In figuring the rent charge, the customary grain rent charged by land owners to tenants is used as a basis. This does not involve placing values on the land but does allow in this rent charge for taxes and repairs on real estate. The loss from abandoned acreage was taken from results obtained by E. A. Logan, of the U. S. Bureau of Crop Estimates. It was found that the 1921 wheat crop cost the average Missouri farmer \$2.34 delivered at the local market.

Table 2 shows the cost of producing Missouri's oat crop per acre and per bushel. The method of calculation is the same as that used in the wheat figures. Notwithstanding the fact that the state yield of 20 bushels is  $7\frac{1}{2}$  bushels lower than that of 1920, the cost of 69c per bushel at the local elevator is considerably lower than the 1920 cost.

TABLE 2.—COST OF 1921 OAT CROP IN MISSOURI.

(Average Yield of 20 Bu.)\*

Breaking (10% of ground):	Twine (1.65 lbs. @ 16c) ....	.264
.24 man hours @ 23c,	Threshing, machine charge 20	
1.12 horse hours @ 9.6c,	bu. @ 5c .....	1.00
Equipment charge @ 5c ...	Threshing:	
\$.0219	2.23 man hours @ 30c,	
Disking, harrowing, dragging, etc.:	2.44 horse hours @ 9.6c,	
1.67 man hours @ 23c,	Equipment charge @ 5c ...	1.025
6.35 horse hours @ 9.6c,	Coal, sacks, misc. ....	.442
Equipment charge @ 5c ...	Total cost of harvesting and	
1.311	threshing .....	4.050
Drilling:	Loss from abandoned acreage	
1.22 man hours @ 23c,	(0.3%)* .....	.025
3.56 horse hours @ 9.6c,	Rent on land (2/5 of crop)**	4.601
Equipment charge @ 5c ...		
.800		
Seed .....		
1.271		
Manure and fertilizer charge .		
.250		
Total cost of putting in crop .	Cost per acre at farm .....	12.502
\$ 3.851	Cost per bushel at farm .....	.63
Cutting:	Cost of hauling to local eleva-	
1.23 man hours @ 30c,	tor per bu.*** .....	.06
4.00 horse hours @ 9.6c,	Cost per bu. at local elevator	.69
Equipment charge @ 5c ...		
.953		
Shocking:		
1.22 man hours @ 30c .....		.366

\*E. A. Logan, Bureau of Crop Estimates, Report October, 1921.

\*\*Assuming that the landlord pays the threshing charge on his 2/5 of crop. Where the tenant pays all threshing charges, land rent would be \$5.267 and the cost per bu. at the farm would be increased to 66c.

\*\*\*U. S. Department of Agriculture Bureau of Statistics Bulletin 49.

In Table 3 is shown the average cost of producing Missouri's corn crop in 1921. Rent on corn land varies considerably for the different sections of the State, corresponding more nearly to the fertility of the soil than does the rent on any other crop. In the northwest and southeast sections and all along the Missouri and Mississippi river bottoms the customary grain rent rate is one-half and in some localities as high as three-fifths is charged but for the entire State two-fifths is more nearly representative. In Table 7 the cost is shown when the different rent rates are charged. The average cost for the State is 62c per bushel on the farm. No attempt was made to show the

cost of marketing because of the indefinite data available on this cost and also because of the small percentage of Missouri corn which is shipped to market, most of it being fed on the farms where produced or sold to a neighbor to feed livestock.

TABLE 3.—COST OF 1921 CORN CROP IN MISSOURI.

(Average Yield of 30.75 Bu.)\*

Cutting stalks:	Harrowing corn:
1.24 man hours @ 23c,	1.49 man hours @ 23c,
2.38 horse hours @ 9.6c,	3.68 horse hours @ 9.6c,
Equipment charge @ 5c ....\$0.633	Equipment charge @ 5c ... .880
Breaking ground:	Cultivating corn:
2.9 man hours @ 23c,	3.99 man hours @ 23c,
9.52 horse hours @ 9.6c,	8.26 horse hours @ 9.6c,
Equipment charge @ 5c ... 2.057	Equipment charge @ 5c ... 2.124
Disking, harrowing, dragging	Cutting weeds and misc. labor:
etc.:	2.43 man hours @ 23c ..... .559
2.47 man hours @ 23c,	Total cost of cultivating crop 3.563
7.87 horse hours @ 9.6c,	Harvesting:
Equipment charge @ 5c ... 1.717	Man labor @ 4.42c per bu.,
Planting:	8.87 horse hours @ 9.6c,
1.06 man hours @ 23c,	Equipment charge @ 5c ... 2.654
2.10 horse hours @ 9.6c,	Total operating cost per acre .. 11.432
Equipment charge @ 5c ... .550	Rent on land at 2/5 of crop .. .7.621
Seed, 7.7 pounds @ \$1.875 per	Total cost per acre ..... 19.053
bu. .... .258	Cost per bu. at farm (yield
Total cost of putting in crop 5.215	30.75 bu.) ..... .62

\*E. A. Logan, Bureau of Crop Estimates, Report of October, 1921.

Table 4 shows the cost of producing the 1921 hay crop of Missouri. Because of the bulky nature of hay, freight rates are much higher per unit value than for grain. This fact causes the local price of hay to vary with local supply and demand. In those sections of the State where there is a local deficiency in the supply, hay has made a profit for those who had hay, while

TABLE 4.—COST OF 1921 HAY CROP.  
IN MISSOURI.

(Average Yield 1.15 Tons.)\*

Cutting:	Total cost of harvesting crop..	\$ 3.386
1.56 man hours @ 30c,	Rent on land (1/2 of crop) ...	3.386
2.93 horse hours @ 9.6c,	Seed .....	.12
Equipment charge @ 5c ..\$0.896	Cost per acre at farm .....	\$ 6.892
Raking:	Cost per ton at farm .....	5.99
0.23 man hours @ 30c,	Cost of baling and marketing	
0.42 horse hours @ 9.6c,	per ton .....	6.61
Equipment charge @ 5c ... .130	Cost per ton at local market ..	12.60
Putting up:		
5.41 man hours @ 30c,		
5.05 horse hours @ 9.6c,		
Equipment charge @ 5c ... 2.360		

\*E. A. Logan, Bureau of Crop Estimates, Report of August 10, 1921.

in some surplus sections large areas of hay have not been cut because the price did not justify the expense of cutting and putting up. The average cost per ton at the local market is \$12.60.

The effect of large or small yields on the cost of producing small grain is shown in Tables 5 and 6. With small grain crops there are only a few items of cost that are affected by large or small yields. It requires just as much seed and just as much labor to prepare, plant and cut a 20-bushel wheat crop as for a 10-bushel crop. The variation in cost is found in the

TABLE 5.—SHOWING EFFECT OF YIELD ON COST OF PRODUCING WHEAT.

Yield per acre in bu.	⅓ Rent		⅔ Rent		½ Rent	
	Per acre at farm	Per bu. at market	Per acre at farm	Per bu. at market	Per acre at farm	Per bu. at market
4.99 or less	\$18.929	\$ 4.81	\$21.007	\$ 5.33	\$25.17	\$ 6.37
5 - 6.99	19.901	3.40	22.071	3.76	26.418	4.48
7 - 8.99	20.873	2.69	23.135	2.97	27.664	3.54
9 - 10.99	21.845	2.26	24.199	2.50	28.910	2.97
9.9 - 11.9*	22.282	2.12*	24.678	2.34*	29.471	2.78*
11 - 12.99	22.817	1.98	25.263	2.19	30.156	2.59
13 - 14.99	23.789	1.78	26.327	1.96	31.402	2.32
15 - 16.99	24.761	1.63	27.391	1.79	32.648	2.12
17 - 18.99	25.733	1.51	28.455	1.66	33.894	1.96
19 - 20.99	26.705	1.42	29.519	1.56	35.140	1.84
21 - 22.99	27.677	1.34	30.583	1.47	36.386	1.73
23 - 24.99	28.649	1.27	31.647	1.40	37.632	1.65
25 - 26.99	29.621	1.22	32.711	1.34	38.878	1.58
27 - 28.99	30.593	1.17	33.775	1.29	40.124	1.51
29 - 30.99	31.565	1.13	34.839	1.24	41.370	1.46

\*State average.

TABLE 6.—SHOWING EFFECT OF YIELD ON COST OF PRODUCING OATS.

Yield per acre in bu.	⅓ Rent		⅔ Rent		½ Rent	
	Per acre at farm	Per bu. at market	Per acre at farm	Per bu. at market	Per acre at farm	Per bu. at market
10 - 13.99	\$ 9.182	\$ 0.83	\$10.118	\$ 0.90	\$11.059	\$ 0.98
14 - 17.99	10.278	.70	11.310	.77	12.451	.84
18 - 21.99*	11.374	.63*	12.502	.69*	13.843	.75*
22 - 25.99	12.470	.58	13.694	.63	15.235	.69
26 - 29.99	13.566	.54	14.886	.59	16.627	.65
30 - 33.99	14.662	.52	16.078	.56	18.019	.62
34 - 37.99	15.758	.50	17.270	.54	19.411	.60
38 - 41.99	16.854	.48	18.462	.52	20.803	.58
42 - 45.99	17.950	.47	19.654	.51	22.195	.56
46 - 49.99	19.046	.46	20.846	.49	23.587	.55
50 - 53.99	20.142	.45	22.038	.48	24.979	.54

\*State average.

expense of extra twine, shocking, threshing, marketing and rent charge. The time required to shock grain depends directly on the straw yield. The amount of straw also influences the time required to haul the grain to the separator and thresh it. To arrive at the value of this variable factor, the straw yield of wheat and oats with different grain yields as reported by the Ohio Station Bulletin 336 was used. Using this as a basis gives 27.4c for wheat and 14.9c for oats as the cost of twine, shocking and threshing-labor, coal, sacks, and miscellaneous for each bushel increase in yield. The variation in machine and marketing charges is very definite, a bushel increase or decrease giving a difference of 7.5c machine charge and 8c marketing charge for wheat while for oats the difference is 5c and 6c for machine charge and marketing charge respectively. For the rent charge,  $\frac{2}{5}$  of the increased or decreased cost of twine, shocking and threshing labor, coal, sacks, and miscellaneous, is used, thus increasing or decreasing the acre-rent charge. These figures give a total of 61.2c per acre as the price of a one-bushel increase in wheat yield and a total of 35.8c per acre as the price of a one-bushel increase in oat yield, when a  $\frac{2}{5}$  rent charge is made. These tables are calculated at  $\frac{1}{3}$  rent,  $\frac{2}{5}$  rent and  $\frac{1}{2}$  rent so that they can be applied to all yields and all sections of the State. A careful study of these tables will show the great influence yield has on the cost of production. Increasing the yield of wheat from 10 to 20 bushels per acre cuts down the cost from \$2.50 to \$1.56 when a  $\frac{2}{5}$  rent charge is made while increasing the yield of oats from 20 to 40 bushels cuts down the cost from 69c to 52c when a  $\frac{2}{5}$  rent charge is made.

Table 7 shows the cost of producing corn per acre and per bushel for different yields and for different rent rates. When the yield of corn per acre is increased there are only two items of cost which increase. These items are the cost of harvesting and the rent charge. The cost of harvesting increases approximately directly in proportion to the yield and at a  $\frac{2}{5}$  rent

TABLE 7.—SHOWING EFFECT OF YIELD ON COST OF PRODUCING CORN.

Yield in bus. per acre	$\frac{1}{3}$ Rent		$\frac{2}{5}$ Rent.		$\frac{1}{2}$ Rent.	
	Per acre at farm	Per bu. at farm	Per acre at farm	Per bu. at farm	Per acre at farm	Per bu. at farm
14 - 17.99	\$15.23	\$0.95	\$16.929	\$1.06	\$20.312	\$1.27
18 - 21.99	15.75	.79	17.505	.88	21.004	1.05
22 - 25.99	16.27	.68	18.081	.75	21.696	.90
26 - 29.99	16.79	.60	18.657	.67	22.388	.80
28.75-32.75*	17.148	.56	19.053	.62	22.864	.74
30 - 33.99	17.31	.54	19.233	.60	23.080	.72
34 - 37.99	17.83	.50	19.809	.55	23.772	.66
38 - 41.99	18.35	.46	20.385	.51	24.464	.61
42 - 45.99	18.87	.43	20.961	.48	25.156	.57

\* State average.

rate the rent will increase  $\frac{2}{5}$  of the cost of harvesting the additional yield. The cost of harvesting a bushel of corn was found to be 8.63c. When the rent is added to this, the cost of a one-bushel increase in yield is found to



be 14.4c. By increasing the yield per acre from 20 bushels to 40 bushels, the cost per bushel on the farm was cut down from 88c to 51c when a 2/5 rent rate was used.

In Table 8 is shown the effect that yield per acre has on the cost of producing hay. An increased yield of hay influences the cost of putting it up

TABLE 8.—SHOWING EFFECT OF YIELD ON COST OF PRODUCING HAY.

Yield per acre in tons.	2/5 Rent.		1/2 Rent.	
	Per acre at farm.	Per ton at local market.	Per acre at farm.	Per ton at local market.
0.375 - .624	\$3.540	\$ 13.69	\$4.224	\$15.06
0.625 - .874	4.395	12.47	5.25	13.61
0.875 - 1.124	5.250	11.86	6.276	12.89
1.025 - 1.274*	5.763	11.62*	6.892	12.60*
1.125 - 1.374	6.105	11.49	7.302	12.45
1.375 - 1.624	6.960	11.25	8.328	12.16
1.625 - 1.874	7.815	11.08	9.354	11.95
1.875 - 2.124	8.670	10.95	10.38	11.80
2.125 - 2.374	9.525	10.84	11.406	11.68

\* State average.

but has practically no effect on cutting and raking. The cost of putting up is in direct proportion to the yield while the rent charge is influenced by the cost of putting up. This extra rent charge and cost of putting up amounts to \$4.104 per ton to which must be added the cost of baling and mar-

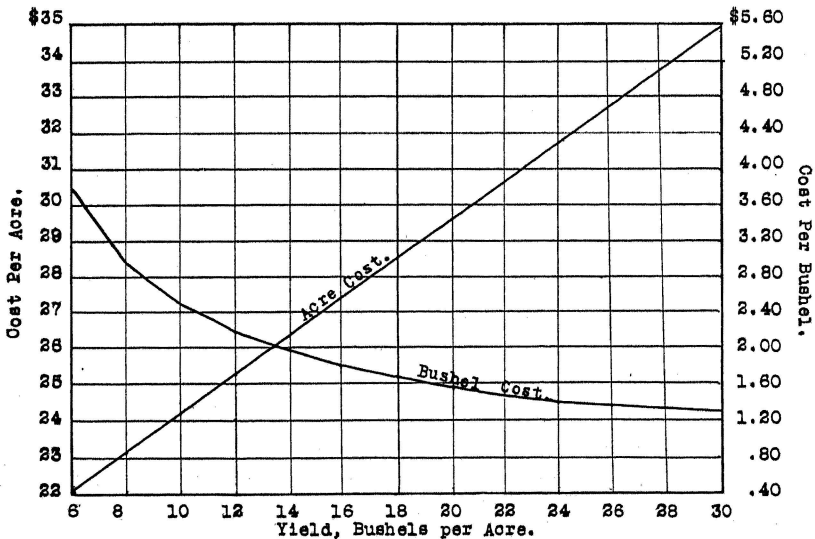


Fig. 2.—Showing Relation of Yield of Wheat to Cost per Bushel and per Acre.

keting making the total cost of each additional ton \$10.714 when a 1/2 rent charge is used. When the yield of hay is increased from one ton to two tons per acre the cost per ton at the local market decreases from \$12.89 to \$11.80. In the case of hay an increase in yield does not mean such a decrease in cost as in the case of the grains because such a small proportion of the total cost remains stationary with the increased yield.

A very important and interesting economic law is brought out in Tables 5 to 8 inclusive. It will be noted that as the yields increase the cost per acre also increases but this increased acre cost is not enough to off-set the influence of the additional yield so that the cost per bushel decreases. This decrease in the bushel cost becomes smaller and smaller as the yields increase so that finally a point is reached where the bushel cost ceases to decrease. In other words, there is a certain yield per acre which is the optimum yield so far as profit to the producer is concerned. This law is illustrated in the case of wheat in figure 2. The optimum acre yield is not always the same but varies with changing economic conditions.

In Table 9 is shown the distribution of the wheat crop in Missouri by cost of production. Two counties have an acre yield of less than 4.99 bushels and a bushel cost of \$5.33 delivered at the local market. However, these two counties, although having only a little less than 2 percent of the total area of the State, produced only 0.3 percent of Missouri's wheat crop. At the other extreme there were three counties which secured acre yields between

TABLE 9.—DISTRIBUTION OF WHEAT CROP IN MISSOURI BY COST OF PRODUCTION.

Yield in bushels per acre . . .	Counties obtaining yield in column one* . .	Cost per bushel at market . . .	Percent of state crop produced at this cost* . .	Percentage of counties able to sell at this figure and get cost of production. . . . .
4.99 or less	2	\$5.33	0.3	100.
5 - 6.99	6	3.76	4.8	98.2
7 - 8.99	27	2.97	17.5	93.0
9 -10.99	37	2.50	37.20	69.3
11 -12.99	20	2.19	18.50	36.8
13 -14.99	10	1.96	9.20	19.3
15 -16.99	9	1.79	8.30	10.5
17 -18.99	3	1.66	4.10	2.6
19 -20.99	0	1.56	.0	.0
10.9 or more	44	2.34 or less	47.7	38.6
10.8 or less	70	2.35 or more	52.3	61.4

\* Bureau of Crop Estimates and Mo. State Board of Agriculture, unpublished data.

†At 2/3 rent.

17 and 18.99 bushels and produced 4.1 percent of the State's wheat crop at a cost of \$1.66 per bushel delivered at the local market. Forty-four counties or 38.6 percent of the total number produced 47.7 percent of Missouri's total

wheat crop at a cost of \$2.34 or less while 70 counties or 61.4 percent of the total number produced 52.3 percent of the total crop at a cost of \$2.35 or more per bushel.

Table 10 shows the same thing for oats as Table 9 does for wheat. Six counties had acre yields of from 10 to 13.99 bushels and had a bushel cost of 90c delivered at the local market while 12 counties had acre yields of from 26 bushels to 29.99 bushels with a cost of 59c per bushel delivered at the local market. Sixty-nine or 60.5 percent of the counties had acre yields of 20

TABLE 10.—DISTRIBUTION OF OATS CROP IN MISSOURI BY COST OF PRODUCTION.

Yield in bus. per acre .....	Counties obtaining yield in column one* ..	Cost per bu. at marketf.....	Percent of state crop produced at this cost.	Percentage of counties able to sell at this figure and get cost of production .....
10 - 13.99	6	90c	7.9	100
14 - 17.99	26	77c	31.2	94.7
18 - 21.99‡	41	69c	34.9	71.9
22 - 25.99	29	63c	16.8	35.9
26 - 29.99	12	59c	9.2	10.5
30 - 33.99	0	56c	0	.0
20 or more	69	69c, or less	47.6	60.5
19.9 or less	45	70c, or more	52.4	39.5

\* Bureau of Crop Estimates and Missouri State Board of Agriculture, Report, Oct. 1921.

†At  $\frac{3}{8}$  rent.

‡Average state yield.

bushels or more and produced 47.6 percent of the total crop at a cost of 69c or less per bushel delivered at the local market. Forty-five or 39.5 percent of the counties had acre yields of 19.99 bushels or less and produced 52.4 percent of the total crop at a bushel cost of 70c or more delivered at the local market.

In Table 11 is given the distribution of Missouri's corn crop by cost of production. Two counties had yields of from 14 to 17.99 bushels with a cost of \$1.06 at the farm while three counties had acre yields of from 42 to 45.99 bushels with a bushel cost of only 48c at the farm. Fifty-one or 42.98 percent of the counties had yields of 30.75 bushels or more per acre and had a cost of 62c or less while 63 or 57.02 percent of the counties had acre yields of 30.74 bushels or less per acre and had a cost of 63c or more per bushel.

Table 12 shows the distribution of the hay crop by cost of production. One county had an acre yield of between 0.375 and 0.624 tons per acre which cost \$15.06 delivered to the local market while one county had an acre yield between 1.875 and 2.124 tons which cost \$11.80 delivered to the local market. Forty-nine or 42.98 percent of all the counties had yields of 1.15 tons or more per acre and produced 48 percent of the total crop at a cost of \$12.60

TABLE 11.—DISTRIBUTION OF CORN CROP IN MISSOURI BY COST OF PRODUCTION.

Yield in bushels per acre .....	Counties obtaining yield in column one* ...	Cost per bushel (2/5 rent) ...	Percentage of counties able to sell at this figure and get cost of production. ....
Under 14	0		100.
14 - 17.99	2	\$1.06	100.
18 - 21.99	8	.88	98.2
22 - 25.99	29	.75	91.2
26 - 29.99	11	.67	65.8
30 - 34	27	.60	56.1
34.01-37.99	18	.55	32.5
38 - 41.99	16	.51	16.7
42 - 45.99	3	.48	2.6
30.75 or more	51	.62 or less	44.7
30.74 or less	63	.63 or more	55.3

\*E. A. LOGAN, Bureau of Crop Estimates.

TABLE 12.—DISTRIBUTION OF HAY CROP IN MISSOURI BY COST OF PRODUCTION.

Yield in tons per acre .....	Counties obtaining yield in Column One*	Cost per ton ..	Percent of State Crop Produced at this cost* .	Counties able to sell at this figure and get cost of production. ....
.375 - .624	1	\$15.06	.2	Per cent
.625 - .874	16	13.61	12.0	100.
.875 - 1.124	43	12.89	36.4	99.1
1.025 - 1.274 †	49	12.60	45.3	85.1
1.125 - 1.374	41	12.45	38.4	63.2
1.375 - 1.624	11	12.16	11.5	47.4
1.625 - 1.874	1	11.95	1.2	11.4
1.875 - 2.124	1	11.80	.3	1.8
2.125 - 2.374	0	11.68	0	.9
1.15 or more	49	12.60	48.	0
		or less		42.98
1.14 or less	65	12.61	52.	57.02
		or more		

\*Bureau of Crop Estimates, Preliminary Report, E. A. Logan.

†At 1/2 rent.

‡Average state yield.

or less delivered to the local market. Sixty-five or 57.02 percent of all the counties had acre yields of 1.14 tons or less and produced 52 per cent of the total crop at a cost of \$12.61 or more delivered at the local market.

One of the significant facts obtained from a study of Tables 9, 10, 11 and 12 is that not a single county in the State could sell its wheat, oats or corn crop at the present market price and get cost of production. The highest price for No. 2 red wheat on the Kansas City market since July 1 was \$1.35 while the corresponding high prices for No. 2 white oats was 40c. November 2 prices on the Kansas City market for No. 2 red wheat, No. 2 white oats, and No. 2 white corn were \$1.10, 38c, and 32c, respectively. The local market prices would be considerably less. In some counties hay will be sold at a profit while in other counties it was not worth the cost of harvesting. Most everyone will agree that producers should receive at least the average cost of production. Such a price, however, will not maintain production for a long period of time. The producer must receive more nearly cost of production for his product or he will quit and go into some more lucrative occupation. It is fair and just that the average producer should receive not only the cost of production but some reward as an entrepreneur. Just what proportion of the crops should be produced at a profit is a mooted point. Many place it as high as 70 or 80 percent. Perhaps this is too high but it probably should be more than 50 percent.

In the tables so far no allowance has been made for the managerial ability of the operator. The vast bulk of farm crops is produced by the operator's own labor. For this labor he has been allowed the same wage that

TABLE 13.—WHEAT, OATS, CORN AND HAY PRICES ON A COST PLUS 10 PERCENT BASIS.

WHEAT		OATS		CORN		HAY	
Yield in bus. per acre .....	Local elevator price to pay cost plus 10% (2/5 rent) ..	Yield in bus. per acre .....	Local elevator price to pay cost plus 10% (2/5 rent) ..	Yield in bus. per acre .....	Local farm price to pay cost plus 10% (2/5 rent) .....	Yield in tons per acre ...	Local market price to pay cost plus 10% (1/2 rent) ...
10.9*	\$2.57	20*	\$0.76	30.75*	\$0.68	1.15*	\$13.86
4	5.86	12	.99	16	1.17	.5	16.57
6	4.14	16	.85	20	.97	.75	14.97
8	3.27	20	.76	24	.83	1.00	14.18
10	2.75	24	.69	28	.74	1.25	13.70
12	2.41	28	.65	32	.66	1.50	13.38
14	2.16	32	.62	36	.61	1.75	13.15
16	1.97	36	.59	40	.56	2.00	12.98
18	1.83	40	.57	44	.53	2.25	12.85

\* State average.

he pays his hired man. Not only does he furnish labor but he furnishes capital, brains and initiative. Table 13 shows the cost of producing wheat, oats, corn and hay where the operator is allowed 10 percent for his capital, brains and initiative. Where such an allowance is made the average cost of producing wheat, oats, corn and hay in Missouri in 1921 was \$2.57, \$.76, \$.68, and \$13.86, respectively.

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Table 14 shows the cost of producing wheat, corn, oats, and hay in Missouri since 1910 with the exception of oats in 1918 and 1919 and for hay for the years 1918, '19 and '20. The trend of costs can be seen best in the acre cost columns since the fluctuating yields per acre do not influence the acre

TABLE 14.—SHOWING THE TREND IN THE COST OF PRODUCING MISSOURI CROPS FROM 1910 TO 1921.

Year	WHEAT		CORN		OATS		HAY	
	Cost per acre.	Cost per bu. at farm	Cost per acre.	Cost per bu. at farm	Cost per acre.	Cost per bu. at farm	Cost per acre.	Cost per ton at farm
1910-1913	\$11.51	\$ 0.78	\$14.54	\$ 0.54	\$ 9.45	\$ 0.35	\$ 6.22	\$ 6.35
1914	12.81	.78	14.31	.60	9.88	.49	5.28	6.07
1915	12.55	1.08	13.64	.47	10.05	.51	6.70	6.32
1916	12.77	1.54	16.06	.83	11.30	.55	7.59	7.37
1917	17.06	1.22	22.20	.56	15.12	.35	8.06	8.58
1918	24.99	1.46	21.81	.78	-----	-----	-----	-----
1919	25.27	1.94	24.49	.91	-----	-----	-----	-----
1920	27.83	2.18	28.64	.90	20.62	.75	-----	-----
1921	24.68	2.26	19.05	.62	12.50	.63	6.89	5.99

costs so much as the bushel costs. In general there was an increase each year in the acre costs culminating in 1920. The 1921 costs are considerably lower in all cases.

**Summary.**

1. The average cost of production in Missouri in 1921 was \$2.26 for a bushel of wheat, 63c for a bushel of oats and 62c for a bushel of corn at the farm. The average cost of producing hay was \$5.99 per ton at the farm.
2. Yield is a very important factor in the cost of production. As the yield increases the cost per acre increases but the cost per bushel decreases until the optimum yield is reached. When the optimum yield is passed the cost per bushel again increases.
3. While there was a wide difference between counties in the cost of production owing to difference in yield, not a single county in the State could sell its wheat, oats or corn crop at the present market prices for enough to cover the cost of production.
4. In some counties the hay crop has returned a profit while in others, farther from the primary markets, it was not worth the cost of harvesting.
5. The price of farm products should be more than the average cost of production or the nation will eventually be faced with the problem of under-production.

6. Allowing the operator 10 percent for his capital and managerial ability brings the farm price of wheat, oats and corn up to \$2.57, 76c, and 68c respectively and the cost of a ton of hay at the farm \$13.86.

7. Production costs seem to have reached the peak in 1920 and are now (November 1921) on the decline.

8. One of two things must happen: there must be a further reduction in production costs, or prices of farm products must rise to more nearly the level of production costs.

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