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Cost of Farm Crops

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ARTICLE III.—*The Cost of Farm Crops.* By C. L. INGERSOLL, M. Sc., and S. W. PERIN.

An examination into the reasons for the prosperity of a country or state causes us to investigate the efforts and the results attained by all classes of people. Those which attract more especial attention are the efforts of the producer. Farmers are producers, and, as such, contribute their share to the general prosperity of the state and of the communities in which they live. Indeed, so marked are the results that any serious diminution in the results to be realized in any single year of effort is felt immediately in the centers of trade, and in the end brings more or less of disaster. Meanwhile the producer who has, by economy and in other ways, enabled himself to pass the trying period is prepared to reap future success.

The prosperity of the whole country is the prosperity of the individuals that compose the people. The prosperity of the farmers depends upon the profit on the crops and animals raised, and as the cost of raising animals depends upon the cost of food consumed, then the whole may be stated as depending upon the cost of crops.

The profit on any single crop depends on two factors:

1. The cost of the crop.
2. The market price of the produce.

The former is the more important of the two for the farmer to consider, as it is largely under his control, while the market price of produce of any kind depends upon the condition of the markets, which are primarily influenced by the law of supply and demand, but secondarily by various local considerations, real and speculative.

The cost depends upon several considerations:

1. The character of the season. There are several matters which add to or detract from the cost, as, the amount and distribution of rainfall; the coldness or the heat; the growth of weeds and consequent increase of cost from more frequent or prolonged cultivation; all of these, and still others, affect the cost, by creating either a maximum or a minimum of labor, and by giving a large or a small yield per acre.

2. The price of labor, together with the amount used upon a particular crop, both affect the cost of a crop. A farmer may in some single year raise a crop very cheaply by using a minimum of labor and allowing the weeds to attain a fine stand, thus seeding the ground well and causing all future cultivation to be more costly.

3. The previous treatment of the soil. It may have been abused or heavily cropped for several years in succession. The crop that preceded may have had an adverse influence upon the succeeding one. These and other considerations, such as the application of manures or other fertilizers in previous years, affect the cost; and lastly,

4. The individuality of the farmer. One man may, by his superior judgment in the planning of his labor and in the timely treatment of the soil, accomplish much more than his neighbor who joins farm with him. By the more thorough way in which the farmer does his work his crops are better able to withstand drouths, they ripen a few days earlier and thus escape frost. The latter, though with as many natural advantages, is always a little late; his work is hastily and superficially performed and the result is shown in reduced yields and poorer quality.

The present bulletin is an inquiry into the "Cost of Farm Crops," as produced at the State Experiment Station, under the following conditions:

1. The crops were treated substantially as upon the farms ordinarily found in our state.

2. The labor was all charged against the fields at the uniform rate of 15 cents an hour for each man and team, or at the rate of $3 per day of ten hours.

3. Substitute the farmer anywhere in the state for the Experiment Station and charge his time and that of his team at the same rate, and the conditions, except soil and climate, are identical.

The fields on which records are prepared and which enter into this bulletin are as follows:

        Field No. 1—Corn.
        Field No. 2—Corn and hay.
        Field No. 3—Hay.
        Field No. 6—Hay.
        Field No. 7—Wheat, oats, and rye.
        Field No. 8—Corn.

In order to condense the data as much as possible, we have prepared the matter in tabular form, presenting the cereal grains, wheat, oats, and rye, in Table I; corn in Table II; hay in Table III; and, lastly, Table IV, showing the rate of interest on investment in land where the crops show a net return of $1 to $10 per acre. The profits are arranged at the top of the table, the prices of land occupy the left column, and the per cents the body of the table. The data in the other tables cover the following points, viz.: The variety grown; the date when sown or planted, cultivated, and harvested; the area; the cost per acre; the yield per acre and cost per bushel of grain in granary or crib, or of hay in barn or stack; the cost of marketing and the price per bushel (Lincoln market); the profit per bushel and per acre; and, lastly, the rate of interest the land has paid on a valuation of $25 per acre. (In this computation the taxes are omitted, as they are very variable in different parts of the state, depending first upon the rate, and second, upon the assessor's valuation. Each farmer can • compute this for his own locality.)

We have also computed the reverse of this, showing what price the crop has given the land with money worth six per cent. We have not presented this data in the form of a bulletin because the Experiment Station has been able to equal or perhaps exceed the results attained by the best farmers in many localities of the state; many have produced more bushels of wheat, corn, oats, or rye per acre than the statements here made; our desire has been to present accurate data, and thus stimulate the farmers of the state to keep accounts with their crops and fields in order to know the cost to them of each bushel of grain and ton of hay.

As we have intimated in a previous paragraph, the cost may vary upon different farms, so we see here that under nearly the same conditions we have results which differ quite widely. In Table II, which gives a comparison of corn in fields 1, 2, and 8, we have these conditions: Corn in fields 1 and 2 followed corn or a sown crop; the soil was in a pliable condition and easily prepared for the planted crop; in field 8, the soil had been for several years in old blue grass pasture, with a very tough sward. The field not only needed a large excess of labor applied in preparing a good seed-bed for the crop, but the frequent rains caused the blue grass to spring up and a large amount of labor was expended in order to keep the crop clean and free from

grass and weeds; the cost of the crop was thus increased 63 per cent for the season.

Again, a close study of these tables will reveal the fact that a minimum crop will pay for the labor, the tax on the land, and 6 per cent on the investment and no more. A better type of farming and a little more economy in time and effort may add a few bushels to the yield, and these last are almost solely profit. To illustrate: In field 1 the cost per acre was $6.65; at 30 cents per bushel it would require twenty-five bushels of corn per acre to pay the expense of raising and marketing the crop. The excess in yield·is almost entirely a profit. This feature is also quite noticeable in the rye crop, which, on account of a small yield per acre and a low market price, but little more than paid expenses. The crop of 1891, with a yield of 39+ bushels per acre, paid a handsome profit. It is believed that a careful study of the tables cannot fail to interest and instruct any person interested in the problems of production as related to agriculture.

TABLE I.

Cereal Grains.

CROP OF 1892.	RYE.	OATS.	WHEAT	WHEAT.	WHEAT.	WHEAT.	WHEAT.
Field	7	7	13	13	13	7	7
Variety.....................	White Winter	Prize Cluster	Ironclad	Tuscan Island Red	Hickman	Extra Early Red	Landreth White
Date sown in 1891	Sept. 20–29	April 8–23,'92	Oct. 17	Oct. 17	Oct. 17	Sept. 30	Sept. 29
Date harvested in 1892...	July 5–8	July 25	July 20	July 13	July 11	July 13	July 11
Area in acres..............	15	32	1	1 ·	1	2.5	2.5
Cost of planting	$63.48	$74.90	$3.55	$3.55	$3.55	$8.81	$8.82
Cost of harvesting	$64.05	$122.65	$2.58	$2.90	$3.28	$17.00	$16.20
Cost, total	$127.53	$197.55	$6.13	$6.45	$6.83	$25.81	$25.02
Cost per acre.............	$8.50	$6.15	$6.13	$6.45	$6.83	$10.32	$10.00
Bushels per acre..........	$21.33	$34.84	$26.66	$33.07	$40.75	$39.00	$36.17
Cost per bushel in granary....................	$0.398	$0.177	$0.234	$0.194	$0.166	$0.264	$0.276
Cost of marketing	$0.02	$0.015	$0.02	$0.02	$0.02	$0.02	$0.02
Market price per bushel	$0.50	$0.30	$0.50	$0.50	$0.50	$0.50	$0.50
Profit per bushel	$0.082	$0.107	$0.25	$0.286	$0.314	$0.216	$0.203
Profit per acre.............	$1.75	$3.75	$6.66	$9.45	$12.77	$8.40	$7.36
Rate of interest on investment, land at $25 per acre...................	7	15+	26+	37+	51+	33+	29+
Land value per acre where profit is rated at 6 per cent on investment................	$29.17	$62.50	$111.00	$159.00	$212.83	$140.00	$122.66

TABLE II.

Cost of Corn.

CROP OF 1892.	CORN.	CORN.	CORN.
Field	8	2	1
Variety	Centennial White	Leaming	Leaming
Date planted	May 23–25	May 27	May 27
Cultivation, 1	June 2–4	June 7–8	June 4–6
Cultivation, 2	June 10–13	June 16–18	June 10
Cultivation, 3	June 20–23	June 27–29	June 14–16
Cultivation, 4	....	July 9–12	{ June 23–28 July 8–9
Date harvested	Oct. 29 to Nov. 11	Nov. 16–25	Nov. 11–16
Area acres.................................	25	28	20
Cost planting...........................	$94.05	$69.52	$39.10
Cost cultivation.........................	$99.30	$46.65	$55.50
Cost harvesting	$61.00	$54.10	$38.30
Total cost	$254.35	$170.27	$132.90
Cost per acre	$10.17	$6.08	$6.65
Bushels per acre	43.4+	40.7+	44.5+
Cost per bushel in granary	$0.2343	$0.149	$0.149
Market price per bushel	$0.30	$0.30	$0.30
Cost of marketing per bushel........	$0.035	$0.035	$0.035
Profit per bushel.......................	$0.0307	$0.116	$0.116
Profit per acre	$1.33	$4.72	$5.16
Rate interest on investment, land at $25 per acre......................	5.3	18.8+	20.6+
Land value per acre when profit is rated at 6 per cent on investment	$22.17	$78.66	$86.00

TABLE III.

Hay, Timothy, and Clover.

	FIELD 2.	FIELD 3.	FIELD 6.
Area..	6 acres	35 acres	5 acres
Total cost...	$29.47	$126.07	$12.65
Total yield...	22+ tons	*95 tons	†15— tons
Cost per ton...	$1.34	$1.32	$0.84
‡ Value of hay at $3 per ton...........................	$66.00	$285.00	$45.00
Total profit..	$36.53	$158.93	$35.35
Profit per acre..	$6.09	$4.54	$7.07
Rate of interest, land $25 per acre..................	24.4	18.2	28.3
Land value when rate is 6 per cent.................	$101.50	$5.66	$117.83

* Estimated by cubic feet in stack.

† Five tons sold from field for $5 per ton.

+ and — indicate slightly over and under the weight indicated, within a small fraction.

‡ The price of $3 was taken as a basis of computation because there is necessarily some loss in stacked hay, and because of the cost of delivery, which is, approximately, $1.50 per ton to town market.

TABLE IV.

Rate of Interest on Investment.

PRICE OF LAND PER ACRE	PROFIT $1 TO $10 PER ACRE.									
	$1	$2	$3	$4	$5	$6	$7	$8	$9	$10
$10.........	10	20	30	40	50	60	70	80	90	100
20..........	5	10	15	20	25	30	35	40	45	50
25........ .	4	8	12	16	20	24	28	32	36	40
30.........	$3\frac{1}{3}$	$6\frac{2}{3}$	10	$13\frac{1}{3}$	$16\frac{2}{3}$	20	$23\frac{1}{3}$	$26\frac{2}{3}$	30	$33\frac{1}{3}$
40.........	$2\frac{1}{2}$	5	$7\frac{1}{2}$	10	$12\frac{1}{2}$	15	$17\frac{1}{2}$	20	$22\frac{1}{2}$	25
50...... ..	2	4	6	8	10	12	14	16	18	20
100.........	1	2	3	4	5	6	7	8	9	10

NOTE.—In the preparation of the foregoing bulletin, Mr. S. W. Perin gave material assistance by keeping the books as foreman of the farm, and also in assisting in the compilation of the material for the tables from the farm accounts. Acknowledgment is hereby made of his faithfulness and his excellent labor in this connection.

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