

Tomatoes  
Ventura 75

Yields

Most machine-harvested cannery tomato fields yield between 20 and 30 tons per acre. Yields of 25, 20, and 30 tons per acre are used in this sample.

Varieties and Seed

Several strains of the VF145 variety of round tomatoes developed especially for mechanical harvesting are in general use. Each year a few new varieties can be expected as progress is made toward a more desirable type for both the farmer and the processor. Several major seed companies have substantial tomato breeding projects and fundamental research in tomato breeding is going on at the University of California. Among the more interesting new varieties are the "square rounds". These have very thick walls, store well on the vines and are high in solids. However, they may not equal the old varieties in yield, they are difficult to separate from the vines, and they tend to place too much fruit in the furrow.

Soils and Climate

Except for the extreme coastal exposure, soils and climate of the level land throughout Ventura County are suitable for cannery tomato production. A low risk of rain in September and October is a substantial advantage of Ventura County over many other tomato-growing areas in the state and the world.

When to Plant and Harvest

Planting must be carefully scheduled to assure about the same acreage ready for harvest each week throughout the harvest season. Early plantings may not emerge for more than 20 days and late plantings may emerge in less than a week. For this reason it is suggested that each planting be made at a time when the first true-leaf is about 0.5 inches long in the seedlings of the previous planting. More detailed suggestions are found in "Mechanized Growing and Harvesting of Processing Tomatoes", a University of California publication available from farm advisors.

Although the optimum time for harvesting may be when 80 percent of the fruit is ripe, it is advisable to start harvesting as soon as the amount of ripe fruit exceeds 65 percent. At this time, fruit is ripening rapidly and it is only a few days after a field is 65 percent ripe until it is over 75 percent ripe. The new "square round" may be left until a higher percentage is ripe.

The time from emergence to harvest is approximately 130 days.

Planting, Cultivating, and Weed Control

Single rows spaced 4.5 to 5 feet apart are generally used here. The usual planting rate is from .5 to .75 pound of seed per acre. This is equivalent to 12 to 20 seeds per foot of single row and plantings of this kind are followed by hand thinning to 9 to 12 inches between plants. Thinning can be eliminated by using precision planters to drop about five seeds every 9 inches. Where this hill or clump planting is used, it is important that the seed for each clump be confined to an inch or two of row space; otherwise, the clump effect which caused each clump to act as a single plant is lost.

Selective herbicides incorporated in the seedbed immediately ahead of planting have been used to good advantage. However, the treatments most effective on the weeds may not be perfectly safe under all conditions. Wherever herbicides are used it is important to leave a few small untreated areas in the field to observe for both weed control and effect of the herbicide on stand and growth of the crop.

Each cultivation must be done with a high regard for the condition of the bed surface at harvest time. A tomato harvester works best when beds have a smooth, flat surface.

### Fertilizing

Although tomatoes will not respond to phosphorous in all fields or all parts of some fields, it is advisable to apply some phosphorous under the seed at planting time. A combination of 8 to 10 pounds of nitrogen per acre and 10 to 20 pounds of phosphorous per acre placed under the seed or not more than 1 inch to the side of the seed and 1 or 2 inches below the seed will help to get all plants off to a good start. On some soil it is advisable to limit nitrogen applied after planting to less than 80 pounds, and this should be applied not later than thinning time. This restriction on nitrogen application and timing is to allow plants to become deficient in nitrogen before harvest time. If this deficiency does not occur, plants tend to continue setting fruit that has no chance of ripening in time for harvest.

### Irrigation

At planting time the soil moisture should be at field capacity throughout the root zone; then in the milder sections of the county a single irrigation is adequate. When more than one irrigation is required, the final irrigation should be early enough so soil moisture will be nearly exhausted at harvest time.

### Ethephon

Ethephon applied according to the manufacturer's directions will hasten the ripening of tomatoes so that harvesting can be done approximately a week earlier than normal. By harvesting earlier than normal less of the early fruit is lost by spoilage. For the cost sheet it is assumed that half the fields will be treated with ethephon.

It is important to hand harvest a few representative plants or clumps to determine percent of fruit pink and ripe (include breakers). Best results are expected when about 10 percent of the fruit is pink or ripe. After 20 to 30 percent of the fruit is pink or ripe spraying with ethephon may not have much effect on time of harvest.

In the mild coastal climate of Ventura County it may be more than 2 weeks after spraying before fruit is ready for harvest.

### Pest and Disease Control

Root-knot nematodes, tomato fruit worms, and russet mite are the principal pests. Unless there is good reason to believe that nematodes will not be a problem, soil fumigation for root-knot nematode control should precede

planting. Careful field observations can be used to assure proper timing of pesticide applications and to avoid unnecessary treatments.

University of California recommendations for pest and disease control are available at the farm advisors office.

CANNERY TOMATOES - CASH FLOW  
EXCLUDING LAND RENT AND TAXES

Apr.	May	June	July	Aug.	Sept.	Oct.
<u>Start</u>						
\$150						
		<u>Grow</u>				
		\$170				
					<u>Harvest</u>	
					\$460	

Acres, Yields, and Prices as Reported by  
Ventura County Agricultural Commissioner

<u>Year</u>	<u>Acres</u>	<u>Ton/A</u>	<u>\$/Ton</u>	<u>\$/A</u>
1970	3,288	25.9	28.50	737
1971	3,861	22.4	29.06	650
1972	3,707	23.8	28.92	689
1973	3,652	25.0	34.00	850
1974	4,140	25.0	57.00	1425

CANNERY TOMATOES

Yield: 25, 20, and 30 Tons/A

Land Use: 7 months

Plant: March, April, and May

Harvest: August and September

	Tractor	Labor Per Acre		Machinery		Contract & Materials	Total Per A.
		Hrs	Cost				
<b>CULTURAL CASH COSTS</b>							
Subsoil 1/2 x	W 80	.21	.98	\$ .99			\$ 1.97
Plow	W 80	.45	2.09	2.28			4.37
Disc & Roll 2 x	C 40	.50	2.32	1.59			3.91
Landplane 2 x	C 40	.52	2.42	1.35			3.77
Furrow for pre-irrig.	W 40	.20	.93	.38			1.31
Pre-irrigate		1.50	6.08	.25	1/2 A-Ft Wtr @\$10	\$ 5.00	11.33
Drag Harrow 2 x	C 40	.34	1.58	1.26			2.84
Springtooth Harrow 2x	C 40	.34	1.58	1.46			3.04
Fumigate			Contract			65.00	65.00
Drag Harrow 2 x	C 40	.34	1.58	1.26			2.84
Plant & Fertilize	W 50	.35*	2.92	1.29	3/4 lb. Seed 200 lb. 16-20	12.38 22.50	39.09
Irrigate 2 x		3.00	12.16	.50	2/3 A-Ft Wtr @\$10	6.67	19.33
Fertilize 1x	W 30	.50	2.32	1.20	60 lb. N @ \$.30	18.00	21.52
Cultivate 4 x	W 30	1.00	4.65	1.80			6.45
Hoe		8.00	29.60				29.60
Pest Control 3 x			Contract			50.00	50.00
Ethephon Growth Regul.			Contract		1/2 x	20.32	20.32
Disc & Roll Refuse	W 80	.36	1.67	2.66			4.33
<b>Total Cultural Cash Costs</b>		<b>17.96</b>	<b>\$72.88</b>	<b>\$18.27</b>		<b>\$199.87</b>	<b>\$291.02</b>
<b>CASH OVERHEAD</b>							
Land Rent			\$25.00 per acre-month x 7 months				\$175.00
Taxes on Machinery	@		.29 per acre-month x 7 months				2.03
Supervision	@		5.30 per acre-month x 7 months				37.10
General Expense	@		6% of cultural cash costs				17.46
<b>Total Cash Overhead</b>							<b>\$231.59</b>
<b>Total Cash Costs Except Harvesting</b>							<b>\$522.61</b>
<b>HARVESTING, PACKAGING, AND SELLING CASH COSTS</b>							
Prepare for harvesting		\$2.00/A					\$ 2.00
Harvest and load		\$18.00/Ton x 25 Tons		Contract			450.00
Inspection fee		\$.17/Ton x 25 Tons/A + Broome Rape Fee \$.06/Ton					6.00
<b>Total Harvesting, Packaging, and Selling Cash Costs</b>							<b>\$458.00</b>
<b>Total Cultural, Overhead, Harvesting, Packaging, and Selling Cash Costs</b>							<b>\$980.61</b>
<b>INVESTMENT OVERHEAD</b>							
Depreciation: Tractor & Machinery		\$13.12		Transportation & Shop	\$5.32		\$ 18.44
Interest:	"	"	6.09	"	"	1.40	7.49
<b>Total Investment Overhead</b>							<b>\$ 25.93</b>
<b>Total Cost Per Acre</b>	@		<b>25 Tons/A</b>				<b>\$1,006.54</b>
<b>Total Cost Per Acre</b>	@		<b>20 Tons/A</b>				<b>\$ 915.34</b>
<b>Total Cost Per Acre</b>	@		<b>30 Tons/A</b>				<b>\$1,097.74</b>
<b>Total Cost Per Ton</b>	@		<b>25 Tons/A</b>		\$40.26		
<b>Total Cost Per Ton</b>	@		<b>20 Tons/A</b>		45.77		
<b>Total Cost Per Ton</b>	@		<b>30 Tons/A</b>		36.59		

\* 1 man @ \$4.65/Hr., 1 man @ \$3.70/Hr.

## POLE TOMATOES

### Yields

Most pole tomatoes are picked pink, culled, and graded for size and color in a packing shed and packed in flats holding about 20 pounds. Yields range from less than 2,000 to over 3,000 flats (20 pounds) per acre. A yield of 2,500 flats per acre is used in this sample.

### Varieties and Seed

VF428F2 has become the leading variety. It has some resistance to Verticillium and Fusarium wilts. It has the same plant and fruit characteristics as Earlypak 707 and Pearson Shipper which it has replaced because these varieties are damaged by Verticillium wilt on land with tomato history. For land not used for tomatoes within the past 10 years, Earlypak 707 is used because it produces smoother fruit than VF428F2.

VF 6343, a hybrid variety, and Polepak are suitable substitutes for VF428F2, but in trials they have not excelled 428. Fruits of Polepak average a little smaller than those of VF 6343 and 428.

Alternaria stem canker, which caused serious losses in San Diego County, occurs in Ventura County, but losses from this disease have not been drastic. The variety VF6718, which is used in San Diego County because it is resistant to Alternaria Stem canker, produces well here but its fruit does not have the desired depth of 428, Earlypak 707, or VF 6343.

Each year new varieties with resistance to tomato mosaic, Alternaria stem canker, and nematodes, as well as Verticillium and Fusarium wilts, are examined carefully for fruit quality, freedom from defects such as blossom-end rot, graywall, and cracked fruit, and a plant suitable for pole culture.

### Soil and Climate

Most of the irrigated land in Ventura County is suitable for pole tomatoes. There are a few fields that should be avoided because of inadequate drainage.

### When to Plant and Harvest

Attempts to have pole tomatoes ready for harvesting before July 15 are not usually successful. The earliest plantings are made in March for harvesting in August and September. Planting of most of the pole tomato acreage here is delayed until around June 1 so that the picking is from late September until around December 1. This is to take advantage of the climate which in most years is suitable for harvesting tomatoes throughout October and November when prices are usually higher than in September. Full production cannot be expected from plantings made later than June 15. Rain and cool weather which usually come together may terminate the pole tomato season before December 1.

### Planting, Cultivation, and Weed Control

Most pole tomatoes here are direct seeded in rows 5 to 6 feet apart and thinned to 14 to 18 inches. A local trial in 1968 showed that a 14-inch spacing produced the greatest yield and that wider spacings produced

larger fruit. Transplanting is not recommended because of repeated experiences of losses from tomato mosaic and other diseases in transplanted pole tomatoes.

With good cultural practices not much is gained by chemical weed control in pole tomatoes.

Seed may be planted in moist soil from which it will emerge without irrigation or it may be planted in dry soil and irrigated up with furrow or sprinkler irrigation.

Almost all pole tomatoes are planted on flat ground. Cultivating to control weeds should be no deeper than necessary and the field should be free of weeds before staking. One or two irrigation furrows in each row space are made just before irrigating which may not be necessary until near the beginning of harvest. For cultivation and furrowing after staking, a small narrow tractor is needed.

### Fertilizing

Land that has been intensively farmed with vegetable crops will usually supply all the phosphorous and potassium needed for a tomato crop. Nitrogen fertilization may not be necessary until 2 or 3 weeks before the first pick. Then one or two applications of 100 pounds per acre of nitrogen may be required for a maximum yield. Decisions regarding when to apply nitrogen fertilizer may be aided by plant tissue analysis. Pole tomato plants allowed to become deficient in nitrogen to the extent that they lose their dark green color and form small leaves cannot be expected to recover and produce a full crop.

### Irrigation

Tomatoes have deep vigorous root systems, so the first irrigation may not be necessary until plants are well developed. Then it is a good practice to irrigate thoroughly before picking begins so that several picks can be made before irrigating again. In heavy soil there may be some advantage to irrigating alternate row spacings to avoid excessive soil moisture. Where there is much of a slope to the land, two small furrows in each row space are more effective than a single furrow.

### Pest and Disease Control

Nematodes, tomato fruit worms, and russet mites are the principal pests. Most fields here should be treated for control of root-knot nematode before planting pole tomatoes. Treating for control of the fruit worms should start before about 1 percent of the fruit is found to be damaged by worms. Russet mites are usually controlled by including a miticide with the worm control treatment.

Attempts to control Verticillium wilt in tomatoes by soil fumigation here have been unsuccessful.

University of California recommendations for pest and disease control are available from the farm advisors office.

SPECIAL MACHINERY FOR 50 ACRES OF POLE TOMATOES

Item	Cost New	Acres /Year	Life	Dep. /A	Int. /A	Cash Cost/A	Labor /A
Small Tractor	\$ 4,000	50	15	\$ 5.33	\$ 3.20	\$2.35	\$17.80
Stakedriver	400	50	15	.53	.32	.69	38.00
Truck (2 Ton) 1/2*	4,000	50	10	8.00	3.20	8.12	56.75
Picking Carts (25 @ \$45)	1,125	50	10	2.25	.90	1.06	---
Stakes (125,000 @ \$.25)	31,250	50	10	62.50	18.75	0	---
<b>Total</b>	<b>\$40,775</b>			<b>\$78.61</b>	<b>\$26.37</b>		

\* Two trucks shared by pole tomato and celery enterprises.

\* \* \* \* \*

CASH FLOW - EXCLUDING LAND RENT AND TAXES

Apr.    May    June    July    Aug.    Sept.    Oct.    Nov.

Start  
\$325

Grow  
\$725

Harvest and Cleanup  
\$1,500

\* \* \* \* \*

Acres and Prices not reported because this crop is not reported separately from other market tomatoes.

POLE TOMATOES

Yield: 1,500, 2,000, and 2,500 Boxes

Land Use: 7 months

Plant: May and June

Harvest: September 15 to December 1

	Tractor	Labor Per Acre		Machinery	Contract & Materials	Total Per A.
		Hrs	Cost			
<b>CULTURAL CASH COSTS</b>						
Subsoil 3 shanks 1/2	W 80	.21	.94	.99	\$	1.93
Plow 4 - 16"	W 80	.45	2.09	2.30		4.39
Disc & Roll 2 x	C 40	.50	2.32	2.96		5.28
Landplane 2 x	W 80	.52	2.42	2.70		5.12
Furrow for Irrig.	W 30	.20	.93	.38		1.31
Pre-irrigate		1.50	6.08	.25 1/3 A-Ft Wtr @ \$10	\$ 3.33	9.66
Drag Harrow 3 x	C 40	.51	2.37	1.89		4.26
Springtooth Harrow 2x	C 40	.34	1.58	1.46		3.04
Fumigate and Fertilize			Contract	20 Gal DD, 100 Lb/A N	82.45	82.45
Plant	W 50	.35	2.92*	1.29 Seed 3/4 Lb @ \$19	14.25	18.46
Cultivate 2x	W 30	.50	2.32	.90		3.22
Fertilize, Sidedress	W 30	.40	1.86	.96	33.75	36.57
Cultivate or Furrow		4.00	18.60	2.35		20.95
Thin & Hoe		12.00	44.40			44.40
Hoe 1x		6.00	22.20			22.20
Prune 2x		30.00	111.00			111.00
Set stakes 2 men	W 30	6.00*	50.10	11.76 No cash charge for stakes		61.86
String 6x, 9 hrs ea.		54.00	199.80	Twine & Gloves	80.00	279.80
Fertilize in water				100 lb. N	31.10	31.10
Pest Control 5 x			Contract		125.00	125.00
Irrigate 4 x		6.00	24.32	1.50 1 1/2 A-Ft Wtr @10	15.00	40.82
Pull & Store stakes	W 30	30.00	111.00	3.00		114.00
Disc & Roll Refuse 2x	W 80	.36	1.67	2.66		4.33
<b>Total Cultural Cash Costs</b>		<b>160.19</b>	<b>\$608.92</b>	<b>\$37.35</b>	<b>\$384.88</b>	<b>\$1,031.15</b>
<b>CASH OVERHEAD</b>						
Land Rent			\$25.00 per acre-month x 7 months		\$	175.00
Taxes on Machinery	@		.29 per acre-month x 7 months			2.03
Supervision	@		10.00 per acre-month x 7 months			70.00
General Expense	@		6% of cash cultural and harvest costs			146.47
<b>Total Cash Overhead</b>					\$	<b>393.50</b>
<b>Total Cash Costs Except Harvesting</b>						<b>\$1,424.65</b>
<b>HARVESTING, PACKAGING, AND SELLING CASH COSTS</b>						
Labor, Pick and haul			\$ .70/packed box x 2000 + Truck \$9.00 + Carts \$1.00		\$1,410.00	\$1,410.00
Packing cost			1400 flats @ \$1.65 and 600 lugs @ \$1.85		3,420.00	3,420.00
Selling cost			10% x 1400 x \$3.75 + 600 x \$5.00		825.00	825.00
<b>Total Harvesting, Packaging, and Selling Cash Costs</b>						<b>\$5,655.00</b>
<b>Total Cultural, Overhead, Harvesting, Packaging, and Selling Cash Costs</b>						<b>\$7,079.65</b>
<b>INVESTMENT OVERHEAD</b>						
Depreciation: Stakes		\$62.50	Special Equipment	\$16.11	Other	\$23.25 \$ 101.86
Interest:	"	18.75	"	"	7.62	" 10.30 36.67
<b>Total Investment Overhead</b>						<b>\$ 138.53</b>
<b>Total Cost Per Acre for 2000 boxes/A</b>				(70% 2 layer, 30% 3 layer)		<b>\$7,218.18</b>
<b>Total Cost Per Acre for 1500 boxes/A</b>				(70% 2 layer, 30% 3 layer)		<b>\$5,804.43</b>
<b>Total Cost Per Acre for 2500 boxes/A</b>				(70% 2 layer, 30% 3 layer)		<b>\$8,631.93</b>
<b>Total Cost Per Box @ 2000 boxes/A</b>				(70% 2 layer, 30% 3 layer)	\$3.61	
<b>Total Cost Per Box @ 1500 boxes/A</b>				(70% 2 layer, 30% 3 layer)	3.87	
<b>Total Cost Per Box @ 2500 boxes/A</b>				(70% 2 layer, 30% 3 layer)	3.45	

\* 2 men -- 1 @ \$4.65/Hr and 1 @ \$3.70/Hr.



TOMATO PRICES, WHOLESALE, LOS ANGELES MARKET

Two-layer flats 5 x 6 and larger, Wednesday Prices  
 Shaded area show ranges between highest and lowest prices

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