KEYS TO PROFITABLE PRODUCTION

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KEYS TO PROFITABLE TOMATO PRODUCTION IN SOUTH AND WEST TEXAS

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The combined value of Texas fresh market and processing tomatoes annually exceeds $10 million. The majority of this production occurs during early spring.

Production Areas and Seasonal Movement

Although tomatoes are grown statewide, most commercial production is located in four areas: South Texas (San Antonio to the Rio Grande Valley); Upper Coast; Central-East Texas; and the High Plains.

Most tomato production in Texas occurs in South Texas, including the Rio Grande Valley and Wintergarden areas. Planting for these areas begins in December in the Valley area and continues through April in the Wintergarden area. Most of the acreage, especially processing tomatoes, is direct seeded. Some fresh market producers transplant either pot-grown plants or bare-root plants. This system, although costly and time consuming, insures earlier production during peak price periods.

Depending on weather conditions and cultural techniques used, peak productions begins from early April to May for the Valley and early June to July for the Wintergarden area. Fresh market production declines during late June in the Valley and late July in the Wintergarden area because of hot temperatures and other environmental conditions. At this time, planting of fall tomatoes gets underway in these areas and continues into September in the Valley. Harvest of the fall crop begins in early November and continues until a freeze ends harvest. Processing tomato types are more tolerant to hot temperatures and can be grown in these areas during most frost-free periods.

Late spring production comes from the Upper Coast, Central and East Texas areas. Plantings in greenhouses and hot beds begin during late January in early areas and continue through February in later sections. Plants are set in fields from early March into April. Earliest plantings are ready for harvest in late May. Crops in Central and East Texas come into production early in June. Peak harvest occurs during the last half of June and early July, with the season ending in August.

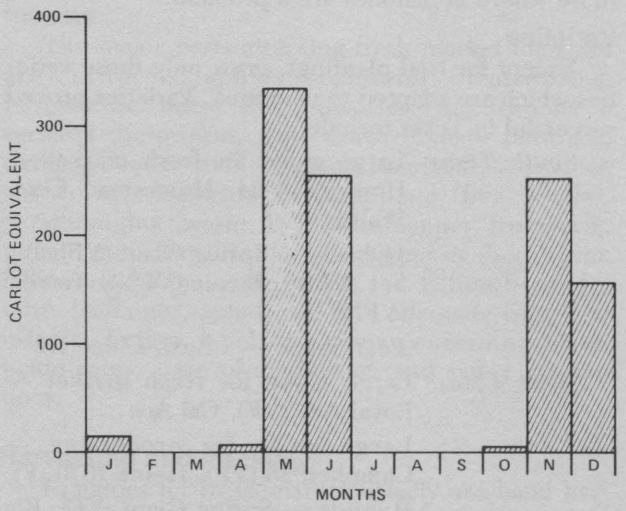

Fig. 1. Average shipments of Texas tomatoes in carlot equivalents by months for the 3-year period 1973-75. Source: Fresh Fruit and Vegetable Shipment Totals, USDA, AMS, Market News Branch, Washington, D.C.

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Production from the High Plains is during summer and early fall. Direct seeding begins in late April and May, providing supplies from late July through September. Figure 1 indicates the seasonal movement of tomatoes to market from Texas production areas.

Climate Requirements

Tomatoes are a warm-season crop, requiring 90 to 120 days from seeding to mature fruit. Best production occurs when temperatures range from 80 to 85 degrees F during the day and 60 to 70 degrees F at night. Day temperatures above 90 degrees F along with night temperatures above 70 degrees F result in blossom drop and poor fruit set, especially in the case of fresh market types; some processor types are somewhat tolerant. Hot, dry winds cause blossom drop and blossom-end rot to occur on developing fruit. Since tomato plants are highly susceptible to frost damage, hot caps sometimes are used to protect early plantings. Areas of high humidity require additional protection to control fruit and foliage diseases. Windbreaks often are desirable in many areas of Texas. Usually a two- or four-row windbreak of corn or grain sorghum between each 12 to 16 rows is adequate.

Soils

Selection of land for tomato production is important. Sandy loam and silty loam soils are best suited for tomatoes, and heavy clay soils should be avoided if possible. Good surface drainage and a permeable subsoil are necessary. Properly levelled fields free of potholes enhance proper irrigation, help drainage and promote uniform maturity. Avoid salty fields and those where nematodes are a problem.

Varieties

Except for trial plantings, grow only those varieties which are adapted to your area. Varieties proved successful in Texas include:

South Texas: Large globe for fresh market — Homestead 24, Homestead Elite, Walter

Hybrids — Spring Giant (VF), Big Set (VFN), Bonus (VFN), Terrific (VFN)

Pear Shape — Chico, Chico III

West Texas: Large globe for fresh market — Royal Ace (VF), Cal Ace

Large globe for processing — Campbell 28 (VF), Heinz 1370 (F)

Hybrids — Spring Giant (VF), Big Set (VFN), Supersonic (VFN)

Pear Shape — Chico III (F, St), Napoli (VF)

Tomato variety performance differs greatly from area to area. The above recommendations are general, and variety testing on the growing site should be conducted periodically.

Fertilization

The amount and kinds of fertilizer to apply for the tomato crop depends on fertility of the soil, organic matter content, moisture supply, season, cropping system, variety and expected returns from the crop. To produce high yields, however, the soil must be well fertilized.

A preplant soil test is strongly advised. Many soils in South and West Texas contain high levels of available potassium; thus potassium fertilization is not usually necessary. Ammonium phosphate is an efficient fertilizer for tomatoes under most conditions. High plant populations require more nutrients per acre before planting. If the plants are to be set close together or if large quantities of fertilizer are used, broadcasting is recommended. If rows are wide apart (4 to 6 feet) moderate amounts of fertilizer will be more effective when banded on each side of the seed or plant row. Bands 3 inches to the side and 3 inches below the seed or plants will concentrate the fertilizer near the plants without burning the seed or damaging plant roots. Ammonium phosphate (16-20-0) at the rate of 300 to 400 pounds per acre is a sufficient preplant rate.

Direct-seeded tomatoes show more early vigor when phosphate is banded beneath the seed. Apply 60 to 100 pounds of P_2O_5 per acre in a band 2 to 3 inches directly below the seed at planting time. Do not band potassium or nitrogen directly below the seed.

Nitrogen sidedressing is recommended. For determinate varieties such as Spring Giant, Big Set, Royal Ace, Chico III, Saladette and Small Fry, sidedress 40 to 60 pounds of actual nitrogen when the first blooms appear. A second sidedressing of 30 to 40 pounds of nitrogen after fruit set has begun will usually produce more fully sized fruit. For indeterminate varieties such as Terrific, Supersonic, Better Boy and Bonus, apply the first nitrogen sidedressing when fruit set has begun. Two or more additional sidedressings 2 to 3 weeks apart help these vigorous hybrids reach full yield potential. Growers must use good judgement in fertilizing tomatoes. Plants should never be allowed to show nitrogen deficiency.

Planting

Tomatoes are normally planted one row per bed on 36- or 40-inch centers at the rate of 1 pound of seed per acre. Seeding and phosphate banding should be one operation to insure proper placement and seed depth. Seeds usually are planted ¾ to 1 inch deep in moisture, whereas ½ to ¾ inch deep is sufficient when the crop is to be watered up. Always use good quality, treated seed.

Thin plants of processing or small-fruited types to 14 to 16 inches apart when they are 4 to 6 inches tall.

Fresh market variety types may be easier to harvest if a plant spacing of 36 to 40 inches is used and every other row planted.

For August transplanting in South Texas, the plants should be 4 to 5 inches tall. For spring transplanting, larger plants (5 to 8 inches) may be used to promote earlier harvest. Following transplanting, two or three irrigations at 3- to 5-day intervals are required. A sidedressing of 20 to 30 pounds of nitrogen applied about 10 days after transplanting is recommended to promote vigorous plant growth.

Irrigation

A direct-seeded tomato crop requires 12 to 16 inches of water per acre. Most tomatoes are planted in moist soil or planted dry and irrigated up. An irrigation usually is needed after thinning or blocking when seedlings are 4 to 6 inches high. The most critical time for ample soil moisture is during bloom and early fruiting stages. Moisture stress during this period may result in poor fruit set or development of blossom-end rot. If water is needed after harvest begins, apply it in every other furrow to allow harvesting to continue.

Weed Control

Applications of Enide®, Dymid®, or Prefar® at the rate of 4 to 6 pounds per acre, and Eptam®, Vernam® or Tillam® at the rate of 3 to 4 pounds per acre incorporated 2 to 3 inches deep, will control most weeds. Use Dacthal®, Treflan®, Amiben®, Eptam or Tillam applications after transplanting or thinning but before weeds emerge. Use recommended amounts for best control without plant damage: Dacthal — 4 to 10 pounds active chemical (ac) (30 to 40 pounds granular); Treflan — .5 to 1 pound ac (1 to 2 pts. EC); Amiben — 3 to 4 pounds ac (30 to 40 pounds G); Eptam — 3 pounds ac; and Tillam — 3 to 6 pounds ac.

Cultivation

Avoid deep cultivation because this results in root pruning and a loss of soil moisture. Large cultivator knives, 18 to 22 inches long, may be mounted on cultivator legs for shallow cultivation under plants after they are down.

Diseases

Many diseases threaten tomato production in Texas. In fact, disease and its control during humid, rainy periods is a limiting factor of South Texas tomato production. Diseases may affect the entire plant or only the foliage or the fruit.

Crop rotation and resistant varieties help prevent soil-borne diseases such as Fusarium, Verticillum wilt, southern blight and bacterial blight. Cultural techniques such as caging, staking or mulching tend to lessen damage from soil-borne fungi by keeping tomato fruit dry and free from soil contact.

The soil should be fumigated before planting to control root knot and other nematodes if resistant varieties are not used. For transplant production, the seedbed should be fumigated with steam, methyl bromide, formaldehyde or chloropicrin to control nematodes and soil-borne diseases. Another method is to grow the plants in a sterile, artificial medium such as peatlite.

Disease-free seed, grown in areas where diseases are not prevalent and treated with a proper fungicide, helps control damping off and bacterial spot.

Drenching transplants with fungicides such as Captan® or a fixed copper will control diseases in the seedling stage.

A regular spray program is necessary to control foliage diseases such as late blight, early blight, gray leaf spot, leaf mold and anthracnose. Fungicides such as maneb (various formulations), Polyram, Dyrene, Captan, Zineb and copper-containing fungicides — applied at recommended rates in enough water to obtain good coverage — should be applied at 10- to 14-day intervals. Begin applications at bloom and continue until shortly before harvest. Spreader-stickers added to the spray solution help to obtain better coverage. Always check the product label for recommended rates.

Adequate watering and fertilization at proper intervals will reduce losses caused by physiological disorders such as leaf roll, blossom-end rot, sunscald and growth cracks.

Excessive handling and cultivation increases the spread of certain virus diseases such as mosaic. Proper weed and insect control will minimize the spread of other virus diseases.

Insects

The major pests attacking fresh market tomatoes are cutworms, aphids, leafminers, fruitworms, hornworms, mites and pinworms. Applications of carbaryl (hornworm, fruit worm, tomato pinworm, darking beetle, stink bug, tomato suckfly), diazinon (cutworms, leafminers), toxaphene (flea beetle), parathion (hornworm, Psyllid leafhopper, fruitworm, tomato pinworm), *Bacillus thuringiensis* (hornworm, fruitworm, tomato pinworm), or Ethion® (spider mite, leafminer, aphid) will give adequate control of insects. Follow label directions concerning insecticide rates, time of application and safety precautions.

Harvesting and Packing

Tomatoes for fresh market usually are hand harvested. Green-wrap tomatoes are harvested when they are full size but have no pink color. Vine-ripened tomatoes are picked when they "break," or when the stem end begins to change from green to light pink. The tomatoes are placed in field containers for transporting to a grading station or a packing shed. Then

they are cleaned, graded, sized and packed in wooden or fiberboard boxes containing 20 to 40 pounds of fruit. The containers are moved to market in refrigerated cars or trucks.

Marketing

Most Texas-grown tomatoes sell on the open market at prevailing prices. Some producers sell directly to local retail stores. Little contracting of Texas tomatoes is practiced.

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