ERS-207

Truck Crop Production Practices

ERIE COUNTY, NEW YORK

Labor, Power, and Materials, by Operation

Farm Production Economics Division
Economic Research Service
U. S. Department of Agriculture

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Crossley S-D Surveys, Inc., New York, N.Y., prepared the sample, conducted the field interviewing, and tabulated the statistical data under a contract with the U.S. Department of Agriculture.

HOW TO USE THE DATA

Different kinds of data are needed for different purposes. Some persons have need for data on average labor, power, and material inputs, while others, particularly county agents and farm budgeters, prefer data for usual or typical labor, power, and material inputs. The data in this report are presented in such a way as to satisfy both these needs.

Tables 1 and 2 contain information on the characteristics of farms in the sample. The remaining tables are for specific crops. There are four tables and a chart for each crop. These four sets of tables are not numbered in the usual way but are designated by the letters A, B, C, and D.

The tables lettered A present quantities and costs of materials used and of contract work hired per acre. Cost items included are direct costs only; they do not include charges for such items as land, overhead labor, and capital. Data that present only direct costs are somewhat limited in use. They are applicable in computing costs incurred in connection with crop insurance programs and are useful in partial farm budgeting to compare costs of producing alternative crops when charges for overhead labor, machinery, land, and so on, are the same for either crop and, hence, need not be taken into account.

These data are not appropriate and would be misleading for use as the sole criteria in judging whether or not a farmer made a profit on a crop or whether he should stay in business, or in making cost comparisons with crops grown in other areas. For these purposes, total costs are required.

Tables designated B present the various operations performed on the crops, the most common size of equipment used, the average number of times the operation was performed, the acreage covered, the man and power inputs per acre, and the total labor and power used per acre. These data do not reflect an accurate picture of operations or inputs on any one farm; they are averages of all operations and inputs.

Tables designated C present usual or typical labor and power inputs by operation. The accompanying charts show the seasonality of the operation by periods.

Tables designated D present for each operation the composition of the work force by major sources of workers.

Data in these tables were obtained from a sample of growers and are subject to sampling error. For some crops, particularly those having limited numbers of observations, large sampling errors are possible. Therefore, these data should be considered as approximations.

Tables A, B, and D are offered for those persons interested in average requirements. However, extension economists, county agents, farm budgeters, and others may have more use for the data on usual or typical situations shown in table C for each crop.

Farm labor placement officials and others concerned with the problem of obtaining and placing workers may find tables B and D and the charts of value in determining the number of workers necessary for each operation, and the period of time during which local seasonal workers and those from other areas will be needed to supplement the regular farm labor force.

CONTENTS

Previous publications in this group of reports on 1959 truck crop production practices covered the following area:

Publication No.	Area Covered
ARS 43-132	Columbia County, Wis.
ERS-45	Accomack and Northampton Counties, Va.
ERS-79	Broward and Palm Beach Counties, Fla.
ERS-82	Colquitt County, Ga.
ERS-115	Cameron and Hidalgo Counties, Tex.
ERS-128	Imperial County, Calif.
ERS-129	Monterey County, Calif.
ERS-166	San Joaquin County, Calif.
ERS-169	Marion County, Oreg.
ERS-172	Yakima County, Wash.
ERS-206	Berrien and Van Buren Counties, Mich.

TRUCK CROP PRODUCTION PRACTICES
ERIE COUNTY, NEW YORK

Labor, Power, and Materials, by Operation

By

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INTRODUCTION

In 1963 U.S. production of truck crops for fresh market and processing occupied 3.3 million acres of cropland. These crops used slightly more than 1 percent of the total cropland. The farm value of truck crops harvested for sale exceeded $1.2 billion, or an average of $361 per acre harvested. 1/

Although the total acreage of truck crops is small, it is highly concentrated in areas with conditions favorable for production of these crops. The major areas are in California, Florida, Texas, the Eastern Seaboard from Georgia to Long Island, N.Y., the States bordering the Great Lakes, and the Pacific Northwest.

Truck crops in general require intensive labor. These requirements are highly seasonal--with several labor peaks--the highest occurring at harvesttime.

Most truck-crop operations other than land preparation are difficult to mechanize. Thinning and weeding are two preharvest operations still performed largely by hand labor. Harvesting of a majority of truck crops is still predominantly a hand operation. Most of these crops require repetitive pickings, which must be timely, as quality deteriorates very rapidly if the crops are not harvested at the optimum time.

These high labor demands have been difficult to meet, particularly during peak periods of weeding, thinning, and harvesting. Most truck-crop areas do not have sufficient local labor available to handle the crops during these periods. This has led many thousands of workers to migrate from one area to another during the peak seasons. In addition, many thousands of foreign workers are imported annually to help satisfy these heavy seasonal labor demands.

1/ U.S. Department of Agriculture Crop Reporting Board. Vegetables - Fresh Market 1963 Annual Summary - Acreage, Production, and Value of Principal Commercial Crops. Vg. 2-2-(63).

U.S. Department of Agriculture Crop Reporting Board. Vegetables - Processing 1963 Annual Summary - Acreage, Production, and Value of Principal Commercial Crops. Vg. 3-2-(63).

Purchased inputs comprise a high proportion of the total inputs in the production of these crops. Most labor is hired. Fertilizer, seed, pesticides, and containers are significant items that are usually purchased. From 1953 to 1963, prices of these inputs increased relative to prices received for truck crops.

To gain further knowledge of some of the inputs involved in production of vegetables, information regarding the 1958-59 crop was obtained from 2,496 vegetable growers in 12 areas.2/ The areas sampled were the counties of (1) Erie, N.Y., (2) Accomack and Northampton, Va., (3) Colquitt, Ga., (4) Broward and Palm Beach, Fla., (5) Cameron and Hidalgo, Tex., (6) Berrien and Van Buren, Mich., (7) Columbia, Wis., (8) Yakima, Wash., (9) Marion, Oreg., (10) Imperial, Calif., (11) Monterey, Calif., and (12) San Joaquin, Calif.

The areas included in the survey were selected on the basis of importance of seasonal and overall production, diversity of crops grown -- both for fresh market and for processing -- and number and proportion of farmers harvesting truck crops for sale.3/

The survey population was defined as all farmers producing truck crops for sale whose farm headquarters were located within the survey area, except those residing outside the county and more than 20 road miles from their headquarters in the survey area. Within the survey area, a randomized area sampling plan was used to obtain the desired number of respondents.

This is the last of a group of 12 publications containing information on labor requirements, production practices, and costs involved in the production of truck crops for fresh market and processing. Information in this report was obtained from 198 producers in Erie County, N.Y. The area studied is shown in figure 1.

A separate report covering all 12 areas presents information on the extent to which production of truck crops has become vertically coordinated by either ownership or contractual agreements.4/

2/ The Crossley S-D Surveys, Inc., under U.S. Department of Agriculture, Agricultural Research Service contract #12-14-100-3826 (43) conducted the field survey and made preliminary tabulations. The author is responsible for the analysis of the data.

3/ Based on U.S. Department of Commerce, Census of Agriculture, vols. I and II, 1954, and on the 1958 annual summaries of the series cited in footnote 1.

4/ Mighell, Ronald L., Jones, Lawrence A., and Gavett, Earle E. Contract Production of Truck Crops, 12 Selected Areas, United States. ERS-152, U.S. Dept. Agr., March 1964.

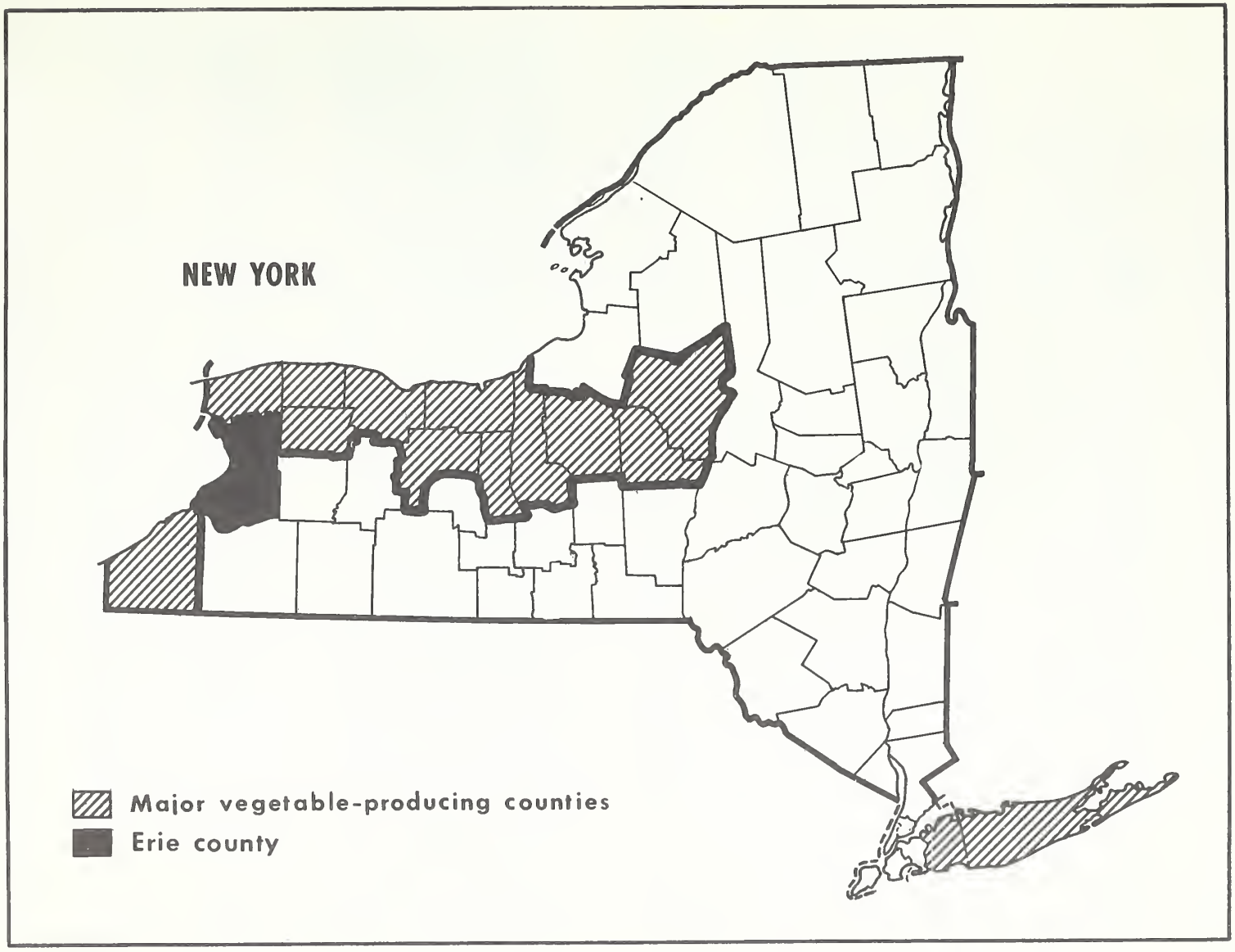

Figure 1

CHARACTERISTICS OF ERIE COUNTY, NEW YORK

New York is an important vegetable-producing State, ranking fifth in acres, production and value of production of fresh market vegetables; fifth in production, and seventh in acres and value of production of vegetables for processing in 1963 (see footnote 1, p. 1).

Erie County is one of the leading vegetable-producing counties in New York. In 1959, Erie ranked first in acres of vegetables harvested--16, 877 of 174, 573--and third in value of vegetable sales--$3, 148, 188 of $35, 891, 360. Only about 5 percent of the State's vegetable farms were located in Erie County, but they accounted for almost 10 percent of the harvested acres and 9 percent of the value of vegetable sales.5/

Erie County is located along the western border of the State and is in the second tier of counties from Lake Ontario. The climate of Erie County is substantially moderated by air currents from over Lake Erie which lies just to the west. In the spring, cold air from over ice and cold water has a tendency to slow up the season and thus crops aren't so apt to be hurt by spring frosts. In the Eden Valley and Collins area, soils and topography permit planting vegetables about a week earlier than is possible in other production areas of the county. In the fall, cold air is moderated by the warmer water of the lake and thus helps prevent early killing frosts. In addition, the cooling effect of air over cold water produces a growing season which is nearly ideal for such cool weather crops as cabbage and cauliflower.

Rainfall is generally plentiful in Erie County, but it doesn't always occur when needed. Thus, some growers have added sprinkler irrigation systems to their operations. Yet for 1959, irrigation of truck crops was not reported on the farms in the survey.

While strawberries are not a truck crop, strawberry acreage, production, and value data are presented in vegetable crop reports. In 1959, growers in Erie County had 39 percent of the New York strawberry acreage. In the winter of 1959-60, information regarding the 1959 production of truck crops and strawberries was obtained by interviewing operators of 198 farms. The survey farms represented a 48-percent sample of all farms harvesting vegetables for sale. On the average, the survey farms had 128.9 acres of cropland. Vegetables were grown on 57.6 acres. These farmers grew many different truck crops. On 47 percent of the farms, 4 or more truck crops were grown (table 1). Specialization of truck crops was apparent only on the very large farms.

Snap beans were grown on nearly 60 percent of the truck crop acreage (table 2). Snap beans grown for processing averaged 123.2 acres per farm as compared with 3.5 acres for snap beans for fresh market. The smallest size planting was in green peas for fresh market, averaging 1.7 acres per farm.

This report presents information on the production and harvesting of eight crops grown for the fresh market and four for processing.

5/ U.S. Department of Commerce 1959 Census of Agriculture, vol. 1, pt. 7.

Table 1.--Sample farms: Number, average acreage of cropland, and distribution of truck crops produced by farms in each size group, Erie County, N.Y., 1959

Cropland operated (acres)	Farms in size groups	Average acreage of cropland per farm	Distribution of farms by number of crops produced									
			1	2	3	4	5	6	7	8	9	10 or more
	Number	Acres	Farms	Farms	Farms	Farms	Farms	Farms	Farms	Farms	Farms	Farms
Under 15.0	19	8.5	1	6	2	1	2	3	---	1	2	1
15.0 - 29.9	28	21.1	6	3	2	3	3	3	1	1	2	4
30.0 - 49.9	26	38.1	7	3	6	3	---	---	2	2	2	1
50.0 - 99.9	44	71.6	8	8	3	4	4	3	3	3	1	7
100.0 - 149.9	32	117.8	4	6	7	3	2	1	2	1	1	5
150.0 - 299.9	30	197.7	5	13	3	2	1	1	---	---	2	3
300.0 - 639.9	14	489.2	2	3	2	4	---	---	---	---	---	3
640.0 and over	5	845.6	1	3	1	---	---	---	---	---	---	---
Total or average	198	128.9	34	45	26	20	12	11	8	8	10	24

Table 2.--Truck crops grown for fresh market and for processing on 198 farms, by acreage harvested, Erie County, N.Y., 1959

Crop	Farms on which crops were grown for--		Acreage harvested			Average acreage harvested per farm		
	Fresh market	Processing	Fresh market	Processing	Total	Fresh market	Processing	Total
	Number	Number	Acres	Acres	Acres	Acres	Acres	Acres
Snap beans	44	52	152.9	6,408.0	6,560.9	3.5	123.2	69.1
Cabbage	73	2	345.7	17.0	362.7	4.7	8.5	4.9
Cantaloups	29	---	64.0	---	64.0	2.2	---	2.2
Cauliflower	53	7	296.2	104.0	400.2	5.6	14.9	6.9
Sweet corn	83	---	757.7	---	757.7	9.1	---	9.1
Green peas	21	11	36.3	307.5	343.8	1.7	28.0	11.1
Squash	57	---	145.4	---	145.4	2.6	---	2.6
Tomatoes	78	42	222.4	792.0	1,014.4	2.8	18.9	9.1
Strawberries	69	18	657.4	166.5	823.9	9.5	9.2	10.2
Other 1/	---	---	828.7	97.5	926.2	---	---	---
Total	---	---	3,506.7	7,892.5	11,399.2	---	---	57.6

1/ Includes 828.7 acres of asparagus, green lima beans, beets, broccoli, carrots, celery, cucumbers, eggplant, endive and escarole, lettuce and romaine, dry onions, parsnips, blackeyed peas, sweet peppers, pumpkin, radishes, rutabagas, spinach, and watermelons for the fresh market, and 97.5 acres of beets, cabbage, carrots, and cauliflower for processing.

Truck crops are classified as fresh market vegetables if they were intended for this use at time of planting and were sold as such at time of harvesting.

In this section, information is presented only for those crops, including strawberries, that were grown and harvested for the fresh market.

Snap Beans

Figure 2 and tables A, B, C, and D present data on snap bean production for the fresh market from 29 acres on 6 farms in 1959. The average yield per acre was 46.9 hundredweight.

Tractors were the chief source of power on these farms. Unless otherwise indicated, they were used for operations listed. Size of tractor was not obtained in the survey. From the size of equipment drawn by the tractors, it is assumed that the average tractor was a 2- or 3-plow unit with a drawbar rating of 15 to 30 horsepower.

Most of the labor involved in snap bean production is in the harvesting; only 7 hours of preharvest labor were used on this crop. In the picking of snap beans, growers relied heavily upon Puerto Rican and local seasonal workers. For all other operations, the farm operator and his family were sufficient.

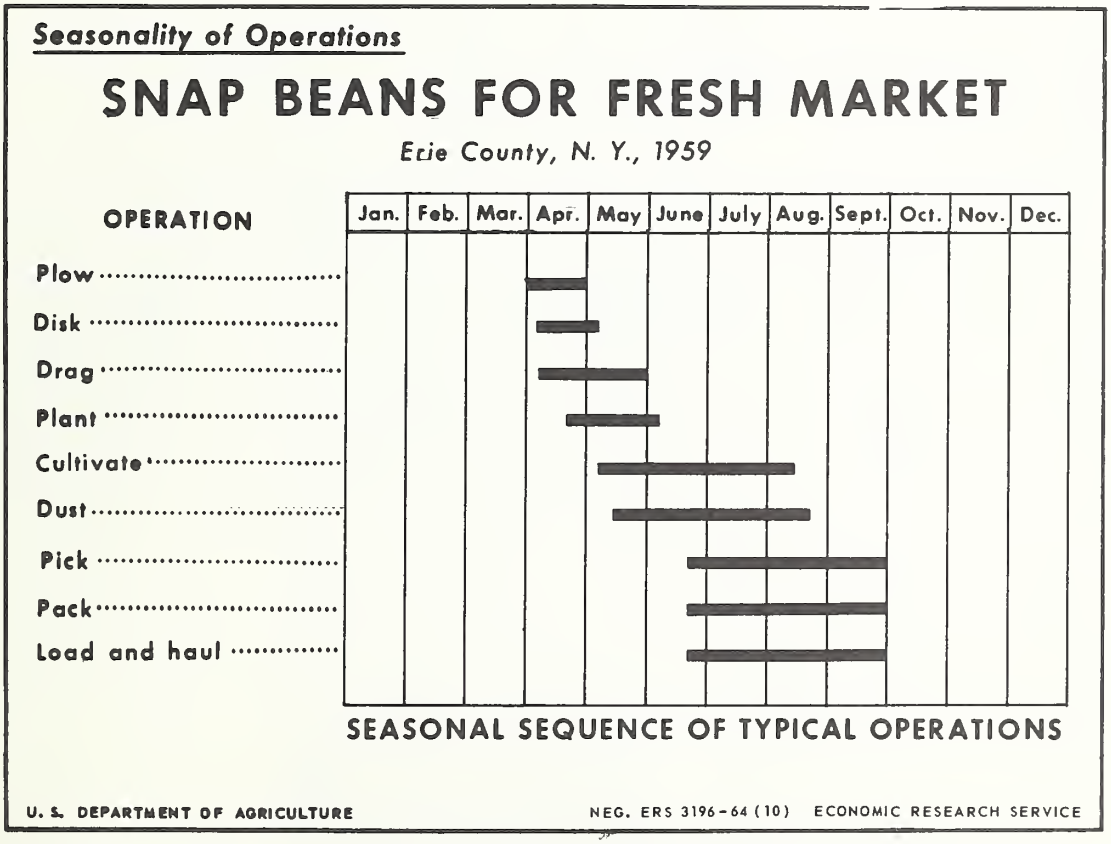

Figure 2

Table A.--Snap beans: Materials used, averages for 29 acres on 6 farms, Erie County, N.Y., 1959

Item	Unit	Units per acre covered	Price per unit	Cost per acre covered	Percentage of total acreage covered	Cost per acre, total acreage
		Number	Dollars	Dollars	Percent	Dollars
Manure	Ton	20.0	1.00	20.00	10	2.00
Seed	Pound	76.2	.30	22.86	100	22.86
Fertilizer nutrients--						
N	Pound	31.8	1/	15.94	90	14.35
P_2O_5	Pound	60.2	1/			
K_2O	Pound	57.9	1/			
Dust materials	Pound	134.2	.077	10.33	66	6.82
Spray materials	Pound	5.3	1.97	10.44	34	3.55
Baskets, bushel	Each	156.3	.17	26.57	100	26.57
Total	---	---	---	---	---	2/ 76.15

1/ Data not available.
2/ Average yield per acre--46.9 hundredweight. Average cost of materials used per hundredweight--$1.62.

Table B.--Snap beans: Labor, power, and machinery used in producing and harvesting, averages for 29 acres on 6 farms, Erie County, N.Y., 1959

Operation	Type and size of equipment	Time per acre, once over		Times over, acreage covered	Percentage of total acreage covered	Time per acre, total acreage	
		Man	Power			Man	Power
		Hours	Hours	Number	Percent	Hours	Hours
Preharvest:							
Plow	3-bot. 14-in. moldbd.	0.9	0.9	1.0	100	0.9	0.9
Spread manure	90-bushel spreader	1.7	1.7	1.0	10	.2	.2
Disk	9-foot tandem	.5	.5	1.0	100	.5	.5
Harrow	3-section springtooth	1.0	1.0	1.0	28	.3	.3
Drag	10-foot	.2	.2	2.0	59	.2	.2
Cultipack	12-foot cultipacker	.1	.1	1.0	41	1/	1/
Fertilize	12-foot sower	.4	.4	1.0	21	.1	.1
Plant 2/	2-row planter/attach.	1.6	1.1	1.0	100	1.6	1.1
Cultivate	2-row cultivator	.8	.8	2.9	100	2.3	2.3
Dust	8-row duster	.1	.1	2.6	66	.2	.2
Spray	6-row boom sprayer	1.2	1.2	1.8	34	.7	.7
Total	---	---	---	---	---	7.0	6.5
Harvest:							
Pick	---	28.0	---	6.1	100	170.8	---
Pack	---	4.6	---	6.1	100	28.1	---
Load and haul	Truck	2.0	2.0	6.1	100	12.2	12.2
Total	---	---	---	---	---	211.1	12.2
Total preharvest and harvest	---	---	---	---	---	3/ 218.1	3/ 18.7

1/ Less than 0.05 hour. 2/ Includes fertilizing on 69 percent of the acreage.
3/ Average yield per acre--46.9 hundredweight. Average labor and power used per hundredweight--4.65 hours and 0.40 hour, respectively.

Table C.--Snap beans: Usual labor and power inputs, Erie County, N.Y., 1959

Operation	Times over	Time per acre, once over		Time per acre, total	
		Man	Power	Man	Power
	Number	Hours	Hours	Hours	Hours
Plow	1	0.9	0.9	0.9	0.9
Disk	1	.5	.5	.5	.5
Drag	2	.2	.2	.4	.4
Plant	1	1.6	1.1	1.6	1.1
Cultivate	3	.8	.8	2.4	2.4
Dust	3	.1	.1	.3	.3
Pick	6	28.0	---	168.0	---
Pack	6	4.6	---	27.6	---
Load and haul	6	2.0	2.0	12.0	12.0
Total	---	---	---	213.7	17.6

Table D.--Snap beans: Distribution of workers performing specified operations, by type of worker on 6 farms, Erie County, N.Y., 1959

Operation	Type of worker		
	Operator and unpaid family	Local seasonal	Puerto Rican
	Percent	Percent	Percent
Plow	100	0	0
Spread manure	100	0	0
Disk	100	0	0
Harrow	100	0	0
Drag	100	0	0
Cultipack	100	0	0
Fertilize	100	0	0
Plant	100	0	0
Cultivate	100	0	0
Dust	100	0	0
Spray	100	0	0
Pick	11	37	52
Pack	100	0	0
Load and haul	100	0	0

Figure 3 and tables A, B, C, and D present information on the growing and harvesting of cabbage for the fresh market from 146 acres on 18 farms in 1959. The average yield per acre was 211.8 hundredweight.

Tractors were the chief source of power on these farms. Unless otherwise stated, they were used for operations listed. Size of tractor was not obtained in the survey. From the size of equipment drawn by the tractors, it is assumed that the average tractor was a 2- or 3-plow unit with a drawbar rating of 15 to 30 horsepower.

The establishment of the cabbage plantings was accomplished by mechanically setting transplants on 88 percent of the acreage and hand-setting the plants on 2 percent. The remaining 10 percent of the acreage was grown from seed drilled in place and thinned during hoeing. Transplanted cabbage plants generally bear sooner and yield heavier than plants grown in place. Thus, fresh-market growers generally set plants and hope to obtain a high price for early cabbage.

Most of the work performed on cabbage was done by the farm operator, his family, and local seasonal help. A few workers of Puerto Rican origin were used in transplanting, cutting, and field-packing cabbage.

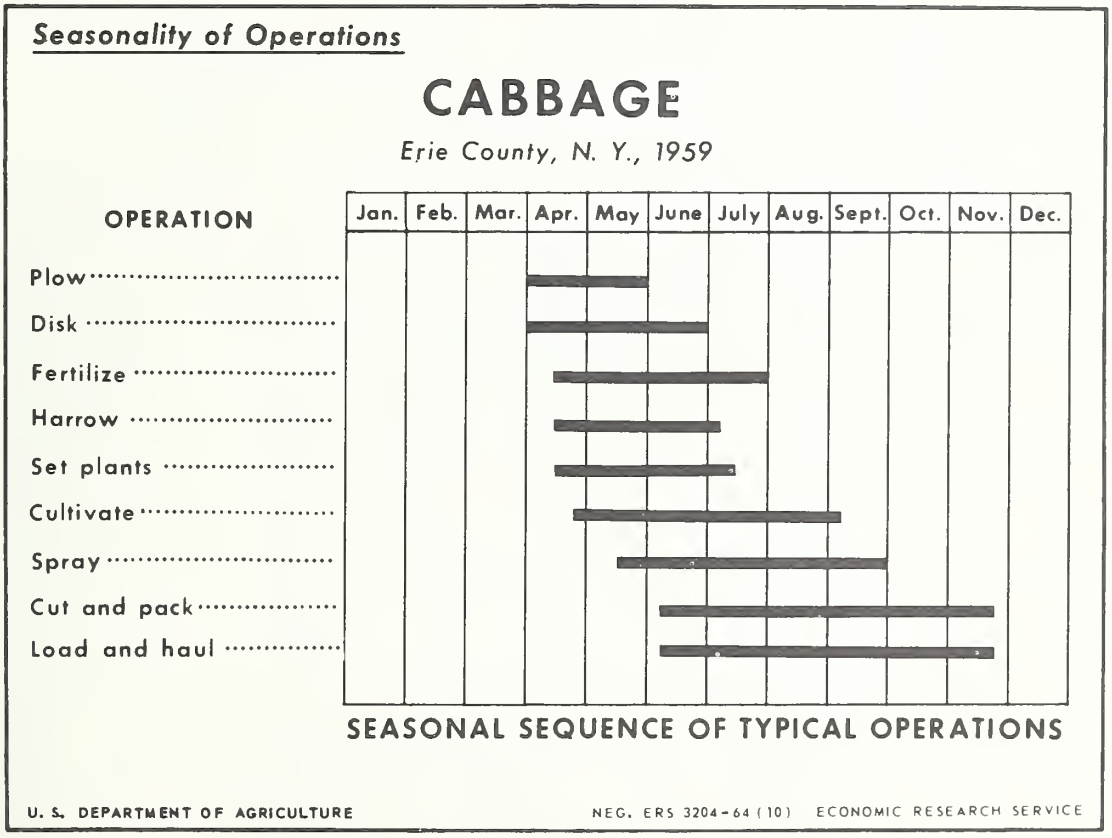

Figure 3

Table A.2--Cabbage: Materials used and contract work hired, averages for 146 acres on 18 farms, Erie County, N.Y., 1959

Item	Unit	Units per acre covered	Price per unit	Cost per acre covered	Percentage of total acreage covered	Cost per acre, total acreage
		Number	Dollars	Dollars	Percent	Dollars
Materials used:						
Plants	Thousand	12.57	8.81	110.74	100	110.74
Manure	Ton	6.2	1.31	8.12	11	.89
Fertilizer nutrients--						
N	Pound	105.2	1/			
P_2O_5	Pound	170.5	1/	47.72	96	45.81
K_2O	Pound	169.7	1/			
Lime	Ton	1.0	3.50	3.50	3	.10
Dust	Pound	129.2	.11	14.21	22	3.13
Spray	Pound	106.4	.11	11.70	78	9.13
Containers:						
Bushel crates, used	Each	306	.16	48.96	28	13.71
Sacks, used burlap	Each	792	.13	99.06	72	71.32
Total	---	---	---	---	---	254.83
Contract work hired:						
Apply spray by boom spray, no materials	Acre	8.6	2.89	24.85	25	6.21
Total	---	---	---	---	---	6.21
Total materials and contract work	---	---	---	---	---	2/ 261.04

1/ Data not available.

2/ Average yield per acre--211.8 hundredweight. Average cost of materials and contract work per hundredweight--$1.23.

Table B.--Cabbage: Labor, power, and machinery, by operation, averages for 146 acres on 18 farms, Erie County, N.Y., 1959

Operation	Type and size of equipment	Time per acre, one over		Times over, acreage covered	Percentage of total acreage covered	Time per acre, total acreage	
		Man	Power			Man	Power
		Hours	Hours	Number	Percent	Hours	Hours
Preharvest:							
Spread manure	60-bushel spreader	6.7	6.7	1.0	11	0.7	0.7
Plow	2-bot. 14-in. moldbd.	1.1	1.1	1.0	100	1.1	1.1
Spread lime	10-foot sower	.7	.7	1.0	3	1/	1/
Disk	10-foot tandem	.7	.7	1.4	100	1.0	1.0
Fertilize	10-foot sower	.6	.5	1.0	78	.5	.4
Harrow	3-section spiketooth	.7	.7	1.3	96	.9	.9
Seed	1-row seeder	26.8	5.9	1.0	10	2.7	.6
Set plants 2/	1-row transplanter	12.2	3.3	1.0	88	10.7	2.9
Set plants	---	48.0	---	1.0	2	1.0	---
Cultivate	1-row cultivator	1.9	1.9	4.4	100	8.4	8.4
Cultivate and fertilize	1-row cult./attach.	2.0	2.0	1.1	6	.1	.1
Spray 3/	6-row boom sprayer	.8	.8	8.6	78	5.4	5.4
Dust	6-row duster	.8	.7	3.4	22	.6	.5
Hoe, thin, and weed	---	12.8	---	1.0	29	3.7	---
Total	---	---	---	---	---	36.8	22.0
Harvest:							
Cut and pack	---	6.1	---	7.0	100	42.7	---
Store	Truck	8.0	1.0	1.0	7	.6	.1
Trim and repack	---	60.0	---	1.0	7	4.2	---
Load and haul	Truck	1.5	1.5	7.0	100	10.5	10.5
Total	---	---	---	---	---	58.0	10.6
Total preharvest and harvest	---	---	---	---	---	4/ 94.8	4/ 32.6

1/ Less than 0.05 hour.
2/ Includes applying fertilizer on 22 percent of the acreage.
3/ Includes contract spraying.
4/ Average yield per acre--211.8 hundredweight. Average labor and power used per hundredweight--0.45 hour and 0.15 hour, respectively.

Table C.--Cabbage: Usual labor and power inputs, Erie County, N.Y., 1959

Operation	Times over	Time per acre, once over		Time per acre, total	
		Man	Power	Man	Power
	Number	Hours	Hours	Hours	Hours
Plow	1	1.1	1.1	1.1	1.1
Disk	1	.7	.7	.7	.7
Fertilize	1	.6	.5	.6	.5
Harrow	1	.7	.7	.7	.7
Set plants	1	12.2	3.3	12.2	3.3
Cultivate	4	1.9	1.9	7.6	7.6
Spray	9	.8	.8	7.2	7.2
Cut and pack	7	6.1	---	42.7	---
Load and haul	7	1.5	1.5	10.5	10.5
Total	---	---	---	83.3	31.6

Table D.--Cabbage: Distribution of workers performing specified operations, by type of worker on 18 farms, Erie County, N.Y., 1959

Operation	Type of worker				
	Operator and unpaid family	Year-round hired	Local seasonal	Puerto Rican	Custom
	Percent	Percent	Percent	Percent	Percent
Spread manure	100	0	0	0	0
Plow	75	5	20	0	0
Spread lime	100	0	0	0	0
Disk	74	5	21	0	0
Fertilize	73	0	27	0	0
Harrow	64	7	29	0	0
Seed	42	0	58	0	0
Set plants	54	0	39	7	0
Set plants by hand	100	0	0	0	0
Cultivate	83	6	11	0	0
Cultivate and fertilize	100	0	0	0	0
Spray	72	0	14	0	14
Dust	90	10	0	0	0
Hoe, thin, and weed	67	0	33	0	0
Cut and pack	45	0	48	7	0
Store	100	0	0	0	0
Trim and repack	33	0	67	0	0
Load and haul	86	14	0	0	0

Figure 4 and tables A, B, C, and D present information covering the production and harvesting of cantaloups from 15 acres on 7 farms in 1959. The average yield per acre was 191.5 bushels or 90 hundredweight.

Tractors were the chief source of power on these farms. Unless otherwise indicated, they were used for operations listed. Size of tractor was not obtained in the survey. From the size of equipment drawn by the tractors, it is assumed that the average tractor was a 2-plow unit having a drawbar rating of 15 to 20 horsepower.

Cantaloups, like cucumbers, are very sensitive to cold weather. Even a light frost is devastating to these plants. Yet, high prices for early cantaloups tempt growers to plant before the danger of frost is past. Growers who plant cantaloups early in the season generally protect them with hot caps. In this survey, 42 percent of the acreage was capped.

Growers can also shorten the season by setting out seedling plants rather than seeding in place. Seedling plants were transplanted onto 97 percent of the acreage.

In the harvest of cantaloups, production from most of the acreage was picked and field-packed into baskets, then loaded and hauled to market. However, production from nearly one-third of the acreage was graded and repacked before it left the farm. Where done, grading and repacking took 28 hours per acre.

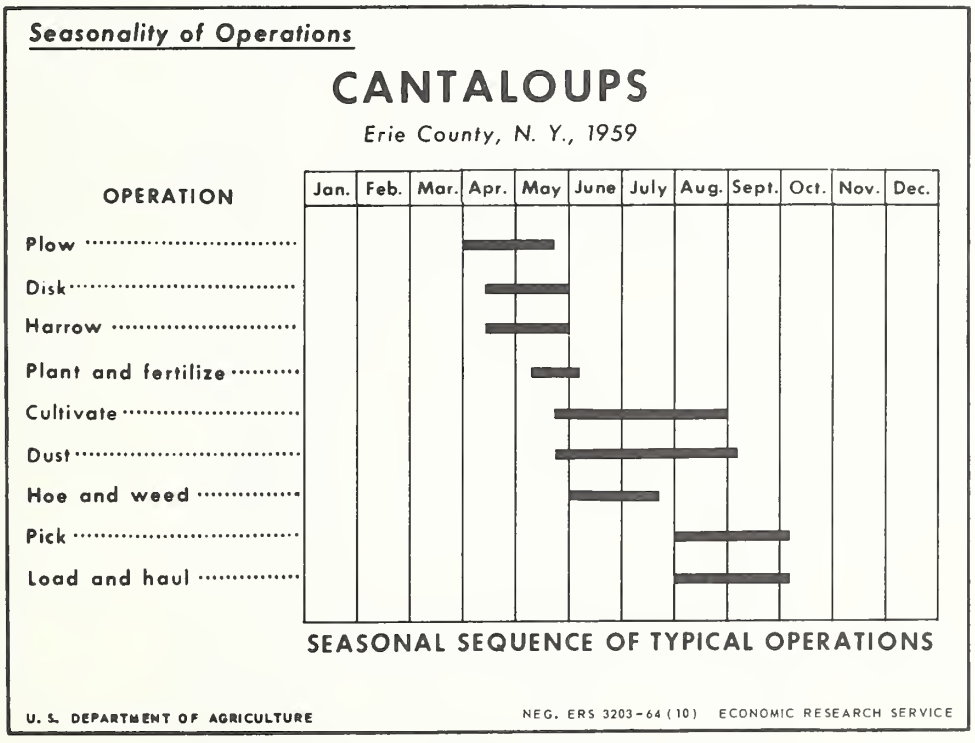

Figure 4

Table A.--Cantaloups: Materials used, averages for 15 acres on 7 farms, Erie County, N.Y., 1959

Item	Unit	Units per acre covered	Price per unit	Cost per acre covered	Percentage of total acreage covered	Cost per acre, total acreage
		Number	Dollars	Dollars	Percent	Dollars
Fertilizer nutrients--						
N	Pound	106.8	1/			
P_2O_5	Pound	102.7	1/	36.76	93	34.19
K_2O	Pound	98.5	1/			
Lime	Ton	1.0	3.50	3.50	7	.24
Plants	Hundred	16.1	8.00	128.80	97	124.94
Seed	Pound	2.0	4.50	9.00	3	.27
Hot caps	Hundred	16.6	1.50	24.90	42	10.46
Dust	Pound	229.0	.13	29.77	53	15.78
Spray	Gallon	4.5	5.69	25.60	41	10.50
Baskets, bushel	Each	191.5	.17	32.56	100	32.56
Total	---	---	---	---	---	2/ 228.94

1/ Data not available.

2/ Average yield per acre--191.5 bushels (90 hundredweight). Average cost of materials used per hundredweight--$2.54.

Table B.--Cantaloups: Labor, power, and machinery used in producing and harvesting, averages for 15 acres on 7 farms, Erie County, N.Y., 1959

Operation	Type and size of equipment	Time per acre, once over		Times over, acreage covered	Percentage of total acreage covered	Time per acre, total acreage	
		Man	Power			Man	Power
		Hours	Hours	Number	Percent	Hours	Hours
Preharvest:							
Plow	2-bot. 14-in. moldbd.	1.7	1.7	1.0	100	1.7	1.7
Disk	8-foot tandem	1.2	1.2	1.3	100	1.6	1.6
Harrow	3-section springtooth	.6	.6	1.4	83	.7	.7
Spread lime	Truck	4.0	4.0	1.0	7	.3	.3
Drag	9-foot	.8	.8	2.0	10	.2	.2
Fertilize	10-foot sower	1.0	1.0	1.0	39	.4	.4
Seed	1-row planter	1.5	1.5	1.0	3	1/	1/
Plant and fertilize	1-row transplanter	9.9	4.3	1.0	63	6.2	2.7
Plant and cap	1-row transplanter	64.0	8.0	1.0	34	21.8	2.7
Cap plants	---	32.0	---	1.0	8	2.6	---
Cultivate	1-row cultivator	1.7	1.7	4.4	100	7.5	7.5
Dust	4-row duster	.4	.4	10.9	53	2.3	2.3
Ventilate hot caps	---	3.0	---	1.0	42	1.3	---
Cultivate and fertilize	1-row cult./attach.	3.2	3.2	1.0	41	1.3	1.3
Hoe and weed	---	28.8	---	1.7	81	39.7	---
Remove hot caps	---	6.0	---	1.0	42	2.5	---
Spray	---	4.0	---	5.0	41	8.2	---
Total	---	---	---	---	---	98.3	21.4
Harvest:							
Pick	---	12.5	---	6.7	100	83.8	---
Grade and pack	---	4.0	---	7.0	31	8.7	---
Load and haul	Truck	2.0	2.0	6.7	100	13.4	13.4
Total	---	---	---	---	---	105.9	13.4
Total preharvest and harvest	---	---	---	---	---	2/ 204.2	2/ 34.8

1/ Less than 0.05 hour.

2/ Average yield per acre--191.5 bushels (90 hundredweight). Average labor and power used per hundredweight--2.27 hours and 0.39 hour, respectively.

Table C.--Cantaloups: Usual labor and power inputs, Erie County, N.Y., 1959

Operation	Times over	Time per acre, once over		Time per acre, total	
		Man	Power	Man	Power
	Number	Hours	Hours	Hours	Hours
Plow	1	1.7	1.7	1.7	1.7
Disk	1	1.2	1.2	1.2	1.2
Harrow	1	.6	.6	.6	.6
Plant and fertilize	1	9.9	4.3	9.9	4.3
Cultivate	4	1.7	1.7	6.8	6.8
Dust	11	.4	.4	4.4	4.4
Hoe and weed	2	28.8	---	57.6	---
Pick	6.7	12.5	---	83.8	---
Load and haul	6.7	2.0	2.0	13.4	13.4
Total	---	---	---	179.4	32.4

Table D.--Cantaloups: Distribution of workers performing specified operations, by type of worker on 7 farms, Erie County, N.Y., 1959

Operation	Type of worker		
	Operator and unpaid family	Local seasonal	Puerto Rican
	Percent	Percent	Percent
Plow	83	17	0
Disk	83	17	0
Harrow	67	33	0
Spread lime	100	0	0
Drag	100	0	0
Fertilize	100	0	0
Seed	100	0	0
Plant and fertilize	73	27	0
Plant and cap	50	0	50
Cap plants	100	0	0
Cultivate	83	17	0
Dust	67	33	0
Ventilate hot caps	50	50	0
Cultivate and fertilize	67	33	0
Hoe and weed	10	40	50
Remove hot caps	100	0	0
Spray	100	0	0
Pick	60	20	20
Grade and pack	100	0	0
Load and haul	80	20	0

Figure 5 and tables A, B, C, and D present data covering the growing and harvesting of cauliflower for the fresh market from 56 acres on 15 farms in 1959. The average yield was 9,058 pounds per acre or 393.8 crates, each containing 12 heads.

Tractors were the chief source of power on these farms. Unless otherwise indicated, they were used for operations listed. Size of tractor was not obtained in the survey. From the size of equipment drawn by the tractors, it is assumed that the average tractor was a 2- or 3-plow unit with a drawbar rating of 15 to 30 horsepower.

Nearly three-fourths of the acreage was planted with plants grown from seed in growers' plantbeds. The remaining acreage was set with purchased plants. Material inputs, other than seed, used in the production of plants were not obtained. Labor inputs in growing plants were obtained, but details were insufficient to report other than the total (tables B and C).

All of the cauliflower acreage was planted to the Early Snowball variety. This variety is not self-blanching, thus the leaves must be tied over the curd 4 to 8 days prior to harvest. This operation required more than 63 hours per acre where done, and was performed on 91 percent of the acreage.

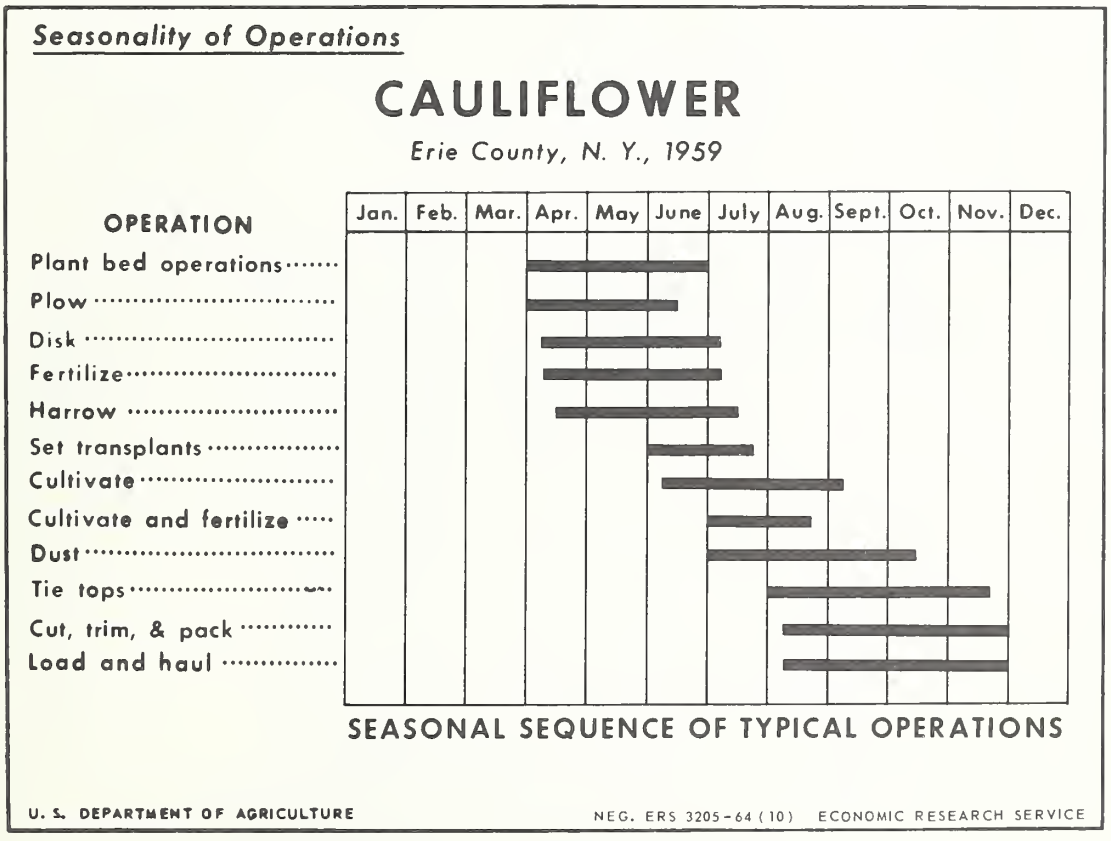

Figure 5

Table A.--Cauliflower: Materials used, averages for 56 acres on 15 farms, Erie County, N.Y., 1959

Item	Unit	Units per acre covered	Price per unit	Cost per acre covered	Percentage of total acreage covered	Cost per acre, total acreage
		Number	Dollars	Dollars	Percent	Dollars
Seed	Ounce	2.5	2.36	5.90	73	4.31
Plants	Thousand	8.0	3.91	31.28	27	8.45
Manure	Ton	14.0	2.00	28.00	43	12.04
Fertilizer nutrients--						
N	Pound	171.8	1/	53.90	100	53.90
P_2O_5	Pound	174.2	1/			
K_2O	Pound	150.4	1/			
Lime	Ton	1.0	7.53	7.53	29	2.18
Dust	Pound	215.5	.11	23.70	94	22.28
Spray	Gallon	1.0	17.00	17.00	11	1.87
Twine	Pound	25.0	.28	7.00	91	6.37
Crates (12-head)	Each	393.8	.24	94.51	100	94.51
Total	---	---	---	---	---	2/ 205.91

1/ Data not available.

2/ Average yield per acre--9,058 pounds (393.8 crates of 12 heads each). Average cost of materials used per crate--$0.52.

Table B.--Cauliflower: Labor, power, and equipment used in producing and harvesting, averages for 56 acres on 15 farms, Erie County, N.Y., 1959

Operation	Type and size of equipment	Time per acre, once over		Times over, acreage covered	Percentage of total acreage covered	Time per acre, total acreage	
		Man	Power			Man	Power
		Hours	Hours	Number	Percent	Hours	Hours
Preharvest:							
Plantbed work 1/	Assorted equipment	8.0	1.4	1.0	73	5.8	1.0
Spread manure	90-bushel spreader	5.9	5.9	1.0	43	2.5	2.5
Plow	2-bot. 14-in. moldbd.	2.1	2.1	1.0	100	2.1	2.1
Disk	8-foot tandem	.7	.7	3.0	90	1.9	1.9
Lime	10-foot sower	1.1	1.1	1.0	29	.3	.3
Fertilize	10-foot sower	1.5	1.4	1.3	100	2.0	1.8
Harrow	3-section springtooth	.5	.5	2.0	55	.6	.6
Drag	3-section spiketooth	1.0	1.0	1.5	48	.7	.7
Set transplants	1-row transplanter	16.8	5.7	1.0	98	16.5	5.6
Set transplants	---	360.0	---	1.0	2	7.2	---
Cultivate	1-row cultivator	3.0	3.0	3.7	90	10.0	10.0
Cultivate and fertilize	1-row cult./attach.	3.5	3.5	1.0	52	1.8	1.8
Dust	6-row duster	.7	.7	6.9	81	3.9	3.9
Dust	---	2.8	---	3.2	13	1.2	---
Hoe and weed	---	22.2	---	1.9	23	9.7	---
Weed	---	10.0	---	1.0	9	.9	---
Spray	8-row boom sprayer	.3	.3	3.0	11	.1	.1
Tie tops 2/	---	25.4	---	2.5	91	57.8	---
Total	---	---	---	---	---	125.0	32.3
Harvest:							
Cut, trim, and pack	---	42.3	---	2.5	100	105.8	---
Load and haul	Truck	2.2	1.2	2.5	100	5.5	3.0
Total	---	---	---	---	---	111.3	3.0
Total preharvest and harvest	---	---	---	---	---	3/ 236.3	3/ 35.3

1/ Insufficient data to report individual operations.
2/ Outer leaves are tied over the curds 4 to 8 days prior to harvest for the purpose of blanching the curd.
3/ Average yield per acre--9,058 pounds (393.8 crates of 12 heads each). Average labor and power used per crate--0.60 hour and 0.09 hour, respectively.

Table C.--Cauliflower: Usual labor and power inputs, Erie County, N.Y., 1959

Operation	Times over	Time per acre, once over		Time per acre, total	
		Man	Power	Man	Power
	Number	Hours	Hours	Hours	Hours
Plantbed operations	1	8.0	1.4	8.0	1.4
Plow	1	2.1	2.1	2.1	2.1
Disk	3	.7	.7	2.1	2.1
Fertilize	1	1.5	1.4	1.5	1.4
Harrow	2	.5	.5	1.0	1.0
Set transplants	1	16.8	5.7	16.8	5.7
Cultivate	4	3.0	3.0	12.0	12.0
Cultivate and fertilize	1	3.5	3.5	3.5	3.5
Dust	7	.7	.7	4.9	4.9
Tie tops	2.5	25.4	---	63.5	---
Cut, trim, and pack	2.5	42.3	---	105.8	---
Load and haul	2.5	2.2	1.2	5.5	3.0
Total	---	---	---	226.7	37.1

Table D.--Cauliflower: Distribution of workers performing specified operations, by type of worker on 15 farms, Erie County, N.Y., 1959

Operation	Type of worker		
	Operator and unpaid family	Local seasonal	Puerto Rican
	Percent	Percent	Percent
Plantbed operations	100	0	0
Spread manure	91	9	0
Plow	93	7	0
Disk	85	15	0
Lime	100	0	0
Fertilize	92	8	0
Harrow	80	20	0
Drag	88	12	0
Set transplants	76	13	11
Set transplants by hand	100	0	0
Cultivate	92	8	0
Cultivate and fertilize	75	25	0
Dust	90	10	0
Dust by hand	100	0	0
Hoe and weed	70	30	0
Weed	0	100	0
Spray	0	50	0
Tie tops	27	15	58
Cut, trim, and pack	34	14	52
Load and haul	100	0	0

Figure 6 and tables A, B, C, and D present information covering the growing and harvesting of sweet corn for the fresh market from 451 acres on 41 farms in 1959. The average yield per acre was 6,120 pounds, or, in more commonly used terms, 153 crates of 5-dozen ears each.

Tractors were the chief source of power on these farms. Unless otherwise indicated, they were used for operations listed. Size of tractor was not obtained in the survey. Considering the size of equipment drawn by the tractors, it is assumed the average tractor is a 2-plow tractor with a drawbar rating of 15 to 20 horsepower.

Excluding harvesting operations, most of the work on sweet corn is done either chemically or mechanically. Growers applied chemical weed killers to 75 percent of the acreage. The use of $2.16 of materials and 0.7 hour of labor and power use per acre eliminated the need for hand-hoeing and weeding. Where done, this hand job took 24 hours per acre.

Harvesting of sweet corn for fresh market is still a hand operation. Workers pick the ears by hand, and place them in tractor-mounted tote boxes. At the ends of the rows, the boxes are emptied and the ears are packed into bags or boxes. While most of the harvesting is done by the farm operator and his family, about one-third of the harvest labor force is composed of local seasonal and Puerto Rican workers.

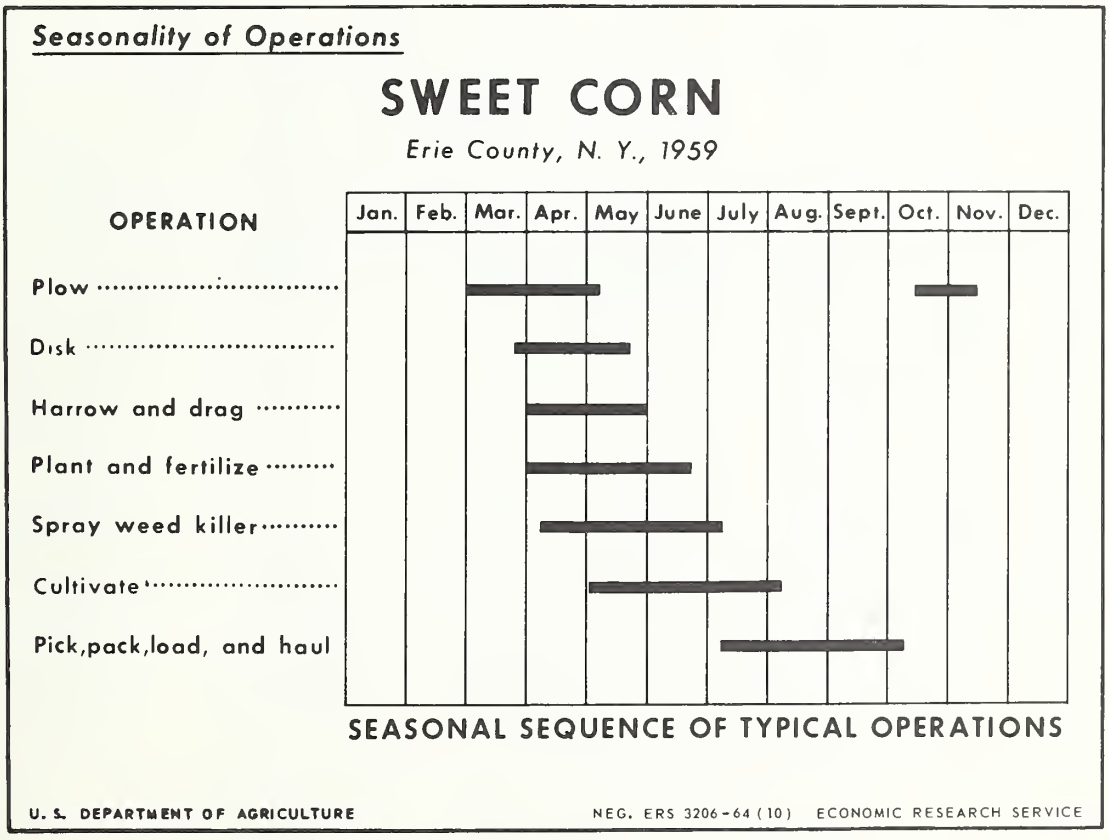

Figure 6

Table A.--Sweet corn: Materials used and contract work hired, averages for 451 acres on 41 farms, Erie County, N. Y., 1959

Item	Unit	Units per acre covered	Price per unit	Cost per acre covered	Percentage of total acreage covered	Cost per acre, total acreage
		Number	Dollars	Dollars	Percent	Dollars
Materials used:						
Seed	Pound	10.2	0.52	5.30	100	5.30
Manure	Ton	6.0	2.00	12.00	4	.48
Fertilizer nutrients--						
N	Pound	70.6	1/			
P_2O_5	Pound	77.3	1/	22.78	100	22.78
K_2O	Pound	67.6	1/			
Weedkiller	Gallon	.32	6.75	2.16	75	1.62
Spray materials	Pound	130.6	.08	10.45	42	4.39
Dust materials	Pound	132.3	.09	11.91	38	4.53
Crates (5-dozen ears)	Each	150.0	.23	34.50	53	18.28
Sacks or bags (5-dozen ears)	Each	156.0	.11	17.16	47	8.07
Ice	Cwt.	9.2	1.00	9.20	11	1.01
Total	---	---	---	---	---	66.46
Contract work hired:						
Dust by plane, application only	Acre	3.6	3.82	13.75	26	3.58
Spray by plane, application only	Acre	6.0	3.00	18.00	5	.90
Total	---	---	---	---	---	4.48
Total materials and contract work	---	---	---	---	---	2/ 70.94

1/ Data not available.

2/ Average yield per acre--6,120 pounds or 153 crates of 5-dozen ears each. Average cost of materials and contract work per crate--$0.46.

Table B.--Sweet corn: Labor, power, and machinery, by operation, averages for 451 acres on 41 farms, Erie County, N.Y., 1959

Operation	Type and size of equipment	Time per acre, once over		Times over, acreage covered	Percentage of total acreage covered	Time per acre, total acreage	
		Man	Power			Man	Power
		Hours	Hours	Number	Percent	Hours	Hours
Preharvest:							
Plow	2-bot. 14-in. moldbd.	1.3	1.3	1.0	100	1.3	1.3
Spread manure	100-bushel spreader	3.8	3.8	1.0	4	.2	.2
Disk	8-foot tandem	.7	.7	1.2	100	.8	.8
Harrow and drag	3-section springtooth /plank	.7	.7	1.0	100	.7	.7
Plant and fertilize	2-row cornplanter/ attach.	1.5	1.4	1.0	100	1.5	1.4
Spray weedkiller	4-row boom sprayer	.7	.7	1.0	75	.5	.5
Cultivate	2-row cultivator	1.7	1.7	2.2	100	3.7	3.7
Spray	4-row boom sprayer	.7	.7	3.3	42	1.0	1.0
Cultivate and fertilize	2-row cult./attach.	1.9	1.9	1.1	25	.5	.5
Hoe and weed	---	24.3	---	1.0	3	.7	---
Dust	6-row duster	.9	.9	3.2	18	.5	.5
Dust	---	1.5	---	2.5	4	.2	---
Dust (custom)	Plane	1/	1/	3.6	26	1/	1/
Spray (custom)	Plane	1/	1/	6.0	5	1/	1/
Total	---	---	---	---	---	11.6	10.6
Harvest:							
Pick, pack, and load by hand and haul by truck	Tractor tote boxes and truck	9.9	2.0	3.0	68	20.2	4.1
Pick by hand	Tractor tote boxes	12.9	1.0	2.5	32	10.3	.8
Pack	---	6.6	---	2.5	6	1.0	---
Pack and ice	---	12.8	---	2.5	11	3.5	---
Load and haul	Truck	3.0	3.0	2.5	17	1.3	1.3
Total 2/	---	---	---	---	---	36.3	6.2
Total preharvest and harvest	---	---	---	---	---	3/ 47.9	3/ 16.8

1/ Less than 0.05 hour. 2/ Excludes inputs on packing and selling from roadside stands the production from 15 percent of the acreage. 3/ Average yield per acre--6,120 pounds or 153 crates of 5-dozen ears each. Average labor and power per crate--0.31 hour and 0.11 hour, respectively.

Table C.--Sweet corn: Usual labor and power inputs, Erie County, N.Y., 1959

Operation	Times over	Time per acre, once over		Time per acre, total	
		Man	Power	Man	Power
	Number	Hours	Hours	Hours	Hours
Plow	1	1.3	1.3	1.3	1.3
Disk	1	.7	.7	.7	.7
Harrow and drag	1	.7	.7	.7	.7
Plant and fertilize	1	1.5	1.4	1.5	1.4
Spray weedkiller	1	.7	.7	.7	.7
Cultivate	2	1.7	1.7	3.4	3.4
Pick, pack, load, and haul	3	9.9	2.0	29.7	6.0
Total	---	---	---	38.0	14.2

Table D.--Sweet corn: Distribution of workers performing specified operations, by type of worker on 41 farms, Erie County, N.Y., 1959

Operation	Type of worker			
	Operator and unpaid family	Year-round hired	Local seasonal	Puerto Rican
	Percent	Percent	Percent	Percent
Plow	86	2	12	0
Spread manure	100	0	0	0
Disk	86	2	12	0
Harrow and drag	76	0	24	0
Plant and fertilize	100	0	0	0
Spray weedkiller	100	0	0	0
Cultivate	95	0	5	0
Spray 1/	100	0	0	0
Cultivate and fertilize	82	9	9	0
Hoe and weed	40	0	0	60
Dust 1/	93	0	7	0
Dust by hand	100	0	0	0
Pick, pack, load, and haul	51	0	23	26
Pick	76	0	14	10
Pack	56	0	44	0
Pack and ice	100	0	0	0
Load and haul	100	0	0	0

1/ Excludes custom work.

Figure 7 and tables A, B, C, and D present information covering the growing and harvesting of squash for fresh market use from 34 acres on 13 farms in 1959. The average yield per acre was 139 hundredweight or 231.8 crates of 60 pounds each.

Tractors were the chief source of power on these farms. Unless otherwise indicated, they were used for operations listed. Size of tractor was not obtained in the survey. From the size of equipment drawn by the tractors, it is assumed the average tractor was a 2-plow unit having a drawbar rating of 15 to 20 horsepower.

The squash plantings on these 13 farms were of the acorn and butternut varieties. All but one grower planted seed. One grower grew plants in a hotbed and then transplanted them into the field. On small plantings like these, mechanical equipment (such as planters, dusters, and sprayers) is awkward to handle and requires more time per acre to perform an operation than on larger plantings with less turning. On these farms, hand-planting took less time per acre than did machine-planting. Labor used to grow plants for 9 percent of the acreage was not obtained.

Harvesting on 70 percent of the squash acreage was completed when the squash was crated and hauled directly from the field to market. Production on the remaining acreage was placed in farm storage prior to being prepared for market.

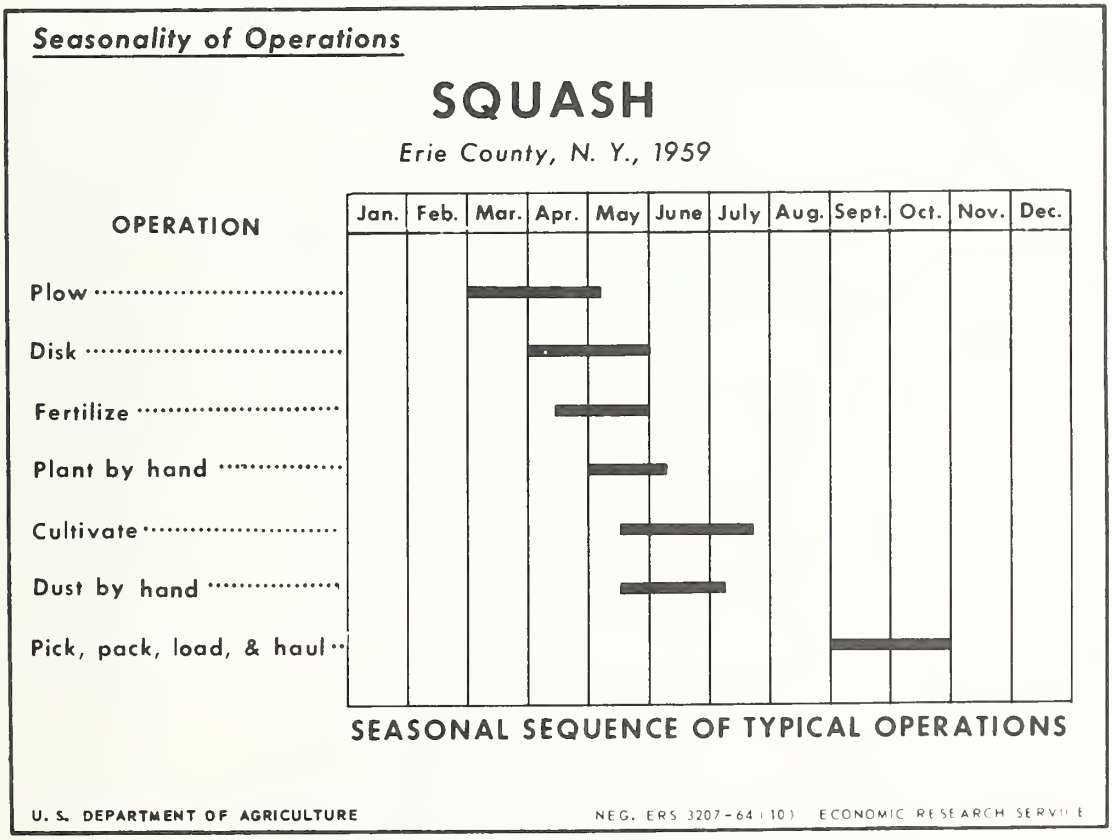

Figure 7

Table A.--Squash: Materials used, averages for 34 acres on 13 farms, Erie County, N. Y., 1959

Item	Unit	Units per acre covered	Price per unit	Cost per acre covered	Percentage of total acreage covered	Cost per acre, total acreage
		Number	Dollars	Dollars	Percent	Dollars
Seed	Pound	2.9	3.26	9.45	100	9.45
Manure	Ton	9.7	1.94	18.82	43	8.09
Fertilizer nutrients--						
N	Pound	66.0	1/	23.66	91	21.53
P_2O_5	Pound	84.2	1/			
K_2O	Pound	78.8	1/			
Dust materials	Pound	167.8	.16	26.85	67	17.99
Spray materials	Pound	1.5	2.00	3.00	9	.27
Crates, bushel	Each	231.8	.14	32.45	100	32.45
Total	---	---	---	---	---	2/ 89.78

1/ Data not available.
2/ Average yield per acre--139 cwt. or 231.8 crates of 60 pounds each. Average cost of materials per crate--$0.39.

Table B.--Squash: Labor, power, and machinery used in producing and harvesting, averages for 34 acres on 13 farms, Erie County, N.Y., 1959

Operation	Type and size of equipment	Time per acre, once over		Times over, acreage covered	Percentage of total acreage covered	Time per acre, total acreage	
		Man	Power			Man	Power
		Hours	Hours	Number	Percent	Hours	Hours
Preharvest:							
Spread manure	100-bushel spreader	4.0	2.1	1.0	43	1.7	0.9
Plow	2-bot. 14-in. moldbd.	1.7	1.7	1.0	100	1.7	1.7
Disk	8-foot tandem	1.3	1.3	1.5	61	1.2	1.2
Harrow	6-foot springtooth	.6	.6	3.0	49	.9	.9
Drag	7-foot spiketooth	.7	.7	1.0	27	.2	.2
Fertilize	10-foot sower	.8	.8	1.0	73	.6	.6
Plant and fertilize	1-row planter	5.9	2.1	1.0	31	1.8	.7
Plant	---	5.0	---	1.0	60	3.0	---
Set transplants	1-row transplanter	6.0	2.0	1.0	9	.5	.2
Cultivate	1-row cultivator	1.3	1.3	4.1	100	5.3	5.3
Dust	6-row duster	.8	.8	2.6	22	.5	.5
Dust	---	1.3	---	3.7	54	2.6	---
Spray	6-row boom sprayer	.8	.8	1.5	9	.1	.1
Hoe and thin	---	18.7	---	1.0	5	.9	---
Total	---	---	---	---	---	21.0	12.3
Harvest:							
Pick, pack, and load by hand and haul by truck	Truck	43.2	3.6	1.0	70	30.2	2.5
Pick, load, and store	Tractor and trailer	28.8	3.0	1.0	30	8.6	.9
Wash and pack	---	37.3	---	1.0	9	3.4	---
Sort and pack	---	28.0	---	1.0	21	5.9	---
Haul to market	Truck	4.3	4.3	1.0	1/ 10	.4	.4
Total	---	---	---	---	---	48.5	3.8
Total preharvest and harvest	---	---	---	---	---	2/ 69.5	2/ 16.1

1/ Production from 20 percent of the acreage was sold at the farm.

2/ Average yield per acre--139 cwt. or 231.8 crates of 60 pounds each. Average labor and power per crate--0.30 hour and 0.07 hour, respectively.

Table C.--Squash: Usual labor and power inputs, Erie County, N.Y., 1959

Operation	Times over	Time per acre, once over		Time per acre, total	
		Man	Power	Man	Power
	Number	Hours	Hours	Hours	Hours
Plow	1	1.7	1.7	1.7	1.7
Disk	2	1.3	1.3	2.6	2.6
Fertilize	1	.8	.8	.8	.8
Plant by hand	1	5.0	---	5.0	---
Cultivate	4	1.3	1.3	5.2	5.2
Dust by hand	4	1.3	---	5.2	---
Pick, pack, load, and haul	1	43.2	3.6	43.2	3.6
Total	---	---	---	63.7	13.9

Table D.--Squash: Distribution of workers performing specified operations, by type of worker on 13 farms, Erie County, N.Y., 1959

Operation	Type of worker	
	Operator and unpaid family	Local seasonal
	Percent	Percent
Spread manure	100	0
Plow	100	0
Disk	100	0
Harrow	100	0
Drag	100	0
Fertilize	100	0
Plant and fertilize	100	0
Plant by hand	100	0
Set transplants	100	0
Cultivate	100	0
Dust	100	0
Dust by hand	83	17
Spray	100	0
Hoe and thin	100	0
Pick, pack, and load by hand and haul by truck	56	1/ 44
Pick, load, and store	33	67
Wash and pack	100	0
Sort and pack	33	67
Haul to market	100	0

1/ Includes 9 percent Puerto Rican workers.

Figure 8 and tables A, B, C, and D present data covering the growing and harvesting of tomatoes for fresh market from 67 acres on 23 farms in 1959. The average yield per acre was 168.9 hundredweight.

Tractors were the chief source of power on these farms. Unless otherwise indicated, they were used for operations listed. Size of tractor was not obtained in the survey. From the size of equipment used, it is assumed that the average tractor was a 2-plow unit with a drawbar rating of 15 to 20 horsepower.

Many growers of tomatoes for the fresh market produce for their own roadside stands. Many plant early in the season, before danger of frost is over, and protect their plants with hot caps. Nearly 30 percent of the acreage was covered with hot caps. Production from the covered plants was harvested nearly 3 weeks earlier than that from any uncovered planting.

Most of the labor in tomato production is in the harvesting. On the average, 135 hours of labor were used per acre--108 of which were for picking, loading, and hauling from the field.

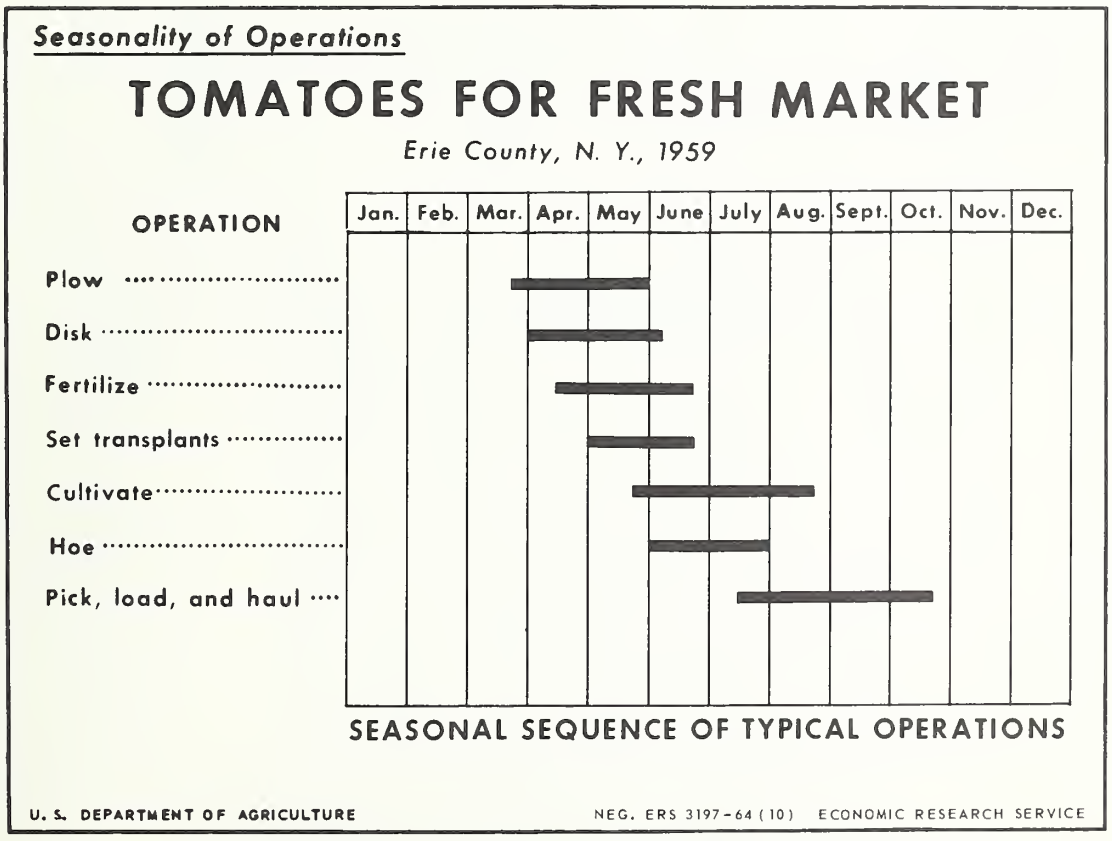

Figure 8

Table A.--Tomatoes: Materials used and contract work hired, averages for 67 acres on 23 farms, Erie County, N. Y., 1959

Item	Unit	Units per acre covered	Price per unit	Cost per acre covered	Percentage of total acreage covered	Cost per acre, total acreage
		Number	Dollars	Dollars	Percent	Dollars
Materials used:						
Plants	Thousand	3.3	10.82	35.71	100	35.71
Fertilizer nutrients--						
N	Pound	124.1	1/	43.03	93	40.02
P_2O_5	Pound	130.6	1/			
K_2O	Pound	117.2	1/			
Dust	Cwt.	1.9	6.45	12.26	29	3.56
Spray materials	Pound	5.7	.75	4.28	22	.94
Lime	Ton	1.0	8.00	8.00	3	.24
Hot caps	Thousand	3.3	9.50	31.35	28	8.78
Containers, bushel	Each	202.0	.14	28.28	48	13.57
Containers, 8-quart	Each	1,292.0	.09	116.28	58	67.44
Total	---	---	---	---	---	170.26
Contract work hired:						
Spray by plane, includes materials	Acre	4.3	7.23	31.09	4	1.24
Spray by boom sprayer, includes materials	Acre	5.0	6.00	30.00	10	3.00
Total	---	---	---	---	---	4.24
Total materials and contract work	---	---	---	---	---	2/ 174.50

1/ Data not available.
2/ Average yield per acre--168.9 cwt. Average cost of materials and contract work per cwt.--$1.03.

Table B.--Tomatoes: Labor, power, and machinery used in producing and harvesting, averages for 67 acres on 23 farms, Erie County, N.Y., 1959

Operation	Type and size of equipment	Time per acre, once over		Times over, acreage covered	Percentage of total acreage covered	Time per acre, total acreage	
		Man	Power			Man	Power
		Hours	Hours	Number	Percent	Hours	Hours
Preharvest:							
Plow	2-bot. 14-in. moldbd.	1.7	1.7	1.0	100	1.7	1.7
Disk	7-foot tandem	1.0	1.0	1.7	84	1.4	1.4
Lime	8-foot sower	.5	.5	1.0	3	1/	1/
Harrow	9-foot spiketooth	1.0	1.0	1.0	45	.4	.4
Drag	8-foot drag	1.1	1.1	1.3	38	.5	.5
Mark	2-row marker	.7	.7	1.0	4	1/	1/
Fertilize	8-foot lime sower	3.2	1.8	1.9	59	3.6	2.0
Set plants 2/	1-row planter	13.1	5.8	1.0	93	12.2	5.4
Set plants	---	25.3	---	1.0	7	1.8	---
Apply hot caps	---	12.0	---	1.0	28	3.4	---
Cultivate	1-row cultivator	1.9	1.9	4.6	100	8.7	8.7
Hoe	---	14.6	---	2.2	65	20.9	---
Remove hot caps	---	6.0	---	1.0	28	1.7	---
Dust	3-row duster	.8	.7	5.4	28	1.2	1.1
Dust	---	24.0	---	2.3	1	.6	---
Cultivate and fertilize	1-row cult./attach.	2.2	2.2	1.0	28	.6	.6
Spray 3/	4-row boom sprayer	.7	.7	4.2	32	.9	.9
Spray (custom)	Plane	1/	1/	4.3	4	1/	1/
Total	---	---	---	---	---	59.6	22.7
Harvest:							
Pick, load, and haul	Tractor and wagon	9.0	.5	12.0	100	108.0	6.0
Sort and pack	---	10.2	---	5.8	26	15.4	---
Load and haul	Truck	2.6	1.9	8.9	4/ 49	11.3	8.3
Total	---	---	---	---	---	134.7	14.3
Total preharvest and harvest	---	---	---	---	---	5/ 194.3	5/ 37.0

1/ Less than 0.05 hour. 2/ Includes some fertilization. 3/ Includes custom spraying on 10 percent of the acreage. 4/ Production on the remaining acreage was sold in the field or from a roadside stand. 5/ Average yield per acre--168.9 cwt. Average labor and power used per cwt.--1.15 hours and 0.22 hour, respectively.

Table C.--Tomatoes: Usual labor and power inputs, Erie County, N.Y., 1959

Operation	Times over	Time per acre, once over		Time per acre, total	
		Man	Power	Man	Power
	Number	Hours	Hours	Hours	Hours
Plow	1	1.7	1.7	1.7	1.7
Disk	2	1.0	1.0	2.0	2.0
Fertilize	2	3.2	1.8	6.4	3.6
Set plants	1	13.1	5.8	13.1	5.8
Cultivate	5	1.9	1.9	9.5	9.5
Hoe	2	14.6	---	29.2	---
Pick, load, and haul	12	9.0	.5	108.0	6.0
Total	---	---	---	169.9	28.6

Table D.--Tomatoes: Distribution of workers performing specified operations, by type of worker on 23 farms, Erie County, N.Y., 1959

Operation	Type of worker			
	Operator and unpaid family	Year-round hired	Local seasonal	Puerto Rican
	Percent	Percent	Percent	Percent
Plow	92	4	4	0
Disk	95	0	5	0
Lime	100	0	0	0
Harrow	100	0	0	0
Drag	88	12	0	0
Mark	100	0	0	0
Fertilize	73	9	18	0
Set plants	73	9	12	6
Set plants by hand	100	0	0	0
Apply hot caps	17	33	50	0
Cultivate	96	0	0	4
Hoe	31	3	16	50
Remove hot caps	17	33	50	0
Dust	67	0	0	33
Dust by hand	100	0	0	0
Cultivate and fertilize	75	0	0	25
Spray 1/	100	0	0	0
Pick, load, and haul	50	0	10	40
Sort and pack	80	20	0	0
Load and haul	100	0	0	0

1/ Excludes custom operations.

Figure 9 and tables A, B, C, and D present data on establishing new strawberry beds on 122 acres on 12 farms in 1959. No production was obtained from this acreage in 1959.

Tractors were the chief source of power on these farms. Unless otherwise indicated, they were used for operations listed. Size of tractor was not obtained in the survey. From the size of equipment used, it is assumed that the average tractor was about a 2-plow unit with a drawbar rating of 15 to 20 horsepower.

The material cost of establishing an acre of strawberry plants averaged nearly $200. Of this total, almost 60 percent was attributable to the costs of plants. In addition to the material cost, more than 205 hours of labor and about 33 hours of power were used in establishing an acre of strawberries.

In Erie County, strawberry growers generally keep a bed for 3 years or 2 crops before turning it under. Broadleaf weeds and grass invade a strawberry bed and sharply reduce production. Growers can usually keep the beds relatively weed-free the first year after establishment, but because of plant growth cultivation is impossible after the first year. Weeds thus get established and it becomes too costly to try to maintain a producing bed for longer than two crops. Thus, the cost of establishment should be prorated over two crops.

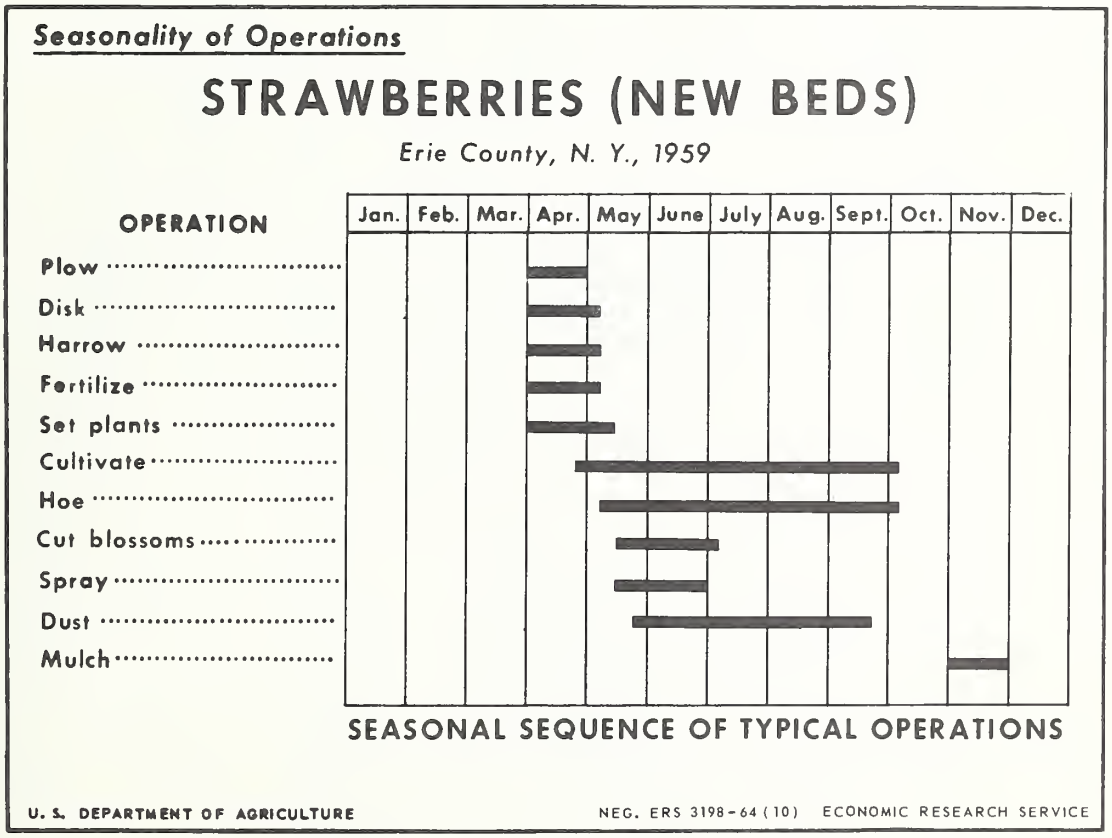

Figure 9

Table A.--Strawberries (new beds): Materials used and contract work hired, averages for 122 acres on 12 farms, Erie County, N. Y., 1959

Item	Unit	Units per acre covered	Price per unit	Cost per acre covered	Percentage of total acreage covered	Cost per acre, total acreage
		Number	Dollars	Dollars	Percent	Dollars
Materials used:						
Plants	Thousand	7.73	14.91	115.25	100	115.25
Fertilizer nutrients--						
N	Pound	57.3	1/	22.44	100	22.44
P_2O_5	Pound	74.8	1/			
K_2O	Pound	66.6	1/			
Mulch, straw	Ton	2.9	16.81	48.75	83	40.46
Mulch, shavings	Ton	20.0	1.00	20.00	17	3.40
Spray, weedkiller	Quart	5.4	2.44	13.18	36	4.74
Spray, insecticides	Quart	1.3	3.61	4.69	64	3.00
Dust, insecticides	Pound	85.8	.08	6.86	84	5.76
Total	---	---	---	---	---	195.05
Contract work hired:						
Spray insecticide, includes materials	Acre	1.0	3.50	3.50	9	.32
Total	---	---	---	---	---	.32
Total materials and contract work	---	---	---	---	---	2/ 195.37

1/ Data not available.

2/ Estimated life of the new beds is 3 years (2 crops). Average cost of materials and contract work per crop--$97.68.

Table B.--Strawberries (new beds): Labor, power, and machinery used, averages for 122 acres on 12 farms, Erie County, N.Y., 1959

Operation	Type and size of equipment	Time per acre, once over		Times over, acreage covered	Percentage of total acreage covered	Time per acre, total acreage	
		Man	Power			Man	Power
		Hours	Hours	Number	Percent	Hours	Hours
Plow	2-bot. 14-in. moldbd.	1.1	1.1	1.0	100	1.1	1.1
Disk	8-foot tandem	.9	.9	1.4	100	1.3	1.3
Harrow	9-foot spiketooth	.6	.6	1.1	100	.7	.7
Fertilize	10-foot lime sower	.6	.6	1.2	80	.6	.6
Set plants 1/	1-row planter/attach.	15.2	3.8	1.0	100	15.2	3.8
Cultivate and fertilize	1-row cult./attach.	3.3	3.3	1.0	10	.3	.3
Cultivate	1-row cultivator	1.6	1.6	10.4	100	16.6	16.6
Hoe	---	27.7	---	4.6	100	127.4	---
Cut blossoms	---	19.6	---	1.0	76	14.9	---
Spray weedkiller	4-row boom sprayer	1.0	1.0	1.2	36	.4	.4
Spray insecticides 2/	4-row boom sprayer	1.5	1.5	1.6	73	1.8	1.8
Dust	4-row duster	.5	.5	2.1	84	.9	.9
Mulch	Straw mulcher	21.6	21.6	1.0	25	5.4	5.4
Mulch	---	24.9	---	1.0	75	18.7	---
Total	---	---	---	---	---	3/ 205.3	3/ 32.9

1/ Includes fertilizing on 10 percent of the acreage.
2/ Includes custom operations.
3/ Estimated life of the new beds is 3 years (2 crops). Average labor and power used per acre, per crop--102.6 hours and 16.4 hours, respectively.

Table C.--Strawberries (new beds): Usual labor and power inputs, Erie County, N.Y., 1959

Operation	Times over	Time per acre, once over		Time per acre, total	
		Man	Power	Man	Power
	Number	Hours	Hours	Hours	Hours
Plow	1	1.1	1.1	1.1	1.1
Disk	1	.9	.9	.9	.9
Harrow	1	.6	.6	.6	.6
Fertilize	1	.6	.6	.6	.6
Set plants	1	15.2	3.8	15.2	3.8
Cultivate	10	1.6	1.6	16.0	16.0
Hoe	5	27.7	---	138.5	---
Cut blossoms	1	19.6	---	19.6	---
Spray	2	1.5	1.5	3.0	3.0
Dust	2	.5	.5	1.0	1.0
Mulch by hand	1	24.9	---	24.9	---
Total	---	---	---	221.4	27.0

Table D.--Strawberries (new beds): Distribution of workers performing specified operations, by type of worker on 12 farms, Erie County, N.Y., 1959

Operation	Type of worker			
	Operator and unpaid family	Local seasonal	Domestic migratory	Puerto Rican
	Percent	Percent	Percent	Percent
Plow	75	25	0	0
Disk	75	25	0	0
Harrow	73	27	0	0
Fertilize	75	25	0	0
Set plants	50	36	5	9
Cultivate and fertilize	100	0	0	0
Cultivate	72	21	0	7
Hoe	9	1	13	77
Cut blossoms	7	6	1	86
Spray weedkiller	100	0	0	0
Spray insecticides 1/	100	0	0	0
Dust	71	29	0	0
Mulch	46	45	0	9
Mulch by hand	33	15	0	52

1/ Excluding custom operations.

Figure 10 and tables A, B, C, and D present data on the growing and harvesting of strawberries for the fresh market from 154 acres on 13 farms in 1959. The average yield was 216.8 crates or 3,468 quarts per acre.

Tractors were the chief source of power on these farms. Unless otherwise indicated, they were used for operations listed. Size of tractor was not obtained in the survey. From the size of equipment used, it is assumed the average tractor was a 2-plow unit with a drawbar rating of 15 to 20 horsepower.

Most of the preharvest work done on these strawberry beds was in removing the mulch cover from the plants. Nearly half of the acreage was sprayed with an insecticide but only 13 percent of the acreage was fertilized.

Harvesting was performed over a 6-week period, with 9.5 pickings being the average for the acreage. Total labor for harvesting averaged 300 hours per acre. Growers relied heavily upon Puerto Rican workers to pick strawberries and to do other handwork.

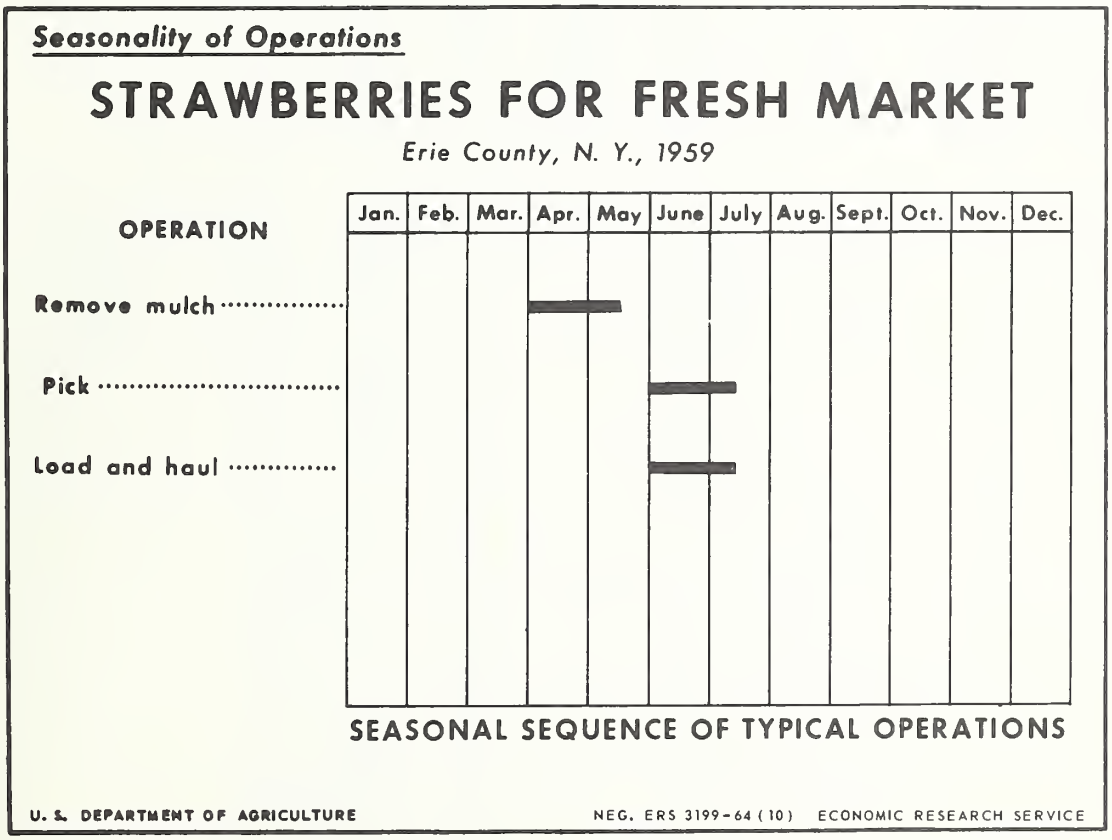

Figure 10

Table A.--Strawberries: Materials used, averages for 154 acres on 13 farms, Erie County, N. Y., 1959

Item	Unit	Units per acre covered	Price per unit	Cost per acre covered	Percentage of total acreage covered	Cost per acre, total acreage
		Number	Dollars	Dollars	Percent	Dollars
Materials used:						
Baskets, quart	Hundred	34.7	1.63	56.56	100	56.56
Crates, 16-quart	Each	216.8	.27	58.54	100	58.54
Fertilizer nutrients--						
N	Pound	13.8	1/			
P_2O_5	Pound	18.7	1/	6.00	13	.78
K_2O	Pound	16.6	1/			
Spray materials	Quart	1.6	3.34	5.34	48	2.56
Total materials	---	---	---	---	---	118.44
Prorata share of establishment cost 2/	---	---	---	---	---	97.68
Total	---	---	---	---	---	3/ 216.12

1/ Data not available.
2/ Cost of establishing beds was prorated over 2 crops.
3/ Average yield per acre--216.8 crates or 3,468 quarts. Average cost of materials per crate--$1.00.

Table B.--Strawberries: Labor, power, and machinery used in producing and harvesting, averages for 154 acres on 13 farms, Erie County, N.Y., 1959

Operation	Type and size of equipment	Time per acre, once over		Times over, acreage covered	Percentage of total acreage covered	Time per acre, total acreage	
		Man	Power			Man	Power
		Hours	Hours	Number	Percent	Hours	Hours
Preharvest:							
Remove mulch	2-row rake	6.0	6.0	1.0	8	0.5	0.5
Remove mulch	---	16.8	---	1.0	76	12.8	---
Fertilize	10-foot spreader	.4	.4	1.0	13	.1	.1
Cultivate	1-row cultivator	.4	.4	1.0	13	.1	.1
Spray	4-row boom sprayer	.8	.8	1.0	48	.4	.4
Weed	---	17.7	---	1.0	24	4.2	---
Total	---	---	---	---	---	18.1	1.1
Harvest:							
Pick	---	30.0	---	9.5	100	285.0	---
Load and haul	Truck	1.7	1.3	9.5	1/ 90	14.5	11.1
Total	---	---	---	---	---	299.5	11.1
Total preharvest and harvest	---	---	---	---	---	317.6	12.2
Prorata share of establishment 2/	---	---	---	---	---	102.6	16.4
Total	---	---	---	---	---	3/ 420.2	3/ 28.6

1/ Production from the remaining acreage was sold crated in the field. 2/ Labor and power used in establishing the beds was prorated over 2 crops. 3/ Average yield per acre--216.8 crates or 3,468 quarts. Average labor and power used per crate--1.94 hours and 0.13 hour, respectively.

Table C.--Strawberries: Usual labor and power inputs, Erie County, N.Y., 1959

Operation	Times over	Time per acre, once over		Time per acre, total	
		Man	Power	Man	Power
	Number	Hours	Hours	Hours	Hours
Prorated share of establishment 1/	1	102.6	16.4	102.6	16.4
Remove mulch	1	16.8	---	16.8	---
Pick	9.5	30.0	---	285.0	---
Load and haul	9.5	1.7	1.3	16.2	12.4
Total	---	---	---	420.6	28.8

1/ Labor and power used in establishing the beds was prorated over 2 crops.

Table D.--Strawberries: Distribution of workers performing specified operations, by type of worker on 13 farms, Erie County, N.Y., 1959

Operation	Type of worker			
	Operator and unpaid family	Year-round hired	Local seasonal	Puerto Rican
	Percent	Percent	Percent	Percent
Remove mulch	32	0	22	46
Remove mulch by hand	0	12	0	88
Fertilize	0	0	100	0
Cultivate	0	0	100	0
Spray	100	0	0	0
Weed	0	0	0	100
Pick	1	0	10	89
Load and haul	60	0	40	0

Truck crops were classified as processing vegetables if they were intended for this use at time of planting and were sold as such at time of harvesting.

In this section, information is presented for crops, including strawberries, that were grown and harvested for processing use.

Snap Beans

Figure 11 and tables A, B, C, and D present data covering the production and harvesting of 5,773 acres of snap beans for processing grown on 45 farms in 1959. The average yield per acre was 1.77 tons.

Tractors were the chief source of power on these farms. Unless otherwise indicated, they were used for operations listed. Size of tractor was not obtained in the survey. But from the size of equipment used, it is assumed the average tractor was a 2- or 3-plow unit with a drawbar rating of 15 to 30 horsepower.

In 1959, preharvest labor inputs were essentially those of operating machinery. The only hand job was hoeing and weeding done on 4 percent of the acreage.

In harvesting, hand-picking was done on 20 percent of the acreage, while the mechanical snap bean harvester was used on 83 percent. The extra 3 percent was acreage which had been hand-picked once and then a second picking was made by machine. Hand-harvesting, including hauling, used 69.6 man-hours of labor per acre, compared with only 5.2 man-hours when machine-harvested and hauled. It is little wonder that bean growers have been so quick to adopt the mechanical snap bean harvester.

In this sample of growers, it appears that all growers who harvested beans mechanically owned their own harvesters. This impression is erroneous. Some growers had processor-owned harvesters pick their beans on a custom basis. Insufficient data were obtained on this practice to separate it from farmer-owned machine operations.

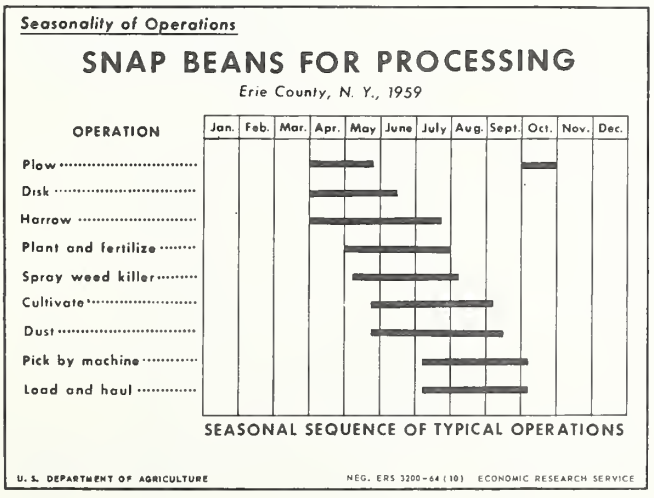

Figure 11

Table A.--Snap beans: Materials used, averages for 5,773 acres on 45 farms, Erie County, N. Y., 1959

Item	Unit	Units per acre covered	Price per unit	Cost per acre covered	Percentage of total acreage covered	Cost per acre, total acreage
		Number	Dollars	Dollars	Percent	Dollars
Seed	Pound	75.3	0.34	25.60	100	25.60
Fertilizer nutrients--						
N	Pound	36.4	1/			
P_2O_5	Pound	66.7	1/	16.32	100	16.32
K_2O	Pound	51.8	1/			
Lime	Ton	2.0	7.53	15.06	1	.15
Spray, weedkiller	Quart	1.5	1.96	2.94	55	1.62
Spray, insecticide	Quart	.3	3.90	1.17	14	.16
Dust, assorted	Pound	55.6	.09	5.00	79	3.95
Bag, burlap	Each	7.0	.12	.84	42	.35
Box, pallet	Each	.7	7.43	5.20	15	.78
Total	---	---	---	---	---	2/ 48.93

1/ Data not available.
2/ Average yield per acre--1.77 tons. Average cost of materials used per ton--$27.64.

Table B.--Snap beans: Labor, power, and machinery used in producing and harvesting, averages for 5,773 acres on 45 farms, Erie County, N.Y., 1959

Operation	Type and size of equipment	Time per acre, once over		Times over, acreage covered	Percentage of total acreage covered	Time per acre, total acreage	
		Man	Power			Man	Power
		Hours	Hours	Number	Percent	Hours	Hours
Preharvest:							
Plow	3-bot. 14-in. moldbd.	1.1	1.1	1.0	100	1.1	1.1
Disk	10-foot tandem	.6	.6	1.4	85	.7	.7
Lime	10-foot sower	.9	.9	1.0	1	1/	1/
Harrow	12-foot spiketooth	.4	.4	1.0	92	.4	.4
Drag	12-foot drag	.3	.3	1.0	16	1/	1/
Roll	10-foot cultipacker	.4	.4	1.0	18	.1	.1
Plant and fertilize	4-row planter/attach.	1.1	.8	1.0	100	1.1	.8
Spray weedkiller	6-row boom sprayer	.4	.4	1.0	55	.2	.2
Cultivate	2-row cultivator	.8	.8	3.6	100	2.9	2.9
Spray insecticide	6-row boom sprayer	.5	.5	1.0	14	.1	.1
Dust	6-row duster	.5	.5	1.7	79	.7	.7
Hoe and weed	---	7.5	---	1.0	4	.3	---
Total	---	---	---	---	---	7.6	7.0
Harvest:							
Hand--							
Pick	---	47.7	---	1.4	20	13.4	---
Load and haul	Truck	2.0	1.3	1.4	20	.6	.4
Machine--							
Pick	2-row picker	3.5	1.4	1.0	2/ 83	2.9	1.2
Load and haul	Truck	1.7	1.7	1.0	2/ 83	1.4	1.4
Total	---	---	---	---	---	18.3	3.0
Total preharvest and harvest	---	---	---	---	---	3/ 25.9	3/ 10.0

1/ Less than 0.05 hour. 2/ On 3 percent of the acreage which was hand-picked a second picking was made by machine. 3/ Average yield per acre--1.77 tons. Average labor and power used per ton--14.6 hours and 5.6 hours, respectively.

Table C.--Snap beans: Usual labor and power inputs, Erie County, N.Y., 1959

Operation	Times over	Time per acre, once over		Time per acre, total	
		Man	Power	Man	Power
	Number	Hours	Hours	Hours	Hours
Plow	1	1.1	1.1	1.1	1.1
Disk	1	.6	.6	.6	.6
Harrow	1	.4	.4	.4	.4
Plant and fertilize	1	1.1	.8	1.1	.8
Spray weedkiller	1	.4	.4	.4	.4
Cultivate	4	.8	.8	3.2	3.2
Dust	2	.5	.5	1.0	1.0
Pick by machine	1	3.5	1.4	3.5	1.4
Load and haul	1	1.7	1.7	1.7	1.7
Total	---	---	---	13.0	10.6

Table D.--Snap beans: Distribution of workers performing specified operations, by type of worker on 45 farms, Erie County, N.Y., 1959

Operation	Type of worker			
	Operator and unpaid family	Local seasonal	Domestic migratory	Puerto Rican
	Percent	Percent	Percent	Percent
Plow	37	57	0	6
Disk	42	48	0	10
Lime	100	0	0	0
Harrow	44	49	0	7
Drag	30	50	0	20
Roll	33	67	0	0
Plant and fertilize	41	49	2	8
Spray weedkiller	17	83	0	0
Cultivate	40	54	0	6
Spray insecticide	20	80	0	0
Dust	17	83	0	0
Hoe and weed	0	0	0	100
Pick by hand	6	4	0	90
Load and haul	60	40	0	0
Pick by machine	14	86	0	0
Load and haul	58	42	0	0

Figure 12 and tables A, B, C, and D present information on the growing and harvesting of 117 acres of green peas on 7 farms in 1959. The average yield of shelled peas was 1.99 tons per acre.

Tractors were the chief source of power on these farms. Unless otherwise indicated, they were used for operations listed. Size of tractor was not obtained in the survey. From the size of equipment used, it is assumed that the average tractor was a 2-plow unit having a drawbar rating of 15 to 20 horsepower.

The growing of green peas for processing requires little labor. All operations performed, both preharvest and harvest, were done with mechanical equipment. Total labor input was 13 hours per acre. Of this 7.6 hours was in harvesting. All the harvesting was done by the processors' crews and equipment. The mower-loader is far too expensive for growers of small acreages of peas to consider owning. By proper scheduling of planting and harvesting dates, the processors can harvest 400 or more acres per season with a single machine.

The harvesting equipment employed on these farms included a 6-foot mower-loader and two trucks for hauling. In total, machine and truck time averaged 4.1 hours per acre.

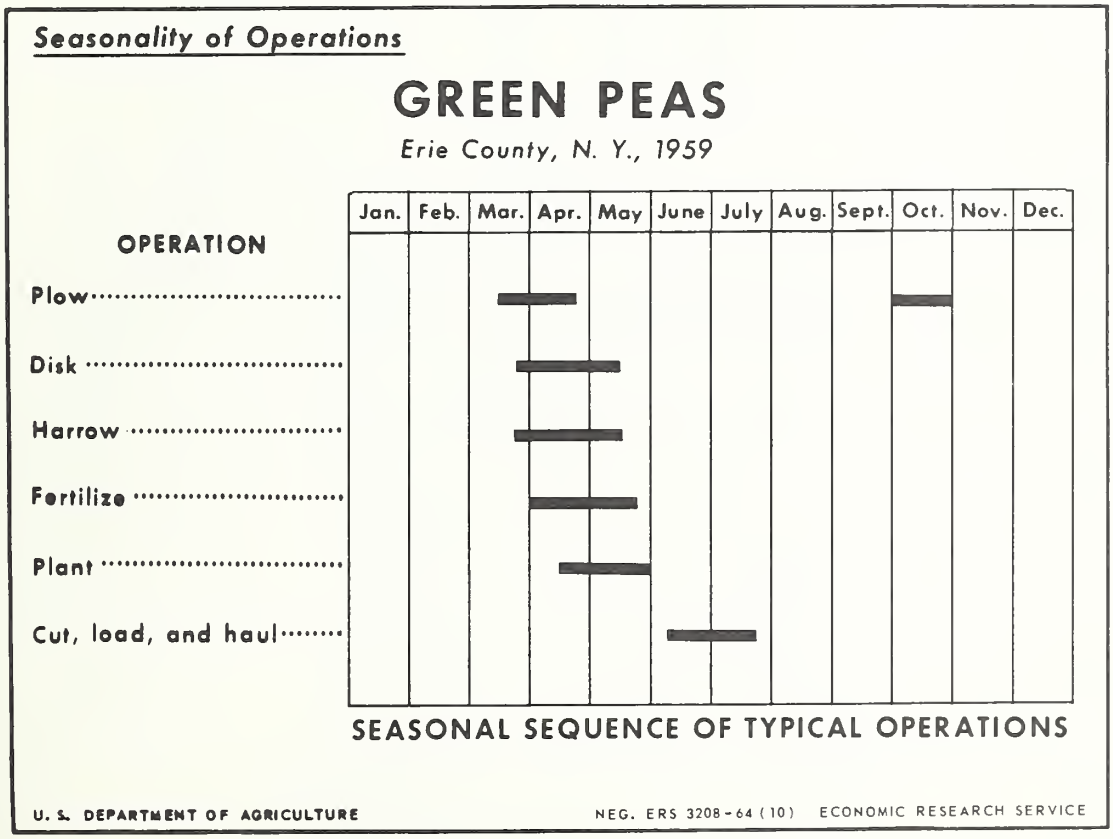

Figure 12

Table A.--Green peas: Materials used and contract work hired, averages for 117 acres on 7 farms, Erie County, N. Y., 1959

Item	Unit	Units per acre covered	Price per unit	Cost per acre covered	Percentage of total acreage covered	Cost per acre, total acreage
		Number	Dollars	Dollars	Percent	Dollars
Materials used:						
Seed	Bushel	4.3	7.56	32.51	100	32.51
Fertilizer nutrients--						
N	Pound	51.7	1/	18.88	100	18.88
P_2O_5	Pound	77.8	1/			
K_2O	Pound	69.1	1/			
Lime	Ton	.8	6.13	4.90	38	1.86
Spray, weedkiller	Pint	4.0	.69	2.76	38	1.05
Total	---	---	---	---	---	54.30
Contract work hired:						
Fertilize by plane, includes fertilizer	Acre	1.0	6.00	6.00	13	.78
Apply weedkiller	Acre	1.0	1.25	1.25	13	.16
Harvest and haul	Acre	1.0	25.00	25.00	100	25.00
Total	---	---	---	---	---	25.94
Total materials and contract work	---	---	---	---	---	2/ 80.24

1/ Data not available.
2/ Average yield per acre--1.99 tons. Average cost of material and contract work per ton--$40.32.

Table B.--Green peas: Labor, power, and machinery used in producing and harvesting, averages for 117 acres on 7 farms, Erie County, N.Y., 1959

Operation	Type and size of equipment	Time per acre, once over		Times over, acreage covered	Percentage of total acreage covered	Time per acre, total acreage	
		Man	Power			Man	Power
		Hours	Hours	Number	Percent	Hours	Hours
Preharvest:							
Plow	2-bot. 14-in. moldbd.	1.2	1.2	1.0	87	1.0	1.0
Disk	10-foot tandem	.7	.7	1.0	72	.5	.5
Harrow	9-foot springtooth	.4	.4	1.5	87	.5	.5
Fertilize	10-foot drill	.9	.7	1.0	100	.9	.7
Lime	10-foot drill	1.6	1.0	1.0	38	.6	.4
Plant	10-foot drill	1.5	.8	1.0	100	1.5	.8
Cultipack	12-foot cultipacker	.5	.5	1.0	40	.2	.2
Spray weedkiller 1/	18-foot boom sprayer	.4	.4	1.0	38	.2	.2
Fertilize (custom)	Plane	2/	2/	1.0	13	2/	2/
Total	---	---	---	---	---	5.4	4.3
Harvest:							
Cut, load, and haul (custom)	Pea harvester and 2 trucks	7.6	4.1	1.0	100	7.6	4.1
Total	---	---	---	---	---	7.6	4.1
Total preharvest and harvest	---	---	---	---	---	3/ 13.0	3/ 8.4

1/ Includes custom work.
2/ Less than 0.05 hour.
3/ Average yield per acre--1.99 tons. Average labor and power used per ton--6.5 hours and 4.2 hours, respectively.

Table C.--Green peas: Usual labor and power inputs, Erie County, N.Y., 1959

Operation	Times over	Time per acre, once over		Time per acre, total	
		Man	Power	Man	Power
	Number	Hours	Hours	Hours	Hours
Plow	1	1.2	1.2	1.2	1.2
Disk	1	.7	.7	.7	.7
Harrow	2	.4	.4	.8	.8
Fertilize	1	.9	.7	.9	.7
Plant	1	1.5	.8	1.5	.8
Cut, load, and haul	1	7.6	4.1	7.6	4.1
Total	---	---	---	12.7	8.3

Table D.--Green peas: Distribution of workers performing specified operations, by type of worker on 7 farms, Erie County, N.Y., 1959

Operation	Type of worker			
	Operator and unpaid family	Year-round hired	Local seasonal	Custom
	Percent	Percent	Percent	Percent
Plow	100	0	0	0
Disk	80	20	0	0
Harrow	100	0	0	0
Fertilize	86	14	0	0
Lime	100	0	0	0
Plant	70	20	10	0
Cultipack	100	0	0	0
Spray weedkiller	80	0	0	20
Fertilize by plane	0	0	0	100
Cut, load, and haul	0	0	0	100

Figure 13 and tables A, B, C, and D present data covering the growing and harvesting of tomatoes for processing from 565 acres on 26 farms in 1959. The average yield was 9.57 tons per acre.

Tractors were the chief source of power on these farms. Unless otherwise indicated, they were used for operations listed. Size of tractor was not obtained. From the size of equipment used, it is assumed that the average tractor was a 2-plow unit having a drawbar rating of 15 to 20 horsepower.

Growing tomatoes for the processing plants is quite similar to growing them for fresh market use but the amount of labor used is quite different. In preharvest operations, the processing acreage required only 44 hours per acre while fresh market acreage used 61 hours. More time spent in planting, cultivating, and capping plants for fresh market production makes up most of the difference.

In harvesting, tomatoes for processing were picked only 5 times, compared with 12 times for the fresh market crop. Less care in selection and no sorting and packing of the processing crop enabled growers to harvest a greater tonnage per acre in 101 hours, 34 fewer than the 135 hours needed per acre of fresh market tomatoes.

In total, the labor input per ton of processing tomatoes was 15.2 hours; for fresh market tomatoes, it averaged 23.2 hours.

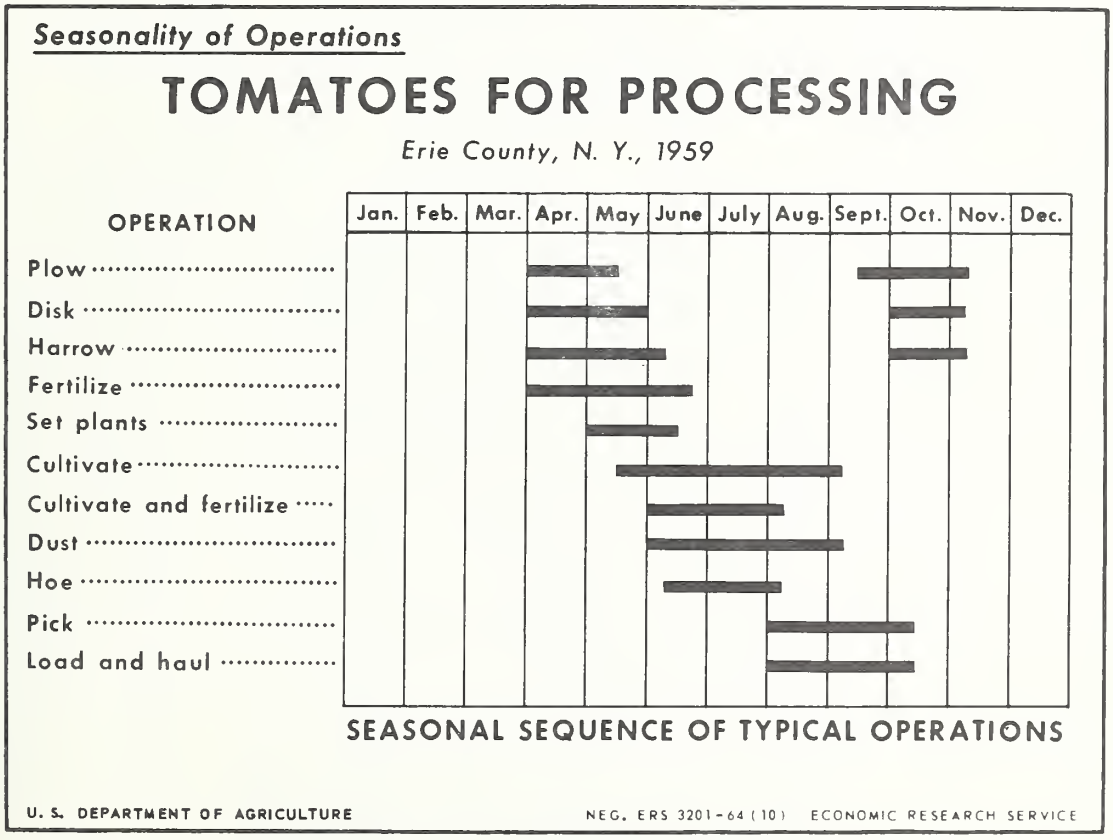

Figure 13

Table A.--Tomatoes: Materials used and contract work hired, averages for 565 acres on 26 farms, Erie County, N. Y., 1959

Item	Unit	Units per acre covered	Price per unit	Cost per acre covered	Percentage of total acreage covered	Cost per acre, total acreage
		Number	Dollars	Dollars	Percent	Dollars
Materials used:						
Plants	Thousand	4.25	11.54	49.04	100	49.04
Fertilizer nutrients--						
N	Pound	126.7	1/			
P_2O_5	Pound	228.7	1/	59.34	100	59.34
K_2O	Pound	224.3	1/			
Dust materials	Pound	150.6	.088	13.25	59	7.82
Spray materials	Pound	31.7	.82	25.99	58	15.07
Baskets, 5/8 bushel	Each	35.9	.18	6.46	2/ 68	4.39
Total	---	---	---	---	---	135.66
Contract work hired:						
Lime with truck spreader, includes lime	Ton	2.0	8.00	16.00	2	.32
Total	---	---	---	---	---	.32
Total materials and contract work	---	---	---	---	---	3/ 135.98

1/ Data not available.
2/ Sufficient baskets were on hand so that replacements were not purchased on 32 percent of the acreage.
3/ Average yield per acre--9.57 tons. Average cost of materials and contract work per ton--$14.21.

Table B.--Tomatoes: Labor, power, and machinery used in producing and harvesting, averages for 565 acres on 26 farms, Erie County, N.Y., 1959

Operation	Type and size of equipment	Time per acre, once over		Times over, acreage covered	Percentage of total acreage covered	Time per acre, total acreage	
		Man	Power			Man	Power
		Hours	Hours	Number	Percent	Hours	Hours
Preharvest:							
Plow	2-bot. 14-in. moldbd.	0.9	0.9	1.0	100	0.9	0.9
Disk	8-foot tandem	.7	.7	2.0	100	1.4	1.4
Lime (custom)	Truck spreader	.3	.3	1.0	2	1/	1/
Harrow	9-foot springtooth	.7	.7	1.2	100	.8	.8
Fertilize	10-foot lime sower	1.4	1.1	1.2	83	1.4	1.1
Set plants 2/	1-row planter/attach.	7.9	2.3	1.0	100	7.9	2.3
Cultivate	1-row cultivator	1.4	1.4	5.9	97	8.0	8.0
Cultivate and fertilize	1-row cult./attach.	1.3	1.2	1.5	53	1.0	1.0
Dust	3-row duster	.7	.7	3.7	59	1.5	1.5
Spray	4-row boom sprayer	.6	.6	4.9	58	1.7	1.7
Hoe	---	20.3	---	1.4	69	19.6	---
Total	---	---	---	---	---	44.2	18.7
Harvest:							
Pick	---	18.5	---	5.0	100	92.5	---
Load and haul	Truck	1.7	1.3	5.0	100	8.5	6.5
Total	---	---	---	---	---	101.0	6.5
Total preharvest and harvest	---	---	---	---	---	3/ 145.2	3/ 25.2

1/ Data not available.
2/ Includes some fertilizing.
3/ Average yield per acre--9.57 tons. Average labor and power used per ton--15.2 hours and 2.6 hours, respectively.

Table C.--Tomatoes: Usual labor and power inputs, Erie County, N.Y., 1959

Operation	Times over	Time per acre, once over		Time per acre, total	
		Man	Power	Man	Power
	Number	Hours	Hours	Hours	Hours
Plow	1	0.9	0.9	0.9	0.9
Disk	2	.7	.7	1.4	1.4
Harrow	1	.7	.7	.7	.7
Fertilize	1	1.4	1.1	1.4	1.1
Set plants	1	7.9	2.3	7.9	2.3
Cultivate	6	1.4	1.4	8.4	8.4
Cultivate and fertilize	1	1.3	1.2	1.3	1.2
Dust	4	.7	.7	2.8	2.8
Hoe	1	20.3	---	20.3	---
Pick	5	18.5	---	92.5	---
Load and haul	5	1.7	1.3	8.5	6.5
Total	---	---	---	146.1	25.3

Table D.--Tomatoes: Distribution of workers performing specified operations, by type of worker on 26 farms, Erie County, N.Y., 1959

Operation	Type of worker					
	Operator and unpaid family	Year-round hired	Local seasonal	Domestic migratory	Puerto Rican	Custom
	Percent	Percent	Percent	Percent	Percent	Percent
Plow	67	3	30	0	0	0
Disk	72	3	25	0	0	0
Lime	0	0	0	0	0	100
Harrow	70	0	30	0	0	0
Fertilize	45	10	45	0	0	0
Set plants	20	4	38	9	29	0
Cultivate	56	0	36	4	4	0
Cultivate and fertilize	50	0	50	0	0	0
Dust	53	0	40	0	7	0
Spray	59	5	32	0	4	0
Hoe	1	0	7	10	82	0
Pick	4	0	10	5	81	0
Load and haul	55	0	36	0	9	0

Figure 14 and tables A, B, C, and D present data on the growing and harvesting of strawberries for processing use from 52 acres on 6 farms in 1959. The average yield of capped berries was 5,264 pounds per acre.

Tractors were the chief source of power on these farms. Unless otherwise indicated, they were used for operations listed. Size of tractor was not obtained in the survey. From the size of equipment used, it is assumed that the average tractor was a 2-plow unit having a drawbar rating of 15 to 20 horsepower.

In this survey, very few growers set out new beds of strawberries for processing use, so costs and practices reported here are for established beds only. Establishment costs and practices should vary little from those reported on strawberries for fresh market use (see pages 35 to 38).

Labor used to harvest strawberries was almost exactly the same per hundredweight, whether harvested for fresh market or for processing. To pick, cap, load, and haul 100 pounds of berries for processing took 5.80 hours of labor, compared with 5.76 hours per 100 pounds of uncapped berries for fresh market. Acreage for processing was picked an average of only 3.9 times, compared with 9.5 for that for fresh market.

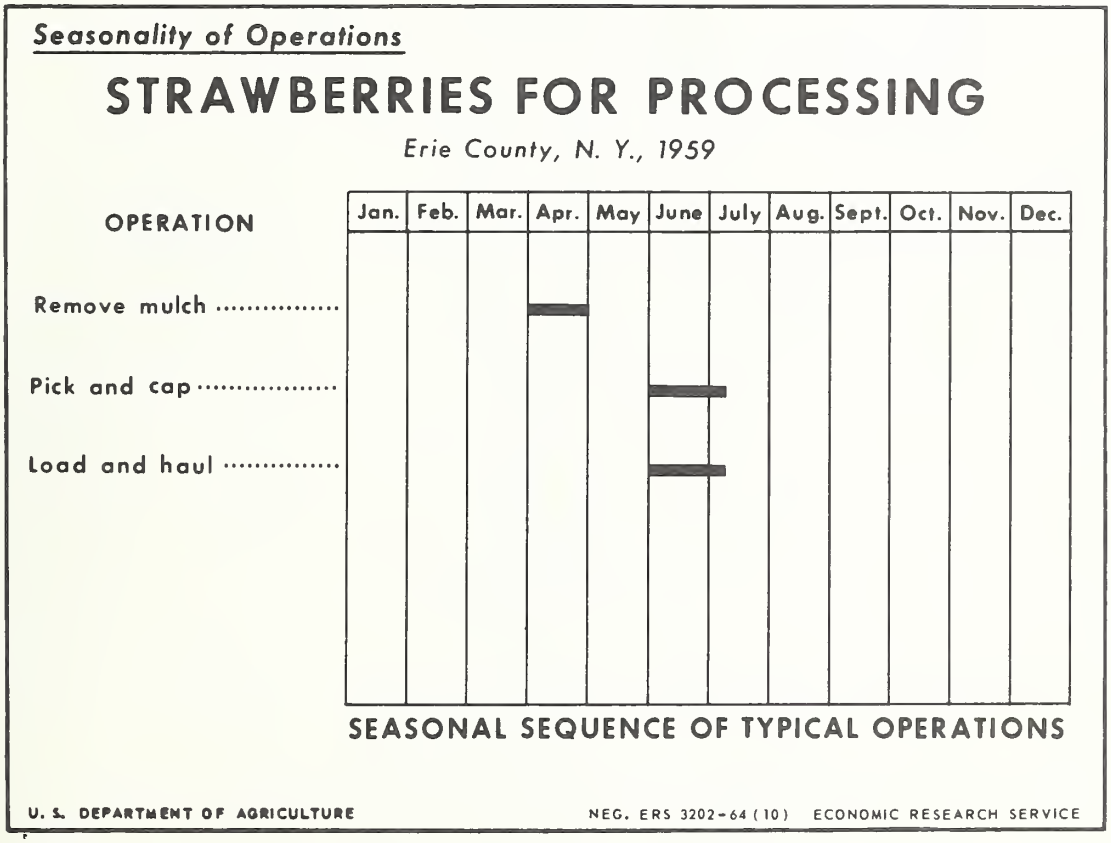

Figure 14

Table A.--Strawberries: Materials used, averages for 52 acres on 6 farms, Erie County, N. Y., 1959

Item	Unit	Units per acre covered	Price per unit	Cost per acre covered	Percentage of total acreage covered	Cost per acre, total acreage
		Number	Dollars	Dollars	Percent	Dollars
Dust	Pound	37.5	0.10	3.75	38	1.42
Spray	Quart	3.4	3.36	11.42	44	5.02
Containers:						
Baskets, quart	Each	3,509.0	.018	63.16	100	63.16
Crates, 8-quart	Each	438.6	.230	100.88	100	100.88
Total 1/	---	---	---	---	---	2/ 170.48

1/ Excludes cost of establishment.
2/ Average yield per acre--5,264 pounds. Average cost of materials per cwt.--$3.24.

Table B.--Strawberries: Labor, power, and machinery used in producing and harvesting, averages for 52 acres on 6 farms, Erie County, N.Y., 1959

Operation	Type and size of equipment	Time per acre, once over		Times over, acreage covered	Percentage of total acreage covered	Time per acre, total acreage	
		Man	Power			Man	Power
		Hours	Hours	Number	Percent	Hours	Hours
Preharvest:							
Remove mulch	---	8.5	---	1.0	75	6.4	---
Remove mulch	2-row rake	5.5	5.5	1.0	25	1.4	1.4
Spray	---	.7	.7	1.6	44	.5	.5
Dust	---	.3	.3	1.0	38	.1	.1
Weed	---	7.2	---	1.0	44	3.2	---
Total 1/	---	---	---	---	---	11.6	2.0
Harvest:							
Pick and cap	---	71.5	---	3.9	100	278.9	---
Load and haul	Truck	3.8	1.9	3.9	100	14.8	7.4
Total	---	---	---	---	---	293.7	7.4
Total preharvest and harvest	---	---	---	---	---	2/ 305.3	2/ 9.4

1/ Excludes inputs used in establishing beds.

2/ Average yield per acre 5,264 pounds. Average labor and power used per cwt.--5.80 hours and 0.18 hour, respectively.

Table C.--Strawberries: Usual labor and power inputs, Erie County, N.Y., 1959

Operation	Times over	Time per acre, once over		Time per acre, total	
		Man	Power	Man	Power
	Number	Hours	Hours	Hours	Hours
Remove mulch	1	8.5	---	8.5	---
Pick and cap	3.9	71.5	---	278.9	---
Load and haul	3.9	3.8	1.9	14.8	7.4
Total	---	---	---	302.2	7.4

Table D.--Strawberries: Distribution of workers performing specified operations, by type of worker on 6 farms, Erie County, N.Y., 1959

Operation	Type of worker			
	Operator and unpaid family	Year-round hired	Local seasonal	Puerto Rican
	Percent	Percent	Percent	Percent
Remove mulch by hand	8	0	0	92
Remove mulch by machine	0	12	0	88
Spray	50	50	0	0
Dust	100	0	0	0
Weed	6	0	0	94
Pick and cap	14	0	0	86
Load and haul	56	0	11	33

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