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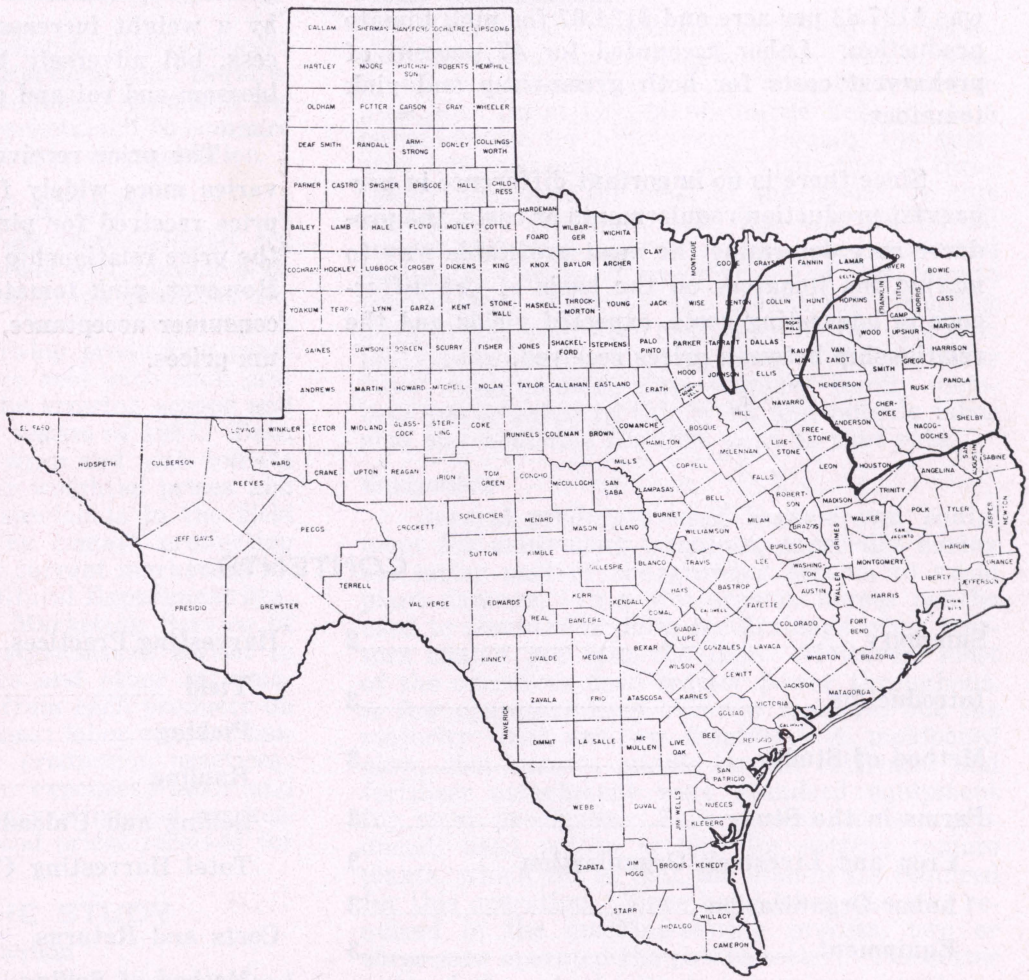
• Costs and Returns of Growing and Marketing • Pink and Green-wrap Tomatoes, • Northeast Sandy Lands Area



The heavy black lines show the Northeast Sandy Lands area where this study was made.

in cooperation with the
UNITED STATES DEPARTMENT OF AGRICULTURE

TEXAS AGRICULTURAL EXPERIMENT STATION
R. D. LEWIS, DIRECTOR, COLLEGE STATION, TEXAS.

SUMMARY

Tomato production in the Northeast Sandy Lands area of Texas generally supplements livestock and other crop enterprises and offers an opportunity for farm labor that otherwise may be unused. During 1957 there were no important differences in preharvest production requirements or costs of producing tomatoes for the green-wrap or pink market. Total preharvest time was 95.1 man-hours and 20.3 tractor-hours per acre for green-wrap tomatoes and 93.1 man-hours and 20.9 tractor-hours per acre for pink tomatoes. Preharvest cost for green-wrap tomato production was $127.83 per acre and $124.67 for pink tomato production. Labor accounted for 47 percent of preharvest costs for both green-wrap and pink tomatoes.

Since there is no important difference in preharvest production requirements or costs, the producer may determine the most profitable way to market his tomatoes on the basis of the difference in harvesting costs, expected yields and the relationship between prices received.

Pink tomatoes had a slightly higher harvesting cost both per pound and per acre. Green-wrap tomatoes were picked about 5 times as contrasted with 12 times for pink tomatoes. On the average, it took 25 minutes to pick a bushel of green-wrap tomatoes while it took 35 minutes to pick a bushel of pink tomatoes. Labor accounted for about 85 percent of the harvesting cost for both green-wraps and pinks.

The yield of pink tomatoes in relation to green-wrap tomatoes may be affected favorably by a weight increase during the maturing process, but adversely by weather, growth cracks, blossom-end rot and other damage.

The price received for green-wrap tomatoes varies more widely from year to year than the price received for pink tomatoes, which changes the price relationship between the two each year. However, pink tomatoes, because of their better consumer acceptance, normally will bring premium prices.

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Costs and Returns of Growing and Marketing Pink and Green-wrap Tomatoes, Northeast Sandy Lands Area

Calvin C. Boykin, Jr. and Wayne W. Clark*

MANY FARMERS in the Northeast Sandy Lands area of Texas grow a few acres of tomatoes to supplement livestock and other crop enterprises. Ordinarily, family members perform most of the labor required for both production and harvesting. The tomatoes generally are sold at the green-wrap maturity stage to one of the packers in the area. In recent years, however, there has been a trend toward marketing pink tomatoes. One shipping point for pink tomatoes has been developed in East Texas.

This study was undertaken to help producers compare the production practices and requirements being followed in producing tomatoes for the green-wrap and pink markets and to compare costs and returns from each type of production.

METHOD OF STUDY

Thirty tomato producers were selected for study from two adjacent areas with similar soils and rainfall conditions; one group produced for the green-wrap market and the other for the pink market. Interviews concerning production practices and requirements were held with each producer about twice during the growing season and once during the harvesting season of 1957. Data were obtained from green-wrap and pink tomato shed managers to arrive at weighted prices and grades. Technicians and specialists in the field were interviewed concerning tomato production and marketing. Results of current marketing research by the Texas Agricultural Experiment Station and the Agricultural Marketing Service of the U. S. Department of Agriculture served to check yields, prices, grades and other information. Data were obtained from each producer on crop and livestock enterprises; labor supply; machinery inventory; tomato production practices; itemized tomato production expenses; labor and power used for growing, harvesting and marketing tomatoes; and grades and prices received for tomatoes.

FARMS IN THE STUDY

Crop and Livestock Organization

Most of the farms combined livestock and crop enterprises and were operated by owners or part owners. The tomato enterprise was not a major source of income and in most cases supplemented other enterprises. In 1957, the acreage of green-wrap tomatoes ranged from 1 to 11, for an average of 5 acres. The acreage for pink producers ranged from 1 to 7, for an average of 4 acres. Green-wrap producers also planted acreages of field corn, peas, watermelons and cotton. Pink tomato producers specialized more in sweet potatoes, turnips, cabbage, sweet corn, cotton, field corn and watermelons. All producers had a history of tomato production and were considered better than average producers.

Labor Organization

Most tomato producers performed the necessary operations themselves with the help of family labor. Those with 5 acres or more tended to hire labor for setting plants in the field and to a lesser degree for harvesting. Usually the operator depended on his own labor, plus that of three family members for most of the labor. In this analysis, 75 cents per hour was charged for all tractor and truck labor used in the production and marketing phases of green-wrap and pink tomato production. Most of the operations requiring labor of this kind were performed by the operator. Sixty cents per hour was charged for all other labor requirements, since younger family members participated in this work and outside labor also was available for this work at that rate.

Equipment

Several producers used horse-drawn equipment for cultivating tomatoes, especially during the latter part of the growing season, to avoid plant damage. In a wet season, horses can be used to plow the middles for drainage when tractors cannot get into the field. However, most of the operators used tractor power throughout. A few operators used two-row tractors, but the majority used one-row tractors. A moldboard plow, disk harrow, middle buster, cultivator and fertilizer attachment were standard equipment for most producers. Several pink tomato producers used potato setters for setting tomato plants, which cut in half the man-hours required for this operation. Since hand labor also was required in the machine-setting process, two or three men operated the potato setter. The setter reduced the actual time to set an acre by three-fourths in some cases. This may be important some seasons because of the short time suitable for successful planting. Some used horse-drawn sleds for carrying tomato plants while setting in the field. All producers used pickup trucks for hauling tomatoes to market. One dollar per hour was charged for use of the tractor plus equipment. Eight cents per mile was charged for truck operation.

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PRODUCTION PRACTICES, REQUIREMENTS AND COSTS

Plants

Most producers raised plants on their farms. Some purchased plants from South Texas or bought replacements from neighbors and specialized plant growers in the area. Plants cost $1 per thousand in South Texas and $2.50 per thousand delivered.

Producers who raised plants seeded their hotbeds in February and transplanted into coldframes in March. Rutgers and Homestead varieties were used most commonly among green-wrap producers, while pink producers used Homestead and Texto 2. To a lesser degree, Stokes Hybrid No. 5 and Marglobe varieties were used by both groups. One ounce of seed usually was sufficient for production of enough plants to set 1 acre. Green-wrap producers set 5,000 plants per acre in rows 8 feet apart and 16 to 18 inches apart in the row. Pink tomato producers set 4,000 plants per acre in rows 8 feet apart and 24 inches apart in the row. Prices for seed varied from 75 cents an ounce to $1.25 an ounce. On the average, green-wrap tomato producers spent $1.10 per ounce and pink tomato producers spent 95 cents per ounce for seed for 1 acre.

Most producers used one hotbed per farm and one coldframe per acre for growing plants. Hotbeds were approximately 8 x 12 feet, which required 40 board-feet of lumber per acre. Green-wrap tomato producers used one coldframe per acre with an average size of 8 x 60 feet or 360 board-feet of lumber per acre. Pink tomato producers used a coldframe 8 x 50 feet which required 320 board-feet of lumber per acre.

Green-wrap tomato producers used 400 board-feet of lumber per acre for building hotbeds and coldframes and pink tomato producers used 360 board-feet per acre. At $5 per board-foot, green-wrap tomato producers paid $20 per acre initial cost for lumber and pink tomato producers paid $18 per acre. Assuming a life span of 4 years, the annual cost was $5 per acre for green-wrap tomato producers and $4.50 per acre for pink tomato producers.

TABLE 1. USUAL LABOR REQUIREMENTS PER ACRE FOR GREEN-WRAP AND PINK TOMATO PLANT PRODUCTION, NORTHEAST SANDY LANDS AREA, TEXAS, 1957

Item	Man-hours	
	Green-wrap tomatoes	Pink tomatoes
	Number	
Hotbed		
Preparation	4.5	4.2
Seeding	2.0	2.7
Care	4.7	5.5
Coldframe		
Preparation	10.0	7.8
Transplanting	21.7	20.9
Care	8.2	8.1
Total	51.1	49.2

TABLE 2. USUAL LABOR AND POWER REQUIREMENTS PER ACRE FOR FIELD OPERATIONS FOR GREEN-WRAP AND PINK TOMATO PRODUCTION, NORTHEAST SANDY LANDS AREA, TEXAS, 1957

Item	Green-wrap tomatoes			Pink tomatoes		
	Times over	Total hours		Times over	Total hours	
		Man	Tractor 1 row		Man	Tractor 1 row
	Number					
Flatbreak	1.0	1.7	1.7	1.0	2.0	2.0
Disk	2.0	1.7	1.7	2.0	2.0	2.0
Lay off rows	1.0	.3	.3	1.0	.3	.3
Fertilize	1.0	1.2	1.2	1.0	1.2	1.2
Bed	1.0	1.0	1.0	1.0	1.0	1.0
Open Beds	1.0	1.0	1.0	1.0	1.0	1.0
Set Plants	1.1	22.0	5.0	1.1	22.0	5.0
Cultivate	6.0	7.2	7.2	6.0	7.2	7.2
Sidedress	1.0	1.2	1.2	1.0	1.2	1.2
Dust	4.0	6.7		2.0	6.0	
Total		44.0	20.3		43.9	20.9

Sheeting for hotbeds and coldframes averaged 16 cents per yard for both groups, with an average life of 2 years. Green-wrap tomato producers used 68 yards per acre and pink producers used 58 yards per acre. The initial cost per acre for sheeting was $10.88 or an annual cost of $5.44. Pink tomato producers had an initial cost per acre of $9.28 or an annual cost of $4.64 per acre.

There were no important differences in the two groups of producers as to method or time required for growing plants, Table 1. Time spent at this stage of production involved building, repairing, seeding and fertilizing hotbeds and coldframes. Watering, weeding, covering and uncovering hotbeds and coldframes with sheeting also were required and some producers fired hotbeds.

Transferring plants from hotbed to coldframe was the most time-consuming operation involved in growing plants. Green-wrap tomato producers spent 51.1 hours per acre in the production of plants, while pink tomato producers spent 49.2 hours per acre, mainly because of less plants per acre for pink tomato producers. Labor costs were 60 cents per hour or $30.66 per acre for green-wrap plant production and $29.52 per acre for pink tomato plant production.

Field Operations and Materials

The usual sequence of operations was to flatbreak once; disk or double cut twice; lay off rows, fertilize, bed and open beds once, Table 2. Plants then were set in the field, sidedressed with fertilizer once and cultivated six times. Some green-wrap tomato producers sidedressed twice. Green-wrap tomato producers dusted their plants four times for insects, while pink tomato producers dusted twice. Most producers placed 600 pounds of 5-10-5 or 300 pounds of 10-20-10 under beds before planting. Some green-wrap tomato producers used 500 pounds of 8-8-8 for this treatment. Both groups of producers sidedressed with 500 pounds of 5-10-5. There were a few green-wrap tomato producers who used ammonium nitrate mixed half

and half with 5-10-5. Barnyard manure and 4-12-4 were used in plant production.

The average amount of fertilizer used for green-wrap tomato production was 57 pounds of nitrogen, 116 pounds of phosphorus and 57 pounds of potassium. Cost per acre for fertilizer was $25.25. Pink tomato producers used 56 pounds of nitrogen, 113 pounds of phosphorus and 56 pounds of potassium per acre for a cost of $24.40.

Five percent DDT and 6 percent copper in dust form was the most commonly used insecticide. Green-wrap tomato producers used 48 pounds per acre for a cost of $5.76. Pink tomato producers used 45 pounds per acre which cost $5.40.

Green-wrap tomato producers used 44 man-hours per acre for all field operations before harvest. Of this amount, 20.3 hours involved tractor labor at 75 cents per hour which amounted to $15.22 per acre. Hand labor for setting plants and dusting was 23.7 hours per acre. At 60 cents per hour, the cost was $14.22 per acre. Pink tomato producers used 43.9 man-hours per acre for field operations. Tractor labor amounted to 20.9 hours and, at 75 cents per hour, was $15.68 per acre. Hand labor for setting plants and dusting required 23 hours. At 60 cents per hour, the cost per acre was $13.80. There were no producers who staked and tied tomato plants in the field, although this was a common practice in the area at one time and still is recommended by some from a production standpoint. Pruning was not used to the extent that it was used formerly. An economic evaluation of these practices is necessary to determine if the extra costs involved are covered by returns from higher quality tomatoes.

A one-row tractor and equipment were used for most field operations, and all calculations of tractor time were figured at $1 per hour. Green-wrap tomato producers used 20.3 hours of tractor and equipment time at a cost of $20.30 per acre. Pink tomato producers used 20.9 hours of tractor and equipment time at a cost of $20.90 per acre.

Total Preharvest Costs

A total of 95.1 preharvest hours of hand and tractor labor was required per acre for green-wrap tomato production at a cost of $60.10, Table 3. Pink tomato production required 93.1 hours per acre of hand and tractor labor at a cost of $59.

Containers cost $3.25 per dozen and producers replaced 18 each year at a cost of $4.88 per acre. Green-wrap tomato production required $47.43 per acre for lumber, sheeting, containers, fertilizer, insecticide and seed. Pink tomato producers spent $44.77 per acre on these materials.

Operation of tractor and equipment amounted to 20.3 hours or $20.30 per acre for green-wrap tomato producers and 20.9 hours or $20.90 for pink tomato producers.

Total preharvest costs for green-wrap tomato production was $127.83 per acre. For pink tomato production, the preharvest cost was $124.67 per acre.

HARVESTING PRACTICES, REQUIREMENTS AND COSTS

Yield

Yields in East Texas tomato production vary widely. From 1948-57 the average yield per acre in the late spring tomato area of Texas, of which the Northeast Sandy Lands area constitutes a considerable part, has ranged from a high of 4,000 pounds per acre in 1948-49 to a low of 2,100 pounds per acre in 1953. The average yield for the period was 3,040 pounds per acre with an average deviation of 480 pounds and a standard deviation of 587 pounds. Of more significance, however, is a downward yield trend of 195 pounds per acre per year. A large part of this yield reduction undoubtedly is caused by adverse weather conditions, but other factors also may be involved.

In addition to yearly variation in yield there is wide variation among producers. This is caused by differences in soil type, cultural practices, planting time, variety and vigor of plants, local weather conditions and disease and insect control.

Yield variation between green-wrap and pink tomatoes also is associated with harvest time. Tomatoes add a slight amount of weight while maturing from the green-wrap to the pink stage, but most of the changes during this period are of a chemical nature. While individual fruits gain weight, total yield for the season may be reduced since the maturing process tends to reduce the plants' vigor, thus shortening the production period. Another important consideration in East Texas is that pink tomatoes, by remaining on the

TABLE 3. PREHARVEST COSTS PER ACRE FOR GROWING GREEN-WRAP AND PINK TOMATOES, NORTHEST SANDY LANDS AREA, TEXAS, 1957

Item	Green-wrap tomatoes		Pink tomatoes	
	Hours	Dollars	Hours	Dollars
Labor				
Tractor labor[1]	20.3	15.22	20.9	15.68
Hand labor[2]				
Plant production	51.1	30.66	49.2	29.52
Field operation	23.7	14.22	23.0	13.80
Total	95.1	60.10	93.1	59.00
Equipment				
Tractor & equipment operation[3]	20.3	20.30	20.9	20.90
	Amount	Dollars	Amount	Dollars
Materials				
Lumber, board-feet	400.0	5.00	360.0	4.50
Sheeting, yards	68.0	5.44	58.0	4.64
Containers, number	18.0	4.88	18.0	4.88
Fertilizer				
Nitrogen, pounds	57.0		56.0	
Phosphorus, pounds	116.0	25.25	113.0	24.40
Potassium, pounds	57.0		56.0	
Insecticide, pounds	48.0	5.76	45.0	5.40
Seed, ounces	1.0	1.10	1.0	.95
Total		47.43		44.77
Total preharvest cost		127.83		124.67

[1]Seventy-five cents per hour.
[2]Sixty cents per hour.
[3]One dollar per hour.

vine for the additional length of time before picking, are subject to greater loss from adverse weather, growth cracks, blossom-end rot and other damage.

Market conditions also may affect the quantity of tomatoes harvested per acre. Prices may drop so low that the packers and shippers discontinue buying before all the tomatoes in the area are harvested. Prices also may be so low that producers quit picking. This has been particularly true of green-wrap tomatoes.

Information on the tomato yield in the East Texas area has been obtained by sampling producers over a 2-year period and from packing shed records. The green-wrap tomato producer usually delivered about 5,000 pounds of tomatoes per acre to the packing shed. These usually graded out about 77 percent number 1's and number 2's and 23 percent culls, giving a yield of 3,850 pounds of 1's and 2's and 1,150 pounds of culls. The average pink tomato producer delivered about 4,400 pounds of tomatoes per acre which graded out about 60 percent 1's and 40 percent 2's. Because of the close field grading, few pink tomatoes brought to market were rejected by the packer. This gave the average pink tomato producer a yield of 2,640 pounds of 1's and 1,760 pounds of 2's. These yields are not strictly comparable, however, because each packer has his own grade standards by which he accepts or rejects the tomatoes.

Picking

During the 1957 season, green-wrap tomatoes were picked on an average of 5 times, as contrasted with an average of 12 times for pink tomatoes. One of the reasons for this difference is that pink tomatoes must be picked more frequently to be within the maturity stage required by the packer. Also, pink tomato producers generally are able to sell tomatoes over a longer time. This was true particularly during the 1957 season when the green-wrap market closed earlier than usual because of unfavorable market and weather conditions.

These differences in picking requirements were reflected in the length of time it took to pick a bushel of tomatoes. On the average, it took 25 minutes to pick a bushel (50 pounds) of green-wrap tomatoes while it took 35 minutes to pick a bushel (50 pounds) of pink tomatoes. With this labor requirement, a green-wrap tomato producer delivering 5,000 pounds of tomatoes per acre spent 41.7 hours per acre picking. At a wage rate of 60 cents per hour, his labor cost for picking was $25.02 per acre. A pink tomato producer delivering 4,400 pounds of tomatoes per acre spent 51.3 hours per acre picking. At the same wage rate, his labor cost was $30.78 per acre, Table 4.

TABLE 4. HARVESTING COSTS PER ACRE FOR GREEN-WRAP AND PINK TOMATOES, NORTHEAST SANDY LANDS AREA, TEXAS, 1957

Item	Green-wrap tomatoes (5000-pound yield)		Pink tomatoes (4400-pound yield)	
	Hours	Cost	Hours	Cost
	Number	Dollars	Number	Dollars
Labor				
Picking[1]	41.7	25.02	51.3	30.78
Hauling[2]	4.0	3.00	6.0	4.50
Selling and unloading[3]	13.2	9.90	19.8	14.85
Miscellaneous harvesting[4]	2.0	1.20	3.0	1.80
Total labor	60.9	39.12	80.1	51.93
Truck				
Truck operation[5]	80 miles	6.40	120 miles	9.60
Total harvesting cost		45.52		61.53

[1]Sixty cents per hour.
[2]Seventy-five cents per hour.
[3]Seventy-five cents per hour.
[4]Sixty cents per hour.
[5]Eight cents per mile.

Hauling

In the typical operation the producer and his family composed the picking crew and did the picking in the morning. The producer then delivered his tomatoes to the packing shed. A pick-up truck usually was used which generally had the capacity to hold all the tomatoes picked in the morning. The average green-wrap tomato producer made four trips to market per acre during the season while the average pink tomato producer made six trips per acre because of the greater number of pickings. The average load taken to market was 25 bushels for green-wrap tomato producers and 15 bushels for pink tomato producers. The average time required to travel to and from the market for both types of tomato producers was 1 hour per trip. Thus, 4 man-hours per acre were required to deliver green-wrap tomatoes and 6 man-hours for pink tomatoes. Using a wage rate of 75 cents, the same as for tractor driving, the labor cost per acre of delivering green-wrap tomatoes was $3 and for pink tomatoes, $4.50.

Both green-wrap and pink tomato producers averaged 10 miles to market or 20 miles a round trip. Eight cents per mile was used in figuring transportation costs. Green-wrap tomato producers thus traveled 80 miles at a cost of $6.40 to deliver the production from an acre of tomatoes while pink tomato producers, who had to make two extra trips, traveled 120 miles at a cost of $9.60.

Selling and Unloading

Both green-wrap and pink tomato producers spent about 3.3 hours per load selling their tomatoes, waiting in line and unloading them at the packing shed. Pink tomato producers did not have to wait in line as long before reaching the packing shed, but it required longer for their tomatoes to be unloaded because they were graded and packed from hand-grading tables. With four loads of green-wrap tomatoes per acre, 13.2 hours were spent at a labor cost of $9.90. The six loads of pink tomatoes per acre required 19.8 hours at a labor cost of $14.85 per acre.

It is estimated that green-wrap tomato producers had about 2 man-hours of miscellaneous

harvesting time per acre at a cost of $1.20. Pink tomato producers had 3 man-hours at a cost of $1.80.

Total Harvesting Costs

The total harvesting time for green-wrap tomato producers was 60.9 man-hours per acre at a cost of $39.12. Truck operation to deliver the tomatoes cost $9.60, giving a total harvesting cost of $45.52. The total harvesting time for pink tomato producers was 80.1 man-hours per acre at a cost of $51.93. Truck operation to deliver the tomatoes cost $9.60, giving a total harvesting cost of $61.53 per acre.

Labor accounted for about 85 percent of the harvesting costs in both cases. With the cost of harvesting green-wrap tomatoes prorated over the 3,850 pounds of 1's and 2's delivered to market, an average harvesting cost of about 1.2 cents per pound resulted. With the cost of harvesting pink tomatoes divided by the 4,400 pounds of 1's and 2's delivered to market, the harvesting cost per pound was 1.4 cent per pound.

COSTS AND RETURNS

Method of Selling

Various methods were used by green-wrap tomato packers in buying tomatoes, but the most common was payment on a grade-out basis. Under this method, each farmer's tomatoes were weighed as delivered to the packing shed and the entire lot was graded. Cull tomatoes failing to meet the grade standard established by the packer, or tomatoes accepted only at lower prices, were reweighed. It was common practice to pay one price for all tomatoes accepted, although the packer was packing more than one grade of tomatoes. Farmers usually were able to dispose of the tomatoes returned to them by selling them at 50 cents a bushel to a cull buyer.

Cooperative marketing research by the TAES and the AMS in East Texas during the 1956 and 1957 marketing seasons showed that tomatoes graded out on an average 77 percent 1's and 2's and 23 percent culls during the season. There was considerable variation over the season, however, depending on weather and market conditions and among growers depending on how closely they field graded while picking.

TABLE 5. GROSS RETURNS PER ACRE FROM GREEN-WRAP AND PINK TOMATO PRODUCTION, NORTHEAST SANDY LANDS AREA, TEXAS, 1956-57

Type of tomato production	Grade	Pounds	1957 Average price per pound	1957 Per acre value	1956 Average price per pound	1956 Per acre value
		Number	— — —	Dollars	— — —	
Green-wrap tomatoes						
	1's and 2's	3,850	.06	231.00	.10	385.00
	Culls	1,150	.01	11.50	.01	11.50
Total		5,000		242.50		396.50
Pink tomatoes						
	1's	2,640	.084	221.76	.114	300.96
	2's	1,760	.043	75.68	.059	103.84
Total		4,400		297.44		404.80

Comparison of Returns

During the 1956 season the weighted average price received for green-wrap tomatoes by farmers for a combination grade of 1's and 2's was 10 cents a pound. In 1957 the price was 6 cents a pound. During both seasons farmers were able to dispose of their culls at 50 cents a bushel or 1 cent a pound.

In 1957, 5,000 pounds of green-wrap tomatoes per acre delivered to the packing shed and grading 77 percent 1's and 2's grossed the producer $242.50 per acre, Table 5. This was a return above operating cost of $69.15 per acre, Table 6. In 1956, with the same yield and grade, he would have grossed $396.50 per acre. Assuming the same operating costs in 1956 as in 1957, this would give a return above operating cost of $223.15 per acre.

Pink tomatoes generally were purchased on the basis of two grades established by the packer. Producers were paid for the pounds of tomatoes

Figure 1. Tomato producers in the Northeast Sandy Lands area of Texas waiting to sell (left) and unload (right) their green-wrap tomatoes at a typical market.

TABLE 6. RETURNS PER ACRE FOR GREEN-WRAP AND PINK TOMATO PRODUCTION, USING 1957 COSTS, NORTHEAST SANDY LANDS AREA, TEXAS, 1956-57

Type of tomato production	Operating costs, 1957[1]			Gross returns		Gross returns less operating costs	
	Preharvest	Harvest	Total	1957	1956	1957	1956
	— — — —	Dollars	— — — —	— — — — — —	Dollars	— — — — — —	
Green-wrap	127.83	45.52	173.35	242.50	396.50	69.15	223.15
Pink	124.67	61.53	186.20	297.44	404.80	111.24	218.60
Difference	3.16	16.01	12.85	54.94	8.30	42.09	4.55

[1]Includes operator and family labor.

they had of each grade. Over the season about 60 percent of the tomatoes delivered graded out as 1's and 40 percent as 2's. Producers helped with the grading of their own tomatoes and as a result of being familiar with the packers' grade standards, used close field grading and the amount of culls delivered was insignificant.

In 1956, the season average price received by farmers for pink tomatoes was 11.4 cents per pound for 1's and 5.9 cents per pound for 2's. In 1957 the price was 8.4 cents a pound for 1's and 4.3 cents a pound for 2's.

In 1957, 4,400 pounds of pink tomatoes delivered to the packing shed grading 60 percent 1's and 40 percent 2's grossed the producer $297.44 per acre, Table 5. This is a return above operating cost of $111.24 per acre, Table 6. In 1956, with the same yield and grade, he would have grossed $404.80 per acre. Assuming the same operating costs in 1956 as in 1957, this would give a return above operating cost of $218.60 per acre.

With these relationships, green-wrap tomatoes returned $4.55 more per acre in 1956 than did pink tomatoes, while in 1957 pink tomatoes returned $42.09 more per acre.

The fact that returns were larger, under the conditions set forth, from selling green-wrap tomatoes in 1956 and pink tomatoes in 1957, may imply that it would be more profitable to shift between the two types of markets. However, this is difficult to do in practice.

For one thing, it is difficult to predict in advance the price relationship between green-wrap and pink tomatoes for any given season. The price of green-wrap tomatoes varies more from year to year and during the season than the price of pink tomatoes. This is because the price of green-wrap tomatoes is affected to a greater extent by the supply of tomatoes produced in East Texas and in competitive areas than the price of pink tomatoes which are produced only in limited quantity and have specialized outlets.

During the past 10 years, 1948-57, the season average price of green-wrap tomatoes in the late spring production area has ranged from 3.60 cents per pound in 1949 to 10.40 cents per pound in 1952. The average price received during this period was 6.26 cents per pound with an average deviation of 2.17 cents per pound and a standard deviation of 2.45 cents per pound. During 6 of the 10 years the price received has been below average and above average 4 of the years. With the same production practices, yields and costs as in 1957, green-wrap producers would have lost money 4 out of the 10 years on their tomatoes. Assuming from the price relationships during the 1956 and 1957 seasons that selling green-wrap tomatoes is more profitable only during seasons of very high green-wrap tomato prices, it would appear that it would have been more profitable to sell green-wrap tomatoes only 3 out of the 10 years and pink tomatoes the other 7 years.

Family Income

Since tomato production generally is a supplementary enterprise using family labor which otherwise would not be utilized, a producer may want to consider marketing his tomatoes where family income will be highest. Where harvesting is done largely by family labor, family income generally will be increased by selling tomatoes where gross returns are highest. Production costs per acre are nearly the same and the only difference in harvesting costs other than labor is the truck operation involved in delivering the tomatoes to the packing shed.

In 1956-57, pink tomatoes grossed more per acre than did green-wrap tomatoes. While pink tomatoes usually will gross more per acre, and thus return a larger family income, there is a risk involved in leaving the tomatoes on the vine for a longer time.

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