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# REPORT ON THE COST OF GROWING AND HARVESTING POTATOES IN 1933

D. A. Russell

This report is prepared from a summary and analysis of detailed cost records kept by 5 potato growers in Cayuga County and 3 in Erie County. The work has been carried on in cooperation with the County Agricultural Agents of these counties and the Extension Specialists in Farm Management at the New York State College of Agriculture, Ithaca, N. Y. The growers kept detailed records of all costs connected with the growing and harvesting of their potatoes. This report is prepared primarily for them in order that they may have an opportunity to study their costs more carefully and compare these costs with those of the other growers keeping records.

The small number of records obtained in 1933 does not permit a more detailed study of the cost of producing potatoes. About 45 acres of potatoes are included in this study or an average of a little more than five and one-half acres per farm. The average yield obtained by the eight growers was 156 bushels per acre. Yields varied from 75 to 302 bushels per acre.

## Cost of Growing and Harvesting

The average cost for these eight growers to grow an acre of potatoes was $47.41 and to harvest, $13.47 (table 1). The total cost of producing an acre was $60.88. For these producers, the cost of growing a bushel was 35 cents and of harvesting a bushel, 10 cents, making the total cost of producing a bushel of potatoes in 1933, 45 cents.

TABLE 1. COST BY OPERATIONS OF GROWING AND HARVESTING AN ACRE OF POTATOES
Genesee County, 1932, Cayuga and Erie Counties, 1933

| Item | 30 accounts 1932 | 8 accounts 1933 | Your farm |
|---|---|---|---|
| Acres per farm | 12 | 5.6 | |
| Land | $ 6.81 | $ 4.10 | $ |
| Manure and cover crops | 8.62 | 7.28 | |
| Fertilizer | 2.41 | 7.92 | |
| Plowing | 3.65 | 3.59 | |
| Fitting | 3.13 | 2.98 | |
| Seed | 7.00 | 6.76 | |
| Preparing seed | 2.88 | 2.17 | |
| Planting and applying fertilizer | 3.54 | 3.46 | |
| Cultivating | 5.37 | 4.91 | |
| Spray and dust (material and application) | 6.58 | 3.31 | |
| Interest | 1.00 | 0.93 | |
| Total growing cost | $50.99 | $47.41 | $ |
| Total harvesting cost | 12.86 | 13.47 | |
| Total growing & harvesting cost | $63.85 | $60.88 | $ |
| Yield per acre, bushels | 174 | 156 | |
| Cost to grow a bushel (cents) | 30.5 | 35 | |
| Cost to harvest a bushel (cents) | 7.5 | 10 | |
| Total cost per bushel (cents) | 38.0 | 45 | |

The cost of growing an acre was less in 1933 than in 1932 but since the yield was lower in 1933 the cost of growing a bushel was greater. The cost of harvesting both per acre and per bushel was greater in 1933. In considering these figures it should be borne in mind that the records in 1933 were not from the same growers or areas as in 1932 and are not, therefore, directly comparable. The growers keeping records in 1933 valued their land at less than the growers keeping records in 1932. They used slightly less manure but more commercial fertilizer. The cost of spraying and dusting was less in 1933. The cost of the other operations were about the same in both years.

Man labor (66.7 hours per acre in 1933) was the most important item of expense in growing and harvesting potatoes in both years, amounting

to about one-quarter of the total cost (table 2). In 1933 fertilizer and manure made up another one-quarter of the costs. Only 2 growers used a cover crop before potatoes. The average cost to these growers for cover cropping was $2.31 an acre. Horse labor and seed were important items of expense.

TABLE 2. COST TO GROW AND HARVEST AN ACRE OF POTATOES
Genesee County, 1932, Cayuga and Erie Counties, 1933

| Item | 30 accounts 1932 | 8 accounts 1933 | Per cent of total cost 1932 | Per cent of total cost 1933 | Quantity 1933 Average 8 farms | Quantity 1933 Your farm |
|---|---|---|---|---|---|---|
| Acres per farm | 12 | 5.6 | | | | |
| Yield per acre | 174 | 156 | | | | |
| | Averages per acre | | | | | |
| Man labor | $15.02 | $16.93 | 24 | 28 | 66.7 hrs. | |
| Horse labor | 10.32 | 7.42 | 11 | 12 | 53.0 hrs. | |
| Tractor cost | 2.56 | 1.40 | 3 | 2 | 2.7 hrs. | |
| Other equipment cost | 7.43 | 5.49 | 10 | 9 | -- | |
| Land | 6.81 | 4.10 | 7 | 7 | -- | |
| Fertilizer | 2.41 | 7.92 | 6 | 13 | 602 lbs. | |
| Manure and cover crops | 8.62 | 7.28 | 14 | 12 | -- | |
| Seed and treating | 7.52 | 7.00 | 19 | 11 | 17.7 hrs. | |
| Spray and dust materials and spray ring costs | 2.16 | 2.41 | 4 | 4 | -- | |
| Interest on growing cost | 1.00 | 0.93 | 2 | 2 | -- | |
| Total cost | $63.85 | $60.88 | 100 | 100 | | |

The average charge for man labor was 28 cents an hour in 1933, ranging from 22 cents to 42 cents. The average rate for tractor use was 58 cents an hour, for horse labor 14 cents an hour, for truck use, 8 cents a mile, and for auto use, 6 cents a mile. The rates for horses, trucks, and autos were taken from cost account records on other New York farms. Other charges were obtained from the grower's own figures. The charge for man labor includes the value of board or farm privileges furnished the worker as well as wages.

A charge of 8 per cent of the value of the land was made for its use to cover interest and taxes. Manure was charged at the rate of $1.50 per ton applied to the land. It was assumed that the value of manure lasted over a period of four years. Forty per cent of the cost was charged to the potato crop, if this was the first crop grown after the manure was applied, 30 per cent if the second crop, 20 per cent if the third crop, and 10 per cent if the fourth crop.

The cost of equipment was calculated for each grower by charging 6 per cent interest on the average investment, adding his estimate for depreciation and adding repairs and other costs. If the equipment was used on other crops during the year besides his own potatoes, the cost to potatoes was decreased.

Cost of Plowing

Numerous other studies of the cost of plowing and fitting land have shown that it costs less with a tractor than with horses. Four of the growers keeping records on their costs of growing potatoes in 1933 used a tractor for plowing and four used horses. The cost of plowing with a tractor was less than one-half the cost of plowing with horses (table 3). It took more than three times as long to plow an acre with horses as with a tractor. This saving in time through the use of a tractor is the chief reason for the low cost of tractor plowing and fitting. The growers using tractors had more than twice as many acres of potatoes as those using horses. Large acreages are necessary for economical use of labor-saving machinery.

TABLE 3. COST TO PLOW AN ACRE FOR POTATOES
Cayuga and Erie Counties, 1933

| Kind of power | Horses | Tractor | Your farm | |
|---|---|---|---|---|
| Acres per farm | 3.3 | 8.0 | | |
| Number of farms | 4 | 4 | | |

| Item of expense | Averages per acre | | | | | |
|---|---|---|---|---|---|---|
| | Hours | Cost | Hours | Cost | Hours | Cost |
| Man labor | 6.5 | $1.89 | 1.8 | $0.47 | | $ |
| Horse labor | 18.0 | 2.52 | 0.1 | 0.02 | | |
| Tractor use | .... | ..... | 1.8 | 0.96 | | |
| Use of plows | .... | 0.59 | ... | 0.73 | | |
| Total cost | | $5.00 | | $2.18 | | $ |

Cost of Fitting

As stated above the cost of fitting with a tractor is generally less than with horses. However, all but 2 of the growers included in this study used a tractor at least part of the time in fitting their potato land. For this reason no separation has been made between those using tractors and those using horses. The average cost of fitting an acre of land for potatoes was about $3.00 (table 4). The land was gone over an average of about four times in fitting. The cost of fitting was about equally divided between the four items of cost, man labor, horse labor, tractor use, and the use of tools.

TABLE 4. COST OF FITTING AN ACRE FOR POTATOES
Cayuga and Erie Counties, 1933

| | Average 8 farms | | Your farm | |
|---|---|---|---|---|
| Acres per farm | 5.6 | | | |
| | Averages per acre | | | |
| | Hours | Cost | Hours | Cost |
| Man labor | 3.4 | $0.83 | | $ |
| Horse labor | 5.6 | 0.78 | | |
| Tractor use | 1.4 | 0.76 | | |
| Tools | ... | 0.61 | | |
| Total cost | | $2.98 | | $ |

Cost of Seed

These growers used, on the average, about seventeen and one-half bushels of seed to the acre. The average cost of this seed was $6.76 per acre. The average cost of cutting and treating this seed was $2.18 making the total cost of seed ready to plant $8.94 an acre (table 5). Man labor accounted for about 95 per cent of the total cost of cutting and treating seed. Only 4 growers treated their seed. The average cost of treating seed for these four growers was about 48 cents an acre or about three cents for each bushel of seed treated.

TABLE 5. COST OF SEED FOR AN ACRE OF POTATOES
Cayuga and Erie Counties, 1933

| | Average 8 farms | | Your farm | |
|---|---|---|---|---|
| Bushels of seed per acre | 17.7 | | ____ | |
| Cost of seed per acre | $6.76 | | ____ | |
| Number of growers treating | 4 | | ____ | |
| | Averages per farm | | | |
| | Hours | Cost | Hours | Cost |
| Man labor, cutting and treating | 8.0 | $2.07 | ____ | $____ |
| Materials for treating | ... | 0.09 | ____ | ____ |
| Other costs | ... | 0.02 | ____ | ____ |
| Total cost for cutting and treating | | $2.18 | | $____ |
| Cost per acre for cutting seed (average all farms) | | $1.93 | | $____ |
| Cost per acre for treating seed (average 4 farms doing treating) | | $0.48 | | $____ |
| Average total cost per acre of seed ready to plant | | $8.94 | | $____ |

Cost of Fertilizing and Planting

All of the eight growers used some commercial fertilizer. The average amount applied per acre was about 600 pounds, costing $7.92. Two growers broadcast their fertilizer before planting potatoes. The rest applied the fertilizer with the planter at the time of planting. Two growers used only superphosphate with manure. The rest used a complete commercial

fertilizer. All but one grower had applied some manure to his potato land within the last four years. Five growers applied manure directly before the potato crop.

The average cost of applying the fertilizer and planting the seed was $3.45 per acre (table 6). Man labor was the most important item of cost. The cost for the use of a planter was 76 cents per acre. One grower planted his potatoes by hand; four growers used a two-man planter, and three used a one-man planter. All the planters were horse drawn. The average distance between the rows of potatoes was about 36 inches with about 14 inches between the plants in the row.

TABLE 6. COST OF FERTILIZING AND PLANTING AN ACRE OF POTATOES
Cayuga and Erie Counties, 1933

| | Average 8 farms | Your farm |
|---|---|---|
| Bushels of seed planted per acre | 17.7 | _____ |
| Pounds of fertilizer applied per acre | 602 | _____ |
| Cost of fertilizer per acre | $7.92 | _____ |

| | Average per farm | | | |
|---|---|---|---|---|
| | Hours | Cost | Hours | Cost |
| Man labor | 5.8 | $1.50 | _____ | $_____ |
| Horse labor | 7.6 | 1.07 | _____ | _____ |
| Planter | ... | 0.76 | _____ | _____ |
| Other costs | ... | 0.12 | _____ | _____ |
| Total cost of applying fertilizer and planting seed | | $3.45 | | $_____ |

## Cost of Cultivating

Five of the growers used a weeder for the first cultivations. The rest used row cultivators entirely. The potatoes were cultivated by all growers an average of about four times with a row cultivator. (This includes hilling.) The average cost of weeding and cultivating an acre of potatoes was $4.91 (table 7). Man labor, 9.4 hours per acre, was the most important item of cost. The use of tools was relatively unimportant, costing only 48 cents an acre.

TABLE 7. COST OF CULTIVATING AN ACRE OF POTATOES
Cayuga and Erie Counties, 1933

| | Average 8 farms | Your farm |
|---|---|---|
| Times over with Weeder | 1.1 | ____ |
| Times over with Row Cultivator | 3.7 | ____ |

| | Averages per farm | | | |
|---|---|---|---|---|
| | Hours | Cost | Hours | Cost |
| Man labor | 9.4 | $2.59 | ____ | $____ |
| Horse labor | 13.2 | 1.84 | ____ | ____ |
| Use of tools | .... | 0.48 | ____ | ____ |
| Total | | $4.91 | | $____ |

Cost of Spraying

Only five of the eight growers keeping records did any spraying. These five growers sprayed an average of 4.6 times at a cost of $5.29 an acre or $1.04 an acre for each application (table 8). Three of these five growers were in a spray ring. Each of these men sprayed 6 times at a cost of $1.22 an acre for each application. The two growers spraying for themselves sprayed an average of only 2.5 times. Their cost per acre for each application was only 76 cents but their yield was only 148 bushels per acre as compared with 211 bushels for those in a spray ring. The average yield for those growers doing no spraying at all was only 105 bushels per acre.

TABLE 8. COST OF SPRAYING AN ACRE OF POTATOES
5 farms which sprayed
Cayuga and Erie Counties, 1933

| | Average 5 farms | Your farm |
|---|---|---|
| Number of applications | 4.6 | ____ |
| Rows covered at once | 5 | ____ |
| Total cost per acre | $5.29 | $____ |
| Total cost per acre per application | $1.04 | $____ |

| | |
|---|---|
| Yield per acre, those who sprayed (5 farms) | 186 bu. |
| Yield per acre, those doing own spraying (2 farms) | 148 bu. |
| Yield per acre, those in a spray ring (3 farms) | 211 bu. |
| Yield per acre, no spraying (3 farms) | 105 bu. |

Cost of Harvesting

The total average cost for these eight growers of harvesting an acre of potatoes yielding an average of 156 bushels was $13.47 (table 9). The average cost of harvesting a bushel was 10 cents. Man labor accounted for 63 per cent of the total cost of harvesting. The average number of bushels harvested for each hour of man labor spent in harvesting was 5.3. Horse labor was the second largest item of expense.

TABLE 9. COST OF HARVESTING AN ACRE OF POTATOES
Cayuga and Erie Counties, 1933

| | Average 8 farms | | Your farm | |
|---|---|---|---|---|
| | Averages per acre | | | |
| | Hours | Cost | Hours | Cost |
| Man labor | 35.4 | $8.47 | _____ | $_____ |
| Horse labor | 14.3 | 2.00 | _____ | _____ |
| Use of digger | .... | 1.54 | _____ | _____ |
| Use of other equipment | .... | 1.46 | _____ | _____ |
| Total cost per acre | | $13.47 | | $_____ |
| Yield per acre | 156 bu. | | _____bu. | |
| Cost of harvesting a bushel | $0.10 | | $ _____ | |
| Bushels harvested per hour of man labor harvesting | 5.3 bu. | | _____bu. | |

One grower used a shovel plow for digging. All the rest used a traction digger. The use of the potato digger cost $1.54 an acre. Only one grower used a tractor to pull the digger. Other equipment including the crates and baskets used in harvesting and in some cases the truck for hauling the potatoes cost $1.46 an acre.

Effect of Yield per Acre on Cost of Growing and Harvesting

Of the eight growers keeping records four had a yield of less than 120 bushels an acre averaging 97 bushels, while four had a yield of more than 120 bushels an acre averaging 214 bushels (table 10). With the higher yields it cost about eight dollars more to grow and about $3.50 more to harvest an acre. However, the cost per bushel of growing potatoes was 21

cents less and the harvesting cost 5 cents less for the growers getting these higher yields. The total cost of producing a bushel of potatoes was 26 cents less than for the growers getting the low yields. The extra potatoes obtained by the growers getting high yields far more than offset the added cost per acre for obtaining those yields.

TABLE 10. YIELD PER ACRE AND COST OF GROWING AND HARVESTING POTATOES
8 farms, Cayuga and Erie Counties, 1933

| | Low yield per acre (less than 120 bu.) | High yield per acre (120 bu. or more) |
|---|---|---|
| Number of farms | 4 | 4 |
| Average yield per acre | 97 | 214 |
| Growing cost per acre | $43.55 | $51.26 |
| Harvesting cost per acre | 11.79 | 15.15 |
| Growing cost per bushel | $ 0.46 | $ 0.25 |
| Harvesting cost per bushel | 0.12 | 0.07 |
| Total growing and harvesting cost per bushel | $ 0.58 | $ 0.32 |
| Pounds fertilizer per acre | 442 | 762 |
| Bushels seed per acre | 14 | 21 |
| Average number of times sprayed | 2 | 4 |

Rainfall and soil conditions often limit yields. However, if one is to produce potatoes at the lowest possible cost, high yields are necessary. The four growers getting the higher yields used 220 pounds more fertilizer and 7 bushels more seed per acre and sprayed twice as much as did the growers getting the lower yields.

## SUMMARY

This report is based on data from detailed records on the cost of growing and harvesting potatoes kept by five Cayuga County and three Erie County potato growers in 1933. These records show that:

1. It cost these growers $47.41 to grow an acre of potatoes and $13.47 to harvest an acre. The cost per bushel was 35 cents for growing and 10 cents for harvesting. The average yield per acre was 156 bushels.
2. Man labor was the most important item of cost with fertilizer and manure taken together the next in importance. Horse labor and seed were other important items of cost.
3. The average cost of plowing an acre for potatoes with a tractor was $2.18 as compared with a cost of $5.00 for plowing with horses.
4. The average cost of fitting an acre for potatoes was $2.98.
5. These growers used an average of 17.7 bushels of seed per acre costing $6.76. The cost of cutting and treating this seed was $2.18 an acre. Only four growers treated their seed.
6. All growers used some commercial fertilizer, the average amount used being about 600 pounds per acre. The average cost of applying the fertilizer and planting the seed was $3.45 an acre.
7. The cost of cultivating and weeding averaged $4.91 an acre. Five growers used a weeder for the first cultivations.
8. Only 5 of the growers sprayed their potatoes. The average cost was $5.29 an acre or $1.04 an acre for each application. Those who did the most spraying got the highest yields.
9. It cost $13.47 to harvest an acre of potatoes or 10 cents a bushel. Sixty-three per cent of this cost was for man labor. The use of a digger cost $1.54 an acre.
10. The most important factor affecting the cost of producing a bushel of potatoes was the yield obtained per acre. Although it cost those growers getting better than average yields $11.07 an acre more to produce potatoes than it did the growers getting yields below average, the cost per bushel for the growers getting the better yields was 26 cents less.

STUDY YOUR COSTS TO FIND WHERE THEY ARE HIGH.

STUDY YOUR OWN SITUATION TO FIND OUT HOW YOU CAN BEST REDUCE THESE COSTS

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