COSTS OF OPERATING POTATO SPRAY RINGS 1945

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A total of 83 custom-operated potato spray rings were in operation in New York State in 1945. The rings were organized as follows:

1940	2 rings
1941	10 rings
1942	5 rings
1943	18 rings
1944	35 rings
1945	13 rings
Total	83 rings

The 83 rings sprayed about 21 thousand acres of potatoes in 1945, or one-fifth of the potatoes grown in upstate New York.

This report summarizes the costs of operating 32 of these custom-operated potato spray rings during the 1945 season.

The spray ring operators who furnished the information used in this report were:

Carleton R. Abbott	Onondaga	Sven Holmstrom	Chautauqua
Vernon Aldrich	Erie	John Johnson	Wyoming
Walter Babbitt	Allegany	Francis Jones	Cortland
Charles Bellows	Cayuga & Onondaga	Clifford Lester	Cattaraugus
		Edward N. Lieber	Onondaga
Allen Briggs	Chautauqua	George McCoy	Franklin
Briggs Bros.	Steuben	Richard Muellecker	Rensselear
Thomas Buckley	Erie	Maurice Phelps	Erie
Avery Capwell	Genesee	Donald Rienhardt	Cayuga
Charles Cobb	Franklin	Leonard Schoultice	Steuben
Stephen E. Eaton	Cayuga	Lloyd Smith	Oneida
Fesko Bros.	Onondaga	Bernard Stamper	Erie
G.L.F. (Wm. Ellsworth)	Cortland(3)	Walter Thomas	Onondaga
G.L.F. (Wm. Ellsworth)	Madison	Lester Tinch	Erie
Allen Gartenman	Erie	Ralph Warner	Cattaraugus & Wyoming
Arthur Genung	Allegany		
Ellsworth Hemstreet	Rensselear	Arthur Wittmeyer	Erie
		Alois Wrobel	Oneida

Acknowledgement is also made of the assistance received from the County Agricultural Agents in the 20 counties with potato spray rings in 1945.

Size of Spray Rings

The spray rings had an average of 41 growers. The acreage of potatoes per grower averaged 5.7. One spray ring had 10 growers with an average of 30 acres per grower, while another ring with 75 growers had an average of only 2.4 acres per grower. The acreage of potatoes per spray ring averaged 235 but varied from a low of 147 acres in one ring to a high of 330 acres in another.

TABLE 1. SIZE OF SPRAY RINGS
32 Spray Rings, New York, 1945

Item	Average of 32 rings	Your ring
Number of growers	41	----
Acres of potatoes per grower	5.7	----
Acres of potatoes per spray ring	235	----
Average times sprayed	6.3	----
Total acres sprayed	1471	----

Each acre of potatoes was sprayed on the average 6.3 times during the season. The number of sprays applied per acre, however, varied from 4.3 in one ring to 8.5 in another. The number of sprays applied per acre in 1945 was lower than that in 1944 because unfavorable weather delayed the planting of potatoes and the fact that the equipment for some rings arrived after the spraying season should have been started. The number of sprays applied in 1944 averaged 6.7.

Labor and Equipment

It required an average of 5.6 months of labor to operate custom spray rings during the 1945 season. This is a little less than the 6.0 months of labor required to operate the rings in 1944 and again reflects the shorter spraying season that was experienced by some rings.

TABLE 2. LABOR AND EQUIPMENT
32 Spray Rings, New York, 1945

Item	Average of 32 rings	Your ring
Months of labor	5.6	----
Original cost of equipment	$3530	----
Percentage of original cost charged to spray ring	83	----
Amount of original cost charged to spray ring	$2938	----

The original cost of the equipment used in these spray rings averaged slightly over $3500. Since all but 5 of the rings used part of the equipment (the truck and tractor) for other purposes during the year, the percentage of the original cost charged to the spray ring averaged 83 per cent. This left an average investment per ring of $2938.

Materials Used

As an average for the 32 spray rings, 10.8 pounds of lime and 11.3 pounds of copper sulphate were used per acre sprayed.

While these amounts were in excess of recommendations, they probably were accounted for by materials wasted, repeat sprayings with no extra charge, errors in acreage, and the desire on the part of the spray ring operators to do a good job. The quantity of materials applied per acre in 1945 was practically the same as the applied in 1944.

Just under one gallon of gasoline was used per acre sprayed.

TABLE 3. MATERIALS USED PER ACRE
32 Spray Rings, New York, 1945

Item	Average of 32 rings	Your ring
Lime	10.8 lbs.	----
Copper sulphate	11.3 lbs.	----
Gasoline	.9 gals.	----

Operating Costs

Since the cost of hired labor for these spray rings averaged about $150 per month, all labor (including that of the operator) was charged at that rate in order to put the rings on a comparable basis. The charge for the use of the equipment was figured at one-third of the share of the equipment chargeable to the spray ring. Such a charge represents mostly depreciation but also interest on the investment.

The cost of operating the spray rings in 1945 totaled $3516 per ring, or $2.39 per acre. Spray materials, use of equipment, and labor represented 84 per cent of the total operating costs.

TABLE 4. OPERATING COSTS
32 Spray Rings, New York, 1945

Item	Total cost		Cost per acre	
	Average of 32 rings	Your ring	Average of 32 rings	Your ring
Labor (at $150 per month)	$ 840	----	$0.57	----
Use of equipment	979	----	.67	----
Repairs and maintenance	224	----	.15	----
License and tax on truck	41	----	.03	----
Insurance on equipment	48	----	.03	----
Spray materials	1115	----	.76	----
Gas, oil, and grease	238	----	.16	----
Other items	31	----	.02	----
Total	$3516	----	$2.39	----

The total cost of operating spray rings in 1945 ($3516) was practically the same as that for 1944 ($3522). The cost per acre sprayed, however, increased from $2.17 in 1944 to $2.39 in 1945, or about 10 per cent.

Acres Sprayed and Costs

The most important factor affecting the cost of operating potato spray rings is the total number of acres sprayed during the season. To illustrate the relationship between acres of potatoes sprayed and cost per acre, the rings were divided into three groups according to the number of acres sprayed. Those in the small group sprayed from 823 to 1140 acres during the season or an average of

1052 acres per ring. The rings in the medium-sized group sprayed from 1275 to 1674 acres or an average of 1484 acres per ring, while those in the large group sprayed from 1700 acres to 2480 acres, or an average of 1874 acres.

TABLE 5.

RELATION OF TOTAL ACRES SPRAYED TO VARIOUS FACTORS
32 Spray Rings, New York, 1945

Item	10 rings with low acreage	12 rings with medium acreage	10 rings with high acreage
Number of growers	45	37	41
Acres of potatoes per grower	4.3	6.2	6.9
Acres of potatoes per ring	195	228	281
Average times sprayed	5.4	6.5	6.7
Total acres sprayed	1052	1484	1874
Months of labor	5.3	5.4	6.2
Original cost of equipment	$3189	$3756	$3599
Amount of original cost charged to spray rings	$2902	$2884	$3038

The rings that sprayed a large acreage of potatoes had more potatoes per grower, more acres per ring, and applied more sprays per acre than the other two groups of rings. The large rings sprayed about 78 per cent more acres than the small rings but used only 17 per cent more labor. Some factors that tend to influence the time required to spray potatoes are: distance between growers, acres of potatoes per grower, and ease of spraying the field.

The total cost of operating rings that sprayed a large acreage of potatoes was almost $800 more than that for the rings that sprayed a low acreage, yet the large rings sprayed over 800 more acres. In other words, the additional acres in the large rings were sprayed at a cost of about $1.00 per acre. Most of the increased cost of operating the large spray rings was for spray materials.

TABLE 6. RELATION OF TOTAL ACRES SPRAYED TO TOTAL COSTS
32 Spray Rings, New York, 1945

Item	Total Cost		
	10 rings with low acreage	12 rings with medium acreage	10 rings with high acreage
Labor (at $150 per month)	$ 795	$ 810	$ 930
Use of equipment (1/3 of original cost)	967	961	1013
Repairs and maintenance	255	198	225
License and tax on truck	34	46	43
Insurance on equipment	40	47	56
Spray materials	871	1076	1406
Gas, oil, and grease	192	242	278
Other items	43	21	31
Total	$3197	$3401	$3982

The rings that sprayed a low acreage of potatoes during the 1945 season had a cost of $3.04 per acre. Those that sprayed medium-sized acreages had a cost of $2.29 while those that sprayed large acreages had a cost of $2.12. In general, the larger the acreage of

potatoes sprayed per ring the lower the cost per acre. If the acreage of potatoes sprayed per ring is low, an increase in the acreage sprayed will reduce costs considerably. If the acreage per ring is about medium, a further increase in the acreage sprayed will reduce costs only slightly.

TABLE 7. RELATION OF TOTAL ACRES SPRAYED TO COSTS PER ACRE
32 Spray Rings, New York, 1945

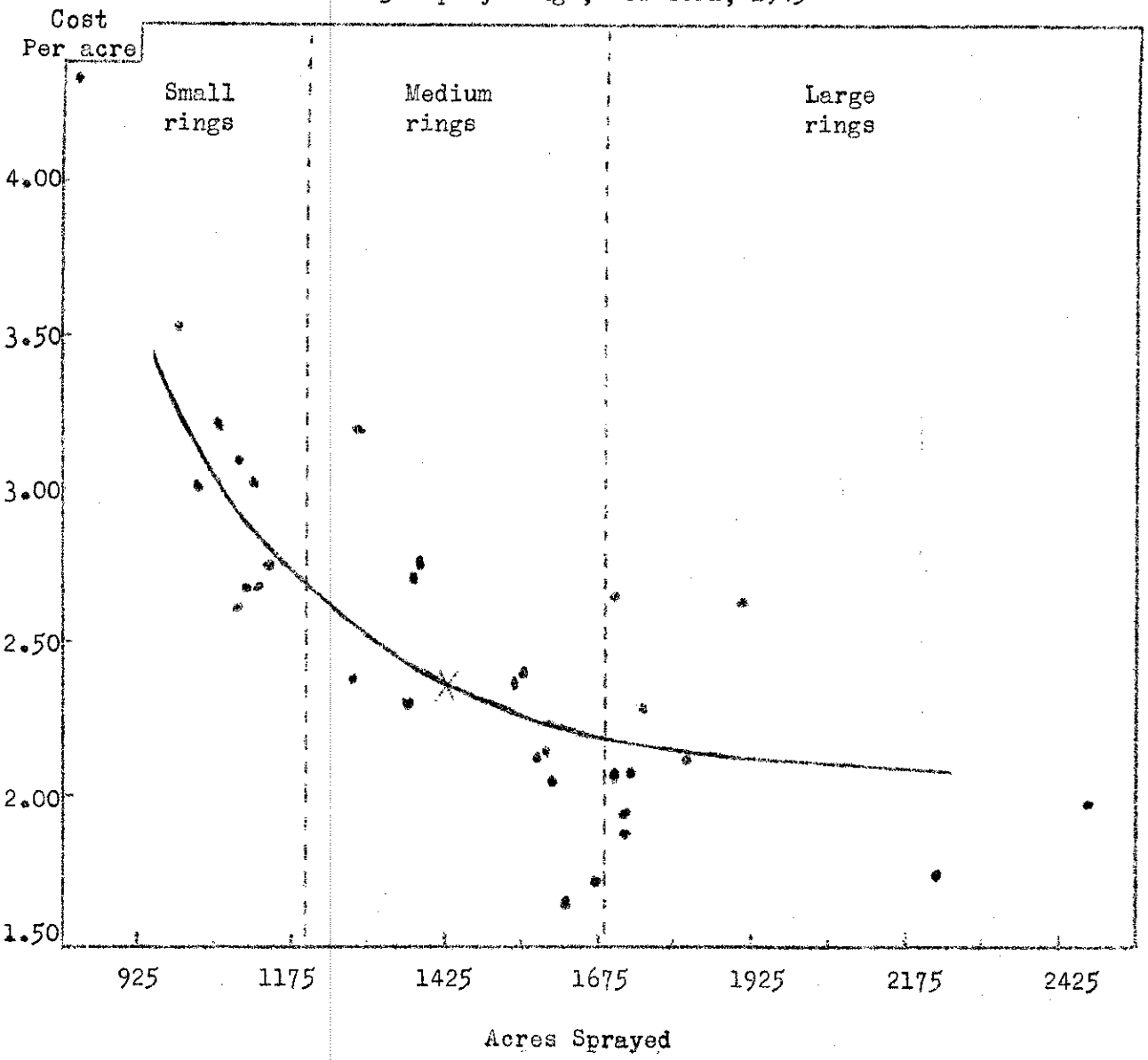
Item	Cost per acre		
	10 rings with low acreage	12 rings with medium acreage	10 rings with high acreage
Labor	$0.76	$0.55	$0.50
Use of equipment	.92	.65	.54
Repairs and maintenance	.24	.13	.12
License and tax on truck	.03	.03	.02
Insurance on equipment	.04	.03	.03
Spray materials	.83	.73	.75
Gas, oil, and grease	.18	.16	.15
Other items	.04	.01	.01
Total	$3.04	$2.29	$2.12

Suggestions for New Rings

There are three things to do if you are planning to establish a new spray ring. They are:

1- Estimate the total acreage that will be sprayed.
2- Use figure I of this publication and see about what the cost per acre will be for the acreage you estimate.
3- Set your rate per acre high enough to cover costs and to encourage good service.

FIGURE 1. RELATION OF ACRES SPRAYED TO COST PER ACRE
32 Spray Rings, New York, 1945



Suggestions for using the above chart to estimate the per acre cost of spraying potatoes are:

1- Estimate the number of acres to be sprayed. (Let's assume that you expect to spray 1425 acres.)

2- Locate this acreage on the bottom scale of the chart.

3- Lay a ruler on the chart, perpendicular to the base line, at 1425 acres and place an "X" on the curve in the chart where a line drawn from the point at 1425 acres strikes the curve. (The point is marked with an "X" on the curve.)

4- Place a ruler on the "X", holding it parallel with the base line, and read the approximate cost per acre on the side scale. (For the estimated 1425 acres to be sprayed, the approximate cost would be about $2.35 per acre.)