ERS- 45

Truck Crop Production Practices

ACCOMACK and NORTHAMPTON COUNTIES, VIRGINIA

Labor, Power, and Materials
by Operation

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

ACKNOWLEDGMENTS

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Crossley S-D Surveys, Inc., New York City, N. Y., prepared the sample, conducted the field interviewing, and tabulated the statistical data under a contract with the U. S. Agricultural Research Service, of which the Farm Economics Division was then a part.

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 only 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

The first in this series of reports on 1959 crop production practices, "Truck Crop Production Practices, Columbia County, Wisconsin," was issued by the U. S. Agricultural Research Service in February 1961 as ARS 43-132.

Washington, D. C. December 1961

TRUCK CROP PRODUCTION PRACTICES ACCOMACK AND NORTHAMPTON COUNTIES, VIRGINIA

Labor, Power, and Materials by Operation

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INTRODUCTION

In 1960, the United States production of truck crops for fresh market and processing occupied nearly 3.5 million acres of cropland. These crops used less than 1 percent of the total cropland. The farm value of truck crops harvested for sale was almost $1.1 billion, or an average of $310 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 are intensive users of labor. In addition, the labor requirements are highly seasonal, with several labor peaks, the highest of which occurs 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. In addition, 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.

1/ Vegetables - Fresh Market 1960 Annual Summary - Acreage, Production and Value of Principal Commercial Crops, Vg. 2-2-(60); Vegetables - Processing 1960 Annual Summary - Acreage, Production, and Value of Principal Commercial Crops, Vg. 3-2-(60), U. S. Agr. Market. Serv. Crop Rpt. Bd.

These high labor demands have been difficult to meet, particularly during such peak periods as 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 to the migration of many thousands of workers from one area to another during the peak seasons to work on vegetables. In addition, many thousands of foreign workers are imported annually to help satisfy these heavy seasonal labor demands.

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 1959, 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/

This report presents information on labor requirements, production practices, and costs involved in the production of truck crops in Accomack and Northampton Counties, Va. (fig. 1). It is the second in a series covering the 12 survey areas.

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 analyzing the data.

3/ Based on data cited in footnote 1 and the 1954 Census of Agriculture, vols. I and II, U. S. Department of Commerce, and in Vegetables – Fresh Market 1958 Annual Summary – Acreage, Production and Value of Principal Commercial Crops, Vg. 2-2-(58); Vegetables – Processing 1958 Annual Summary – Acreage, Production, and Value of Principal Commercial Crops, Vg. 3-2-(58), U. S. Agr. Market. Serv. Crop Rpt. Bd.

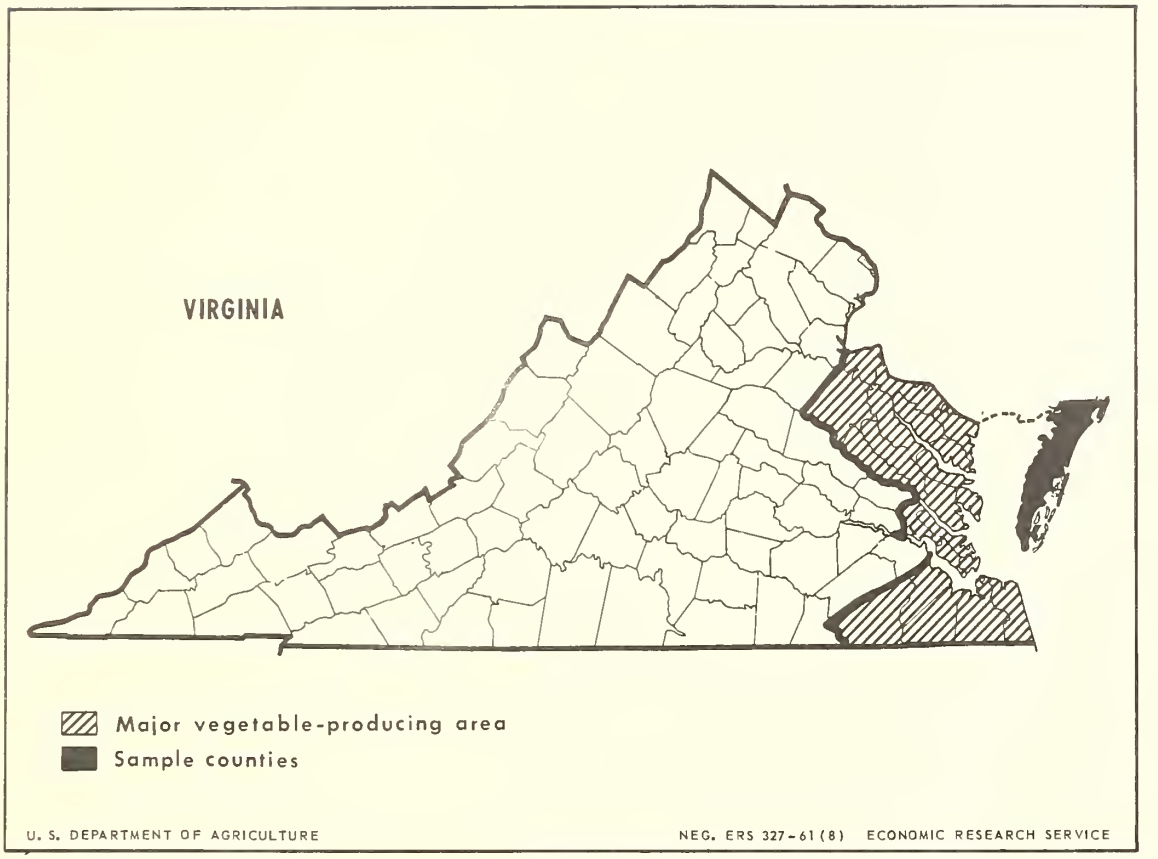

Figure 1

A separate report covering all 12 areas will present information on the extent to which production of truck crops has become vertically integrated by either ownership or contractual agreements.

METHODOLOGY

In 1960, information regarding the 1959 crop was obtained by personal interview with operators of 202 farms in Accomack and Northampton Counties.

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

CHARACTERISTICS OF ACCOMACK AND NORTHAMPTON COUNTIES, VIRGINIA

Accomack and Northampton Counties comprise the Virginia portion of the Delmarva peninsula. The peninsula is nearly surrounded by the Chesapeake and Delaware Bays and the Atlantic Ocean, and its climate is moderated by the influence of these bodies of water. The average frost-free growing season of approximately 210 days beginning about April 10, adequate and fairly well distributed rainfall, and a relatively fertile light sandy loam soil make production of truck crops possible from late spring to late fall. Double-cropping is practiced with some vegetables.

In 1959, Accomack and Northampton Counties grew for sale, on 30,075 acres, truck crops with a value exceeding $5.3 million.4/ This acreage was produced on 543, or 46 percent, of the 1,175 farms in the two counties. On the average, 55 acres of truck crops were harvested per farm where grown. Total production of truck crops in these two counties constituted 58 percent of the acreage and 62 percent of the value of all truck crops harvested for sale in Virginia.

In 1960, information regarding the 1959 crop was obtained by personal interview with operators of 202 farms in Accomack and Northampton Counties harvesting vegetables for sale. This was a 37-percent sample of all truck-crop farms in the two counties. On the average, these farms had 145 acres of cropland. Vegetables were grown on 54 acres, with fresh-market vegetables occupying 46 acres and processing crops 8 acres. In general, farms in the area produce more than one truck crop. Slightly over 13 percent of the farms produced five or more truck crops. Table 1 shows the number of farms by acreage of cropland operated and further indicates the number producing different truck crops.

Accomack and Northampton Counties are fairly typical of the entire Delmarva vegetable-producing area. Data for producing vegetables in these counties, therefore, are generally applicable to the entire area. A major exception is that a higher proportion of vegetables are harvested for fresh market in these two counties than is true of the Maryland and Delaware counties.

Many different vegetables were grown on these farms. This report presents data on seven vegetables produced for fresh market and one produced for processing (table 2). Data are presented for those crops that were grown on six or more survey farms.

4/ 1959 Census of Agriculture, preliminary, Series AC 59-1, Oct. 1960.

Table 1.– Sample farms: Number, average acreage of cropland, and distribution by number of truck crops produced, farms in each size group, Accomack and Northampton Counties, Va., 1959

Cropland operated (acres)	Farms in size group	Average acreage of cropland per farm	Distribution of farms, by number of crops produced							
			1	2	3	4	5	6	7	8
	Number	Acres	Farms	Farms	Farms	Farms	Farms	Farms	Farms	Farms
Under 30.0	18	17.8	11	3	1	2	1	---	---	---
30.0 to 49.9	20	39.0	6	9	2	1	1	1	---	---
50.0 to 69.9	33	58.3	15	11	2	4	1	---	---	---
70.0 to 99.9	28	83.2	9	7	4	5	2	---	---	1
100.0 to 149.9	36	121.3	7	12	7	5	3	2	---	---
150.0 to 184.9	22	165.1	9	5	4	2	2	---	---	---
185.0 to 299.9	20	231.4	8	3	2	2	2	1	1	1
300.0 to 639.9	24	433.3	4	6	6	---	5	3	---	---
640.0 and over	1	1,000.0	1	---	---	---	---	---	---	---
Total or average	202	145.4	70	56	28	21	17	7	1	2

Table 2.– Importance of truck crops, by market use, 202 farms, Accomack and Northampton Counties, Va., 1959

Crop	Farms on which crops were grown for –		Total 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
Green lima beans	13	1	57	20	77	4	20	5
Snap beans	104	21	2,836	584	3,420	27	28	30
Cabbage	45	0	562	0	562	12	0	12
Cucumbers and pickles	27	4	1,061	95	1,156	39	24	41
Green peppers	57	2	507	10	517	9	5	9
Tomatoes	145	0	3,710	0	3,710	26	0	26
Strawberries	40	0	272	0	272	7	0	7
Other 1/	---	---	900	360	1,260	---	---	---

1/ Includes sweet corn, lettuce, dry onions, green peas, watermelons, broccoli, squash, eggplant, turnips, kale, mustard, spinach, collards, and miscellaneous other greens for fresh market; and asparagus and broccoli for processing.

Data in figure 2 and tables A, B, C, and D are based on information covering production of lima beans for fresh market on 25.5 acres on seven farms in 1959. The average yield per acre was 103.6 bushels of unshelled beans.

Tractors were the main source of power on these farms. Unless otherwise indicated, they were used for the operations listed. Drawbar horsepower ratings were not obtained in the survey, but size of equipment indicates that these tractors were 2-plow tractors with drawbar horsepower ratings of 15 to 24.

The bulk of the preharvest labor was performed by the farm operator, his family, and year-round hired workers. Harvesting, however, was performed mainly by local seasonal and migratory workers. Picking rates for the 1959 crop averaged $0.59 per 32-pound bushel.

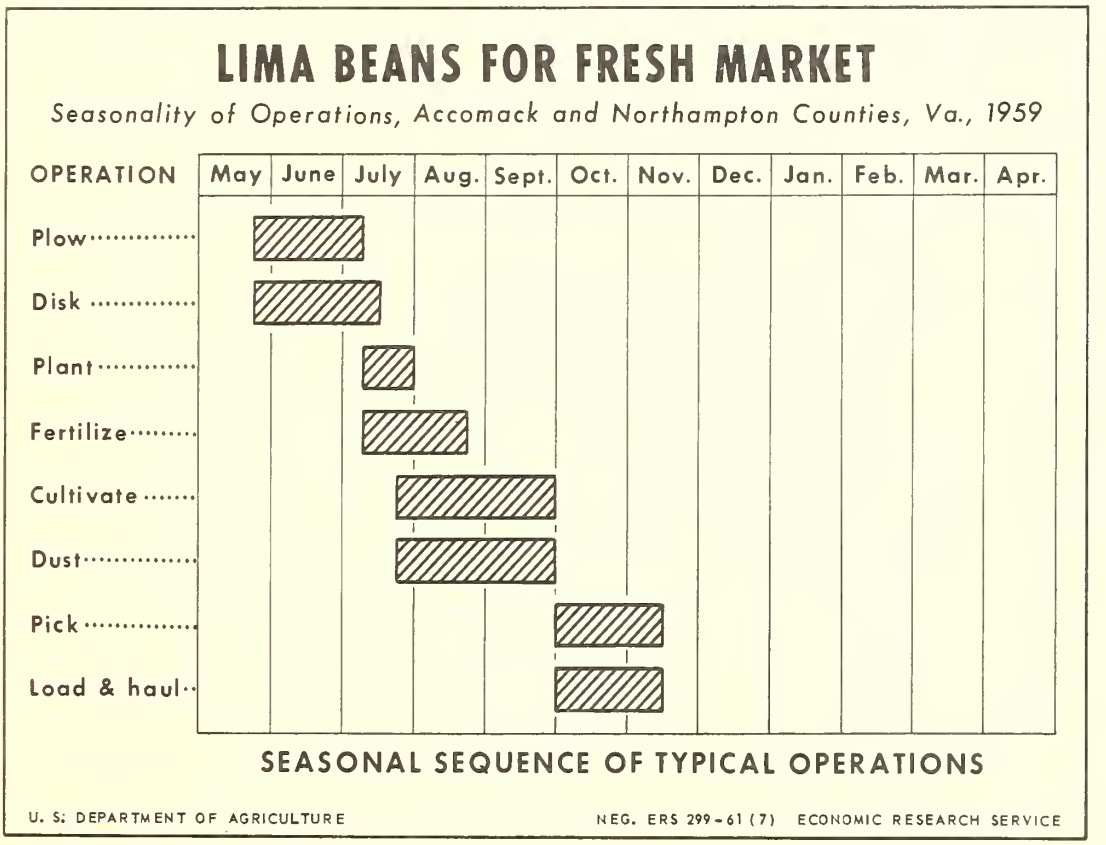

Figure 2

Table A. – Lima beans for fresh market: Materials used, averages for 25.5 acres on 7 farms, Accomack and Northampton Counties, Va., 1959

Materials used	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	49.0	0.30	14.70	100	14.70
Fertilizer, 5-10-5	Cwt.	9.09	1.89	17.18	100	17.18
Dust (parathion + DDT)	Pound	98.8	.11	10.87	66	7.17
Dust (sulfur)	Cwt.	.85	1.41	1.20	16	.19
Spray (parathion + DDT)	Pound	7.84	.16	12.54	33	4.14
Baskets	Each	104	.34	35.36	100	35.36
Total	---	---	---	---	---	1/ 78.74

1/ Average yield per acre – 103.6 bushels. Average cost of materials per bushel – $0.76.

Table B.– Lima beans for fresh market: Labor, power, and machinery used in producing and harvesting, by operation, averages for 25.5 acres on 7 farms, Accomack and Northampton Counties, Va., 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.	2.5	2.5	1.0	100	2.5	2.5
Disk and drag	7-foot tandem, 7-foot spiketooth	1.8	1.8	1.9	100	3.4	3.4
Drag	7-foot spiketooth	2.4	2.4	1.0	18	.4	.4
Furrow	1-row marker	2.0	2.0	1.0	4	.1	.1
Plant	2-row planter	2.1	1.8	1.0	100	2.1	1.8
Fertilize	10-foot spreader	2.3	1.7	1.2	100	2.8	2.0
Cultivate	2-row cultivator	2.2	2.2	3.1	76	5.2	5.2
Dust	4-row duster	1.0	1.0	2.4	82	2.0	2.0
Spray	4-row sprayer	1.2	1.2	2.3	33	.9	.9
Total	---	---	---	---	---	19.4	18.3
Harvest:							
Pick by hand	---	86.1	0	1.5	100	129.2	0
Grade	---	17.6	0	1.5	60	15.8	0
Load by hand and haul by truck	1 1/2-ton truck	5.3	5.3	1.5	100	8.0	8.0
Total	---	---	---	---	---	153.0	8.0
Total, preharvest and harvest	---	---	---	---	---	1/ 172.4	1/ 26.3

1/ Average yield per acre – 103.6 bushels. Average labor and power used per bushel – 1.7 hours and 0.3 hours, respectively.

Table C. – Lima beans for fresh market: Usual labor and power inputs, Accomack and Northampton Counties, Va., 1959

Operation	Times over	Time per acre, once over		Time per acre, total	
		Man	Power	Man	Power
		Hours	Hours	Hours	Hours
Plow	1	2.5	2.5	2.5	2.5
Disk and drag	2	1.8	1.8	3.6	3.6
Plant	1	2.1	1.8	2.1	1.8
Fertilize	1	2.3	1.7	2.3	1.7
Cultivate	3	2.2	2.2	6.6	6.6
Dust	2	1.0	1.0	2.0	2.0
Pick	1.5	86.1	---	129.2	---
Load and haul	1.5	5.3	5.3	8.0	8.0
Total	---	---	---	156.3	26.2

Table D. – Lima beans for fresh market: Distribution of workers performing specified operations, by type of worker, 7 farms, Accomack and Northampton Counties, Va., 1959

Operation	Type of worker			
	Operator and unpaid family	Year-round hired	Local seasonal	Nonlocal seasonal 1/
	Percent	Percent	Percent	Percent
Plow	56	33	11	0
Disk	62	25	13	0
Drag	50	50	0	0
Furrow	100	0	0	0
Plant	78	22	0	0
Fertilize	60	30	10	0
Cultivate	80	20	0	0
Dust	60	40	0	0
Spray	100	0	0	0
Pick	9	0	58	33
Grade	57	0	43	0
Load and haul	100	0	0	0

1/ Includes domestic migratory, foreign, and Puerto Rican workers.

Data in figure 3 and tables A, B, C, and D are based on information covering the production and harvesting of 1,655.5 acres of snap beans grown for the fresh market on 62 farms. The average yield per acre was 102.1 bushels.

Production of snap beans for fresh market is highly competitive. Growers attempt to obtain a high price by producing either an early- or a late-season crop of beans, or both. The price is usually lower in late June, July, and August, when many other areas are harvesting beans. Eastern Shore growers avoid production of beans during these months. Instead they plant so they can harvest beans from late May to early July and from late August to mid-November. The fall-harvested crop constituted 53 percent of the total acreage of beans harvested on the sample farms.

The beans were hand picked by local seasonal and migratory workers. Piece rates for picking ranged from $0.50 to $0.80 a bushel and averaged $0.64. Of this amount, crewleaders usually received $0.15 for worker recruitment, transportation, and checking. Hauling fees averaged $0.12 a bushel.

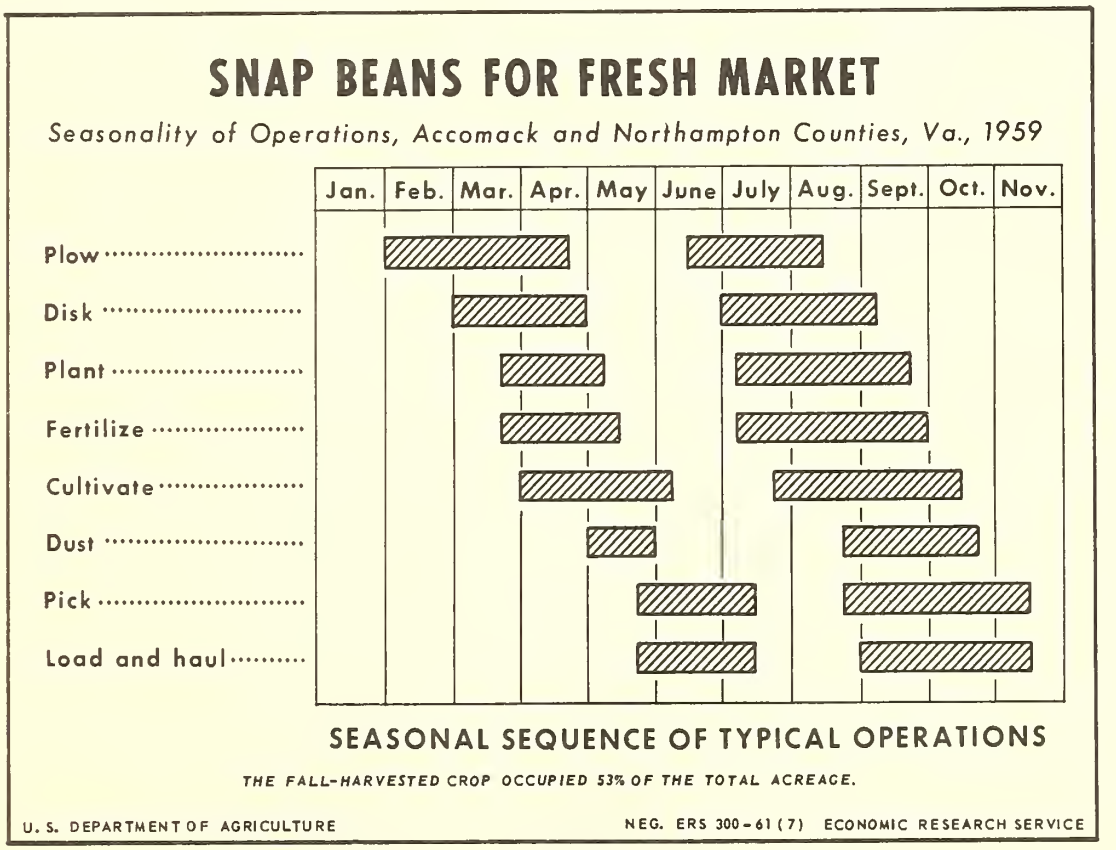

Figure 3

Table A. – Snap beans for fresh market: Materials used and contract work hired, averages for 1,655.5 acres on 62 farms, Accomack and Northampton Counties, Va., 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	61.0	0.25	15.25	100	15.25
Fertilizer, 5-10-5	Cwt.	9.1	1.96	17.84	100	17.84
Fertilizer, 33-0-0	Cwt.	2.0	2.90	5.80	2	.12
Lime	Cwt.	8.6	.89	7.65	2	.15
Spray (DDT and sulfur)	Pound	29	.12	3.48	33	1.15
Dust	Cwt.	87	.19	7.83	65	5.09
Baskets	Each	101	.315	31.81	100	31.81
Total	---	---	---	---	---	71.41
Contract work hired:						
Dust (plane and materials)	Acre	1.0	3.00	3.00	3	.09
Dust (tractor and materials)	do.	2.0	2.00	4.00	1/	.01
Spray (plane and materials)	do.	1.0	11.66	11.66	1	.12
Load truck and haul	Bushel	80.0	.05	4.00	1/	.01
Total	---	---	---	---	---	.23
Total, materials and contract work	---	---	---	---	---	2/ 71.64

1/ Less than 0.5.

2/ Average yield per acre – 102.1 bushels. Average cost of materials and contract work per bushel – $0.70.

Table B.- Snap beans for fresh market: Labor, power, and machinery used in producing and harvesting, by operation, averages for 1,655.5 acres on 62 farms, Accomack and Northampton Counties, Va., 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.	1.3	1.3	1.2	99	1.5	1.5
Lime	10-foot spreader	.6	.6	1.0	2	1/	1/
Lime and disk	10-foot spreader and 10-foot single disk	3.0	2.0	1.0	2/	1/	1/
Disk and drag	8-foot tandem, 8-foot spiketooth	.6	.6	1.7	80	.8	.8
Harrow	7-foot springtooth	1.1	1.1	1.7	25	.5	.5
Smooth	10-foot spiketooth	1.9	1.9	1.0	1	1/	1/
Mark rows	3-row marker	.4	.4	1.0	4	1/	1/
Plant	2-row planter	1.2	.9	1.0	100	1.2	.9
Fertilize	4-row distributor	1.1	.9	1.0	100	1.1	.9
Cultivate	2-row cultivator	1.0	1.0	2.7	100	2.7	2.7
Haul fertilizer	Truck	1.1	1.1	1.0	3	1/	1/
Cultivate and fertilize	2-row cult./attach.	1.0	1.0	1.2	3	1/	1/
Side-dress	2-row drill	1.8	.9	1.0	2	1/	1/
Weed	---	2.5	---	1.0	3	.1	---
Spray	4-row sprayer	.3	.3	1.5	33	.1	.1
Spray, plane (custom)	Plane	.1	.1	1.0	1	1/	1/
Dust	6-row duster	.4	.4	2.0	65	.5	.5
Dust (custom)	6-row duster	.4	.4	2.0	2/	1/	1/
Dust, plane (custom)	Plane	.1	.1	1.0	3	1/	1/
Total	---	---	---	---	---	8.5	7.9
Harvest:							
Pick	---	35.3	---	2.9	100	102.4	---
Check and load	---	1.7	---	2.9	3	.1	---
Load truck and haul 3/	Truck	1.7	1.7	2.9	45	2.2	2.2
Load truck and haul (custom)	Truck	.6	.6	1.0	2/	1/	1/
Total	---	---	---	---	---	104.7	2.2
Total, preharvest and harvest	---	---	---	---	---	4/ 113.2	4/ 10.1

1/ Less than 0.05. 2/ Less than 0.5. 3/ Excludes beans that were sold picked in the fields and hauled by the purchaser.
4/ Average yield per acre - 102.1 bushels. Average labor and power used per bushel - 1.1 hours and 0.1 hour, respectively.

Table C. – Snap beans for fresh market: Usual labor and power inputs, Accomack and Northampton Counties, Va., 1959

Operation	Times over	Time per acre, once over		Time per acre, total	
		Man	Power	Man	Power
		Hours	Hours	Hours	Hours
Plow	1	1.5	1.5	1.5	1.5
Disk and drag	2	.6	.6	1.2	1.2
Plant	1	1.2	.9	1.2	.9
Fertilize	1	1.1	.9	1.1	.9
Cultivate	3	1.0	1.0	3.0	3.0
Dust	2	.4	.4	.8	.8
Pick	2.9	35.3	---	102.3	---
Total	---	---	---	111.1	8.3

Table D. – Snap beans for fresh market: Distribution of workers performing specified operations, by type of worker, 62 farms, Accomack and Northampton Counties, Va., 1959

Operation	Type of worker			
	Operator and unpaid family	Year-round hired	Local seasonal	Nonlocal seasonal 1/
	Percent	Percent	Percent	Percent
Plow	31	54	15	0
Lime	0	100	0	0
Disk and drag	30	58	12	0
Harrow	12	88	0	0
Smooth	0	100	0	0
Mark rows	33	67	0	0
Plant	37	50	13	0
Fertilize	34	56	10	0
Cultivate	32	53	15	0
Haul fertilizer	0	100	0	0
Cultivate and fertilize	0	100	0	0
Side-dress	50	50	0	0
Weed	0	100	0	0
Spray	62	25	13	0
Spray, plane (custom)	0	0	100	0
Dust	19	72	9	0
Dust, plane (custom)	0	0	100	0
Pick	2/	0	28	72
Check and load	50	0	0	50
Load truck and haul	9	25	45	21
Load truck and haul (custom)	0	0	20	80

1/ Includes domestic migratory, foreign, and Puerto Rican workers.
2/ Less than 0.5 percent.

Figure 4 and tables A, B, C, and D were prepared from information covering production of snap beans for processing on 219.5 acres on 10 farms in 1959. The average yield was 3,060 pounds of snap beans per acre.

Tractors were the chief source of power on these farms. Unless otherwise indicated, they were used for operations listed. While information as to size of tractor was not obtained, the size of equipment used would indicate the average tractor to be a 3-plow tractor with a drawbar horsepower rating of 22 to 32.

A long growing season on the Eastern Shore permits double cropping of beans. The seasonality-of-operations chart shows two typical patterns of production. However, less than a fifth of the total acreage of snap beans for processing is fall-harvested. Production inputs for the spring and fall crops were aggregated. Tables A, B, C, and D represent average inputs for spring and fall crops combined.

Preharvest operations were highly mechanized; hand labor was kept at a minimum. Harvesting operations were not mechanized; only 5 percent of the acreage was picked mechanically. Hand-harvesting rates ranged from $0.50 to $0.75 per bushel and averaged $0.61.

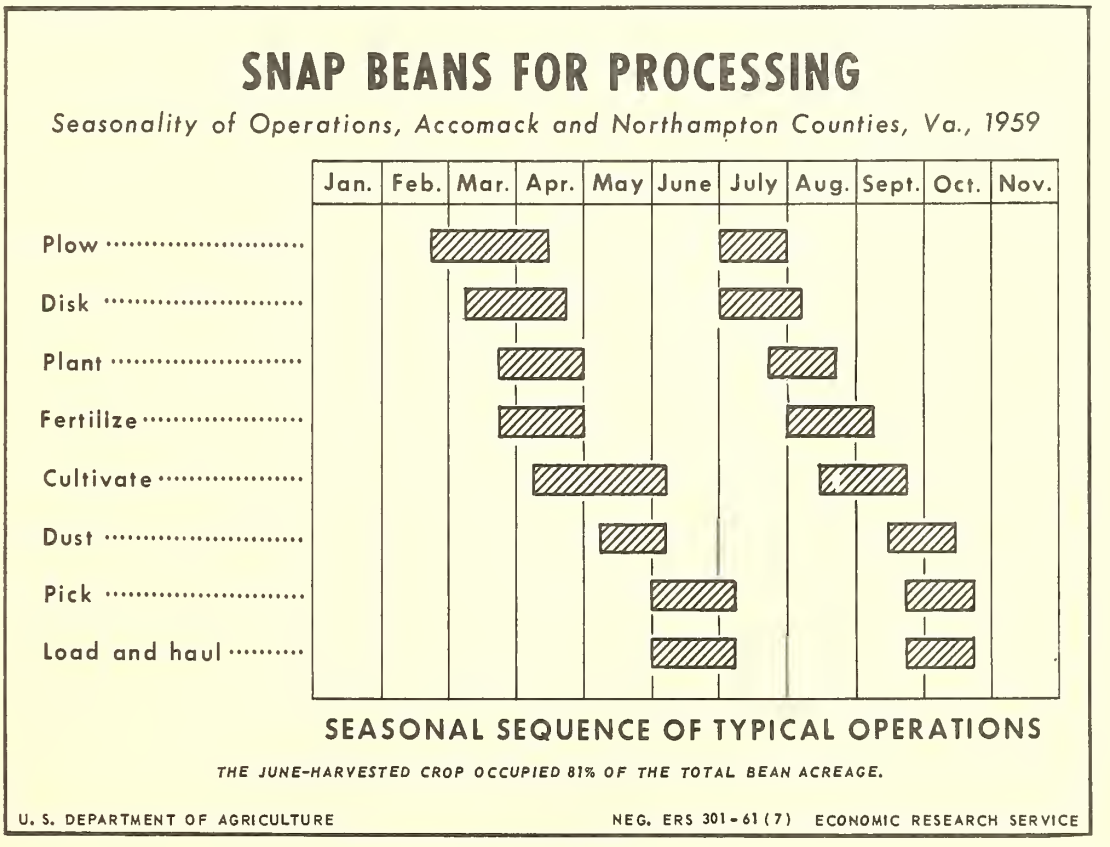

Figure 4

Table A. – Snap beans for processing: Materials used and contract work hired, averages for 219.5 acres on 10 farms, Accomack and Northampton Counties, Va., 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	59.00	0.24	14.16	100	14.16
Fertilizer, 5-10-5	Cwt.	8.9	2.15	19.14	100	19.14
Lime	Ton	.50	8.38	4.19	5	.21
Dust (1% DDT, 5% parathion)	Pound	35.00	.10	3.50	60	2.10
Spray (1% DDT, 5% parathion)	do.	18.00	.22	3.96	28	1.11
Baskets, bushel	Each	16.00	.26	4.16	69	2.87
Total	---	---	---	---	---	39.59
Custom work hired:						
Liquid fertilizer, sprayer and materials	Pound	40.00	0.17	6.80	5	0.34
Harvest, 2-row picker	Cwt.	10.29	1.00	10.29	5	.51
Total	---	---	---	---	---	.85
Total, materials and contract work	---	---	---	----	---	1/ 40.44

1/ Average yield per acre – 30.6 cwt. Average cost of materials and contract work per cwt. – $1.32.

Table B.– Snap beans for processing: Labor, power, and machinery used in producing and harvesting, by operation, averages for 219.5 acres on 10 farms, Accomack and Northampton Counties, Va., 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.	1.3	1.3	1.0	100	1.3	1.3
Lime	10-foot spreader	.6	.2	1.0	5	1/	1/
Disk and drag	12-foot tandem, 12-foot spiketooth	.7	.7	1.6	97	1.1	1.1
Drag	10-foot spiketooth	.7	.7	1.2	12	.1	.1
Plant	2-row planter	1.4	.8	1.0	100	1.4	.8
Fertilize	10-foot spreader	1.1	.8	1.0	100	1.1	.8
Cultivate	2-row cultivator	.8	.8	2.8	100	2.2	2.2
Spray	6-row sprayer	.5	.5	2.7	28	.4	.4
Cultivate and fertilize	2-row cult. /attach.	1.2	1.2	1.0	5	.1	.1
Weed	2-row rodweeder	1.3	1.3	2.0	6	.1	.1
Dust	6-row duster	.5	.4	1.3	60	.4	.3
Total	---	---	---	---	---	8.2	7.2
Harvest:							
Pick by hand and check	---	75.9	---	1.4	95	101.0	---
Load by hand and haul by truck	Truck	4.5	2.5	1.4	95	6.0	3.3
Pick by machine	2-row picker	4.0	2.0	1.0	5	.2	.1
Haul from machine	2 trucks	3.0	3.0	1.0	5	.2	.2
Total	---	---	---	---	---	107.4	3.6
Total, preharvest and harvest	---	---	---	---	---	2/ 115.6	2/ 10.8

1/ Less than 0.05 hour.

2/ Average yield per acre – 30.6 cwt. Average cost of labor and power used per cwt. – 3.8 hours and 0.4 hour, respectively.

Table C.– Snap beans for processing: Usual labor and power inputs, Accomack and Northampton Counties, Va., 1959

Operation	Times over	Time per acre, once over		Time per acre, total	
		Man	Power	Man	Power
		Hours	Hours	Hours	Hours
Plow	1	1.3	1.3	1.3	1.3
Disk and drag	2	.7	.7	1.4	1.4
Plant	1	1.4	.8	1.4	.8
Fertilize	1	1.1	.8	1.1	.8
Cultivate	3	.8	.8	2.4	2.4
Dust	1	.5	.4	.5	.4
Pick and check	1.4	75.9	---	106.2	---
Load and haul	1.4	4.5	2.5	6.3	3.5
Total	---	---	---	120.6	10.6

Table D.– Snap beans for processing: Distribution of workers performing specified operations, by type of worker, 10 farms, Accomack and Northampton Counties, Va., 1959

Operation	Type of worker			
	Operator and unpaid family	Year-round hired	Local seasonal	Nonlocal seasonal 1/
	Percent	Percent	Percent	Percent
Plow	29	42	29	0
Lime	0	0	100	0
Disk and drag	20	40	40	0
Drag	33	0	67	0
Fertilize	33	25	42	0
Plant	47	40	13	0
Cultivate	36	36	28	0
Spray	40	40	20	0
Cultivate and fertilize	0	0	100	0
Weed	100	0	0	0
Dust	25	75	0	0
Pick by hand and check	0	0	47	53
Load by hand and haul	21	26	53	0
Pick by machine	0	0	0	100
Haul from machine	0	0	100	0

1/ Includes domestic migratory, foreign, and Puerto Rican workers.

CABBAGE FOR FRESH MARKET

Data presented in figure 5 and tables A, B, C, and D are based on information obtained covering production of cabbage for fresh market on 168 acres on 12 farms in 1959. The average yield in 50-pound crates was 245 crates per acre.

Major production of cabbage is for the late spring market, but a small acreage of fall cabbage is also grown on the Eastern Shore. Production data obtained in this survey indicate that 95 percent of the acreage of cabbage was harvested in late spring.

Tractors were the chief source of power on these farms. Unless otherwise indicated, they were used for the operations listed. Information on size of tractor was not obtained, but considering the size of equipment used, the average tractor was about a 2-plow tractor with a drawbar horsepower rating of 15 to 20.

One-third of the farmers, growing 43 percent of the cabbage, prepared plantbeds and grew their own plants. In general, farmers in Accomack County bought plants, while farmers in Northampton County grew their own. On the average, 1 acre of plantbed produced enough plants to set out 21.6 acres of cabbage. Two typical situations are presented in table C: (1) Usual labor and power inputs when plants are home-grown and transplanted by hand, and (2) labor and power inputs in situations in which plants are purchased and transplanted by machine. Informed persons estimate that at least 90 percent of the 1959 acreage was transplanted by machine. However, on these survey farms, equal acreages were transplanted by hand and by machine. This discrepancy appears to be the result of a sampling error.

In the harvesting operation, crews cut and packed cabbages into 50-pound crates. The piece rate averaged $0.18 a crate and ranged from $0.10 to $0.23. Most of the crop was sold cut and crated at the edge of the field. A few farmers did not buy crates; they either used up an inventory of old crates or were furnished crates by the buyer.

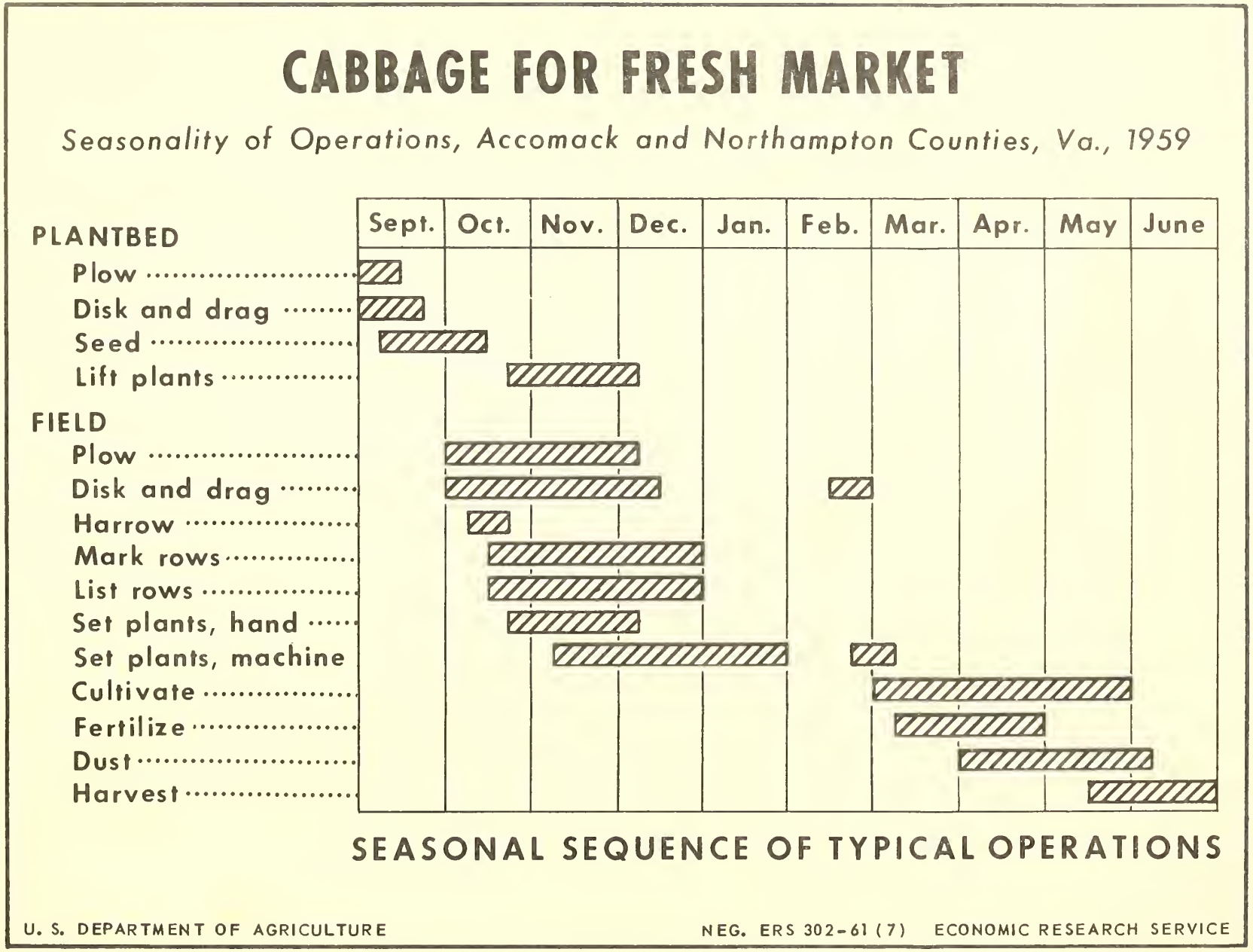
CABBAGE FOR FRESH MARKET
Seasonality of Operations, Accomack and Northampton Counties, Va., 1959
Sept.
Oct.
Nov.
Dec.
Jan.
Feb.
Mar.
Apr.
May
June
PLANTBED
Plow
Disk and drag
Seed
Lift plants
FIELD
Plow
Disk and drag
Harrow
Mark rows
List rows
Set plants, hand
Set plants, machine
Cultivate
Fertilize
Dust
Harvest
SEASONAL SEQUENCE OF TYPICAL OPERATIONS
U. S. DEPARTMENT OF AGRICULTURE
NEG. ERS 302-61 (7) ECONOMIC RESEARCH SERVICE

Figure 5

Table A.– Cabbage for fresh market: Materials used, 12 farms, Accomack and Northampton Counties, Va., 1959

Materials used	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
Plantbed (3.325 acres on 7 farms):						
Seed	Pound	22.8	6.12	139.54	100	139.54
Fertilizer, 10-10-10	Cwt.	10	2.40	24.00	100	24.00
Spray, malathion	Quart	10	.75	7.50	4	.30
Dust, toxaphene-malathion	Pound	60	.15	9.00	6	.54
Total per acre of plantbed	---	---	---	---	---	164.38
Total per acre of field cabbage 1/	---	---	---	---	---	7.61
Field (168 acres on 12 farms):						
Plants raised	---	---	---	7.61	43	3.27
Plants purchased	Thousand	11.7	2.13	24.92	57	14.20
Fertilizer, 8-8-8	Cwt.	13.5	2.03	27.41	100	27.41
Dust, toxaphene	Pound	63	.086	5.42	90	4.88
Spray, malathion	do.	7.47	.258	1.93	7	.14
Crates	Each	236	.24	56.64	90	50.98
Total materials	---	---	---	---	---	2/ 100.88

1/ 1 acre of plantbed produced plants for 21.6 acres of cabbage.

2/ Average yield per acre – 245 50-pound crates. Average cost of materials and contract work per crate – $0.41.

Table B.– Cabbage for fresh market: Labor, power, and machinery used in producing and harvesting, by operation, 12 farms, Accomack and Northampton Counties, Va., 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
Plantbed (3.325 acres on 7 farms):							
Plow	2 bot. 14 in. moldbd.	3.6	3.6	1.1	62	2.5	2.5
Disk	6-foot tandem	5.3	5.3	1.7	62	5.6	5.6
Fertilize	10-foot spreader	4.0	4.0	1.0	100	4.0	4.0
Level	6-foot drag	2.8	2.8	1.0	38	1.1	1.1
Seed	3-row seeder	6.3	6.3	1.0	92	5.8	5.8
Seed and cover	---	6.0	6.0	1.0	8	.5	.5
Cultivate	1-row cultivator	8.0	8.0	5.0	4	1.6	1.6
Spray	6-row sprayer	8.0	8.0	5.0	4	1.6	1.6
Weed	---	16.0	---	1.0	15	2.4	---
Dust	4-row duster	2.5	2.5	3.0	6	.4	.4
Lift plants	---	309.4	---	1.0	100	309.4	---
Total per acre of plantbed	---	---	---	---	---	334.9	23.1
Total per acre of field cabbage 1/	---	---	---	---	---	15.5	1.1

Field (168 acres on 12 farms):							
Preharvest:							
Plantbed	---	15.5	1.1	1.0	43	6.7	.4
Plow	2-bot. 14 in. moldbd.	2.2	2.2	1.0	92	2.0	2.0
Disk	7-foot tandem	1.5	1.5	1.7	79	2.0	2.0
Harrow	2-sec. or 10-foot springtooth	.9	.9	1.0	51	.5	.5
Mark row	4-row marker	.6	.6	1.0	71	.4	.4
List rows	2-row cultivator	1.1	1.1	1.0	60	.7	.7
Set plants, machine	2-row transplanter	10.2	1.8	1.0	50	5.1	.9
Set plants, hand	---	39.6	---	1.0	50	19.8	---
Spray	6-row sprayer	.5	.5	5.7	7	.2	.2
Cultivate	2-row cultivator	.8	.8	4.7	100	3.8	3.8
Fertilize	2-row distributor	1.6	.8	2.0	100	3.2	1.6
Dust	6-row duster	.6	.5	2.9	90	1.6	1.3
Total	---	---	---	---	---	46.0	13.8
Harvest:							
Cut, load, and pack	Tractor and wagon	16.1	.4	4.0	100	64.4	1.6
Total, preharvest and harvest	---	---	---	---	---	2/ 110.4	2/ 15.4

1/ 1 acre of plantbed per 21.6 acres of cabbage.

2/ Average yield per acre – 245 50-pound crates. Average labor and power used per crate – 1.6 hours and 0.2 hour, respectively.

Table C.– Cabbage for fresh market: Usual labor and power inputs, Accomack and Northampton Counties, Va., 1959

HOMEGROWN PLANTS, HAND TRANSPLANTED

Operation	Times over	Time per acre, once over		Time per acre, total	
		Man	Power	Man	Power
		Hours	Hours	Hours	Hours
Plantbed:					
Plow	1	3.6	3.6	3.6	3.6
Disk	2	5.3	5.3	10.6	10.6
Fertilize	1	4.0	4.0	4.0	4.0
Seed	1	6.3	6.3	6.3	6.3
Lift plants	1	309.4	---	309.4	---
Total	---	---	---	333.9	24.5
Field:					
Plantbed 1/	1	15.5	1.1	15.5	1.1
Plow	1	2.2	2.2	2.2	2.2
Disk	2	1.5	1.5	3.0	3.0
Harrow	1	.9	.9	.9	.9
Mark rows	1	.6	.6	.6	.6
List rows	1	1.1	1.1	.7	.7
Set plants	1	39.6	---	39.6	---
Cultivate	5	.8	.8	4.0	4.0
Fertilize	2	1.6	.8	3.2	1.6
Dust	3	.6	.5	1.8	1.5
Cut, load, and pack 2/	4	16.1	.4	64.4	1.6
Total	---	---	---	135.9	17.2

PURCHASED PLANTS, MACHINE TRANSPLANTED

Field:					
Plow	1	2.2	2.2	2.2	2.2
Disk	2	1.5	1.5	3.0	3.0
Harrow	1	.9	.9	.9	.9
Mark rows	1	.6	.6	.6	.6
List rows	1	1.1	1.1	1.1	1.1
Set plants	1	10.2	1.8	10.2	1.8
Cultivate	5	.8	.8	4.0	4.0
Fertilize	2	1.6	.8	3.2	1.6
Dust	3	.6	.5	1.8	1.5
Cut, load, and pack 2/	4	16.1	.4	64.4	1.6
Total	---	---	---	91.4	18.3

1/ 1 acre of plantbed per 21.6 acres of cabbage.
2/ Sold crated at edge of field.

Table D.– Cabbage for fresh market: Distribution of workers performing specified operations, by type of worker, 12 farms, Accomack and Northampton Counties, Va., 1959

Operation	Type of worker			
	Operator and unpaid family	Year-round hired	Local seasonal	Nonlocal seasonal 1/
	Percent	Percent	Percent	Percent
Plantbed operations	80	10	10	0
Plow	38	31	31	0
Disk	28	44	28	0
Harrow	50	0	50	0
Mark rows	67	33	0	0
List rows	40	60	0	0
Set plants by hand	0	10	90	0
Set plants by machine	21	0	79	0
Spray	100	0	0	0
Cultivate	38	38	24	0
Fertilize	30	45	25	0
Dust	11	56	33	0
Cut, load, and pack	4	4	46	46

1/ Includes domestic migratory, foreign, and Puerto Rican workers.

Data presented in figure 6 and tables A, B, C, and D are based on information obtained covering production of cucumbers for fresh market on 205 acres on nine farms in 1959. The average yield was 325 5/8-bushel baskets per acre.

On these farms, tractors were the chief source of power. Unless otherwise indicated, they were used for operations listed. Drawbar horsepower ratings were not obtained in this survey, but size of equipment used indicates that these tractors were 2- and 3-plow tractors with drawbar horsepower ratings of 15 to 30.

Piece rates for picking, loading, and hauling cucumbers to local grading sheds ranged from $0.20 to $0.30 and averaged $0.23 per 5/8-bushel.

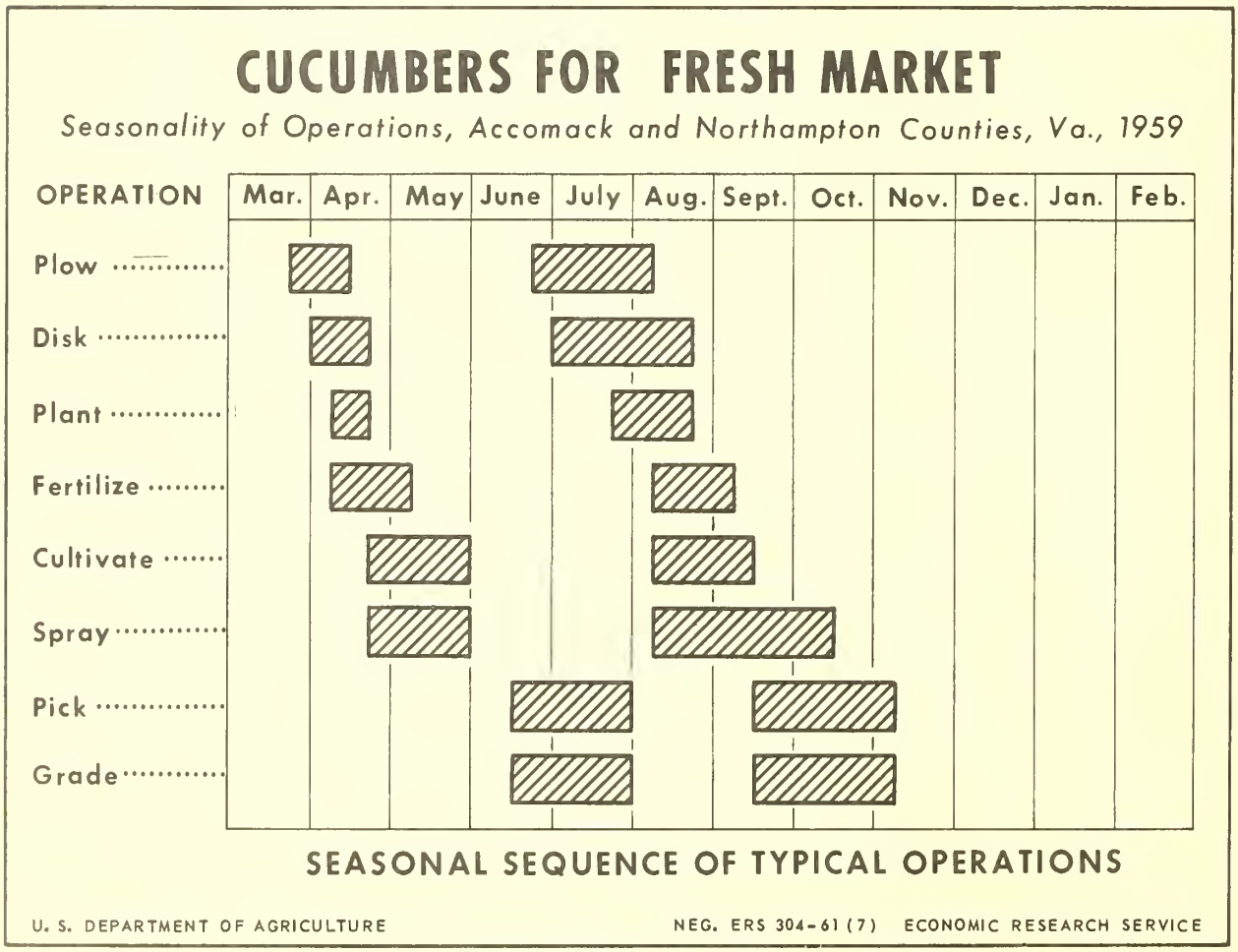

Figure 6

Table A.– Cucumbers for fresh market: Materials used and contract work hired, averages for 205 acres on 9 farms, Accomack and Northampton Counties, Va., 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	2.69	2.27	6.11	100	6.11
Fertilizer, 5-10-10	Cwt.	14.55	2.26	32.88	93	30.58
Spray	do.	20.8	.55	11.44	100	11.44
Dust	do.	172.1	.17	29.26	26	7.61
Baskets, 5/8-bushel	Each	98	.18	17.64	38	6.70
Total	---	---	---	---	---	62.44
Contract work hired:						
Apply spray, no materials	Acre	7.0	1.50	10.50	7	.74
Liquid fertilizer, applicator and materials	do.	1.0	11.50	11.50	7	.80
Total	---	---	---	---	---	1.54
Total, materials and contract work	---	---	---	---	---	1/ 63.98

1/ Average yield per acre – 325 5/8-bushel baskets. Average cost of materials and contract work per bushel – $0.20.

Table B.– Cucumbers for fresh market: Labor, power, and machinery used in producing and harvesting, by operation, averages for 205 acres on 9 farms, Accomack and Northampton Counties, Va., 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.	1.4	1.4	1.0	88	1.2	1.2
Disk	8-foot tandem	.5	.5	1.4	100	.7	.7
Harrow	10-foot springtooth	.3	.3	1.0	12	1/	1/
Mark rows	4-row marker	.5	.5	1.0	31	.2	.2
Plant	1-row planter	.8	.6	1.0	100	.8	.6
Fertilize	1-row spreader	1.0	.4	1.3	81	1.1	.4
Fertilize (custom)	3-row applicator	.2	.2	1.0	7	1/	1/
Cultivate	1-row cultivator	.7	.7	3.9	100	2.7	2.7
Cultivate and fertilize	1-row cult. /attach.	.8	.4	1.0	12	.1	1/
Thin and hoe	---	12.7	---	1.0	60	7.6	---
Dust	3-row duster	.2	.2	5.0	26	.3	.3
Spray	3-row boom sprayer	.4	.3	3.9	100	1.6	1.2
Turn vines	---	5.3	---	1.0	2	.1	---
Total	---	---	---	---	---	16.4	7.3
Harvest:							
Pick, load, and haul	Truck	12.4	.9	6.8	100	84.3	6.1
Total, preharvest and harvest	---	---	---	---	---	2/ 100.7	2/ 13.4

1/ Less than 0.05 hour.

2/ Average yield per acre – 345 5/8-bushel baskets. Average labor and power used per basket – 0.29 hour and 0.04 hour, respectively.

Table C. – Cucumbers for fresh market: Usual labor and power inputs, Accomack and Northampton Counties, Va., 1959

Operation	Times over	Time per acre, once over		Time per acre, total	
		Man	Power	Man	Power
		Hours	Hours	Hours	Hours
Plow	1	1.4	1.4	1.4	1.4
Disk	2	.5	.5	1.0	1.0
Plant	1	.8	.6	.8	.6
Fertilize	1	1.0	.4	1.0	.4
Cultivate	4	.7	.7	2.8	2.8
Spray	4	.4	.3	1.6	1.2
Pick, load, and haul	7	12.4	.9	86.8	6.3
Total	---	---	---	95.4	13.7

Table D. – Cucumbers for fresh market: Distribution of workers performing specified operations, by type of worker, 9 farms, Accomack and Northampton Counties, Va., 1959

Operation	Type of worker			
	Operator and unpaid family	Year-round hired	Local seasonal	Nonlocal seasonal 1/
	Percent	Percent	Percent	Percent
Plow	21	64	15	0
Disk	27	55	18	0
Harrow	50	50	0	0
Mark rows	50	25	25	0
Plant	33	50	17	0
Fertilize	23	69	8	0
Fertilize (custom)	0	0	100	0
Cultivate	28	64	8	0
Cultivate and fertilize	0	100	0	0
Thin and hoe	5	0	50	45
Dust	0	67	33	0
Spray	33	50	17	0
Spray (custom)	0	0	100	0
Turn vines	0	50	50	0
Pick, load, and haul	0	0	22	78

1/ Includes domestic migratory, foreign, and Puerto Rican workers.

Data presented in figure 7 and tables A, B, C, and D are based on information obtained covering production of green sweet peppers for fresh market on 134 acres on 19 farms. The average yield was 145 bushels per acre.

Tractors were the chief source of power on these farms. Unless otherwise indicated, they were used for operations listed. The size of tractor was not obtained, but considering the size of equipment used, the average tractor was about a 2-plow tractor with a drawbar horsepower rating of 15 to 20.

Most producers grew their own plants in plantbeds, then machine transplanted them into the field. On the average, 1 acre of plantbed provided plants for 24.7 acres of peppers.

Peppers were harvested by hand, with the acreage picked an average of 3.2 times. Piece rates for picking a bushel of peppers averaged $0.13 and ranged from $0.10 to $0.20.

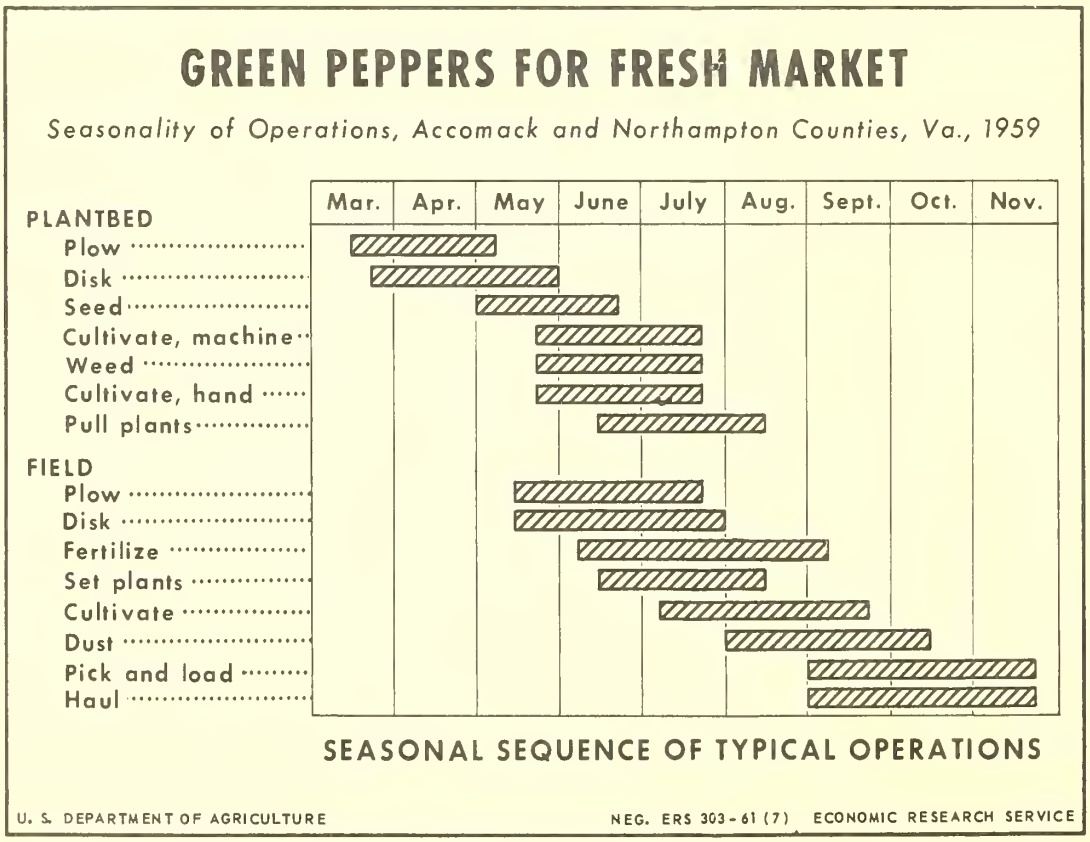

Figure 7

Table A.– Green peppers for fresh market: Materials used and contract work hired, 19 farms, Accomack and Northampton Counties, Va., 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
Plantbed (4.875 acres on 12 farms):						
Materials used:						
Seed	Pound	21.4	7.02	150.23	100	150.23
Lime	Ton	.5	24.80	12.40	19	2.36
Manure, hen	do.	.5	6.00	3.00	6	.18
Fertilizer, 5-10-5	Cwt.	18.7	2.06	38.52	13	5.01
Spray, 1-5 parathion, DDT	Pound	50	.15	7.50	13	.98
Total per acre of plantbed	---	---	---	---	---	158.76
Total per acre of field peppers 1/	---	---	---	---	---	6.43
Field (134 acres on 19 farms):						
Materials used:						
Plants raised	---	---	---	6.43	90	5.79
Plants purchased	Thousand	10	7.00	70.00	10	7.00
Fertilizer, 10-10-10	Cwt.	8.0	2.25	18.00	96	17.28
Lime	Ton	1.6	9.40	15.04	19	2.86
Manure	Cwt.	4.6	.50	2.30	11	2.53
Spray, 5% DDT and 1% parathion	Pound	81	.11	8.91	20	1.78
Dust, 1% parathion	do.	48	.17	8.16	38	3.10
Baskets	Each	145	.28	40.60	100	40.60
Total	---	---	---	---	---	80.94
Contract work hired:						
Fertilizer, applicator and 37-0-0	Pound	60	.17	10.20	9	.92
Total materials and contract work	---	---	---	---	---	2/ 81.86

1/ 1 acre of plantbed produced plants for 24.7 acres of peppers.
2/ Average yield per acre – 145 bushels. Average cost of materials and contract work per bushel – $0.56.

Table B.- Green peppers for fresh market: Labor, power, and machinery used in producing and harvesting, by operation, 19 farms, Accomack and Northampton Counties, Va., 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
Plantbed (4.875 acres on 12 farms):							
Plow	2 bot. 14 in. moldbd.	2.6	2.6	1.0	100	2.6	2.6
Lime	6-foot spreader	1.3	1.3	1.0	19	.2	.2
Manure	---	16.0	---	1.0	6	1.0	---
Fertilize	2-row drill	4.2	2.1	1.0	13	.5	.3
Disk and drag	7-foot tandem, 7-foot spiketooth	1.9	1.9	2.2	100	4.2	4.2
Drag	1-sec. spiketooth	2.0	2.0	1.0	6	.1	.1
Mark rows	6-foot marker	2.0	2.0	1.0	13	.3	.3
List rows	2-row middlebuster	2.0	2.0	1.0	13	.3	.3
Seed	2-row drill	5.0	5.0	1.0	19	1.0	1.0
Seed	1-row hand drill	25.9	---	1.0	81	21.0	---
Rake	---	80.0	---	1.0	13	10.4	---
Mulch	---	14.0	---	1.0	26	3.6	---
Cultivate	2-row cultivator	5.1	5.1	2.3	97	11.4	11.4
Weed and hoe	---	69.0	---	1.3	64	57.4	---
Cultivate	---	7.1	---	2.3	78	12.7	---
Spray	Hand sprayer	4.0	---	1.0	13	.5	---
Irrigate	Sprinkler	240.0	---	1.0	6	14.4	---
Pull plants	---	191.7	---	1.0	100	191.7	---
Total per acre of plantbed	---	---	---	---	---	333.3	20.4
Total per acre of field peppers 1/	---	---	---	---	---	13.5	.8

Field (134 acres on 19 farms):							
Preharvest:							
Plantbed	---	13.5	.8	1.0	90	12.2	.7
Plow	2 bot. 14 in. moldbd.	1.5	1.5	1.0	100	1.5	1.5
Spread manure	1 1/2-ton truck	9.5	2.0	1.0	11	1.0	.2
Lime	8-foot spreader	1.2	.6	1.0	19	.2	.1
Disk and drag	7-foot tandem, 7-foot spiketooth	.7	.7	3.1	96	2.1	2.1
Drag	8-foot drag	.7	.7	1.0	18	.1	.1
Mark rows	4-row marker	.7	.7	1.0	37	.3	.3
Fertilize	2-row spreader	1.5	.9	1.0	96	1.4	.9
Plant	2-row transplanter	10.0	2.9	1.0	100	10.0	2.9
Fertilize (custom)	4-row spreader	.7	.7	1.0	9	.1	.1
Cultivate	2-row cultivator	1.3	1.3	3.2	100	4.2	4.2
Weed and hoe	---	5.4	---	1.1	23	1.4	---
Dust	6-row duster	.5	.5	1.4	38	.3	.3
Spray	6-row sprayer	1.3	.6	2.3	20	.6	.3
Total	---	---	---	---	---	35.4	13.7
Harvest:							
Pick and load by hand	---	9.5	---	3.2	100	30.4	---
Haul	1 1/2-ton truck	2.7	1.1	3.2	100	8.6	3.5
Total	---	---	---	---	---	39.0	3.5
Total, preharvest and harvest	---	---	---	---	---	2/ 74.4	2/ 17.2

1/ 1 acre of plantbed produced plants for 24.7 acres of peppers.

2/ Average yield per acre - 145 bushels. Average labor and power used per bushel - 0.5 hour and 0.1 hour, respectively.

Table C. – Green peppers for fresh market: Usual labor and power inputs, Accomack and Northampton Counties, Va., 1959

Operation	Times over	Time per acre, once over		Time per acre, total	
		Man	Power	Man	Power
		Hours	Hours	Hours	Hours
Plantbed:					
Plow	1	2.6	2.6	2.6	2.6
Disk	2	1.9	1.9	3.8	3.8
Seed, hand drill	1	25.9	---	25.9	---
Cultivate, machine	2	5.1	5.1	10.2	10.2
Weed and hoe	1	69.0	---	69.0	---
Cultivate, hand	1	7.1	---	7.1	---
Pull plants	1	191.7	---	191.7	---
Total	---	---	---	310.3	16.6
Field:					
Preharvest:					
Plantbed 1/	1	12.6	.8	12.6	.8
Plow	1	1.5	1.5	1.5	1.5
Disk	3	.7	.7	2.1	2.1
Fertilize	1	1.5	.9	1.5	.9
Set plants	1	10.0	2.9	10.0	2.9
Dust	1	.5	.5	.5	.5
Cultivate	3	1.3	1.3	3.9	3.9
Total	---	---	---	32.1	12.6
Harvest:					
Pick and load	3	9.5	---	28.5	---
Haul	3	2.7	1.1	8.1	3.3
Total	---	---	---	36.6	3.3
Total, preharvest and harvest	---	---	---	68.7	15.9

1/ 1 acre of plantbed per 24.7 acres of peppers.

Table D.– Green peppers for fresh market: Distribution of workers performing specified operations, by type of worker, 19 farms, Accomack and Northampton Counties, Va., 1959

Operation	Type of worker		
	Operator and unpaid family	Year-round hired	Local seasonal
	Percent	Percent	Percent
Plantbed:			
Plow	66	17	17
Disk	75	17	8
Seed	71	21	8
Cultivate, machine	58	25	17
Weed and hoe	16	32	52
Cultivate, hand	50	50	0
Pull plants	4	35	61
Field:			
Plow	55	36	9
Disk	50	40	10
Fertilize	38	54	8
Set plants	30	46	24
Dust	67	33	0
Cultivate	57	38	5
Pick and load	20	8	72
Haul	44	35	21

TOMATOES FOR FRESH MARKET

Data presented in figure 8 and tables A, B, C, and D are based on information obtained covering production of tomatoes for fresh market on 1,698 acres on 98 farms in 1959. The average yield was 274 5/8-bushel baskets per acre.

A substantial quantity of tomatoes produced on the Eastern Shore are processed, but in recent years, the processing of Virginia-grown tomatoes has become essentially that of a salvage operation. Tomatoes are sold for the fresh market until the market becomes saturated and the price breaks. Production is then diverted to processing plants. Only one grower had a contract to produce tomatoes for processing.

Diversion of tomatoes from fresh market to processing tends to reduce material inputs and increase labor costs. For example, picking baskets average four trips to the processing plant but less than three to the grading sheds for fresh-market tomatoes. The total labor input for harvesting tomatoes for processing is substantially above that used in harvesting for fresh market, as the time involved for hauling to the more distant processing plants is more than double that for hauling to nearby fresh-market grading sheds. Of the 1959 production on these 98 farms, 17 percent was diverted to processing plants.

Tractors were the chief source of power used on these farms. Unless otherwise indicated, they were used for operations listed. Drawbar horsepower ratings were not obtained in this survey, but size of equipment indicates that these tractors were 2- and 3-plow tractors with drawbar horsepower ratings of 15 to 30.

Harvesting operations, which required an average of about 67 hours per acre, were performed under contract with crewleaders on 76 percent of the acreage. The most common arrangement was for crewleaders to provide workers for picking and loading and trucks for hauling to local grading and packing sheds. Rates for such contracts ranged from $0.15 to $0.50 per 5/8-bushel basket and averaged $0.22.

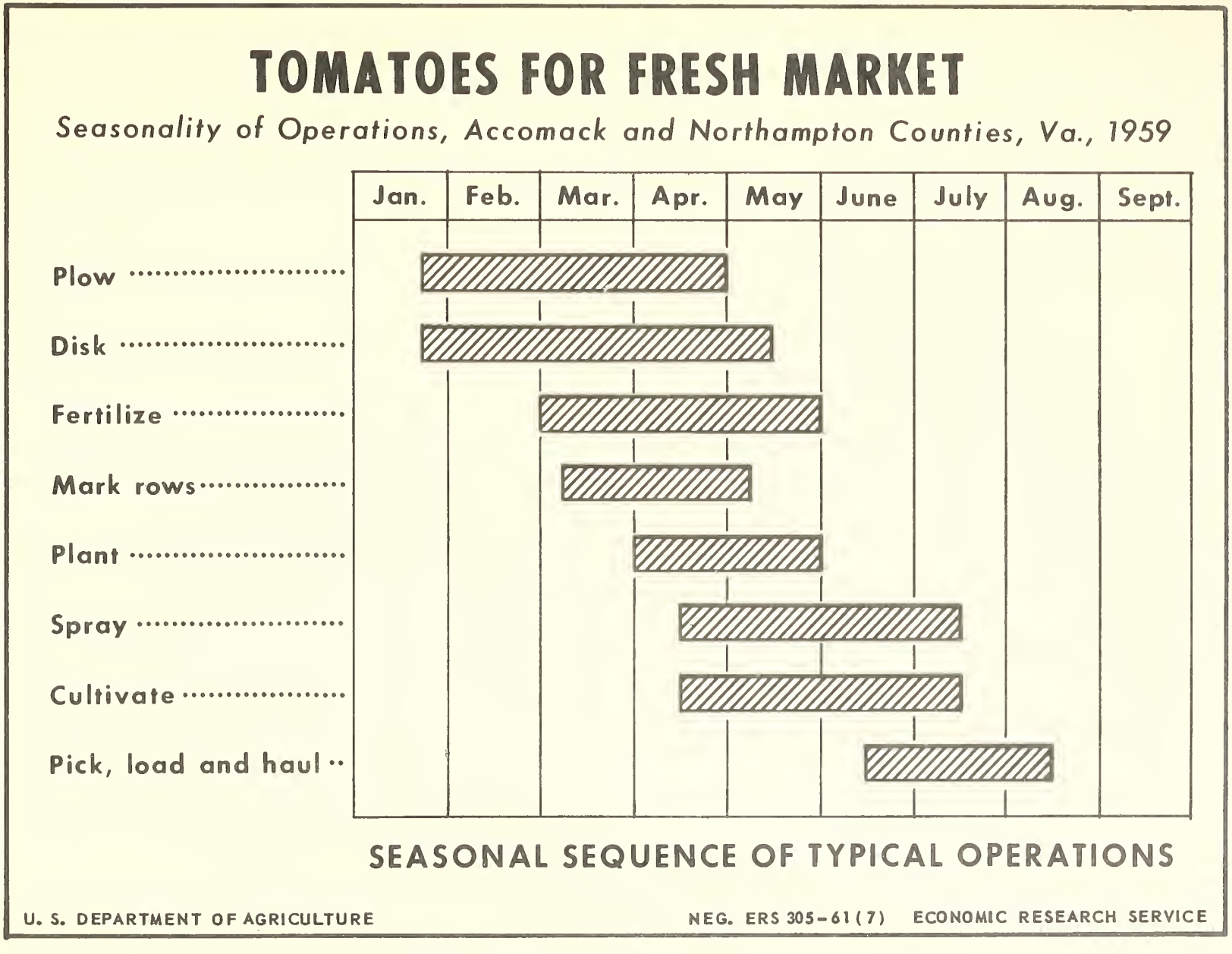
TOMATOES FOR FRESH MARKET
Seasonality of Operations, Accomack and Northampton Counties, Va., 1959
Jan.
Feb.
Mar.
Apr.
May
June
July
Aug.
Sept.
Plow
Disk
Fertilize
Mark rows
Plant
Spray
Cultivate
Pick, load and haul
SEASONAL SEQUENCE OF TYPICAL OPERATIONS
U. S. DEPARTMENT OF AGRICULTURE
NEG. ERS 305-61(7) ECONOMIC RESEARCH SERVICE

Figure 8

Table A.– Tomatoes for fresh market: Materials used and contract work hired, averages for 1,698 acres on 98 farms, Accomack and Northampton Counties, Va., 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	5.59	18.45	100	18.45
Manure	Ton	2.0	5.50	11.00	2	.22
Lime	do.	.6	14.60	8.76	17	1.49
Spray	Pound	63.3	.186	11.77	57	6.71
Dust	do.	71.9	.112	8.05	37	2.98
Fertilizer	Cwt.	11.9	2.10	24.99	96	23.99
Baskets	Each	95	.18	17.10	70	11.97
Total	---	---	---	---	---	65.81
Contract work hired:						
Spray, apply	Acre	1	3.00	3.00	1	.03
Spray, sprayer and materials	do.	3	4.25	12.75	2	.26
Spray, plane	do.	1	3.00	3.00	2	.06
Lime, truck and materials	do.	1	4.12	4.12	1	.04
Dust, plane only	do.	1	1.03	1.03	2	.02
Dust, plane and materials	do.	1	4.95	4.95	1	.05
Pick, load and haul	Basket	278	.22	61.16	76	46.48
Total	---	---	---	---	---	46.94
Total materials and contract work	---	---	---	---	---	1/ 112.75

1/ Average yield per acre – 274 5/8-bushel baskets. Average cost of material and contract work per basket – $0.41.

Table B.– Tomatoes for fresh market: Labor, power, and machinery used in producing and harvesting, by operation, averages for 1,698 acres on 98 farms, Accomack and Northampton Counties, Va., 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.	1.3	1.3	1.0	100	1.3	1.3
Manure	---	23.9	---	1.0	2	.5	---
Lime	10-foot distributor	1.2	1.1	1.0	17	.2	.2
Disk and drag	7-foot tandem, 7-foot spiketooth	.8	.8	1.8	88	1.3	1.3
Lime (custom)	Truck spreader	3.0	2.0	1.0	1	1/	1/
Fertilize	2-row spreader	1.2	.8	1.2	92	1.3	.9
Fertilize (horse)	3-row spreader	2.0	4.0	1.0	1	1/	1/
Harrow	10-foot spiketooth	.5	.5	1.5	22	.2	.2
List	2-row hiller	1.0	1.0	1.0	1	1/	1/
List (horse)	1-row hiller	2.0	4.0	1.0	1	1/	1/
Mark rows	4-row marker	.8	.8	1.0	43	.3	.3
Mark rows (horse)	3-row marker	1.2	2.4	1.0	1	1/	1/
Plant (machine)	2-row transplanter	8.0	1.6	1.0	98	7.8	1.6
Plant (machine, horse)	1-row transplanter	12.0	8.2	1.0	1	.1	.1
Plant (hand)	---	28.2	---	1.0	1	.3	---
Reset plants	---	2.3	---	1.0	7	.2	---
Cultivate	1-row cultivator	.9	.9	3.9	99	3.5	3.5
Cultivate (horse)	1-row cultivator	2.0	4.0	3.3	1	.1	.1
Cultivate and fertilize	1-row cult./attach.	1.0	.9	1.2	14	.2	.2
Dust	3-row duster	.6	.6	2.2	37	.5	.5
Dust (hand)	---	3.2	---	1.3	2	.1	---
Dust (custom)	Plane	1/	1/	1.0	3	1/	1/
Spray	6-row boom	.4	.3	3.3	57	.8	.6

See footnote at end of table.

--Continued

Table B.– Tomatoes for fresh market: Labor, power, and machinery used in producing and harvesting, by operation, averages for 1,698 acres on 98 farms, Accomack and Northampton Counties, Va., 1959 --Continued

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 --Continued							
Spray (custom)	6-row boom	0.4	0.3	3.0	3	1/	1/
Spray (custom)	Plane	1/	1/	1.0	2	1/	1/
Weed and hoe	---	6.3	---	1.0	8	.5	---
Total	---	---	---	---	---	19.2	10.8
Harvest:							
Pick, load, and haul (custom)	Truck	10.1	.7	6.0	76	46.1	3.2
Pick, load, and haul	Truck	17.8	1.0	6.0	1	1.1	.1
Pick	---	12.7	---	5.8	24	17.7	---
Load and haul	Truck	1.7	.8	5.8	24	2.4	1.1
Total	---	---	---	---	---	67.3	4.4
Total, preharvest and harvest	---	---	---	---	---	2/ 86.5	2/ 15.2

1/ Less than 0.05 hour.

2/ Average yield per acre – 274 5/8-bushel baskets. Average labor and power used per basket – 0.32 hour and 0.06 hour, respectively.

Table C.– Tomatoes for fresh market: Usual labor and power inputs, Accomack and Northampton Counties, Va., 1959

Operation	Times over	Time per acre, once over		Time per acre, total	
		Man	Power	Man	Power
		Hours	Hours	Hours	Hours
Plow	1	1.3	1.3	1.3	1.3
Disk and drag	2	.8	.8	1.6	1.6
Mark rows	1	.8	.8	.8	.8
Fertilize	1	1.2	.8	1.2	.8
Plant (machine)	1	8.0	1.6	8.0	1.6
Cultivate	4	.9	.9	3.6	3.6
Spray	3	.4	.3	1.2	.9
Pick, load, and haul (custom)	6	10.1	.7	60.6	4.2
Total	---	---	---	78.3	14.8

Table D.– Tomatoes for fresh market: Distribution of workers performing specified operations, by type of worker, 98 farms, Accomack and Northampton Counties, Va., 1959

Operation	Type of worker			
	Operator and unpaid family	Year-round hired	Local seasonal	Nonlocal seasonal 1/
	Percent	Percent	Percent	Percent
Plow	44	39	17	0
Lime	29	29	42	0
Disk and drag	50	40	10	0
Fertilize	49	36	15	0
Harrow	12	76	12	0
Mark rows	45	52	3	0
Plant (machine)	23	15	62	0
Plant (hand)	0	0	100	0
Reset plants	27	4	69	0
Spray	62	21	17	0
Cultivate	45	47	8	0
Cultivate and fertilize	40	53	7	0
Dust (machine)	35	50	15	0
Dust (hand)	50	0	50	0
Weed and hoe	15	35	50	0
Pick, load, and haul	1	1	28	70
Pick	5	0	43	52
Load and haul	30	20	30	20

1/ Includes domestic migratory, foreign, and Puerto Rican workers.

The data in figure 9 and tables A, B, C, and D are based on information covering production of strawberries for fresh market on 40 acres on 9 farms. The average yield was 2,976 quarts per acre. Data on establishing new beds are based on practices performed on 18 acres on 9 farms. In this area, strawberries are usually established the first year, harvested for 2 years, then turned under. Therefore, the cost of establishing a new bed is prorated for 2 years to be assessed equally against the two crops harvested.

On these farms, tractors were the main source of power. Unless otherwise indicated, they were used for operations listed. Drawbar horsepower ratings were not obtained in this survey, but size of equipment used indicates that these tractors were 2- and 3-plow tractors with drawbar horsepower ratings of 15 to 30.

Local seasonal workers performed most of the harvesting operations. All growers reported that they paid pickers $0.10 a quart. Growers also reported paying crewleaders $0.50 per day per picker. Packers and loaders received day wages.

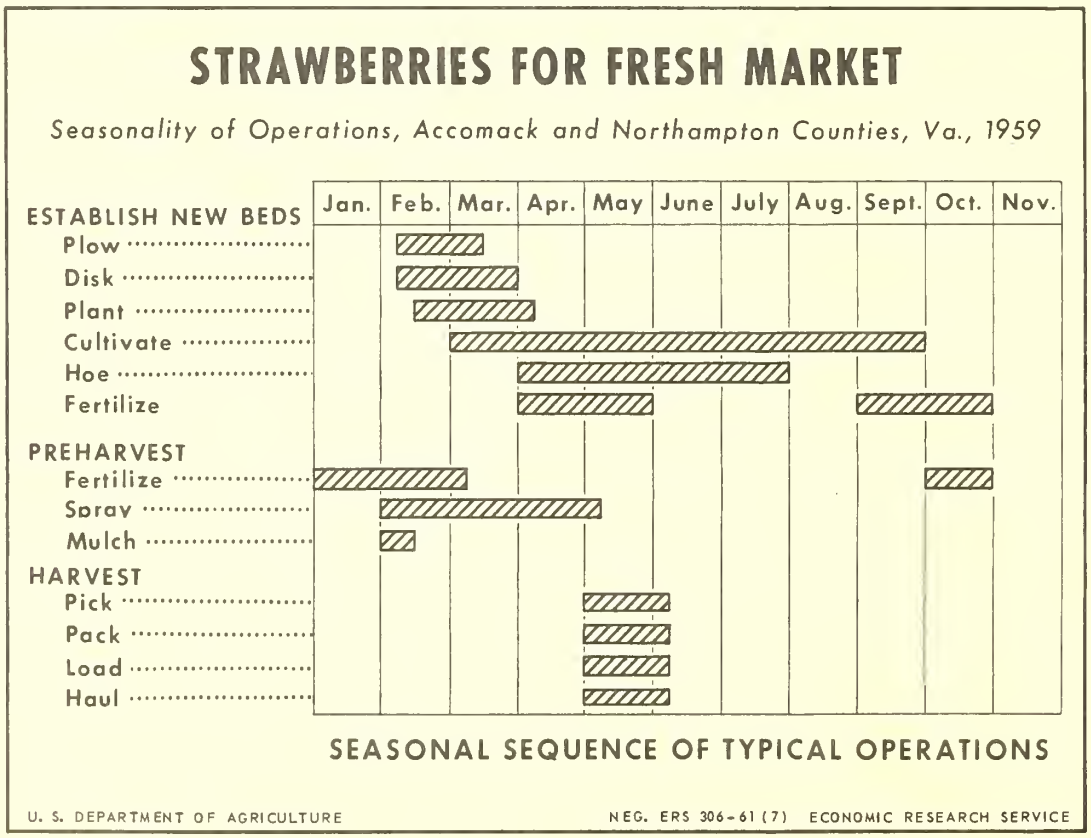

Figure 9

Table A.– Strawberries for fresh market: Materials used, averages for 40 acres on 9 farms, Accomack and Northampton Counties, Va., 1959

Materials used	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
Establishing new beds:						
Plants	Thousand	3	12.92	38.76	100	38.76
Fertilizer, 5-10-5	Cwt.	7.7	1.95	15.02	47	7.06
Manure, hen	Ton	2	3.00	6.00	3	.18
Lime	do.	.5	12.80	6.40	13	.83
Straw	Cwt.	8	1.00	8.00	13	1.04
Total materials	---	---	---	---	---	47.87
Charge per crop 1/	---	---	---	---	---	23.94
Crop, 1959:						
Establishment	Acre	1	23.94	23.94	100	23.94
Fertilizer, 5-10-5	Cwt.	13.6	2.00	27.20	88	23.94
Spray, 5% captan	Pound	65	.12	7.80	70	5.46
Dust, 1% parathion	do.	50	.10	5.00	25	1.25
Lime	Ton	.5	12.80	6.40	3	.19
Crates	Each	186	.87	161.82	100	161.82
Total materials	---	---	---	---	---	2/ 216.60

1/ Average bed is harvested for 2 years.
2/ Average yield per acre – 2,976 quarts. Average cost of materials per bushel – 7 cents.

Table B.– Strawberries for fresh market: Labor, power, and machinery used in producing and harvesting, by operation, averages for 40 acres on 9 farms, Accomack and Northampton Counties, Va., 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
Establishing new beds:							
Plow	3 bot. 14 in. moldbd.	1.7	1.7	1.0	88	1.5	1.5
Lime	10-foot spreader	5.0	2.5	1.0	13	.6	.3
Disk	8-foot tandem	1.1	1.1	1.9	98	2.0	2.0
Drag	3-sec. spiketooth	2.1	2.1	1.0	23	.5	.5
Mark rows	3-row marker	6.0	6.0	1.0	7	.4	.4
Plant (machine)	2-row transplanter	24.0	5.1	1.0	97	23.3	4.9
Plant (hand)	---	40.0	---	1.0	3	1.2	---
Cultivate	1-row cultivator	2.1	2.1	7.9	100	16.6	16.6
Cut blossoms	---	30.0	---	1.0	3	.9	---
Hoe	---	6.9	---	3.0	20	4.1	---
Fertilize	1-row side-dresser	2.7	1.6	1.0	47	1.3	.8
Weed	---	150.0	---	1.0	3	4.5	---
Cultivate and hill	1-row cult./sweeps	1.7	1.7	5.0	20	1.7	1.7
Apply manure	2-ton truck	16.0	8.0	1.0	3	.5	.2
Mulch	2-ton truck	100.0	50.0	1.0	13	13.0	6.5
Total establishment	---	---	---	---	---	72.1	35.4
Charge per crop 1/	---	---	---	---	---	36.0	17.7
Preharvest:							
Establishing new beds	---	36.0	17.7	1.0	100	36.0	17.7
Mulch	---	10.7	---	1.0	30	3.2	---
Fertilize, hand	---	11.0	---	1.0	5	.6	---
Fertilize, machine	1-row spreader	1.7	1.0	1.0	83	1.4	.8

Lime	10-foot spreader	.5	.5	1.0	3	2/	2/
Spray	3-row sprayer	.9	.6	1.6	70	1.0	.7
Dust	2-row duster	1.4	1.4	1.0	25	.4	.4
Weed, (hand)	---	16.1	---	3.4	12	6.6	---
Weed, (machine)	7-foot mower	1.7	1.7	1.0	8	.1	.1
Cultivate	1-row cultivator	4.4	4.4	5.0	8	1.8	1.8
Total	---	---	---	---	---	51.1	21.5
Harvest:							
Pick	---	45.5	---	9.7	100	441.4	---
Pack	---	3.0	---	9.7	100	29.1	---
Load	---	1.5	---	9.7	100	14.6	---
Haul	1 1/2-ton truck	2.1	2.1	9.7	100	20.4	20.4
Total	---	---	---	---	---	505.5	20.4
Total, preharvest and harvest	---	---	---	---	---	3/ 556.6	3/ 41.9

1/ Average bed is harvested for 2 years.
2/ Less than 0.05 hour.
3/ Average yield per acre - 2,976 quarts. Average labor and power used per quart - 0.19 hour and 0.01 hour, respectively.

Table C.– Strawberries for fresh market: Usual labor and power inputs, Accomack and Northampton Counties, Va., 1959

Operation	Times over	Time per acre, once over		Time per acre, total	
		Man	Power	Man	Power
		Hours	Hours	Hours	Hours
Establishing new beds:					
Plow	1	1.7	1.7	1.7	1.7
Disk	2	1.1	1.1	2.2	2.2
Plant, machine	1	24.0	5.1	24.0	5.1
Fertilize	1	2.7	1.6	2.7	1.6
Cultivate	8	2.1	2.1	16.8	16.8
Hoe	3	6.9	---	20.7	---
Charge per crop 1/	---	---	---	68.1	27.4
Crop, 1959:					
Preharvest:					
Establishment 1/	1	34.0	13.7	34.0	13.7
Fertilize	1	1.7	1.0	1.7	1.0
Spray	2	.9	.6	1.8	1.2
Total	---	---	---	37.5	15.9
Harvest:					
Pick	9.7	45.5	---	441.4	---
Pack	9.7	3.0	---	29.1	---
Load	9.7	1.5	---	14.6	---
Haul	9.7	2.1	2.1	20.4	20.4
Total	---	---	---	505.5	20.4
Total, preharvest and harvest	---	---	---	543.0	36.3

1/ Average bed is harvested for 2 years.

Table D. – Strawberries for fresh market: Distribution of workers performing specified operations, by type of worker, 9 farms, Accomack and Northampton Counties, Va., 1959

Operation	Type of worker		
	Operator and unpaid family	Year-round hired	Local seasonal
	Percent	Percent	Percent
Establishing new beds	52	7	41
Plow	50	17	33
Disk	62	13	25
Plant, machine	26	4	70
Plant, hand	100	0	0
Fertilize	60	40	0
Cultivate	50	28	22
Hoe	20	0	80
Crop, 1959:			
Preharvest:			
Fertilize, hand	100	0	0
Fertilize, machine	33	17	50
Lime	100	0	0
Spray	0	20	80
Dust	0	50	50
Weed, hand	0	20	80
Weed, machine	50	50	0
Cultivate	50	50	0
Mulch	0	100	0
Harvest:			
Pick	2	50	48
Pack	80	0	20
Load	20	0	80
Haul	70	30	0

Growth Through Agricultural Progress