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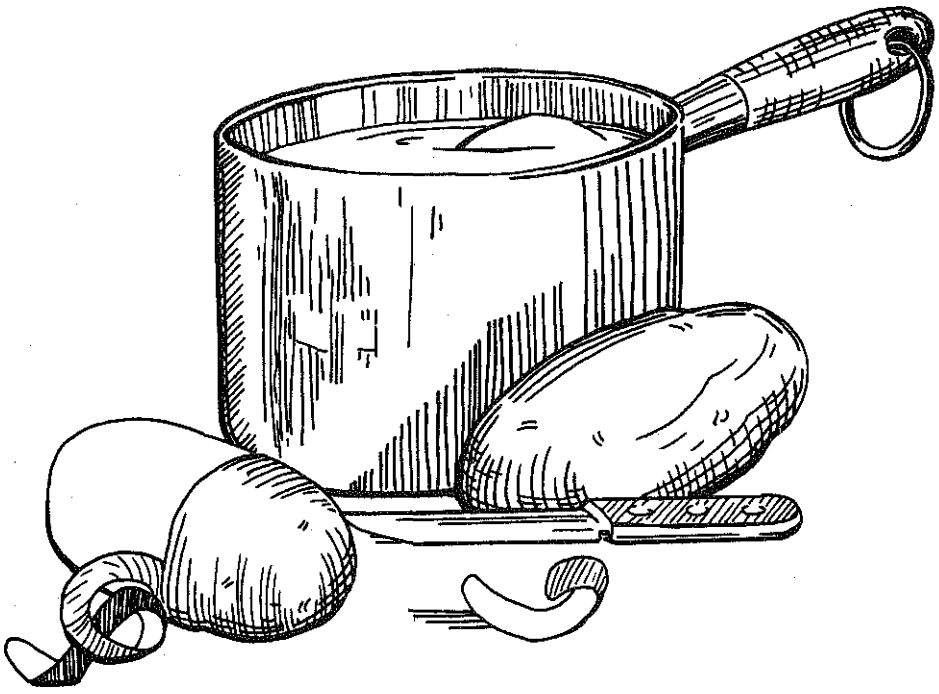
COSTS IN PRODUCING POTATOES ON LONG ISLAND 1959



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COSTS IN PRODUCING POTATOES ON LONG ISLAND

The acreage of potatoes declined sharply in the United States between 1935 and 1950, then stayed during the following 10 years at about the 1950 point (figure 1). Long Island, on the other hand, increased its acres of potatoes during the World War II years, dropped back to a pre-war level and has maintained that level in spite of the inroads of urbanization on the potato land of the Island.

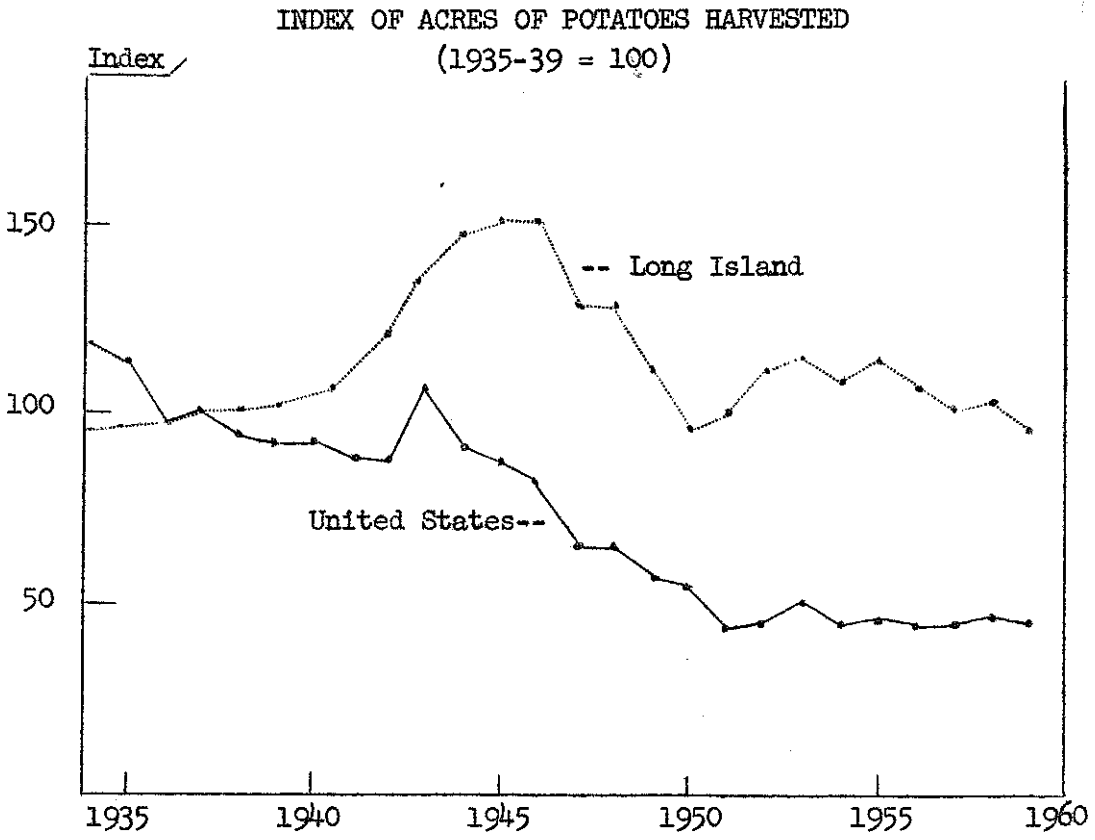

Figure 1. United States acreage has fallen in the last 25 years; Long Island acreage is about the same now as pre-war.

United States acreage has been about 1,400,000 since 1951. Long Island farmers harvested 46,000 acres in 1959.

Total production

Because of increased yield per acre, United States potato production has been maintained during the last 25 years even with the declining acreage (figure 2). Long Island has coupled a maintained acreage with an increased yield per acre to double its potato production during this period.

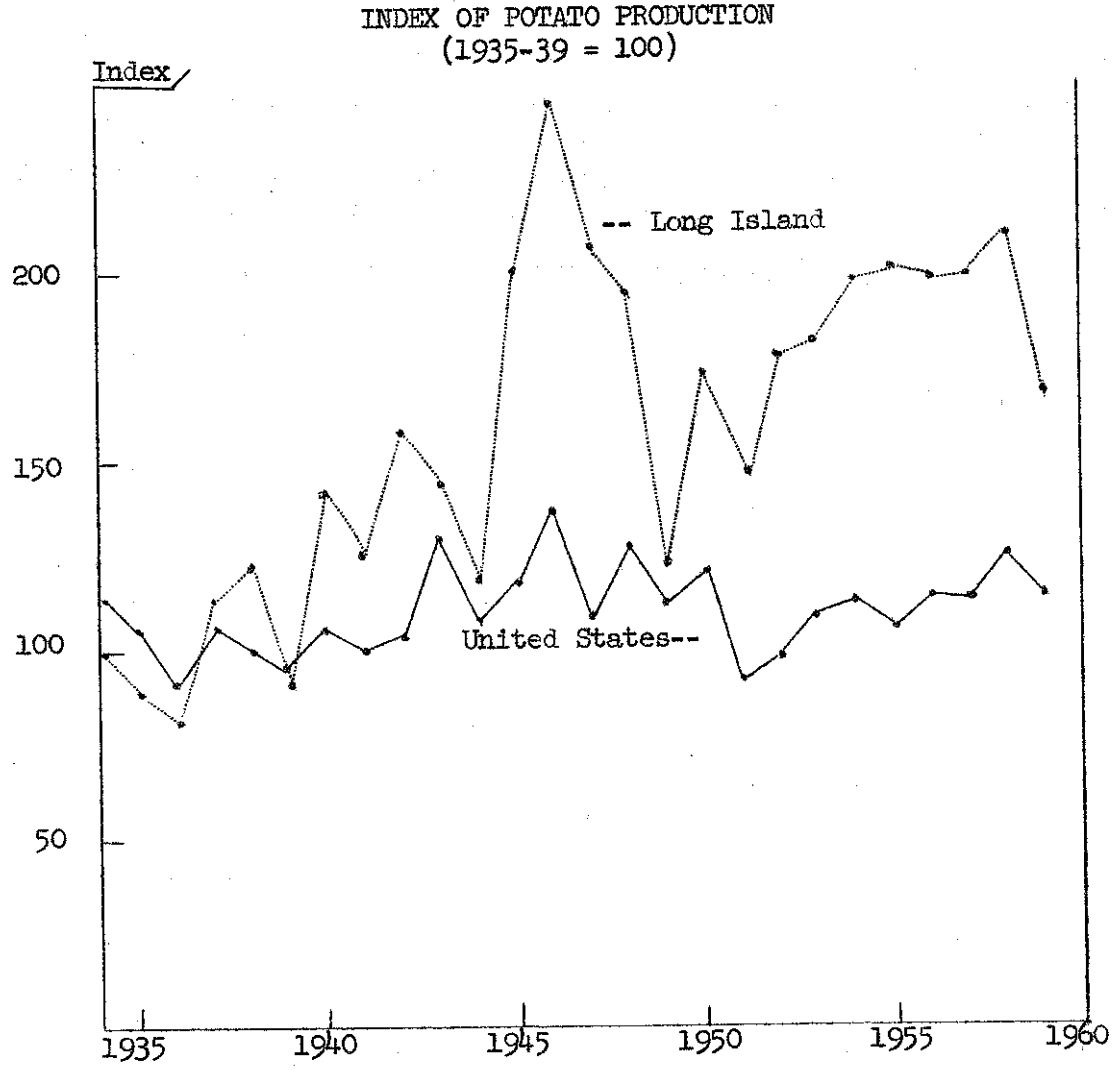

Figure 2. United States production has been maintained; Long Island production has doubled.

Prices of potatoes

Prices of potatoes on Long Island were roughly the same as the United States average price until 1949 (figure 3). Since then, with the exception of 1952, potatoes from the United States as a whole have brought considerably more per hundredweight than have those from Long Island.

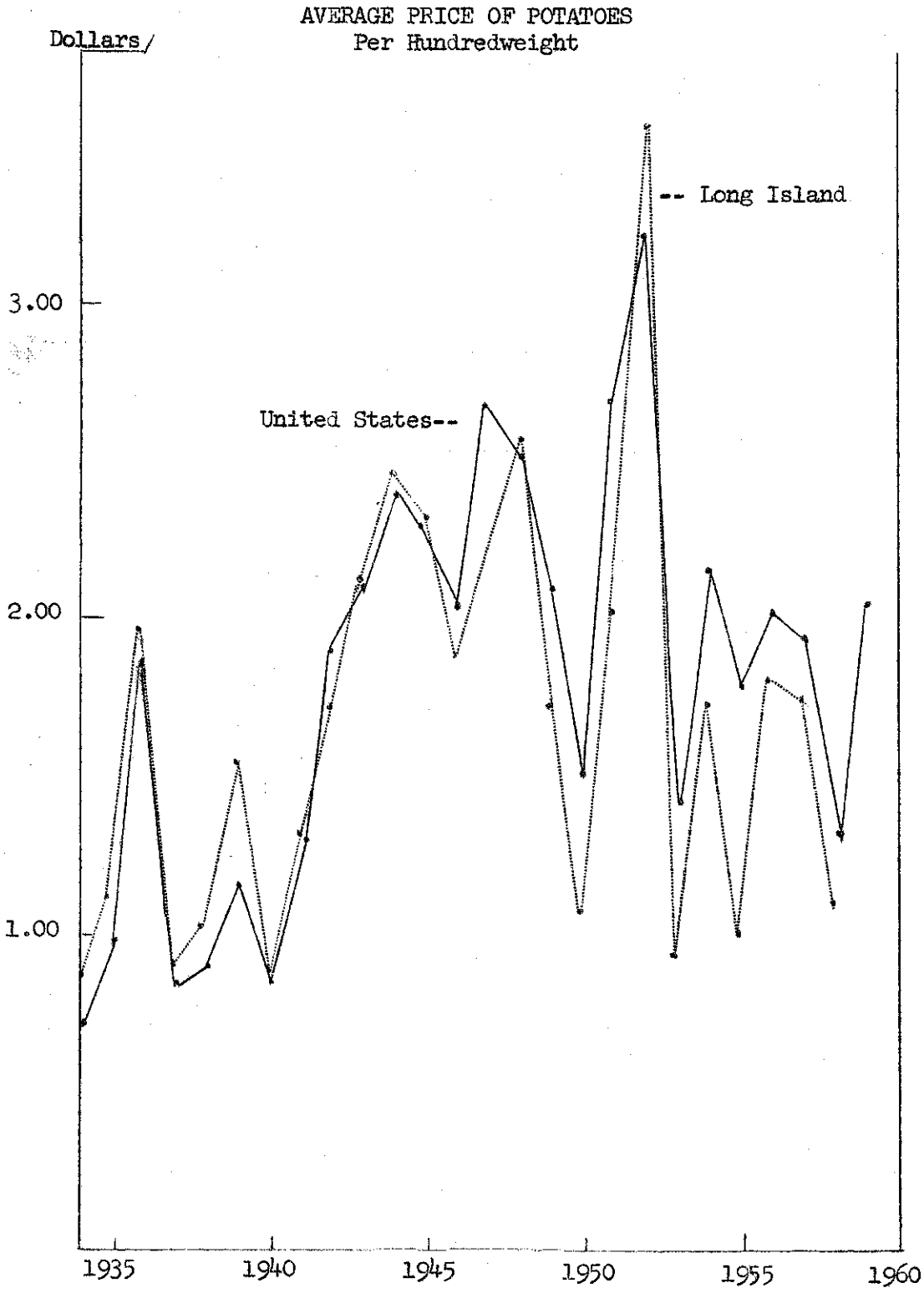

Figure 3. United States and Long Island potatoes brought about the same price until 1949.

Long Island production in 1959

On the Island in 1959 there were 46 thousand acres of potatoes harvested with an average yield of 213 hundredweights per acre (table 1). The total production was 9,817,000 hundredweights.

Acreage, yield and consequent total production were down in 1959 as compared with the five years 1955-59. The acreage was about the same as the pre-war 1935-39 period, but yields were almost double with the result that total production on the Island was much above the pre-war level.

Table 1. ACRES HARVESTED, YIELD PER ACRE, PRODUCTION AND AVERAGE PRICE
Long Island 1935-59

Period	Average per year			Average price received by farmers
	Acres harvested (1000)	Yield per acre (cwt)	Production (1000 cwt)	($/cwt)
1935-39	47.4	123	5,829	1.31
1940-44	59.2	138	8,027	1.70
1945-49	63.8	176	11,305	2.18
1950-54	50.8	202	10,257	1.88
1955-59	50.1	224	11.385	1.43*
1955	55.0	215	11,735	1.02
1956	51.0	226	11,540	1.82
1957	49.0	237	11,602	1.76
1958	49.5	227	12,250	1.11
1959	46.0	213	9,817	**

* Four years
** Not available

The Study

To study potato production on Long Island the potato area was divided into four production areas which are different enough in their physical characteristics to warrant separate consideration. The areas are shown in figure 4.

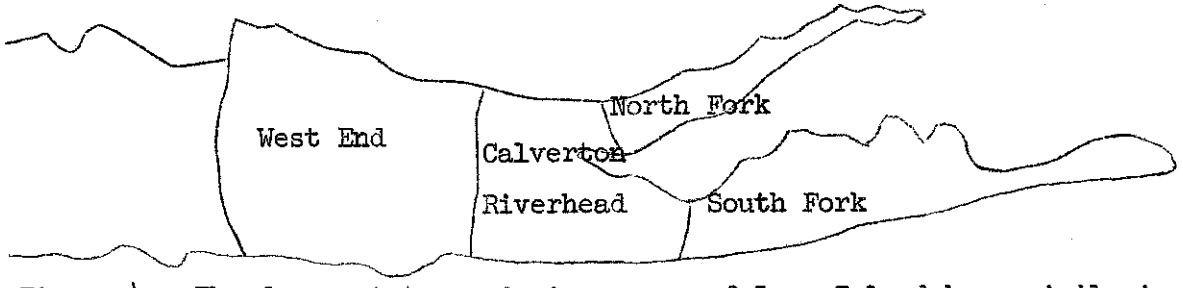

Figure 4. The four potato producing areas of Long Island have similarities but differ enough to warrant separate study.

Characteristics of the areas are as follows:

Table 2. CROPS GROWN
16 Farms
North Fork, Long Island, 1959

Crop	Average acres all farms	Farms reporting Number	Farms reporting Acres per farm
Potatoes	54.7	16	54.7
Cauliflower	3.1	12	4.2
Other cole	4.0	12	5.4
Cucumbers	0.5	3	2.7
Other vegetables	1.8	8	3.6
Strawberries	0.8	5	2.7
Other small fruit	0.2	2	1.1
Small grain	1.6	7	3.6
Forage crops	2.6	1	41.8
Other	0.5	3	2.8
Total	69.8		

North Fork farms are smaller and more diversified than those in other areas. Potatoes accounted for 71 per cent of the total work units on these farms, but considerable amounts of cauliflower, cole crops such as brussel sprouts and cabbage, sweet corn, and other vegetables are grown (table 2). During 1959, rain and a heavy aphid infestation did damage to the crop in the area. Diggers only or digger-baggers were primary methods of harvesting potatoes.

Table 3. CROPS GROWN
14 Farms
West End, Long Island, 1959

Crop	Average acres all farms	Farms reporting Number	Farms reporting Acres per farm
Potatoes	83.1	14	83.1
Cauliflower	4.4	6	10.2
Other cole	5.4	9	8.3
Cucumbers	0.1	1	2.0
Other vegetables	7.9	5	22.2
Strawberries	0.5	5	1.3
Other small fruit	--	--	--
Small grain	18.1	7	36.3
Forage crops	5.4	6	12.7
Other	6.4	5	18.0
Total	131.3		

West End is a large area and has a wide variation in size and type of farms. The per cent work units on potatoes ranged from 38 to 96 and averaged 74. The quality of soil varied widely throughout the area. Farmers grew a variety of vegetables, small fruits and grain crops (table 3). Sixty-four per cent of the farmers used combine harvesters.

Table 4. CROPS GROWN
15 Farms
Calverton-Riverhead, Long Island, 1959

Crop	Average acres all farms	Farms reporting Number	Farms reporting Acres per farm
Potatoes	75.1	15	75.1
Cauliflower	9.9	14	10.6
Other cole	0.7	5	2.0
Cucumbers	0.4	3	1.8
Other vegetables	0.6	5	1.8
Strawberries	1.4	11	1.9
Other small fruit	--	--	--
Small grain	3.2	7	6.9
Forage crops	1.4	7	3.0
Other	0.6	5	1.9
Total	93.3		

Calverton-Riverhead Area lies between the North Fork and West End geographically and in physical characteristics. The farms are larger than in the North Fork but smaller than in the West End. Potatoes accounted for 70 per cent of the work units, but the number of acres per farm was more than the North Fork and less than the West End area. A fairly large acreage of cauliflower was grown in this area (table 4). Because of the larger acreage per farm, there was more mechanization than the North Fork but less than the West End. Almost 50 per cent of the farmers used combine harvesters. The area also suffered from excessive rain and aphid infestation.

Table 5. CROPS GROWN
16 Farms
South Fork, Long Island, 1959

Crop	Average acres all farms	Farms reporting Number	Farms reporting Acres per farm
Potatoes	106.1	16	106.1
Cauliflower	--	--	--
Other cole	0.2	1	3.0
Cucumbers	2.9	5	9.4
Other vegetables	0.1	1	1.0
Strawberries	0.2	1	4.0
Other small fruit	--	--	--
Small grain	30.3	15	32.3
Forage crops	2.6	6	7.0
Other	1.0	3	5.3
Total	143.4		

South Fork - The South Fork area had many characteristics of its own that the others did not have. The farms were larger and highly mechanized. Seventy-five per cent of the farms had 70 or more acres of potatoes and 50 per cent had 110 or more acres of potatoes per farm. Not so many vegetables but more grain was produced (table 5). Thirteen out of sixteen farms did not have irrigation equipment. The farmers purchased more seed per acre and applied more applications of spray than any of the other areas. There was some blight trouble in the area during the year.

From a list of 710 Long Island potato growers, 61 records were obtained from farmers who had 30 acres or more of potatoes and lived east of Stoney Brook. Sixteen of these were in the North Fork, 15 in the Calverton-Riverhead, 14 in the West End and 16 in the South Fork areas (table 6).

Table 6. SIZE OF POTATO ENTERPRISE
61 Long Island Potato Farms, 1959

Area	Per farm		
	Total acres operated	Acres of potatoes	Range in acres of potatoes
North Fork	70	55	30-165
Calverton-Riverhead	93	75	35-122
West End	131	83	30-155
South Fork	143	106	40-160
All Farms	109	80	30-165

In general the farm and potato acreages were smallest in the North Fork and largest in the South Fork areas.

Growing Potatoes

Practices

Subsoiling to loosen up the ground was done by 17 farmers.

Fitting was minimal. Most farmers planted soon after plowing.

Cutting seed was done by hand to some extent by most farmers. A few farmers cut all their seed by hand. Only 16 farmers indicated that they treated their seed.

Planting usually was 10 to 11 inches between plants within the row and 34 inches between the rows. Some of the extremes in planting distance were 9 by 32 inches and 14.5 by 34 inches. The planting season on Long Island ordinarily is March 15 to May 1.

Weeding after planting varied with the farmers and with part of the crop because of the weather. The general practice was to knock down the hills after planting and then cultivate. The farmers usually weeded the crop 1 to 4 times and harrowed 1 to 3 times. Some farmers went over the crop as many as 6 times with either a weeder or harrow.

Cultivating, including sidedressing, ranged from 2 to 8 times and averaged 5 times.

Fertilizer was usually put on at planting time with the planter. Thirty-nine farmers sidedressed when cultivating. Ten farmers banded their potatoes

after the plants came up. Two farmers put on nutrient sprays and 11 did not fertilize after planting.

Spraying insecticides and fungicides averaged ten applications. The number of sprays ranged from 4 to 21. Farmers in the North Fork and West End did the least spraying, while those in the South Fork did the most (table 7).

Irrigation was available for all farms in this study in the North Fork, Calverton-Riverhead and the West End areas. In the South Fork area only 3 of the 16 farms had irrigation equipment.

The frequency of irrigation in 1959 was considerably below average for the farms having irrigation equipment. None of the 16 farms in the South Fork irrigated. Eight farms in the North Fork and 1 farm in the Calverton-Riverhead area did not irrigate. Several of the farms did not get over all of their acreage once. Two growers in the West End irrigated 3 times. Many of the farms that were rented had irrigation wells on them and in some cases even had the pump and pipes with them, the cost being included in the rent.

Physical requirements

Man Labor for growing averaged 23 hours per acre of potatoes (table 7). The range was wide, from 11 hours to 51 hours.

Much of the variation was due to the size of the enterprise, particularly as this varied from area to area.

The operators did 61 per cent of the work of growing an acre of potatoes. The balance was done by family or hired labor, mostly seasonal.

Tractor work per acre averaged 9 hours for the growing operations.

Seed purchased ranged from 10 to 21 hundredweights and averaged 15 hundredweights per acre. The North Fork farmers tended to use somewhat less seed per acre than those in other areas. The South Fork farmers were the heaviest users.

Commercial fertilizer applied per acre varied widely between farms. The most common formula used was 5-10-5 (1-2-1 ratio). Thirty-eight out of 61 farmers used this formula only. Thirteen others used this formula fertilizer together with some others. The next most used formulas were 7-7-7 (1-1-1 ratio) and 5-10-10 (1-2-2 ratio). Ten farmers used the former either solely or in combination; five used the latter. Fifty-one of the 61 farmers used supplemental nitrogen in some form or other.

The fertilizer applications ranged widely and averaged 185 pounds of nitrogen, 270 pounds of phosphorus and 151 pounds of potash. The rate of application of nitrogen and potash was close to Cornell recommendations, but the growers put on about 90 per cent more phosphorus than was recommended.

Table 7. PHYSICAL REQUIREMENTS IN GROWING AN ACRE OF POTATOES
61 Long Island Farms, 1959

	Your farm	North Fork	Calverton-Riverhead	West End	South Fork	All farms
Acres of potatoes per farm	____	55	75	83	106	80
Man hours:						
Operator	____	19	14	12	10	14
Other	____	10	7	7	12	9
Total	____	29	21	19	22	23
Tractor hours	____	11	8	8	10	9
Seed purchased (cwt.)	____	16	15	14	16	15
Commercial fertilizer (lbs.)						
N	____	171	183	195	191	185
P_2O_5	____	275	258	251	292	270
K_2O	____	143	155	145	159	151
Times sprayed	____	8	9	8	14	10

Cost per acre

The average cost to grow one acre of potatoes was $288 (table 8). The cost in the North Fork averaged $304; in Calverton-Riverhead area it was $289; in the West End, $276; and in the South Fork, $280.

Ranges in costs were about the same for all areas except the West End where they were somewhat lower. In the Calverton-Riverhead area the growing cost ranged from $256 to $351 per acre. The high cost North Fork area had a similar range of costs, from $256 to $354, but in this area the common level was higher with the result that the average was higher. In the South Fork area the lowest cost per acre was $242 while the high cost was $356. West End costs ranged from $234 to $326.

Table 8. AVERAGE COST TO GROW ONE ACRE OF POTATOES
61 Long Island Potato Farms, 1959

Item	Your farm	North Fork	Calverton-Riverhead	West End	South Fork	All farms
Acres of potatoes per farm	___	55	75	83	106	80
Yield per acre, cwt.	___	192	192	203	235	206
Land cost	$___	$ 53	$ 49	$ 47	$ 50	$ 50
Man labor	___	46	33	30	31	35
Tractor	___	6	7	6	5	6
Truck	___	4	4	3	3	4
Irrigation	___	12	11	12	1	9
General equipment	___	5	5	4	3	4
Special equipment	___	4	4	4	3	4
Fuel and oil	___	8	9	8	8	8
Seed and treatment	___	47	49	47	54	49
Cover crop	___	4	4	3	4	4
Fertilizer and lime	___	71	71	68	75	71
Spray	___	27	26	28	27	27
Interest	___	3	3	3	3	3
Other	___	14	14	13	13	14
Total Growing Cost	$___	$304	$289	$276	$280	$288

Fertilizer and lime was the largest single cost and was 25 per cent of the total (figure 5). Land, the next largest expense item, made up 18 per cent of the total; seed and seed treatment accounted for 17 per cent, and labor was 12 per cent. The five items, fertilizer, land, seed, labor and spray, accounted for 81 per cent of the total cost to grow an acre of potatoes.

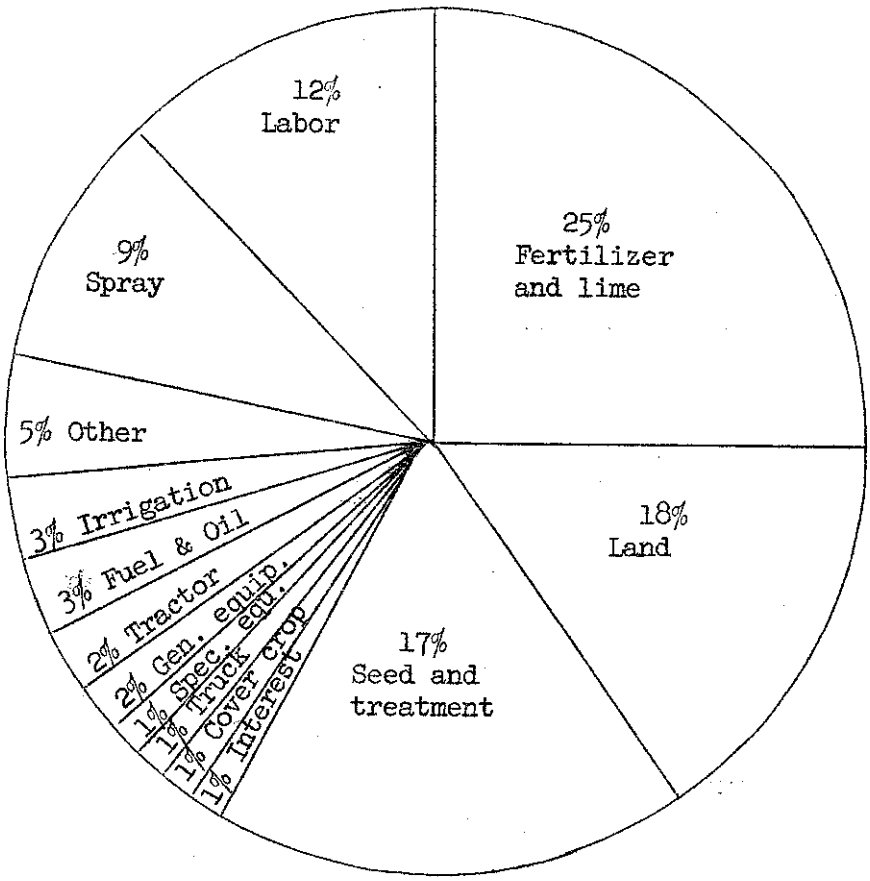

Figure 5. Percentage Distribution of Cost to Grow One Acre of Potatoes

Harvesting Potatoes

Method of harvesting

Fifty-two per cent or 31 growers had combine harvesters (table 9). Twenty-nine of these had more than 70 acres of potatoes. Even with this trend toward mechanized harvesting on large farms, there were 5 growers with more than 70 acres of potatoes who still used a digger or a digger-bagger. Eighty-one per cent of the growers on the North Fork used diggers or digger-baggers, wheras 80 per cent of the growers on the South Fork used combine harvesters.

Table 9. METHOD OF HARVESTING BY AREAS
60 *Long Island Potato Farms, 1959

Type of harvester	Acres of potatoes per farm	Number of farms				
		North Fork	Calverton-Riverhead	West End	South Fork*	Total
Digger	59	5	5	2	3	15
Digger-bagger	46	8	3	3		14
Combine harvester (pull type)	108	2	2	9	11	24
Combine harvester (self-propelled)	98	1	5		1	7

* One grower hired all his acreage harvested.

Physical requirements

Labor for harvesting averaged 25 hours per acre (table 10). The range was from 7 to 57 hours. This wide range can be attributed mostly to the method of harvesting used. Labor was more important on farms using diggers or diggers with baggers attached than for those using combine harvesters where machinery replaced labor. Twenty-eight per cent of the harvesting labor was done by the operator.

Table 10. PHYSICAL REQUIREMENTS TO HARVEST AN ACRE OF POTATOES
61 Long Island Potato Farms, 1959

Inputs	Your farm	North Fork	Calverton-Riverhead	West End	South Fork	All farms
Acres of potatoes per farm	___	55	75	83	106	80
Yield per acre (cwt.)	___	192	192	203	235	206
Per cent of farms using combines	___	19	47	64	80	52
Man hours:						
Operator	___	10	7	7	5	7
Other	___	14	8	10	12	11
Picking up potatoes	___	8	7	8	6	7
Total	___	32	22	25	23	25
Tractor hours	___	6	3	5	3	4

Tractor work for harvesting an acre of potatoes averaged four hours. Those farmers using self-propelled harvesters used very few tractor hours to harvest an acre of potatoes.

Cost to harvest

It cost about $69 an acre to harvest potatoes (table 11). Forty-nine per cent of this was labor. Seventeen per cent of the total harvesting cost was for special harvesting equipment. Custom work accounted for only 1 per cent of the harvesting cost. The harvesting cost varied widely because of the method of harvesting used and the yield.

Table 11. AVERAGE COST TO HARVEST ONE ACRE OF POTATOES
61 Long Island Potato Farms, 1959

	Your farm	North Fork	Calverton-Riverhead	West End	South Fork	All farms
Labor:						
Regular	$___	$ 33	$ 22	$ 25	$ 22	$ 26
Picking	___	10	9	8	6	8
Tractor	___	3	3	3	1	2
Truck	___	9	10	8	9	9
Equipment	___	8	13	16	13	12
Fuel and oil	___	6	6	6	5	6
Vine killer	___	2	2	2	3	2
Custom work	___	1	-	-	1	1
Other	___	4	3	3	3	3
Total Harvesting Cost	$___	$ 76	$ 68	$ 71	$ 63	$ 69
TOTAL COST TO GROW AND HARVEST	$___	$380	$357	$347	$343	$357

Growing and Harvesting Potatoes

The total cost to grow and harvest an acre of potatoes averaged $357 (table 12). It was highest in the North Fork where the acreages were smaller and smallest in the South Fork where the larger potato enterprises were found.

Table 12.

AVERAGE COST TO GROW AND HARVEST
AN ACRE OF POTATOES
61 Long Island Potato Farms, 1959

Item	Your farm	North Fork	Calverton-Riverhead	West End	South Fork	All farms
Acres of potatoes per farm	____	55	75	83	106	80
Yield per acre, cwt.	____	192	192	203	235	206
Growing:						
Land cost	$ ____	$ 53	$ 49	$ 47	$ 50	$ 50
Man labor	____	46	33	30	31	35
Tractor	____	6	7	6	5	6
Truck	____	4	4	3	3	4
Irrigation	____	12	11	12	1	9
General equipment	____	5	5	4	3	4
Special equipment	____	4	4	4	3	4
Fuel and oil	____	8	9	8	8	8
Seed and treatment	____	47	49	47	54	49
Cover crop	____	4	4	3	4	4
Fertilizer and lime	____	71	71	68	75	71
Spray	____	27	26	28	27	27
Interest	____	3	3	3	3	3
Other	____	14	14	13	13	14
Total Growing Cost	$ ____	$304	$289	$276	$280	$288
Harvesting:						
Labor-						
Regular	$ ____	$ 33	$ 22	$ 25	$ 22	$ 26
Picking	____	10	9	8	6	8
Tractor	____	3	3	3	1	2
Truck	____	9	10	8	9	9
Equipment	____	8	13	16	13	12
Fuel and oil	____	6	6	6	5	6
Vine killer	____	2	2	2	3	2
Custom work	____	1	-	-	1	1
Other	____	4	3	3	3	3
Total Harvesting Cost	$ ____	$ 76	$ 68	$ 71	$ 63	$ 69
TOTAL COST TO GROW AND HARVEST	$ ____	$380	$357	$347	$343	$357

Causes in Differences in Costs

Size of enterprise

Size of enterprise was an important factor in affecting both cost to grow and harvest potatoes. As size increased, both of these costs tended to decrease (table 13). A minor exception was the 50 to 69 acre group which had a slightly higher harvest cost per acre than the 30 to 49 acre group. It should be noted, however, that the average yield on the farms in the group were considerably higher than those with the smaller enterprises.

Table 13. RELATIONSHIP OF SIZE TO COST OF GROWING AND HARVESTING ONE ACRE OF POTATOES
61 Long Island Potato Farms, 1959

Acres per farm	Number of farms	Yield per acre (cwt.)	Cost to grow per acre	Cost to harvest per acre	Total cost to grow and harvest per acre
30 - 49	15	197	$302	$78	$380
50 - 69	12	211	290	80	370
70 - 99	17	209	286	67	353
100 and over	17	207	274	58	332

As the potato acreage per farm increased from 30 to 49 to 100 acres and over, the cost to grow per hundredweight decreased from $1.57 to $1.39 per hundredweight, or $0.18 (table 14). The cost to harvest decreased $0.11 per hundredweight between the two groups. The total difference in cost between the two groups was $0.29 per hundredweight. This is a sizeable disadvantage for the small grower.

Table 14. RELATIONSHIP OF SIZE TO COST OF GROWING AND HARVESTING ONE ONE-HUNDREDWEIGHT OF POTATOES
61 Long Island Potato Farms, 1959

Acres per farm	Number of farms	Yield per acre (cwt.)	Cost to grow per cwt.	Cost to harvest per cwt.	Total cost to grow and harvest per cwt.
30 - 49	15	197	$1.57	$0.40	$1.97
50 - 69	12	211	1.43	0.39	1.82
70 - 99	17	209	1.40	0.32	1.72
100 and over	17	207	1.39	0.29	1.68

Amount of seed per acre

As the amount of seed purchased increased, the yield also appeared to increase (table 15). It should be noted, however, that the seed usage was the highest in the South Fork where also the most fertilizer was applied and the most spraying was done.

Table 15. RELATIONSHIP OF AMOUNT OF SEED PER ACRE TO FERTILIZER AND YIELD
61 Long Island Potato Farms, 1959

Item	Number of farms	Cwt. Seed	Pounds per acre N	P	K	Yield cwt/A
10 - 13	12	12	181	268	144	187
14	14	14	170	267	144	184
15 - 16	18	15	195	253	150	211
17 - 21	17	18	188	290	162	232
All farms	61	15	185	270	151	206

Number of spray applications

Yield also increased as the number of spray applications increased, but here again this was accompanied by more fertilizer and seed (table 16).

Table 16. RELATIONSHIP OF NUMBER OF SPRAYS TO FERTLIZER INPUTS AND YIELDS
61 Long Island Potato Farms, 1959

Number of applications	Number of farms	Number of sprays	Fertilizer per acre N	P	K	Yield cwt/A
4 - 6	10	6	163	246	150	192
7 - 8	13	7	179	268	149	190
9 - 10	16	9	189	268	153	194
11 - 12	11	11	198	275	140	208
13 - 21	11	15	192	290	162	251
Total or average	61	10	185	270	151	206

Fertilizer

Generally there is only slight indication of relationships of fertilizer application to yield. This would indicate that many farmers are using at least as much fertilizer as will bring the best yields under normal conditions. Nitrogen shows more relationship to yield than most of the other elements, but there is no definite trend of relationship (table 17).

Table 17. RELATION OF NITROGEN APPLIED TO YIELD
61 Long Island Potato Farms, 1959

Pounds of nitrogen per acre	Number of farms	Pounds per acre			Yield cwt/A
		N	P_2O_5	K_2O	
109 - 169	19	151	270	147	196
170 - 189	16	180	257	144	199
190 - 209	13	200	283	158	223
210 - 250	13	225	271	157	211

Phosphorus showed no relationship at the levels of this nutrient that were being used (table 18).

Table 18. RELATIONSHIP OF PHOSPHORUS APPLIED TO YIELD
61 Long Island Potato Farms, 1959

Pounds of phosphorus per acre	Number of farms	Pounds per acre			Yield cwt/A
		N	P_2O_5	K_2O	
140 - 199	10	181	165	162	191
200 - 259	11	181	240	134	205
260 - 299	12	186	286	145	198
300 - 309	20	186	301	151	218
310 - 375	8	190	338	166	208

Potash likewise showed no direct relationship at the levels at which farmers were using the element (table 19).

Table 19. RELATIONSHIP OF POTASH APPLIED TO YIELD
61 Long Island Potato Farms, 1959

Pounds of potash per acre	Number of farms	Pounds per acre			Yield cwt/A
		N	P_2O_5	K_2O	
110 - 139	13	179	248	126	206
140 - 149	10	175	255	144	184
150 - 159	27	186	284	152	211
160 - 250	11	199	273	184	211

Yield

The various farming practices in addition to the natural environmental conditions all influence yield, and yield in turn is probably the biggest item that can affect per unit production cost. With a low yield the margin of profit per hundredweight of potatoes is low, and with high yields it can be fair with low prices and excellent with good prices. On the farms studied, as the yield increased the cost per hundredweight of potatoes both to grow and to harvest decreased (table 20).

The total cost per hundredweight was $0.88 more for those growers who produced less than 170 hundredweights of potatoes per acre as compared with 230 or over. Seventy-two cents of the $0.88 was a reduction in the growing cost while $0.16 was in harvesting costs.

Table 20. RELATIONSHIP OF YIELD PER ACRE TO COST PER HUNDREDWEIGHT
61 Long Island Potato Farms, 1959

Hundredweight per acre	Number of farms	Per hundredweight		
		Growing cost	Harvesting cost	Growing and harvesting cost
Less than 170	10	$1.89	$0.44	$2.33
170 - 189	10	1.57	0.39	1.96
190 - 209	15	1.44	0.35	1.79
210 - 229	12	1.25	0.31	1.56
230 or over	14	1.17	0.28	1.45
Total or Average	61	$1.40	$0.34	$1.74

If we assume a price of $2.00 and a selling cost of $0.20 per hundredweight for potatoes, farmers with 230 hundredweights or over of potatoes would show a profit of $0.35 while those with a yield of less than 170 hundredweights per acre will lose $0.53 per hundredweight of potatoes.

There was little relationship between yield and cost of growing and harvesting an acre of potatoes (table 21). Farmers with higher yields did not have proportionately higher costs.

Table 21. RELATIONSHIP OF YIELD PER ACRE TO COST PER ACRE
61 Long Island Potato Farms, 1959

Hundredweight per acre	Number of farms	Per acre				
		Harvest labor	Special harvest equipment	Total growing cost	Total harvest cost	Total grow and harvest cost
Less than 170	10	$34	$10	$290	$67	$357
170 - 189	10	33	11	283	70	353
190 - 209	15	36	12	288	70	358
210 - 229	12	29	15	275	67	342
230 and over	14	37	12	299	73	372

Method of harvesting was one of the main causes of differences in cost among the Long Island farmers. Growers who used a digger and picked up potatoes by hand or used a digger with a bagging machine attached had considerably higher costs than those using combines (table 22). Equipment costs were higher for the latter, but these were more than offset by the saving in hours of labor and resultant saving in labor cost.

Table 22. RELATIONSHIP OF METHOD OF HARVESTING TO HOURS OF LABOR AND COST TO HARVEST ONE ACRE OF POTATOES
60* Long Island Potato Farms, 1959

Type of harvester	Number of farms	Per acre				
		Hundredweight yield	Man hours to harvest	Labor cost to harvest	Machinery cost to harvest	Total labor and machinery cost to harvest
Digger	15	200	37	$48	$ 6	$54
Digger-bagger	14	193	34	48	6	54
Combine harvester (pull type)	24	214	18	22	18	40
Combine harvester (self-propelled)	7	204	12	18	20	38

* One grower hired all his acreage harvested.

Farmers using the digger or digger-bagger had similar labor requirements, 37 hours with a digger and 34 hours with a digger-bagger, and took at least twice as much time as was required with a pull type or self-propelled combine harvester. When studied in relation to costs per acre, the reduced costs associated with combines carried over into the total with the result that there were sizeable differences (table 23).

Table 23. RELATIONSHIP OF METHOD OF HARVESTING TO GROWING AND HARVESTING COST PER ACRE
60* Long Island Potato Farms, 1959

Type of harvester	Number of farms	Hundredweight yield per acre	Acres of potatoes per farm	Per acre		
				Cost to grow	Cost to harvest	Cost to grow and harvest
Digger	15	200	59	$287	$80	$367
Digger-bagger	14	193	46	301	77	378
Combine harvester (pull type)	24	214	108	280	61	341
Combine harvester (self-propelled)	7	204	98	285	60	345

* One grower hired all his acreage harvested.

The growers using combine harvesters had costs of harvesting which were about $0.10 a hundredweight less than those using a digger or digger-bagger (table 24). These lower unit costs were influenced by the higher yields on the farms using combine harvesters.

Table 24. RELATIONSHIP OF METHOD OF HARVESTING TO COST PER HUNDREDWEIGHT TO GROW AND HARVEST
60* Long Island Potato Farms, 1959

Type of harvester	Number of farms	Hundredweight yield per acre	Per cwt.		
			Cost to grow	Cost to harvest	Cost to grow and harvest
Digger	15	200	$1.47	$0.41	$1.88
Digger-bagger	14	193	1.60	0.40	2.00
Combine harvester (pull type)	24	214	1.34	0.29	1.63
Combine harvester (self-propelled)	7	204	1.45	0.30	1.75

* One grower hired all of his acreage harvested.

Yield necessary to break even

If a farmer is to break even or make a profit for his year's work and investment, he must receive enough money from the sale of his potatoes to cover all expenses for growing, harvesting, and selling his crop. The yield a farmer needs depends upon the price received and the growing, harvesting, and selling costs per hundredweight. The growing cost per hundredweight will vary among producers because of the inputs used. Harvesting and selling cost will also vary among producers, but will tend to be more stable than growing cost because most of this expense is on a unit basis. In 1959, the growers on Long Island had an average harvesting cost of $0.34 per hundredweight. Assuming they had s storing and selling cost of $0.20 per hundredweight, they would need a yield of 212 hundredweight per acre to break even with an average price of $1.90 per hundredweight.

The yield necessary to break even with different selling prices and growing costs is shown in table 25. For example, if a grower has a growing cost of $275 per acre and the selling price is $2.00 per hundredweight, he must get a yield of 190 hundredweights per acre to break even if he has a harvesting cost of $0.35 per hundredweight and selling cost of $0.20 per hundredweight.

The break-even table can be used by growers as a guide to determine the yield or price that is necessary to break even with different growing, harvesting and selling costs.

Table 25. YIELD NECESSARY TO BREAK EVEN WITH DIFFERENT SELLING PRICES FOR POTATOES

Price per cwt.	Harvesting cost per cwt.	Storing and selling cost per cwt.	Difference per cwt. to apply toward cost of growing	Yield in hundredweight necessary to break even with growing cost of:				
				$225	$250	$275	$300	$325
$1.00	$0.35	$0.20	$0.45	500	556	611	667	722
1.25	0.35	0.20	0.70	321	357	393	429	464
1.50	0.35	0.20	0.95	237	263	289	316	342
1.75	0.35	0.20	1.20	188	219	229	250	271
2.00	0.35	0.20	1.45	155	172	190	207	224
2.25	0.35	0.20	1.70	132	147	162	176	191
2.50	0.35	0.20	1.95	115	128	141	154	167
2.75	0.35	0.20	2.20	102	114	125	136	148
3.00	0.35	0.20	2.45	92	102	112	122	133

The farmer control on yield and selling price is limited, but he does have considerable control on growing cost. If the farmer is going to have higher than average growing costs, then he must obtain a yield that is high enough to justify this cost if he wishes to break even.

When prices are low, the farmer must receive a much higher yield to break even. With a slight increase in price, it takes a much lower yield to break even. Therefore, when prices are low, yield is the most important factor. When yields are low, then price may be the most important factor that will determine the break-even point.

A grower who can keep his costs down and still obtain a good yield can break even when prices are only fair.

Summary

Potato enterprises were smallest in the North Fork and the Calverton-Riverhead areas and were larger in the West End and particularly the South Fork.

The yield averaged 206 hundredweights per acre. The South Fork area had the largest yield per acre in 1959.

The farms with smaller acreage had higher cost per acre and per hundredweights because of the difficulty of spreading cost.

Approximately 48 man hours were required to grow and harvest an acre of potatoes. Approximately 23 hours were required in growing and 25 hours were required in harvesting. This varied greatly from farm to farm especially as method of harvesting differed.

Thirteen tractor hours were used to grow and harvest an acre of potatoes.

The cost to grow and harvest an acre of potatoes averaged $357. The growing cost was $288 an acre or 81 per cent of the total. The harvesting cost was $69 or 19 per cent.

Farmers with large enterprises tended to have lower growing and harvesting costs than those with small businesses.

High yields were associated with ample seed, a good spray program and other good practices. In turn, both growing and harvesting cost per hundredweight decreased as the yield increased.

There was no direct relationship shown between pounds of nitrogen, phosphorus and potash applied and yield per acre, indicating that most growers were using ample fertilizer.

Fifty-two per cent of the growers used combine harvesters and had harvesting costs about $0.10 a hundredweight less than farmers using diggers or digger-baggers.