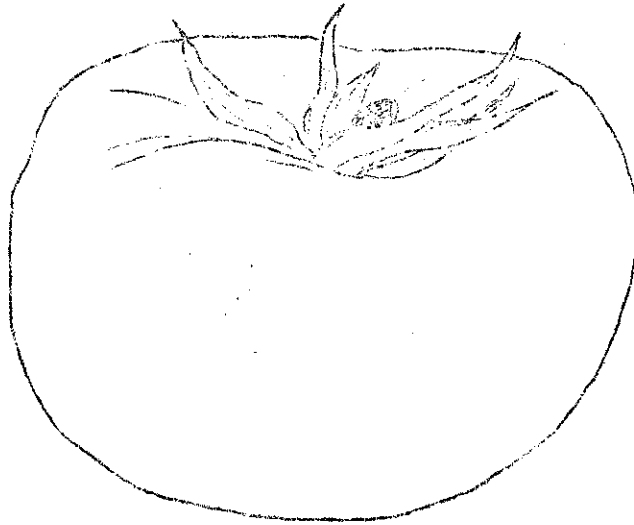SUMMARY OF 118 ENTERPRISE ACCOUNTS
Western New York, 1934

CANNING FACTORY

TOMATOES

W. M. Curtiss
Dept. Agricultural Economics

C. B. Raymond
Dept. of Vegetable Crops

New York State College of Agriculture

CONTENTS

COST OF PRODUCING CANNING FACTORY TOMATOES
118 Farms in Western New York, 1934

When the question of a marketing agreement for canning factory

tomatoes was discussed early in 1934, a number of interested growers in wes-

tern New York found that they had little available data concerning the cost

of producing tomatoes. At their request through their county agricultural

agents and the New York State College of Agriculture, a group of farmers were

provided with account books and were assisted in keeping a record of their

tomato enterprise.

P. S. Williamson of the Department of Agricultural Economics and

C. B. Raymond of the Department of Vegetable Crops at the State College of

Agriculture prepared an account book to be used by tomato growers. This pro-

vided space for all cash expenses, receipts from sale of tomatoes and for

the amount of work done on the tomato enterprise. This information was sup-

plemented by additional information secured at the time the books were closed.

Such information as that relating to the cost of operating their truck, tractor,

car, and other equipment was secured. Mr. Raymond and Mr. Kenneth Hood, who

took over Mr. Williamson's work assisted the growers in closing their books

and in getting the supplementary information.

Of the 125 accounts which were closed, 118 were sufficiently com-

plete to be useful in making a study of this kind. These 118 accounts were

in seven western New York counties (table 1). The drought condition of 1934

was such that a number of growers who started keeping accounts became dis-

couraged and did not complete their books.

All of the growers whose accounts were analyzed sold tomatoes to

canning factories. About one-half of this number sold a part of their crop

as market tomatoes early in the season before canning factories opened. Of

the total tons of tomatoes harvested, only 3.4 per cent were sold as market

tomatoes. These accounted for 5.4 per cent of the total income from tomatoes.

TABLE 1.   LOCATION OF THE 118 FARMS ON WHICH CANNING FACTORY
                TOMATO ACCOUNTS WERE COMPLETED IN WESTERN NEW YORK
                                  1934

County	Number of accounts
Chautauqua	32
Erie	4
Genesee	9
Monroe	15
Niagara	7
Orleans	36
Wayne	15
Seven counties	118

        The usual selling practice of these growers was to contract their

entire crop to the canners. These contracts were closed in the early spring,

usually in February or March. The majority of the contracts were based on

United States standard grades with rates of $14.00 for Number 1 tomatoes, and

$6.00 for Number 2's, delivered at the factory. Some variations from these

prices occurred. In most of the contracts in Chautauqua County, no definite

price was written into the contract. In these cases, the canners agreed to

pay the "market" price for tomatoes at the time they were delivered. Fifteen

of the contracts specified a flat price per ton for all tomatoes delivered.

Of the total tons of tomatoes sold from the 118 farms, 56 per cent was sold on a graded basis, 28 per cent on a "market" basis, and 15 per cent on a flat basis (table 2). The average price received for those sold on a graded basis was $11.75 and on a flat and "market" basis was $13.60. The opinion has been expressed by some canners and growers that ordinarily a canner receives better quality tomatoes if he buys on a graded basis than if he buys on a flat basis. The higher price paid for tomatoes on the flat or "market" basis was due to the willingness of some canners to pay increased prices for non-contracted tomatoes. This raised the "market" price to around $16 in some cases.

TABLE 2.   METHODS OF SALE OF CANNING FACTORY TOMATO CROP
                    118 Western New York Farms, 1934

Method of sale	Number of farms	Tons sold	Percent of total
Graded	67	3238	56.3
"Market" price	34	1629	28.4
Flat basis	15	854	14.9
Miscellaneous	2	21	.4
Total	118	5742	100.0

Tomato Production in New York

Indiana, California, Maryland, and New Jersey each grow more acres of canning factory tomatoes than New York. However, New York's yield per acre is considerably higher than these states. New York has produced about

7 per cent of the total United States crop in recent years. According to United States Department of Agriculture figures, the sixteen-year average yield (1918-33) of canning factory tomatoes in New York was 6.6 tons per acre. In 1934, the average for the state was 7.5 tons per acre. The average for the 118 farms studied was 8.2 tons, indicating that these farms were somewhat above the average for the state in production per acre.

Growing and marketing conditions in each of the seven counties were variable. The drought was more severe in Genesee County than in the others, resulting in low yields and unsatisfactory returns. Selling on a graded basis in some cases and on a flat and "market" basis in others gave rise to some variations in returns. However, conditions in all of the counties were considered to be similar enough to study the entire 118 farms in one group. The results are probably more significant than would be the case if a few farms in each county were studied separately.

Cost of Producing an Acre of Tomatoes

The average cost of producing an acre of tomatoes on the 118 farms was $83.50 (table 3). Approximately 70 per cent of this was growing and 30 per cent harvesting and delivering. The use of land amounted to $7.66 or about 10 per cent of the total. This cost included 5 per cent of the value of the land as given by the grower in addition to the proportion of the farm's taxes which applied to the tomato acreage.

Manure costs amounting to about $4.00 per acre were calculated by charging $1.15 per ton of manure. The cost of getting the manure to the field and spreading it was in addition to the $1.15. This was the average value given manure by cost account farmers in New York in recent years.

Manure applied during the past four years was included. Forty per cent of
the manure applied to the tomato ground during 1934, thirty per cent of
that applied in 1933, twenty per cent of that in 1932, and ten per cent of
that applied in 1931 was charged to the tomato crop.

TABLE 3.   COST OF PRODUCING AN ACRE OF TOMATOES
                             118 Western New York Farms, 1934

		Per cent of total
Growing costs:		
Land	$ 7.66	9.17
Manure	3.91	4.68
Commercial fertilizer	8.21	9.83
Plants	15.55	18.62
Plowing	3.42	4.10
Fitting	3.83	4.59
Applying fertilizer	1.65	1.98
Setting	5.41	6.48
Cultivating	6.38	7.64
All other growing costs	2.14	2.56
Total growing costs	$58.16	69.65
Harvesting and delivering (8.2 tons)	25.34	30.35
Total costs	$83.50	100.00

Commercial fertilizer was applied at an average rate of about 600
pounds per acre, costing $8.00. Many different analyses of fertilizer were
used on the farms.

The largest single item of expense in growing was for plants.
Most of the farmers used approximately 3,000 plants per acre at a cost of
$5.00 per thousand. This item accounted for almost 20 per cent of the total
costs.

Plowing, fitting, fertilizing, setting and cultivating included the cost of all man labor, horse labor, and machine and equipment expense. The average cost of operating 69 tractors, 71 trucks, and 19 automobiles which were used in the production and marketing of tomatoes on the 118 farms was 51.3 cents per hour for tractors, 6.4 cents per mile for trucks, and 3.7 cents per mile for automobiles.

Harvesting and delivering amounted to about $25.00 per acre. Since this was largely picking, the cost varied with the yield per acre. Other harvesting and delivering costs were for transporting the tomatoes to the canning factory. This made an average cost of harvesting and delivering of around $3.50 per ton.

Returns per Acre

The average returns per acre on the 118 farms was $101.19. After subtracting costs of $83.50, a net difference of $17.69 remained (table 4). The 118 growers received an average of $12.18 per ton of tomatoes which cost them $9.77 to produce, leaving a profit of $2.41 per ton. The returns in excess of all costs except labor on these farms averaged 35 cents per hour for all hours spent in producing tomatoes. The average yield was 8.25 tons per acre on farms having an average of 6 acres of tomatoes. Some of the farms were very close to the factory and others were as far as 20 miles away. The average distance was 5.3 miles.

Planting distances varied, but the most common practice was to set the plants in rows 4 feet apart and at such distance within the row to require about 3000 plants per acre. The average number of man hours required to grow an acre of tomatoes was 48 and the total requirements were 142 hours.

About two-thirds of the total man labor requirements were for harvesting and

delivering, but only 30 per cent of the total cost was for this. About 13

hours were required to harvest and deliver a ton of tomatoes.

TABLE 4.   FACTORS RELATED TO TOMATO PRODUCTION
                        118 Western New York Farms, 1934

Total returns per acre*	$101.19
Total costs per acre	83.50
Excess of returns over costs per acre	17.69
Receipts per ton**	12.18
Costs per ton**	9.77
Net gain per ton	2.41
Total man hours per acre	142
Returns per hour of labor	$0.35
Average yield (tons)	8.25
Average acreage per farm	6.0
Miles to cannery (one way)	5.3
Distance between rows (inches)	48
Plants purchased per acre	3250
Times cultivated	4.0
Man hours growing, per acre	48
Man hours harvesting and delivering per ton	12.9
Total man hours per ton	20
Pounds of commercial fertilizer per acre	618

* 78 of the 118 farmers sold market tomatoes before the canning factory
  opened. The total returns per acre of $101.19 includes those sold for
  market which averaged $5.38 per acre.

** The receipts and costs per ton are weighted averages. The total receipts
   and costs for all farms were divided by the total tons produced. Else-
   where in this report, the costs per ton are calculated from simple aver-
   ages.

    One-third of the tomatoes sold were produced at a cost of less than

$8.00 per ton (table 5). Another third were produced at a cost of between

$8.00 and $10.00 per ton. Only 20 per cent cost more than $12.00 per ton to

produce. It is of interest to note that the 42 farms in the high cost group

produced only 20 per cent of the total tomatoes sold.

TABLE 5.   PERCENTAGE OF TOMATOES PRODUCED AT DIFFERENT COSTS PER TON
118 Western New York Farms, 1934

Total costs per ton	Number of farms	Percentage produced	Cumulative percentage
Less than $8	27	34.7	34.7
$8 to $10	28	31.5	66.2
$10 to $12	21	13.3	79.5
More than $12	42	20.5	100.0
Total	118	100.0	--

Factors Affecting the Cost of Producing Tomatoes

The most important factor affecting the cost of producing tomatoes was the yield obtained per acre (table 6). As the yield per acre increased, the costs per acre increased to some extent, but the cost per ton decreased decidedly.

TABLE 6.   RELATION OF YIELD OF TOMATOES TO COST OF PRODUCTION
118 Western New York Farms, 1934

Yield per acre (tons)	Number of farms	Average yield	Cost per acre	Total cost per ton	Cost to harvest and deliver a ton
Less than 4	14	3.2	$66	$21	$4.54
4 - 6	27	5.2	79	15	4.22
6 - 8	23	7.2	82	11	4.03
8 - 10	17	9.1	92	10	3.53
10 - 12	19	10.8	90	8	2.61
More than 12	18	14.7	91	6	2.32
All farms	118	8.2	$84	$12	3.50

The average cost to harvest and deliver a ton of tomatoes was $3.50. With yields of less than 4 tons per acre, the cost was $4.54, while with yields of over 12 tons per acre, the cost to harvest and deliver was only about one-half as great, or $2.32.

The total cost of growing, harvesting, and delivering a ton also decreased as yields increased. While the average total cost per ton was $12.00, those who produced less than 4 tons per acre had a cost of $21.00. Those farmers who secured yields of more than 12 tons per acre produced tomatoes at a total cost of $6.00 per ton.

More labor was used in producing an acre of tomatoes with a high yield than with a low yield (table 7). Practically all of this difference was accounted for by the extra labor required to harvest the larger yield. However, the labor for harvesting and delivering a ton was less when the larger yields were obtained. The average number of hours required to harvest and deliver a ton of tomatoes was 13. Where yields per acre were less than 4 tons, the number of hours required was 17, but with yields of more than 12 tons per acre, only 9 man hours were required to harvest and deliver a ton.

TABLE 7.   RELATION OF YIELD OF TOMATOES TO LABOR REQUIREMENTS
                  118 Western New York Farms, 1934

| Yield per acre (tons) | Number of farms | Average yield | Man Hours | | |
			Total per acre	To grow an acre	To harvest and deliver a ton
Less than 4	14	3.2	94	39	17
4 – 6	27	5.2	135	52	16
6 – 8	23	7.2	137	50	12
8 – 10	17	9.1	154	46	12
10 – 12	19	10.8	162	47	11
More than 12	18	14.7	167	48	9
All farms	118	8.2	142	48	13

High Yields Gave Best Returns

As would be expected, farmers who obtained high yields received more dollars per acre than those with low yields. The price received per ton did not vary significantly, but the returns per hour of labor were much greater when yields were high (table 8). In addition ot paying all expenses except man labor, tomatoes returned an average of 35 cents per hour for each hour of labor spent on them. Five of the farmers obtained yields in excess of 15 tons per acre. Eighteen farmers with yields of more than 12 tons per acre received an average of 70 cents per hour of labor, while on 14 of the farms where yields were less than 4 tons per acre, tomatoes returned nothing for labor and even failed to pay all of the other costs of producing them. It cost these farmers 11 cents an hour for the privilege of working on tomatoes in 1934.

TABLE 8.   RELATION OF YIELD OF TOMATOES TO RECEIPTS AND INCOME
118 Western New York Farms, 1934

Yield per acre (tons)	Number of farms	Average yield	Receipts per acre	Receipts per ton	Returns per hour of labor (cents)
Less than 4	14	3.2	$37	$11.37	- 11
4 - 6	27	5.2	64	12.48	17
6 - 8	23	7.2	94	13.58	38
8 - 10	17	9.1	114	12.18	41
10 - 12	19	10.8	129	11.97	51
More than 12	18	14.7	173	11.90	70
All farms	118	8.2	101	$12.50	35

Relation of Acreage Grown to Costs and Labor

Some of the farmers grew less than an acre of tomatoes, while others grew as many as 20 acres. Those who grew a larger than average acreage had a slightly lower cost of producing an acre (table 9). The average cost of growing, harvesting, and delivering an acre was $84.00. Those farmers who grew less than 3 acres had a total cost of $89.00, while those who grew more than 9 acres had a total cost of $76.00. The farms with less than 3 acres of tomatoes had a cost of $14.00 per ton for growing, harvesting, and delivering, while those with more than 3 acres produced tomatoes at a cost of $11.00 per ton. There seemed to be no definite relationship between the number of acres grown and yield per acre.

TABLE 9.   RELATION OF ACREAGE OF TOMATOES TO COST OF PRODUCTION
118 Western New York Farms, 1934

Acres per farm	Number of farms	Yield per acre (tons)	Total cost per acre	Total cost per ton
Less than 3	28	7.5	$89	$14
3 - 5	32	9.0	85	11
5 - 9	27	8.6	84	11
More than 9	31	7.8	76	11
All farms	118	8.2	$84	12

Some saving was made in man labor by having a large acreage of tomatoes (table 10). Most of this saving was in growing the crop rather than in harvesting and delivering. An average of 48 man hours were required to grow an acre of tomatoes. Where less than 3 acres of tomatoes per farm were grown, 58 hours of man labor were required in growing an acre, while only 37 hours per acre were required on farms with more than 9 acres of tomatoes.

TABLE 10.   RELATION OF ACREAGE OF TOMATOES TO LABOR REQUIREMENTS
                      118 Western New York Farms, 1934

| | | | Man hours per acre | |
Acres per farm	Number of farms	Yield per acre	Growing	Total
		(tons)		
Less than 3	28	7.5	58	151
3 – 5	32	9.0	47	143
5 – 9	27	8.6	52	150
More than 9	31	7.8	37	128
All farms	118	8.2	48	142

Effects of Manure Application

Most of the farmers applied some manure during 1934 or during the three previous years. The amount of the application charged to tomatoes was calculated by adding 40 per cent of the current year's application, 30 per cent of last year's, 20 per cent of that applied two years ago, and 10 per cent of the application three years ago. On this basis, those farmers who applied less than one ton per acre obtained less than average yields (table 11). The average application was 3.4 tons per acre. Farmers who applied less than one ton per acre obtained a yield of tomatoes of 7.2 tons per acre, while those who applied more than 7 tons of manure per acre obtained a yield of 9.6 tons of tomatoes per acre.

TABLE 11.   RELATION OF AMOUNT OF MANURE APPLIED DURING ROTATION TO
                      YIELD OF TOMATOES PER ACRE
                      118 Western New York Farms, 1934

Manure per acre (tons)	Average application of manure (tons)	Number of farms	Yield per acre (tons)
Less than 1	.1	22	7.2
1 – 3	1.8	35	8.1
3 – 5	3.8	27	8.6
5 – 7	5.7	24	8.4
More than 7	8.9	10	9.6
All farms	3.4	118	8.2

The actual number of tons of manure applied during 1934 affected the yield of tomatoes that year. Thirty-eight of the farmers applied no manure and obtained 7.4 tons of tomatoes per acre (table 12). Those who applied more than 10 tons of manure per acre in 1934 obtained a yield of 9.2 tons of tomatoes per acre. Part of the effect of using no manure was probably offset by the use of commercial fertilizer. These farmers who applied no manure used $9.20 worth of commercial fertilizer per acre, while those who applied more than 10 tons of manure used $7.40 worth of fertilizer. The returns per hour of labor were 37 cents where manure was applied and 30 cents where none was applied. The dry season in 1934 possibly made the use of manure less effective than it would ordinarily be.

TABLE 12.   RELATION OF THE AMOUNT OF MANURE APPLIED IN 1934
                          TO YIELDS AND RETURNS
                     91 Western New York Farms, 1934

Tons of manure applied 1934	Number of farms	Yield per acre	Value of commercial fertilizer per acre	Return per hour of labor
				(cents)
None	38	7.4	$9.20	30
Less than 10 tons	22	8.2	6.00	37
10 tons or more	31	9.2	7.40	37
All farms	91*	8.2	$7.80	34

* 27 of the 118 growers applied manure to only a part of their acreage, so were not included in this group.

Use of Commercial Fertilizer

Practically all of the 118 farmers applied some kind of commercial fertilizer. A number of different analyses were used. The average cost was approximately $8.00 per acre for about 600 pounds. Those farms applying

less than $4.00 worth per acre, obtained yields of 6.5 tons of tomatoes
per acre (table 13). Those who applied more than $12.00 worth per acre
obtained yields of 10 tons per acre. An increased amount of fertilizer
resulted in larger yields per acre.

As yields increased with increased amounts of fertilizer, costs
per acre increased so that the costs per ton of tomatoes produced remained
the same. This was $12.00 for all groups. Even though the cost of pro-
ducing a ton was the same, the returns per hour of labor increased as
more fertilizer was used since more tons were produced. Farmers applying
less than $4.00 worth of commercial fertilizer received 29 cents per hour
of labor, while those who applied more than $12.00 worth received 39 cents
per hour.

TABLE 13.   RELATION OF APPLICATION OF COMMERCIAL FERTILIZER
                      TO COSTS AND RETURNS
                118 Western New York Farms, 1934

Value of commercial fertilizer per acre	Number of farms	Yield (tons)	Total costs per acre	Total costs per ton	Returns per hour of labor (cents)
Less than $4	21	6.5	$69	$12	29
$4 - $8	38	8.0	81	12	37
$8 - $12	35	8.3	84	12	34
More than $12	26	10.0	98	12	39
All farms	118	8.2	$84	$12	35

Plants per Acre

The number of plants per acre was computed from the planting

distance between rows and within the row as given by the growers (table 14).

An average of 3100 plants were used per acre. Those who set 2500 plants

obtained a yield of 9 tons per acre as did those who set 3000 plants.

Those who set 3600 plants per acre obtained a yield of 7 tons per acre

and received 30 cents per hour of labor. The highest return per hour of

labor was received by those who set 3000 plants per acre.

TABLE 14.   EFFECT OF NUMBER OF TOMATO PLANTS PER ACRE
                        ON YIELD AND RETURNS

115 Western New York Farms, 1934

Plants per acre	Number of farms	Average number of plants	Yield per acre (tons)	Returns per hour of labor (cents)
Less than 2900	35	2550	9	36
2900 to 3350	31	3070	9	44
More than 3350	49	3600	7	30
All farms	115	3100	82	35

Most experimental data has shown that the greater the number of

plants set per acre, the larger is the yield obtained. Experimental work

of C. B. Sayer at the Geneval Station indicated that while yields increased

with the number of plants per acre, the cost also increased.* Mr. Sayer

recommends setting distances of 3 1/2 x 4 feet. In 1934 the drought con-

ditions probably accounted for the fact that a smaller number of plants per

acre yielded slightly more tons than the largest number.

*Sayer, C.B., "Better Methods of Canning Crops Production," Bul. 553,
N. Y. State Agricultural Experiment Station, Geneva, New York.

Effect of Cultivation

All of the farmers cultivated their tomatoes at least two times and a few as many as nine times. The average number of cultivations was four. The effect on yields per acre of the number of times cultivated was very slight (table 15). Two and three cultivations gave yields of 7.4 tons per acre while four and five cultivations gave 8.6 tons.

TABLE 15.   EFFECT OF NUMBER OF TIMES CULTIVATED
ON TOMATO YIELDS AND RETURNS
116 Western New York Farms, 1934

Number of times cultivated	Number of farms	Yield per acre	Cultivating costs per acre	Returns per hour of labor (cents)
2 and 3	36	7.4	$5.30	31
4 and 5	62	8.6	6.55	37
6 and more	18	8.2	6.20	37
All farms	116	8.2	$6.40	35

Possibly the effects of cultivations would be different under different weather conditions. It is usually recommended that the cultivations be limited to just enough times to control weeds.

Method of Setting Plants

About one-half of the 118 growers used machines for setting their plants, and one-half set them by hand (table 16). There was no significant difference in costs or returns between the two methods of setting. In general, those using machines had a larger than average acreage of tomatoes. They obtained slightly larger yields and greater returns per hour of labor. The principal saving by using machines for setting was in setting costs per acre and total growing costs per acre. Less man labor was required for growing where machines were used.

TABLE 16.   COSTS AND RETURNS WHEN SETTING PLANTS
                        BY HAND AND WITH MACHINES
                    116 Western New York Farms, 1934

	Plants set by:	
	Machine	Hand
Number of farms	59	57
Acres of tomatoes per farm	6.8	5.0
Plants per acre	3240	3000
Tons manure per acre	3.3	3.5
Fertilizer per acre	$8.60	$7.90
Yield per acre (ton)	8.7	7.9
Setting costs per acre	$4.75	$6.15
Hours of labor for growing	40	57
Growing cost per acre	$55.90	$59.75
Returns per hour of labor	$ .38	$ .34

Sale of Market Tomatoes

A number of farmers were able to pick a few tomatoes early in the season to sell on the market before the canning factories opened. The 65 farmers who received an average of 11 per cent of their income from market tomatoes obtained 37 cents per hour of labor while those who sold practically no market tomatoes received 33 cents (table 17). The average price received per ton was $1.30 more for those who sold some market tomatoes. In general, the farmers who sold market tomatoes had smaller than average acreages.

TABLE 17.   RELATION OF THE SALE OF MARKET TOMATOES
                      TO PRICE RECEIVED AND RETURNS
                    118 Western New York Farms, 1934

Per cent of income from market tomatoes	Number of farms	Yield per acre	Acres of tomatoes	Receipts per ton	Returns per hour of labor
		(tons)			
Less than 1 per cent*	53	8.2	7.2	$11.65	33
More than 1 per cent (average 11 per cent)	65	8.2	5.0	12.95	37
All farms	118	8.2	6.0	$12.36	35

*Includes 40 farmers who sold no market tomatoes.

Effect of Quality on Returns

It was desirable for those farmers who sold their tomatoes on a graded basis to have a relatively high percentage grading number one. For each 10 per cent increase in per cent grading number 1, an increase in price per ton of $.80 was obtained when a price of $14 for number 1 and $6 for number 2 was received. Seventy of this group of farmers sold on a graded basis (table 18). These farmers delivered an average of 69 per cent of number 1 tomatoes. Those who delivered less than 60 per cent number 1's had yields of 6.4 tons per acre and received 11 cents per hour of labor. Those who delivered more than 80 per cent number 1's, had yields of 9.9 tons per acre and a return per hour of labor of 44 cents.

TABLE 18. RELATION OF QUALITY OF TOMATOES
TO RECEIPTS PER TON AND RETURNS
70 Western New York Farms, 1934

Per cent grading No. 1	Number of farms	Yield per acre	Price per ton	Returns per hour of labor
				(cents)
Less than 60	10	6.4	$10.35	11
60 - 70	30	8.0	11.20	30
70 - 80	24	9.8	12.10	47
More than 80	6	9.9	12.60	44
All farms	70*	8.5	$11.75	34

*Only 70 of the 118 farms sold on a graded basis.

The fact that as the per cent grading number 1 increased, the yield also increased would seem to indicate that those factors such as soil, cultural practices, and weather conditions which contribute toward high yields also tend to increase the quality of tomatoes marketed.

Date of Transplanting

It is usually considered that early setting of tomatoes results in higher yields and returns than does late setting. Factors such as weather,

field conditions and vigor of plants may partially offset the effect of

either early or late setting. In 1934, 56 of the farmers transplanted

their tomato plants during the week of May 27 to June 3 (table 19). This

group obtained higher than average yields and returns per hour of labor

than either the group who set before or after this week.

TABLE 19.   EFFECT OF DATE OF TRANSPLANTING TOMATOES
                             ON YIELDS AND RETURNS
                        99 Western New York Farms, 1934

Date of transplanting	Number of farms	Yield per acre	Returns per hour of labor
Before May 27	23	7.8	28.9
May 27 to June 3	56	9.2	40.1
After June 3	20	7.2	30.1
All farms	99*	8.5	35.5

*On 19 of the farms, the time of transplanting covered a length of time
 such that they could not be classified in this table.

Effect of Rotation

Twenty-one of the group of farmers grew their entire acreage of

tomatoes on ground which had been sod the previous year (table 20). This

group obtained a yield of 7.5 tons per acre or about one ton less than

average. They applied less manure and less commercial fertilizer than

average.

Where there had been one year of crops intervening between sod

and tomatoes, twenty-two farmers obtained yields of 9.4 tons per acre.

This group applied an average amount of manure and $9.35 worth of

commercial fertilizer, whereas the average amount of commercial fertilizer

applied was $8.00 worth.

TABLE 20.   EFFECT OF ROTATION ON YIELD OF TOMATOES
                            89 Western New York Farms, 1934

Place of tomatoes in rotation	Number of farms	Yield per acre	Value of manure per acre	Value of fertilizer per acre
Following sod	21	7.5	$3.35	$7.10
1 year removed from sod	22	9.4	4.25	9.35
More than 1 year removed from sod	46	8.3	4.65	7.90
All farms	89*	8.3	$4.25	$8.05

*The rotations on the other 29 farms were combinations of two or more
of the above practices.

Where there were two or more years between sod and tomatoes,
yields were about average at 8.3 tons per acre. The amount of manure and
fertilizer applied was approximately the average for all farms.

The fact that the best yields were obtained on ground one year
removed from sod is in harmony with most experimental data on the subject.
Again, the weather conditions of 1934 probably had an influence on the
effect of rotation on yields.

<u>Summary</u>

Returns from canning factory tomatoes in western New York in
1934 were fairly satisfactory when compared with other farm enterprises
in that year. There was a high variation between farms in returns received.
Some farmers failed to receive enough to pay costs other than labor and
received nothing for their labor. Others were able to pay all costs and
receive more than $1.00 an hour for all labor on tomatoes. The group of
118 farmers received an average of 35 cents per hour of labor spent on the
tomato enterprise.

A number of factors accounted for the wide variations in returns. A few of the most important are:

Yield per acre was the most important factor affecting returns. A farmer can hardly hope to produce tomatoes at a profit unless he secures at least average yields, which for this group was 8.2 tons per acre. Yields above average are necessary to secure better than average returns and with a yield of more than 12 tons per acre, tomato production was relatively profitable.

Acreage of tomatoes. Farmers who grew more than the average acreage of tomatoes, which was 6 acres for this group, were able to use labor and machinery more efficiently and produce tomatoes at a lower cost than those farmers with small acreages.

It paid to fertilize. The application of manure and commercial fertilizer resulted in higher yields per acre and larger returns per hour of labor spent on the tomato enterprise.

Quality of tomatoes. For those farmers who sold their tomatoes on a graded basis, it was highly desirable to deliver more than 70 per cent of number 1 tomatoes. An increase of 80 cents per ton was obtained for each increase of 10 per cent of tomatoes grading number 1, when the price was $14 for number 1's and $6 for number 2's.

The place of tomatoes in rotation. The best yields were obtained by that group of farmers who set their tomatoes on ground which had one year of intervening crops between sod and tomatoes.

* * *