

COST OF PRODUCING WHEAT AND OATS IN MISSOURI: 1920

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The variation from year to year in the cost of growing crops is caused by three principal factors: Variation in land value or rent rate, variation in cost of labor, and variation in cost of seed and fertilizer. For ten years, the Missouri Agricultural Experiment Station has

SUMMARY

1. The 1920 wheat crop cost the Missouri farmer \$2.26 a bushel. The 1920 oats crop cost him 82¢ a bushel.

2. At the October 1st price for No. 2 wheat, less than one-fifth of the crop would bring a price equal to cost of production. Not one county could get cost of production for its oats crop at October 1, 1920, prices.

3. Four counties with a wheat yield of less than 8 bushels an acre had an average cost of production of \$3.81 a bushel. Four counties averaging 20 bushels or more had an average cost of \$1.72 a bushel.

4. Three-eighths of the Missouri wheat crop would pay cost of production plus 10% at \$2.26 a bushel. At present labor prices, cost of production cannot be reduced enough to enable the wheat crop to be sold at a profit.

5. The market price should at least pay cost of production on 60% to 70% of the crop.

6. Neither agriculture as a class nor the general public can afford to maintain prices which will only pay the cost of producing the cheapest bushel of grain. Likewise, they cannot afford a price which will make profitable the most expensive bushels.

7. Only 5% of the wheat growers of Missouri would have received cost of production plus 10% profit if they had sold their 1920 crop at \$2.04 a bushel, which was the price on October 1, 1920.

been compiling from detailed farm records the hours of labor given to growing various crops and the amount of seed and fertilizer used each year on these crops. These requirements have changed very little in a period of two or three years. A variation of 2% or 3% has seldom been noted. Applying prices paid for labor and materials used on the 1920 small grain crops to the labor and materials used in producing them as determined from detailed records the cost of producing the average crop of grain is obtained.

Prices at the time the wheat and oats crops were harvested were: Man labor in preparing seed bed and planting, 30¢ an hour; horse labor, 18¢ an hour; depreciation and repairs on equipment, 6¢ an hour. For harvesting, the average cost was 55¢ an hour for man labor; horse labor and equipment were figured at the same rate as before. The average thrashing charge a bushel was 6¼¢ for oats and 12½¢ for wheat. Ten per cent of the ground sowed to oats was broken. Miscellaneous charges such as coal, twine, fertilizer, etc., are taken from the amounts actually paid as reported in the farmers' records.

In figuring the land charge, the most common rent rate charged by land owners to tenants is used as a basis. This does not involve placing values on the land nor providing for taxes and repair charges on real estate.

The average cost of growing wheat and oats is given in Tables 1 and 2. These cost figures are for a wheat yield of 12¾ bushels and an oat yield of 27½ bushels. The marketing charge as shown by records of actual marketing of grain was 8¢ a bushel for wheat and 7¢ a bushel for oats. This charge was for hauling to the local elevator.

The effect of larger or smaller yields on the cost of production is shown in Tables 3 and 4. With small grain crops there are only two or three items that are affected by larger or smaller yields. It requires just as much seed as it just as much time to prepare and plant and cut a 20-bushel wheat crop as to do the same work for a 10-bushel crop. The variation in cost is found in the expense of shocking, thrashing, marketing and in rent charge. The time given to shock grain depends directly on the number of bundles. This is determined by 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 Experiment Station, Bulletin 336, was used. This gave a figure, when translated into dollars, of 36¢ a hundred pounds of straw for wheat, and 30.4¢ a hundred pounds of straw for oats. A variation of one bushel in the wheat yield made a difference of a little more than 100 pounds in the straw yield while one bushel variation in the yield of oats made a difference of approximately 43 pounds in straw yield.

The variation in machine charges and marketing charge because of yield is very definite, an acre yielding 10 bushels of wheat would have a thrashing charge

TABLE 1.—COST PER ACRE AND PER BUSHEL OF PRODUCING WHEAT IN MISSOURI, 1920

Seed—1 bu. and 1 pk. at \$2.05.....	\$2.56
Plowing—3.18 man hrs. at 25¢, 80¢; 10.71 horse hrs. at 15¢, \$1.61; equipment cost at 6¢, 64¢.....	3.05
Disking, harrowing, dragging, etc. —1.77 man hrs. at 25¢, 44¢; 6.46 horse hrs. at 15¢, 97¢; equip- ment cost, 39¢.....	1.80
Drilling—1 man hr. at 25¢; 3.34 horse hrs. at 15¢, 50¢; equipment cost 20 cents.....	.95
Average manure and fertilizer cost.....	1.25
Cost of putting in crop, fall of 1919.....	\$ 9.61
Twine—1½ lbs. at 15 cents.....	.22
Cutting—1.19 man hrs. at 55¢, 65¢; 3.62 horse hrs. at 18¢, 65¢; equip- ment cost 22 cents.....	1.52
Shocking—1.7 man hrs. at 55 cents.....	.94
Thrashing—3.16 man hrs. at 55¢, \$1.- 74; 4.13 horse hrs. at 18¢, 74¢; equipment cost 25 cents.....	2.73
Thrashing—machine without crew, 12¾ bu. at 12½ cents.....	1.59
Coal, sacks and miscellaneous.....	1.00
Loss from abandoned acreage, 6%.....	.95
Cost of harvesting crop.....	3.35
Land cost—⅓ of crop for rent.....	9.27
Cost per acre at farm.....	\$27.83
Cost per bushel at farm (average yield of 12¾ bushels).....	2.18
Cost of marketing per bushel (local elevator).....	.06
Cost per bushel at local market.....	2.26

TABLE 2.—COST PER ACRE AND PER BUSHEL OF PRODUCING OATS IN MISSOURI, 1920

Seed—2½ bu. at \$1.....	\$2.50
Breaking (on 10% of ground)—.24 man hrs. at 30¢, 7¢; 1.12 horse hrs. at 18¢, 20¢; equipment cost 7 cents.....	.34
Disking and harrowing—1.67 man hrs. at 30¢, 50¢; 6.35 horse hrs. at 18¢, \$1.14; equipment cost 38¢.....	2.02
Drilling—1.22 man hrs. at 30¢, 37¢; 3.56 horse hrs. at 18¢, 64¢; equip- ment cost 21 cents.....	1.22
Cost of putting in crop.....	\$ 6.08
Twine—3 lbs. at 15 cents.....	.45
Cutting—1.23 man hrs. at 55¢, 68¢; 4 horse hrs. at 18 cts., 72¢; equip- ment cost 24 cents.....	1.64
Shocking—1.33 man hrs. at 55 cts....	.73
Thrashing—2.23 man hrs. at 55 cts., \$1.23; 2.44 horse hrs. at 18 cents, 44¢; equipment cost 15 cents.....	1.82
Thrashing—machine without crew, 27½ bu. at 6¼ cents.....	1.72
Coal and miscellaneous.....	.75
Loss from acreage not cut.....	.60
Cost of harvesting crop.....	7.71
Land cost—⅓ of crop for rent.....	6.89
Cost per acre at farm.....	\$20.68
Cost per bushel at farm (average yield of 27½ bushels).....	.75
Cost of marketing per bushel (local elevator).....	.07
Cost per bushel at local market.....	.82

of 25¢ less and a marketing charge of 16¢ less than an acre yielding 12 bu. For the rent charge, one-third of the increased or decreased yield is always charged as rent, thus increasing or decreasing the acre rent charge. The costs shown in Tables 3 and 4 are all based on the charges in Tables 1 and 2 with the corrections just mentioned. The farmer growing a 6-bushel yield of wheat would have a cost charge of \$3.81 a bushel, while a farm with a 24-bushel yield of wheat would have a cost charge of \$1.57 a bushel, or noticeably less than half. With oats the comparison is fairly similar, a farmer getting only 20 bu. an acre would have a cost charge of nearly \$1 a bushel while the farmer getting 50 bushels an acre would have a cost charge of only 60¢ a bu. Tables 5 and 6 show the number of counties in Missouri falling in the various acre-yield groups for both oats and wheat. Table 5 also shows the percentage of the total wheat crop of Missouri made up of the acreage in the counties getting the various acre-yields. Sixty-six of the counties growing oats, or 58% of the counties of the state, could sell their oats crop

TABLE 3—WHEAT. EFFECT OF YIELD ON COST OF PRODUCTION

YIELD Per Acre	COST AT LOCAL MARKET	
	Per Acre	Per Bu.
*12.75	\$28.85	\$2.26
6	22.87	3.81
8	24.46	3.06
10	26.57	2.65
12	28.26	2.35
14	29.94	2.14
16	31.62	1.97
18	33.32	1.85
20	34.47	1.72
22	36.11	1.64
24	37.75	1.57
26	39.38	1.51
28	41.16	1.47
30	42.81	1.42

*Cost data taken from cost account records. Allowance is made for each bushel increase or decrease in yield from the basic cost on the following basis: Machine charge for thrashing 1½ cents a bushel; marketing charge 8 cents a bu.; rent ⅓ the increase or decrease at cost; labor of shocking, thrashing, and twine and coal used, on basis of straw yield, 36 cents to the 100 lbs. straw (straw yield from Ohio Exp. Sta. Bulletin 336).

TABLE 4—OATS. EFFECT OF YIELD ON COST OF PRODUCTION

YIELD Per Acre	COST AT LOCAL MARKET	
	Per Acre	Per Bu.
*27.5 Bu.	\$22.55	\$.82
20	19.84	.99
25	21.68	.87
30	23.19	.77
35	24.65	.70
40	26.62	.67
45	28.71	.64
50	30.75	.61

*Cost data taken from cost account records. Allowance is made for each bushel increase or decrease in yield from the basic cost on the following basis: Machine charge for thrashing 6¼ cts. a bushel; marketing charge 7 cts. a bushel; rent ⅓ the increase or decrease at cost; labor of shocking, thrashing, and twine and coal used, on basis of straw yield, 30.4 cents to the 100 lbs. straw (straw yield from Ohio Exp. Sta. Bulletin 336).

TABLE 5—DISTRIBUTION OF WHEAT CROP IN MISSOURI BY COST OF PRODUCTION

Yield. Bu. per acre	Counties obtaining the yield in column one*	Cost per bushel	Per cent of state crop produced at this cost. †	Counties able to sell at this figure and get cost of prod.
12.75	69	\$2.26	55.6	Per cent 60.5
6.0	4	3.81	1.9	100.0
8.0	29	3.06	19.4	96.4
10.0	22	2.65	13.5	71.0
12.0	20	2.35	16.8	51.7
14.0	12	2.14	10.9	34.2
16.0	12	1.97	14.0	23.7
18.0	11	1.85	18.1	13.2
20.0	4	1.72	5.2	3.5
22.0	0	1.64	0.0	0.0

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

Estimates for August, 1920,

†Same reference—May and August, 1920.

TABLE 6—OATS. DISTRIBUTION OF COST OF PRODUCTION BY COUNTIES

Yield Bu. per acre	Counties obtaining the yield in column one*	Cost of production per bushel	Counties that could sell at this cost or and get cost of production
27.5	66	\$.82	Per cent 58.4
under 20.	3	.99	100.0
20 to 25.	20	.91	97.4
25 to 30.	41	.77	79.7
30 to 35.	29	.70	43.4
35 to 40.	15	.67	17.7
40 to 45.	4	.64	4.4
over 45	1	.60	0.9

*From August report, Missouri State Board of Agriculture and Bureau of Crop Estimates.

at 82¢ a bushel at the elevator and get cost of production for it. December oats on the Kansas City market were worth around 58¢ a bushel on October 1. This means a local elevator value of perhaps 48¢. Not one county of the state has secured a yield high enough to pay cost of production if the oats were sold at 48¢ a bushel. With wheat the comparison is a little more favorable. Wheat on the Kansas City market was worth on October 1, approximately \$2.04 a bushel. This

TABLE 7—WHEAT AND OATS PRICES ON A COST PLUS 10% BASIS

WHEAT		OATS	
Yield per acre, bu.	Local elevator price to pay cost plus 10%	Yield per acre, bu.	Local elevator price to pay cost plus 10%
12.75	\$2.48	27.5	\$.90
6	4.19	30	1.09
8	3.36	35	.96
10	2.91	30	.85
12	2.58	35	.77
14	2.35	40	.74
16	2.16	45	.70
18	2.03	50	.67
20	1.89		

means a local elevator value of approximately \$1.87. Fifteen counties of Missouri, or 13% of the counties, could sell their wheat at \$1.87 and get a little more than cost of production. It should be remembered here that land is not valued at any special figure but rent is charged as one-third of the crop and this one-third is valued at just what it cost to produce it.

Two or three things stand out in the foregoing tables. First, it costs more to farm an acre of 25-bushel wheat land than to farm one of 10-bushel land but the cost a bushel of the resulting crop

is considerably less on the good land. With the prices of wheat and oats as they are now many men cannot afford to grow these crops if they want rent on the land and hired man's wages. Only the higher yielding farms could continue to produce. Under present market conditions oats as a cash crop is a poor investment. Neither one of the crops commands a high enough market price to maintain the present scale of production and still pay hired man's wages to the grower.

In connection with these figures it should be remembered that no allowance has been made for the farm operator's wages as manager. Table 7 shows the prices wheat and oats should bring a bushel under the different yield groups on a "cost plus 10%" basis. This table was computed to show the effect of allowing the manager a 10% profit on the enterprises of his farm. This brings the cost of wheat on the poorer yielding areas up to more than \$4 a bushel, and places all but four of the wheat-growing counties of the state in a position where present prices would not pay cost of production plus 10%. With the oats crop it simply places the prices which would then have to be charged that much farther above the market value at present.