

GREENHOUSE TOMATO ECONOMICS

Norman Brints*

This publication is based on information submitted in interviews and questionnaires by interested growers throughout Texas. Although not a statistically sound sample, they provide realistic economic data about greenhouse tomato production that should be useful to experienced as well as new growers.

For comparison of data, the State of Texas was divided into four areas. The areas are shown in figure 1. No economic data was obtained from the

western portion; however, characteristics of the few greenhouses existing in this area appear in Area 4 box.

The economic data, tables 1 and 2, point out the often held misconception that greenhouse tomato production is a get-rich-quick enterprise. However, with good management, return on investment can be adequate. Since operator's labor and management was not included as an expense for all greenhouses in the completed questionnaires, a

Table 1. Income and expense for greenhouse tomato production by areas

| | Per 1,000 square feet | | | |
|---|--------------------------------------|------------------------------|--------------|--------------|
| | Area 1 High and Rolling Plains | Area 2 Northeast Texas | Area 3 | |
| | | | Below 10,000 | Above 10,000 |
| Av. size of green house (sq. ft.) in sample* | 92,964 | 5,560 | 5,900 | 22,500 |
| Income | \$1,247 | \$1,133 | \$856 | \$976 |
| Cash expense: | | | | |
| Labor | \$ 331 | 228 | — | 25 |
| Repairs | 32 | 104 | 27 | 58 |
| Interest | 137 | 37 | 51 | 57 |
| Seeded plants | 25 | 46 | 2 | 16 |
| Fertilizer and chemicals | 31 | 62 | 33 | 44 |
| Supplies | 9 | 84 | 9 | 31 |
| Utilities | 22 | 208 | 133 | 174 |
| Insurance | 35 | 24 | — | 39 |
| Delivery expense | 24 | 64 | 68 | 28 |
| Other | 6 | 68 | — | 36 |
| Total cash expense | \$ 652 | \$ 925 | \$323 | \$508 |
| Total income above cash expense | \$ 595 | \$ 208 | \$533 | \$468 |
| Fixed expenses: | | | | |
| Taxes | \$ 26 | \$ 10 | \$ 3 | \$ 10 |
| Depreciation | 289 | 76 | 161 | 111 |
| Interest on investment | 231 | 141 | 90 | 167 |
| Total fixed expense | \$ 546 | \$ 227 | \$254 | \$288 |
| Income to operator's labor and management | \$ 49 | (\$ 19) | \$279 | \$180 |
| Return as a percent of investment without a charge for operator's labor and management | 9.7 % | 6.9 % | 32.9 % | 16.6 % |

*Reflects average size of greenhouse for which income and expense items were completed on the questionnaire.

*Extension area economist—management, The Texas A&M University System.

true return on investment could not be calculated. Therefore, a return as a percent of investment without a charge for operator's labor and management was determined.

As you will note, greenhouses below 10,000 square feet in Area 3 had the highest percentage when calculated in this manner. This resulted mainly because all labor and management in this area were contributed entirely by the family.

For producers interested in large commercial production, perhaps data from Area 1 would be most useful. Labor expense per 1,000 square feet reflects a charge for management in two of five greenhouses.

Table 3 provides listing of an estimate for labor requirements by jobs performed throughout the year. Operator and family labor are included. This should provide new growers an idea of the amount of labor required.

All income and expense items are shown for 1,000 square feet, rather than on a per plant basis. This was done to avoid differences related to plant populations. These values can be expanded to reflect the size of greenhouse you might be interested in.

A summary of greenhouse characteristics for each of four areas of Texas is shown in boxes. Review of these summaries gives more meaning to income and expense data in tables 1 and 2.

No greenhouses returning questionnaires had the same production and expense figures per 1,000 square feet. This emphasizes the fact that you cannot depend completely on someone else's records. You must have records from your own operation to make the most knowledgeable management decisions.

Area 1
Greenhouse characteristics—High and Rolling Plains
(Five greenhouses in sample)

Size of greenhouse—Size ranged from 20,944 square feet to 217,560 square feet with an average of 79,170 square feet. Square feet per plant averaged 4.48.

Crop system—Three growers used the two-crop system; two, the one-crop system.

Building—Three greenhouses had metal structural portions; two had wood. All growers used fiberglass, mostly 5 ounces material with a range of 4½ to 6 ounces. Two greenhouses used Tedlar*-coated material. Average expected life was 15 years with a range from 4 to 20 years.

Heating system—Two greenhouses used overhead perforated tubes while two used row tubes. Four had heaters located inside the building.

Cooling—Two greenhouses used perforated tubes for the first phase of ventilation. Two were equipped with horizontal pads; the others used the vertical pad system. Pad width ranged from 4 feet to 8 feet. Length from pad to fans ranged from 80 feet to 150 feet with an average of about 120 feet.

Boxes—Four growers reused boxes used for marketing.

Media—Soil was the only growing media used in the greenhouses.

Varieties—Four growers used some Manapal. Two used Tuckross 520 and 533. One used Floradel; one used Tropic.

Yield per plant—Average yield obtained during last growing season varied from 12 pounds to 24 pounds. The yield that growers anticipated ranged from 15 to 24 pounds, with an average of 21 pounds.

Price—Prices for No. 1 tomatoes ranged from 30 to 42 cents—mostly 35 cents. No. 2 tomatoes ranged from 22 to 30 cents—mostly 30 cents. Culls ranged from 20 to 30 cents—mostly 25 cents.

Total investment—Total investment ranged from \$2.11 to \$3.12 per square foot, with an average of \$2.88 per square foot.

*The information given herein is for educational purposes only. Reference to commercial products or trade names is made with the understanding that no discrimination is intended and no indorsement by the Cooperative Extension Service is implied.

Area 2
Greenhouse characteristics—Northeast Texas
(Ten greenhouses in sample)

Size of greenhouse—Size ranged from 720 square feet to 16,000 square feet with the average greenhouse 6,222 square feet. Square foot per plant averaged 4.48.

Crop system—Nine growers used the one-crop system.

Building—All structural portions of buildings were wood. Nine greenhouses used fiberglass on the roof while eight had fiberglass on the sides. Film used on sides ranged from 6 to 8 mil. Fiberglass ranged from 4½ to 6 ounces with seven out of ten using 4- to 4½-ounce material. Three used Tedlar-coated fiberglass. Life of polyethylene film ranged from 2 to 5 years while life of fiberglass ranged from 10 to 20 years with an average of about 12 years.

Heating—Two greenhouses used overhead perforated tubes, and two used row tubes. Nine had heaters located inside the house.

Cooling—Seven greenhouses used overhead perforated tubes for the first phase of ventilation. Fifty percent of the houses used the horizontal pads while 50 percent used vertical pads. Pad width ranged from 3½ to 8 feet. Average distance between fans and pads was approximately 80 feet.

Boxes—Seven greenhouses reused boxes for marketing.

Media—Soil was the principal growing media in all greenhouses. Two used soil in combination with other media such as cotton burs, sand and peat.

Varieties—Seven growers used Floradel; three used Manapal; four used some Tropic. Other varieties grown were Vendor and Tropigro.

Yield per plant—Average yield per plant during the last production year ranged from 13 to 20 pounds. Anticipated average yield ranged from 15 to 21 pounds, with an average of 17½ pounds.

Price—Prices for No. 1 tomatoes ranged from 30 to 45 cents—mostly 38 cents. No. 2 tomatoes ranged from 20 to 40 cents—mostly 34 cents. Culls ranged from 20 to 33 cents—mostly 25 cents.

Total investment—Total investment ranged from \$1.43 to \$2.31 per square foot, with an average of \$1.76 per square foot.

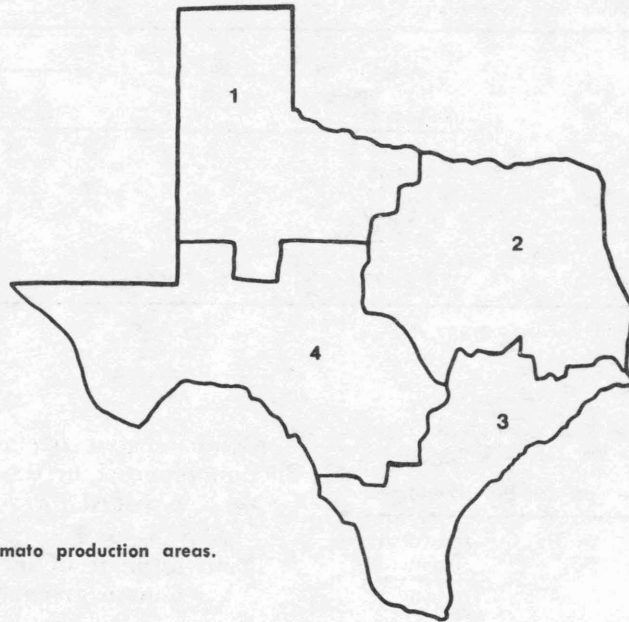


Fig. 1. Greenhouse tomato production areas.

Area 3

Greenhouse characteristics—Gulf Coast
(Four greenhouses in sample)

Size of greenhouse—The size ranged from 4,800 to 24,000 square feet with the average greenhouse 12,160 square feet. For houses containing over 20,000 square feet, square feet per plant was 4.66. For greenhouses below 10,000 square feet, square feet per plant was 4.32.

Crop system—All greenhouses used a one-crop system.

Building—Two greenhouses contained metal structures, and two had wood. Three used 4 to 6 ounces fiberglass. The other grower used 4 mil polyethylene film. Only one greenhouse had fiberglass with Tedlar coating. Expected average life of fiberglass ranged from 7 to 20 years, with an average of about 12 years.

Heating—None of the greenhouses was equipped with overhead perforated tubes, and only one used row tubes. Almost all of the remaining houses used fans for heat distribution.

Cooling—One of four used overhead perforated tubes. Three used horizontal cooling pads with an average width of 4 feet. The average distance between pads and fans was about 90 feet.

Boxes—All greenhouse producers reused boxes for marketing.

Media—All greenhouses used soil as a media for tomato production. However, one indicated that soil was placed in troughs.

Varieties—Three growers used Floradel variety; two used some Tropic. Yield per plant for the past production year ranged from 12 to 17 pounds. Expected average yield for growers ranged from 12 to 19 pounds with an average of 16 pounds.

Price—Prices for No. 1 tomatoes ranged from 40 to 60 cents—mostly 50 cents. No. 2 ranged from 40 to 55 cents—mostly 48 cents. Culls ranged from 25 to 55 cents—mostly 35 cents.

Total investment—Total investment ranged from \$1.31 to \$2.30 per square feet. Of houses over 20,000 square feet, the average investment was \$2.09 while the houses below 10,000 square feet averaged \$1.12 per square feet.

Area 4

Greenhouse characteristics—West Texas
(Four greenhouses in sample)

Size of greenhouse—Greenhouses sampled ranged from 12,000 to 50,000 square feet with an average of 26,000 square feet. Square feet per plant averaged 4.37.

Crop system—Two of four used the one-crop system.

Building—Half used metal for the structural portion of the greenhouse while the others used wood. Half of the greenhouses used fiberglass and the other half used 6 mil polyethylene. Fiberglass weight was from 4 to 8-ounce material with no Tedlar coating. Length of life on the polyethylene film was expected to be 1 year while the fiberglass was expected to be about 5 years.

Heating—Two greenhouses used overhead perforated tubes for heat distribution. None used row tubes. Three had heaters located inside the building.

Cooling—One grower used overhead perforated tubes for cooling distribution, and three used horizontal pads for cooling. Pad width ranged from 3 to 6 feet with the average length between fans and pads about 110 feet.

Boxes—All greenhouses reused boxes for marketing tomatoes.

Media—Three used soil for the main growing media; one used gravel.

Varieties—Three growers used the Tropic variety. One used a combination of Manapal and Floradel.

Yield per plant—Yield per plant for this past production year ranged from 14½ to 17 pounds. Average yield expected was from 15 to 17 pounds, with an average of 16 pounds.

Price—Prices for No. 1 tomatoes ranged from 30 to 45 cents—mostly 40 cents. No. 2 tomatoes from 25 to 35 cents—mostly 30 cents. Culls from 20 to 25 cents—mostly 22½ cents.

Total investment—Total investment per square foot was not submitted for all greenhouses.

Table 2. Summary of specified economic data by areas

| | Area 1 High and Rolling Plains | Area 2 Northeast Texas | Area 3 | |
|--|--------------------------------------|------------------------------|--------------|----------------------------|
| | | | Below 10,000 | Gulf Coast Above 10,000 |
| Investment per sq. ft. | \$2.88 | \$1.76 | \$1.12 | \$2.09 |
| Square foot per plant | 4.48 | 4.48 | 4.66 | 4.32 |
| Av. yield per plant (lbs.) | 21 | 17.5 | 14 | 14 |
| Av. income per plant | \$5.59 | \$4.86 | \$3.71 | \$4.56 |
| Av. price received per pound* | 26.6¢ | 27.7¢ | 36.5¢ | 32.6¢ |
| Breakeven price (excluding operator's labor and management) | 25.6¢ | 29.5¢ | 19.2¢ | 24.6¢ |

*Based on average income per plant divided by average yield.

Table 3. Estimate of labor requirement per acre by job performed

| Job performed | Man days required |
|---|----------------------|
| Clean out vines of old crop | 10 |
| Land preparation | 3 |
| Fumigate | 3 |
| Preplant fertilization | 1 |
| Plant and first watering | 16 |
| Between planting and beginning harvest: | |
| Place rice hulls on walkways | 8 |
| Tying | 18 |
| Pruning | 34 |
| Pollinate | 45 |
| Fertilizing and watering, etc. | 60 |
| Harvest period | 440 |
| Repairs and maintenance | 260 |
| Total* | 898 |

*Equivalent to 3.45 men working full time.

Compare your operation to the cost of production reported in this publication. The form below is provided for your use.

Your estimate of income and expense for tomato greenhouse production

| | Your estimate |
|---|---------------|
| Income | _____ |
| Cash expense: | |
| Labor | _____ |
| Repairs | _____ |
| Interest | _____ |
| Seeded plants | _____ |
| Fertilizer & chemicals | _____ |
| Supplies | _____ |
| Utilities | _____ |
| Insurance | _____ |
| Delivery expense | _____ |
| Other | _____ |
| Total cash expense | _____ |
| Total income above cash expense | _____ |
| Fixed expenses | |
| Taxes | _____ |
| Depreciation | _____ |
| Interest on investment | _____ |
| Total fixed expense | _____ |
| Income to operator's labor and management | _____ |
| Return as a percent of investment without a charge for operator's labor and management | _____ |

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