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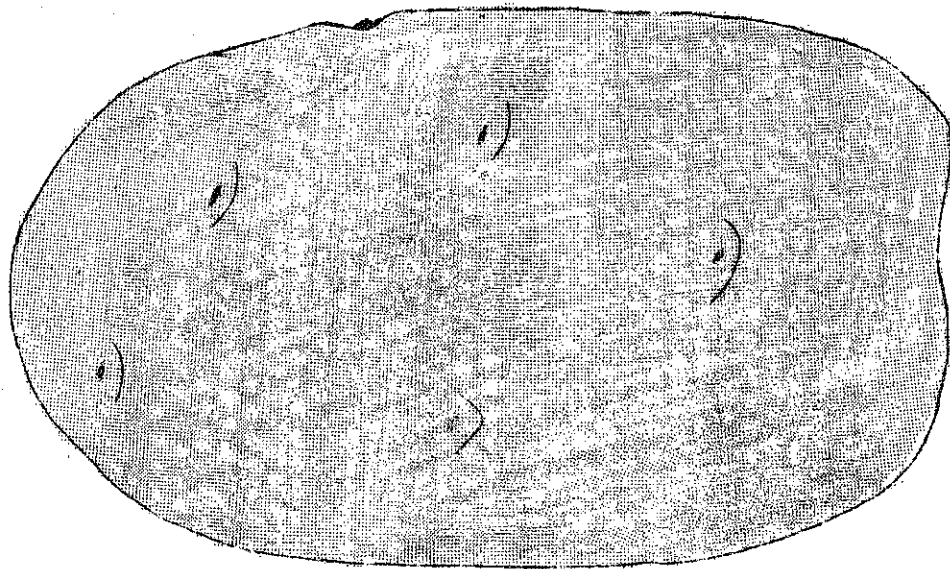
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SEED



POTATOES

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Ithaca, New York

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A. E. 34

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COSTS OF PRODUCING CERTIFIED SEED POTATOES

21 NEW YORK FARMS 1929

by

Floy L. Underwood

Description of Farms Producing Certified Seed Potatoes

Twenty-one of the farms included in this study produced certified seed potatoes. Nine of these were located in Western New York, 6 in Steuben County, and 6 in Northern New York. Fifteen of these farms also produced non-certified potatoes in addition to certified seed.

Capital

The average capital of these 21 farms was \$24,801, of which 71.9 per cent was invested in real estate (table 1). The average value of real estate was \$89 per acre. The investment in machinery averaged \$2453 per farm and that in livestock \$3559 per farm. Livestock accounted for 14.3 per cent of the total capital.

TABLE 1. DISTRIBUTION OF AVERAGE CAPITAL PER FARM ON
21 NEW YORK FARMS PRODUCING CERTIFIED SEED POTATOES, 1929

	Average capital per farm	Per cent of average capital
Buildings	\$ 8,652	34.9
Land	9,169	37.0
All real estate	17,821	71.9
Machinery	2,453	9.9
Livestock	3,559	14.3
Food and supplies	968	3.9
All capital	\$24,801	100.0

Utilization of land

The average size of these farms was 201 acres (table 2). About 57 per cent of the total area was used for crops, while pasture land accounted

for 30.3 per cent of the total area.

TABLE 2. UTILIZATION OF LAND ON 21 NEW YORK FARMS PRODUCING CERTIFIED SEED POTATOES, 1929

	Acres per farm	Per cent of total acres per farm
Crops	114	56.7
Open pasture	39	19.4
Woods pasture	22*	10.9
Woods not pastured	11	5.5
Idle land, roads farmstead, and waste	15	7.5
Total	201	100.0

* Equivalent to 4.1 acres of open pasture.

Crops

Potatoes were the most important crop grown, the average acreage of certified potatoes being 17.9, and of non-certified potatoes 8.6 per farm (table 3). About 23 per cent of the crop land was used for potatoes. Other intensive cash crops occupied 6.9 per cent of the total crop area.

Spring grains were grown on all farms. Oats were the most common, occupying nearly one-tenth of the crop area. All spring grains averaged 31.6 acres per farm. Hay and annual roughage occupied more than two-fifths of the crop land. Eight growers produced alfalfa.

Livestock

With one exception, these farmers kept some kind of productive livestock. The average number of cows was 13.2 per farm (table 4). Three farmers kept sheep, their flocks averaging 22.4 ewes and bucks per farm. Only 4 farmers kept hogs.

Poultry was limited to home use except on 2 farms on which there were commercial flocks of more than 500 birds.

The number of horses averaged 1 for 25.8 acres of crops.

TABLE 3. CROPS GROWN ON 21 NEW YORK FARMS PRODUCING CERTIFIED SEED POTATOES, 1929

Crops	Number of farms growing	Acres per farm (all farms)	Per cent of crop area (all farms)	Yield per acre
Potatoes, certified	21	17.9	15.7	204 bushels
Potatoes, other	15	8.6	7.6	177 bushels
Field beans	6	3.9	3.4	16 bushels
Factory peas	4	2.0	1.8	0.7 ton
Cabbage	4	1.3	1.2	12.1 tons
Cucumbers	2	0.5	0.4	79 bushels
Factory tomatoes	2	0.1	0.1	14.2 tons
Total intensive cash crops		34.3	30.2	
Oats	15	11.2	9.8	28 bushels
Barley	3	2.7	2.4	22 bushels
Buckwheat	4	1.1	1.0	11 bushels
Oats and barley	8	4.2	3.7	31 bushels
Other spring grain mixtures	3	3.2	2.8	31 bushels
Winter wheat	8	6.2	5.4	22 bushels
Rye	1	1.0	0.9	20 bushels
Corn for grain	1	2.0	1.8	36 bushels
Total grains		31.6	27.8	
Corn silage	2	3.7	3.2	8.8 tons
Corn fodder	1	0.2	0.2	4.6 tons
Alfalfa*	8	4.2	3.7	2.3 tons
Spring grains cut for hay	3	1.3	1.1	1.9 tons
Other hay	18	35.9	31.6	1.2 tons
Total hay and annual roughage		45.3	39.8	
Apples	9	1.1	1.0	10 bushels
New seeding alfalfa	1	1.4	1.2	
Total all crops		113.7	100.0	

* About 97 per cent of the alfalfa acreage was cut the second time and about 12 per cent the third time. The yields were: first cutting, 1.7 tons; second cutting, 0.6 ton; and third cutting, 0.5 ton per acre.

TABLE 4. AVERAGE NUMBERS OF LIVESTOCK PER FARM ON 21 NEW YORK FARMS
PRODUCING CERTIFIED SEED POTATOES, 1929

	Number of farms reporting	Average number per farm	
		April 1, 1929	April 1, 1930
Cows	20	13.8	12.5
Heifers	20	4.9	4.4
Ewes and bucks	3	3.9	2.5
Brood sows	3	0.1	0.1
Other hogs	4	0.3	0.7
Mature poultry	19	167.0	158.7
Work horses	21	4.6	4.2
Other horses	5	0.2	0.3

Receipts and expenses

The total receipts per farm averaged \$11,105 (table 5). About 61 per cent of the total farm receipts came from sales of potatoes, while livestock receipts were a little more than one-fourth of the total.

The total farm expenses averaged \$6749 per farm. Of this, nearly one-third was for hired and unpaid labor other than that of the farm operator. Crop and machinery expenses were three-eighths of the total.

The average labor income of these 21 farms was \$3116, while the average rate of return on capital was 11.9 per cent.

Costs of Growing Certified Potatoes To Digging Time

The average yield of certified potatoes produced on these 21 farms was 204 bushels per acre. The average growing cost to digging time was \$102.31 per acre, or 50.2 cents per bushel harvested (table 6). About 35 per cent of this cost was for labor, power, and equipment. Seed and seed treatment costs accounted for 22.5 per cent of the cost to digging time, fertility costs 22.6 per cent, and spray and dust materials 5.4 per cent.

TABLE 5. SUMMARY AND DISTRIBUTION OF AVERAGE RECEIPTS AND EXPENSES ON 21 NEW YORK FARMS PRODUCING CERTIFIED SEED POTATOES, 1929

	Average per farm	per cent.
Total capital	\$24,801	
Receipts:		
Certified potatoes	\$ 5,097	45.9
Other potatoes	1,692	15.2
Other crops	1,063	9.6
Livestock	2,874	25.9
Other receipts	379	3.4
Total	\$11,105	100.0
Expenses:		
Labor (not including operator)	\$ 2,171	32.2
Crop	1,529	22.6
Livestock	1,149	17.0
Machinery	1,007	14.9
Real estate	592	8.8
Other	301	4.5
Total	\$ 6,749	100.0
Summary:		
Income to capital and operator's labor	\$ 4,356	
Interest on capital at 5 per cent.	1,240	
Labor income	\$ 3,116	
Value of privileges	696	
Labor earnings	\$ 3,812	
Value of operator's time*	\$ 1,413	
Return on capital	2,943	
Per cent return on capital		11.9

* Estimated by the operator at what his labor and management would have cost if hired.

TABLE 6. COSTS OF GROWING CERTIFIED SEED POTATOES TO DIGGING TIME ON
21 NEW YORK FARMS, 1929

Item	Average per acre		per cent of total cost
	Amount	Cost	
Man labor	38.4 hours	\$18.31	17.9
Horse labor	33.7 hours	7.57	7.4
Tractor use	4.0 hours	3.17	3.1
Truck use	6.5 miles	0.52	0.5
Auto use	0.5 mile	0.06	0.1
Special potato equipment		4.61	4.5
Other equipment		1.74	1.7
Total labor, power, and equipment		\$35.98	35.2
Seed	20.0 bushels	\$21.96	21.5
Seed treating materials		1.04	1.0
Fertilizer	825 pounds	16.18	15.8
Barnyard manure	2.3 tons	6.43	6.3
Green manures	0.16 acre	0.57	0.5
Spray and dust materials	137 pounds	5.52	5.4
Certification fees		4.82	4.7
Crop insurance		0.02	*
Land use		6.24	6.1
Interest on growing costs		2.24	2.2
Other costs		1.31	1.3
Total growing cost		\$102.31	100.0

Acres of certified potatoes per farm 17.9

Average yield, bushels per acre 204

* Two-hundredths of 1 per cent.

Labor, power, and equipment

The costs of labor, power, and equipment averaged \$35.98 per acre to digging time. Man labor accounted for 50.9 per cent of this cost. The average amount of labor used per acre was 38.4 hours (table 7). These growers covered their certified fields an average of 19.5 times before digging, in addition to the hand work done. Seed preparation required 10.4 hours of labor per acre, while cultivating and tilling after planting averaged 9.2 man hours per acre. The average cost of man labor was 47.7 cents per hour.

Horse labor was used largely for cultivating and tilling after planting, while most of the tractor use was for plowing and fitting. Trucks and autos were used for hauling seed, fertilizer, and spray or dust materials. One grower used a truck for weeding.

The average cost of equipment use for growing certified potatoes to digging time was \$6.35 per acre in addition to the use of tractors, trucks, and autos (table 8). Special potato equipment accounted for 72.6 per cent of this cost.

Seed

The average rate of seeding for certified potatoes was 20 bushels per acre and the average value of seed used was \$1.10 per bushel.

In addition to planting seed of certified stock, all but 2 of these growers treated their seed potatoes for disease, 18 of them reporting extra labor for the operation. The average cost of seed treating materials, including custom treatment, was \$1.04 per acre, or 5.2 cents per bushel planted.

Fertility practices

All of these growers applied commercial fertilizer to their entire acreage of certified potatoes, the average rate of application being 826 pounds per acre (table 9). The average cost of this fertilizer was \$39.12 per ton, varying from \$13.24 per ton for 16 per cent super-phosphate to \$87.92 for fertilizer with an analysis of 15-30-15. The most popular analysis of fertilizer used was 5-10-5, which was used by 7 growers.

TABLE 7. LABOR, POWER, AND EQUIPMENT USED IN GROWING CERTIFIED POTATOES
TO DIGGING TIME ON 21 NEW YORK FARMS, 1929

Operation	Number of growers perform- ing each operation	Average number of times the ground was covered, all farms	Average per acre, all farms				
			Man hours	Horse hours	Tractor hours	truck miles	Auto miles
Plowing	21	1.0	4.0	5.8	1.5	-	-
Disking	13	1.4	1.0	0.6	0.8	-	-
Harrowing	20	2.6	1.2	1.7	0.5	-	-
Total		5.0	6.2	8.1	2.8	-	-
Hauling and mixing fertilizer	18		0.7	0.1	-	2.0	-
Applying fertilizer	15	0.6*	1.0	1.6	-	-	-
Planting	21	1.0	4.3	5.3	0.3	0.3	-
Total		1.6	6.0	7.0	0.3	2.3	-
Getting and selecting Seed	19		1.4	0.1	-	2.4	0.2
Treating seed	18		1.5	0.3	-	0.7	0.3
Cutting seed	21		7.5	-	-	-	-
Total			10.4	0.4	-	3.1	0.5
Rolling or planking	5	0.2	0.2	0.3	-	-	-
Re-covering	10	0.6	0.7	1.3	-	-	-
Weeding	16	2.3	1.0	1.4	0.1	0.4	-
Cultivating	21	3.9	4.9	8.1	0.6	-	-
Hand-hoeing and weed- pulling	11	**	1.4	-	-	-	-
Hilling	11	0.7	1.0	2.0	-	-	-
Total		7.7	9.2	13.1	0.7	0.4	-
Hauling and mixing spray or dust	7		0.1	-	-	0.1	-
Spraying	10	2.5	1.6	2.3	-	-	-
Dusting	12	2.7	1.8	2.8	0.2	0.6	-
Total		5.2	3.5	5.1	0.2	0.7	-
Rogueing and inspecting	21	**	3.1	-	-	-	-
Total growing		19.5	38.4	33.7	4.0	6.5	0.5

* Fertilizing done in addition to applications made with planters.

** Number of times or acres covered not enumerated for hand operations.

TABLE 8. COSTS OF LABOR, POWER, AND EQUIPMENT FOR GROWING CERTIFIED POTATOES TO DIGGING TIME ON 21 NEW YORK FARMS, 1929

Operation	Average cost per acre, all farms					Total	
	Men labor	Horse labor	Tractor use	Truck use	Auto Equip-ment		
Plowing	\$1.89	\$1.31	\$1.29	-	-	\$0.55	\$5.04
Disking	0.48	0.13	0.70	-	-	0.47	1.78
Harrowing	0.55	0.40	0.46	-	-	0.12	1.53
Total	\$2.92	\$1.84	\$2.45	-	-	\$1.14	\$8.35
Hauling and mixing Fertilizer	\$0.32	\$0.02	-	\$0.18	-	-	\$0.52
Applying fertilizer	0.44	0.36	-	-	-	\$0.27	1.07
Planting	2.04	1.17	\$0.20	0.03	-	1.41	4.85
Total	\$2.80	\$1.55	\$0.20	\$0.21	-	\$1.68	\$6.44
Getting and selecting seed	\$0.68	\$0.03	-	\$0.18	\$0.02	-	\$0.91
Treating seed	0.73	0.08	-	0.07	0.04	0.04	0.96
Cutting seed	3.62	-	-	-	-	0.01	3.63
Total	\$5.03	\$0.11	-	\$0.25	\$0.06	\$0.05	\$5.50
Rolling or planking	0.08	0.07	-	-	-	\$0.03	\$0.18
Re-covering	0.31	0.30	-	-	-	0.06	0.67
Wooding	0.50	0.33	\$0.03	*	-	0.07	0.93
Cultivating	2.32	1.79	0.35	-	-	0.78	5.24
Hand-hoeing and wood-pulling	0.68	-	-	-	-	-	0.68
Hilling	0.47	0.46	-	-	-	0.09	1.02
Total	\$4.36	\$2.95	\$0.38	-	-	\$1.03	\$8.72
Hauling and mixing spray or dust	\$0.06	-	-	\$0.02	-	-	\$0.08
Spraying	0.80	\$0.50	-	-	-	\$1.22	2.52
Dusting	0.85	0.62	\$0.14	0.04	-	1.22	2.87
Total	\$1.71	\$1.12	\$0.14	\$0.06	-	\$2.44	\$5.47
Regueing and inspecting	\$1.49	-	-	-	-	\$0.01	\$1.50
Total growing	\$18.31	\$7.57	\$3.17	\$0.52	\$0.06	\$6.35	\$35.98

* Less than 0.06 cent.

TABLE 9. ANALYSIS, AMOUNT, AND COST OF FERTILIZER USED ON CERTIFIED SEED POTATOES ON 21 NEW YORK FARMS, 1929

Formula of fertilizer <u>1/</u>	Number of growers using	Acres fertilized	Pounds used per acre fertilized	Cost per ton	Per cent of total pounds
16-per cent superphosphate	2	47	945	\$13.24	14.3
2-8-10	2	13	1,093	32.68	4.9
3-10-7	1	12	900	27.96	3.5
4-8-4	1	13	400	32.69	1.7
4-8-6	1	10	1,000	40.00	3.2
4-8-7	1	6	400	36.67	0.8
4-12-4	2	61	664	29.33	13.0
4-12-7	1	4	675	37.78	0.9
5-8-5	1	14	1,200	27.98	5.4
5-10-5	7	64	754	37.84	15.5
5-20-5	1	5	200	38.00	0.3
7-12-7	1	30	1,500	60.00	14.5
10-10-10	1	16	800	55.00	4.1
10-20-10	1	1	1,000	68.00	0.3
15-30-15	1	9	533	87.92	1.6
16-0-16	1	10	110	52.73	0.4
20-16 1/2-20	1	38	493	77.97	6.0
Home-mixed	1	23	1,300	35.79	9.6
Total	21*	376	826	\$39.12	100.0

1/ Percentages of NH_3 , P_2O_5 , and K_2O respectively.

* Adjusted for farms using more than one kind of fertilizer.

Approximately three-fifths of the certified potato acreage on these farms was manured, the average rate of application being 5.9 tons per acre manured. The average value of this manure, spread on the land, was \$2.74 per ton. The aggregate charge to certified potatoes for manure was 65.7 per cent of the total value of the manure used, or \$10.61 per acre manured.

About one-sixth of the certified acreage was land which had received green manure. The average green manure charge was \$3.50 per acre of green manure.

Spray and dust

Nine of these growers sprayed their certified potatoes, 11 dusted, and 1 both sprayed and dusted. The average number of applications for those who sprayed was 5.3 as compared with 4.6 for those who dusted.

All of the growers who sprayed used bordeaux, the average application being 99 gallons per acre per spray. All of the bordeaux used was home-mixed except that used by one grower. Poisons added to bordeaux mixtures for control of bugs included calcium arsenate, lead arsenate, zinc arsenate, and paris green. Calcium arsenate was the most common arsenical poison used.

Six of the growers who dusted their certified potatoes used home-mixed dusts, while 5 used commercial preparations. The average amount of dust used was 31.5 pounds per acre per application.

The average cost of all spraying and dusting, including labor, power, equipment, and materials was \$2.11 per acre per application.

Certification

The average charge for certification fees on potatoes on these farms was \$4.82 per acre certified. The average amount of labor used for roguing and inspection was 3.1 hours per acre. The total cost of roguing, inspection, and certification averaged \$6.32 per acre, or 6.2 per cent of the growing cost to digging time. This amounted to 3.1 cents per bushel of certified potatoes harvested.

Land use and other costs

The charge for land use averaged \$6.24 per acre, or 6.1 per cent of the growing cost to digging time. This was 7.7 per cent of the average value of the land.

Crop insurance, interest on growing costs, and miscellaneous charges averaged \$3.57 per acre, or 3.5 per cent of the total growing cost to digging time.

Harvesting Costs

The average cost of harvesting certified potatoes, not including hauling the crop from the field, was \$23.31 per acre, or 11.4 cents per bushel harvested (table 10). The average cost of digging was \$7.78 per acre, of which digger use constituted 42 per cent. All certified potatoes were dug by machine except for a small amount of hand-digging at the ends of the rows.

The average cost of picking up certified potatoes was 7.5 cents per bushel harvested, including the use of crates. Labor costs averaged 7.1 cents per bushel picked up. Seventy per cent of the labor used for picking up potatoes was paid on a piece basis. The average cost of piece labor was 48.6 cents per hour.

The cost of trips for harvesting labor averaged \$0.29 per acre, or 0.1 cent per bushel harvested.

The combined costs of growing and harvesting, not including hauling the crop from the field, averaged 61.6 cents per bushel harvested.

Storage Costs

About 97 per cent of the certified potatoes harvested were stored, the average storage cost, exclusive of interest and shrinkage, being 8.3 cents per bushel removed from the cellar (table 11). These figures include the cost of hauling the potatoes to the cellar, which averaged 2.6 cents per bushel hauled. Charges for labor and equipment for preparation of the storage and care of the potatoes in the cellar averaged 0.5 cent per bushel removed from the cellar.

TABLE 10. FIELD COSTS OF HARVESTING CERTIFIED SEED POTATOES ON 21 NEW YORK FARMS, 1929

	Average per acre		Average cost per bushel harvested	Per cent of total cost
	Amount	Cost		
Digging:				
Man labor	4.3 hours	\$2.04		8.8
Horse labor	9.5 hours	2.13		9.1
Tractor use	0.5 hours	0.34		1.5
Use of digger		3.27		14.0
Total		\$7.78	\$0.038	33.4
Picking up:				
Piece labor	21.0 hours	\$10.20		
Time labor	9.0 hours	4.17	\$0.071	61.7
Use of crates		0.87	0.004	3.7
Total		\$15.24	\$0.075	65.4
Trips for labor:				
Man labor	0.2 hour	\$0.13		0.5
Truck and auto use	3.1 miles	0.16		0.7
Total		\$0.29	\$0.001	1.2
All harvesting:				
Man labor	34.5 hours	\$16.54	\$0.081	71.0
Horse labor	9.5 hours	2.13	0.010	9.1
Tractor use	0.5 hours	0.34	0.002	1.5
Truck and auto use	3.1 miles	0.16	0.001	0.7
Equipment use		4.14	0.020	17.7
Total		\$23.31	\$0.114	100.0
Average yield per acre, bushels 204				

Since practically the only alternative to storing the certified potatoes was to sell them at table-stock prices at harvest time, interest on the certified potatoes that were stored was charged at 6 per cent annually on the basis of the average price received for non-certified potatoes sold by these growers at harvest time. This price was \$1.26 per bushel. As the average storage period was 5.5 months, the average interest charge on the stored certified potatoes was 3.5 cents per bushel. The interest charge would have been 1.8 cents per bushel removed from the cellar if calculated on the basis of the cost of growing and harvesting the potatoes that were stored.

The average amount of shrinkage of the certified potatoes that were stored was 7.9 per cent of the bushels put into the cellar. On the basis of the average price received for non-certified potatoes sold by these growers at harvest time, the average shrinkage charge to stored certified potatoes was 10 cents per bushel removed from the cellar.

The total storage charge, including interest and shrinkage, averaged 21.8 cents per bushel removed from the cellar.

TABLE 11. COSTS OF STORING CERTIFIED SEED POTATOES ON 21 NEW YORK FARMS,
1929

Item	Average cost per bushel removed from storage	Per cent of total storage cost
Man labor	\$0.020	9.2
Horse labor	0.007	3.2
Wagon use	0.001	0.5
Truck use	0.004	1.8
Equipment use	0.002	0.9
Fuel and heating	0.001	0.5
Building use	0.030	13.8
Hired storage	0.012	5.5
Insurance	0.006	2.7
Total, above items	\$0.083	38.1
Interest on stored potatoes	\$0.035	16.0
Shrinkage	0.100	45.9
Total storage cost	\$0.218	100.0

Marketing

Disposal of the crop

About 82 per cent of the certified potatoes produced were sold and 7.8 per cent were kept for seed on the farms on which they were grown (table 12). The average price received for the certified potatoes that were sold was \$1.69 per bushel. Certified potatoes used on the farm were generally considered to be of lower value than those that were sold. Non-marketable potatoes, including shrinkage and culls fed to livestock or discarded, accounted for 9.5 per cent of the harvested crop.

TABLE 12. DISPOSAL OF 76,952 BUSHELLS OF CERTIFIED SEED POTATOES HARVESTED FROM 376.5 ACRES ON 21 NEW YORK FARMS, 1929

Disposal	Bushels per farm	Per cent of total crop	Average value per bushel
Sold from the field	99	2.7	\$1.91
Sold out of storage	2,911	79.4	1.69
Total Sales	3,010	82.1	1.69
Used in operator's household	18	0.5	\$1.12
Furnished to hired labor	4	0.1	1.21
Kept for seed on the farm	285	7.8	1.47
Fed to livestock	44	1.2	0.20
Shrinkage in storage	281	7.7	
Discarded	22	0.6	
Total other disposal	654	17.9	
Total crop harvested	3,664	100.0	

Seasonal distribution of sales

Only 15.4 per cent of the certified potatoes sold from these farms were sold before March 1, while more than three-fourths of them were sold during March, April, and May (table 13). The demand during April was apparently relatively good as 48.4 per cent of the marketed crop was sold during this month and the price was relatively high.

Grade and method of sale

About 79 per cent of the certified seed potatoes sold were sold for seed purposes, the remainder being sold to buyers of table-stock potatoes (table 14). As the average price received for the certified potatoes sold to buyers of table-stock was \$1.49 per bushel as compared with \$1.28 per bushel for the non-certified potatoes sold by these same growers, it is probable that some of the certified potatoes sold to buyers of table-stock were actually sold for seed purposes.

TABLE 13. POTATOES SOLD AND AVERAGE PRICES RECEIVED BY MONTHS, 21 NEW YORK FARMERS GROWING CERTIFIED SEED POTATOES, 1929

Month	Average bushels sold per farm	Average price received per bushel sold	Per cent of total	
			Bushels sold	Dollars of Sales
1929				
October	26	\$1.92	0.9	1.0
November	202	1.76	6.7	7.0
December	71	1.82	2.4	2.5
1930				
January	157	\$1.70	5.2	5.2
February	7	1.40	0.2	0.2
March	338	1.58	11.2	10.5
April	1,458	1.78	48.4	50.9
May	528	1.56	17.6	16.1
June	223	1.51	7.4	6.6
All sales	3,010	\$1.69	100.0	100.0

Potatoes sold as of No. 1 grade represented 86.5 per cent of the total marketed crop. Most of the certified potatoes sold for seed purposes that were not sold as of No. 1 grade were sold directly to growers. Altogether, direct sales to growers represented 29.8 per cent of the total bushels of certified potatoes sold, while 34.8 per cent was sold through a cooperative selling agency handling certified seed potatoes.

The average gross price received for certified potatoes known to be sold exclusively for seed purposes was \$1.96 per bushel as compared with \$1.49 per bushel for those sold to buyers of table-stock potatoes. In addition to the sales of certified seed potatoes, these growers sold 20 per cent of their marketed crop of non-certified potatoes for seed purposes, the price received averaging \$1.53 per bushel. Practically all of these were produced from certified seed of the previous year's crop.

TABLE 14. PERCENTAGE DISTRIBUTION BY GRADE AND METHOD OF SALE OF 63,212 BUSHELS OF CERTIFIED SEED POTATOES SOLD FROM 21 NEW YORK FARMS, 1929

Grade	Sales for seed purposes				Sales as table stock			All Sales	
	Certified seed potato cooperative	Seed Dealers	Growers	Total	Truckers	Local	Miscell-		
						dealers	aneous		
No. 1	34.2	13.2	20.2	67.6	12.9	4.4	1.6	18.9	86.5
No. 2	0.6	0.8	7.8	9.2	0.6	0.1	0.7	1.4	10.6
No. 3	-	-	0.7	0.7	0.2	-	-	0.2	0.9
Roughs and culls	-	0.1	0.8	0.9	0.5	-	0.3	0.8	1.7
Ungraded	-	-	0.3	0.3	-	-	-	-	0.3
All grades	34.8	14.1	29.8	78.7	14.2	4.5	2.6	21.3	100.0

Farm costs of marketing

The average farm cost of marketing certified seed potatoes was 12.1 cents per bushel sold (table 15). Charges for labor and equipment constituted 58.6 per cent of the marketing cost, while the cost of bags and twine amounted to 20.7 per cent.

TABLE 15. FARM COSTS OF MARKETING CERTIFIED SEED POTATOES FROM 21 NEW YORK FARMS, 1929

	Average cost per bushel cost	Per cent of total cost
Man labor	\$0.054	44.6
Horse labor and wagon use	0.001	0.8
Truck and auto use	0.005	4.1
Hired trucking	0.008	6.6
Grader use	0.003	2.5
Bags and twine	0.025	20.7
Advertising, stamps, stationery	0.009	7.5
Travel	0.003	2.5
Freight and messengering	0.001	0.8
Commission	0.006	5.0
Interest	0.005	4.1
Miscellaneous*	0.001	0.8
Total	\$0.121	100.0

* Association dues and expense for Bermuda test.

The cost of labor and equipment for grading and sacking the certified potatoes averaged 4.4 cents per bushel sold.

The average total marketing cost for certified seed potatoes was somewhat higher than that for non-certified potatoes. The average cost of marketing non-certified potatoes by growers of certified seed was 6.6 cents per bushel sold and the average cost of marketing potatoes by the 258 growers not producing certified seed in the three up-state areas included in this study was 6.1 cents per bushel sold.

Summary of Costs and Returns in Producing Certified Seed Potatoes

The average total cost of producing certified seed potatoes on those farms in 1929 was \$164.43 per acre, or 88 cents per bushel sold or used on the farm (table 16). As the total returns from certified potatoes averaged \$309.48 per acre, the average profit was \$145.05 per acre. The average return for labor on certified potatoes, above all other costs, was \$1.93 per hour.

Comparative Costs of Producing Certified and Non-Certified Potatoes

The average total cost of producing certified seed potatoes on 21 farms in 1929 was \$164.43 per acre as compared with \$114.80 per acre for non-certified potatoes on 258 farms not producing certified seed in 3 areas in up-state New York (table 17). The costs per acre of producing certified seed were higher than for non-certified potatoes in every respect except barnyard manure, green manure, horse labor, and land use. The average costs per acre for seed, fertilizer, and spray and dust materials for certified seed potatoes were more than double those for non-certified potatoes. The average acreage of potatoes grown by producers of certified seed was two and one-half

times that for the other growers and the yield per acre was 34.2 per cent higher. The use of more seed, fertilizer, and spray and dust materials undoubtedly contributed materially to the higher yields of certified potatoes. Little of this difference in yield could be attributed to difference in the quality of the land, since the average value and the average cost of the land used were practically the same for the two groups.

TABLE 16. COSTS AND RETURNS IN PRODUCING CERTIFIED SEED POTATOES ON 21 NEW YORK FARMS, 1929

	Average per farm	Average per acre Amount	Value
Returns:			
Potatoes sold	\$5,097	167 bushels	\$284.31
Potatoes used on the farm	451	20 bushels	25.17
Total	\$5,548	187 bushels	\$309.48
Costs:			
Growing	\$1,834		\$102.31
Harvesting	418		23.31
Storage	331		18.48
Marketing	365		20.33
Total	\$2,948		\$164.43
Profit	\$2,600		\$145.05
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Labor cost	\$ 853	99.9 hours	\$ 47.59
Cost of land use	112		6.24
Returns to labor	3,453		192.64
Returns for use of land	2,712		151.29
Value of land used	1,448		80.75
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Returns per hour of labor			\$ 1.93

The seed used for certified potatoes was of higher quality and the fertilizer of higher analysis, as indicated by the average costs per bushel and per ton of these two items respectively. Notwithstanding those differences in costs per acre, the average total cost per bushel harvested for certified

TABLE 17. SUMMARY OF COSTS OF PRODUCING CERTIFIED SEED POTATOES ON 21 FARMS AND NON-CERTIFIED POTATOES ON 258 FARMS IN THREE AREAS IN UP-STATE NEW YORK, 1929

	Average per acre		Per cent of total cost	
	Certified potatoes	Non-certified potatoes	Certified potatoes	Non-certified potatoes
	Amount	Cost	Amount	Cost
Seed	20.0 bushels	\$21.96	15.7 bushels	\$10.12
Seed treating materials		1.04		0.63
Fertilizer	825 pounds	16.18	412 pounds	7.06
Barnyard manure	2.3 tons	6.43	6.2 tons	12.51
Green manure	0.16 acre	0.57	0.22 acre	1.49
Spray and dust materials		5.52		2.74
Man labor	99.9 hours	47.59	85.6 hours	37.64
Horse labor	49.8 hours	11.21	72.9 hours	16.41
Tractor use	4.5 hours	3.51	2.1 hours	1.43
Truck use	23.4 miles	2.07	6.5 miles	0.80
Auto use	3.0 miles	0.16	0.9 mile	0.11
Equipment use		11.44		8.94
Land use		6.24		6.25
Building use		5.92		4.44
Certification fees		4.82		-
Insurance		1.13		0.10
Interest		6.33		2.97
Other costs		12.31		1.16
Total		\$164.43		\$114.80
Number of farms	21		258	
Average acres of all potatoes per farm	26.5		10.6	
Average yield, bushels per acre	204		152	
Average yield of marketable potatoes per acre, bushels	185		138	
Average value of land per acre	\$81		\$79	
Average total cost per bushel harvested	\$ 0.81		\$ 0.76	
Average total cost per bushel sold or used	0.88		0.80	
Average net cost per bushel of marketable potatoes	0.89		0.82	

seed was only 5 cents higher than for non-certified potatoes. This difference is easily accounted for in the additional costs incident to certified seed production, namely, certification fees, roguing, inspection, and the difference in marketing costs.

Charges for labor, power, and equipment for producing certified seed potatoes accounted for 46.1 per cent of the total cost of production as compared with 56.9 per cent for non-certified potatoes. Although more man labor was used per acre on certified potatoes, much of the horse labor was replaced with tractor, truck, and auto use.