

KEYS TO PROFITABLE FRESH MARKET CUCUMBER PRODUCTION

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Texas fresh market cucumbers averaged \$1.6 million per year from 1965-70 with an average of 2,400 acres in spring production and 2,000 acres in fall production. In 1970, fresh market cucumbers comprised 2.3 percent of the acreage and 1.2 percent of the value of the Texas vegetable industry.

Production Areas

Fresh market cucumbers are grown statewide, but the major producing areas are the Lower Rio Grande Valley, Coastal Bend and Winter Garden area. Early spring planting begins in the Rio Grande Valley and continues northward through March. Harvesting in the Rio Grande Valley begins in late April with production from other areas beginning during May.

Late summer and early fall planting begins in the latter half of June and continues into August. Earliest harvest is in the High Plains and furnishes production the latter half of July. Supplies from the Winter Garden are available in September and from other areas in October with production continuing until frost.

Seasonal Movement

The movement of fresh market cucumbers, figure 1, shows that the peak spring production period occurs during May and June; fall production is from September through November.

Climatic Requirements

Cucumbers are a warm-season crop and are susceptible to frost damage. Best quality and production require temperatures ranging from a high of 90 degrees F. during the day to the high 60's at night. Low humidity is more favorable to cucumber production because of the lower incidence of foliar diseases. Under favorable growing conditions, fresh market cucumbers may be harvested within 60 days of seeding. Extremely high temperature may cause bitterness in many cucumber varieties.

Soil Types

Cucumbers can be produced successfully on almost any well-drained and fertile soil type. Light, sandy loam soils are preferred for early spring production because they "warm up" quicker in the spring. Soils infested with nematodes should be treated with a nematocide before planting.

Land Preparation

Plowing, disking (often redisking to break clods) and land planing to maintain a correct slope for irrigation and drainage are important in preparing land for cucumber production. The soil is listed into beds 36 to 40 inches on center and flattened or shaped just before or at planting.

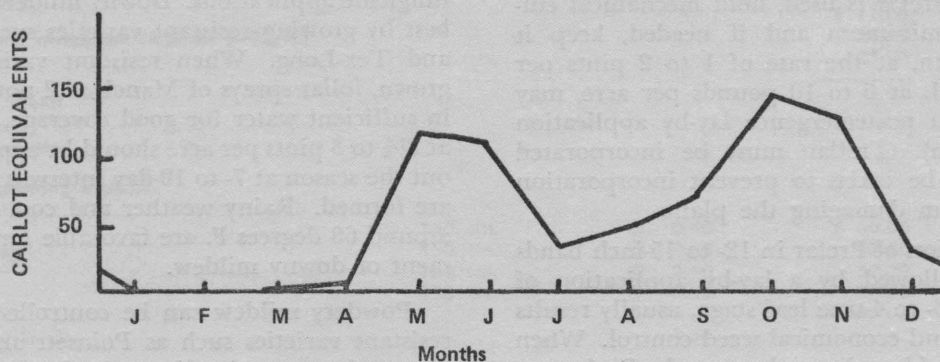


Fig. 1. Average Texas fresh cucumber unloads from the 41 major U. S. cities, in carlot equivalent by months, 1965-69.

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Fertilizing

Cucumbers grow quickly and need a good moisture and nutrient supply to keep them growing vigorously. Generally, fresh market cucumbers are harvested over a relatively short time; thus fertilizer requirements are specific. Cucumbers require about 40 to 50 pounds an acre of nitrogen and 80 to 100 pounds per acre of P_2O_5 . With the exception of the East Texas area, potassium usually is not required. All the phosphorus should be banded 4 to 6 inches below the seed before planting. Side-dress 20 to 25 pounds an acre of nitrogen at first bloom. Additional nitrogen should be applied in the irrigation water later if the plants show need.

Varieties

Poinsett and Ashley are the two major fresh market cucumbers produced in Texas. New hybrids and varieties are being continually introduced. Those with desirable disease resistance warrant trial. Since hybrid varieties often are faster growing than open pollinated varieties, they require more frequent harvesting. Some of the disease-resistant new varieties which show promise are Gemini, Cherokee and Tex-Long, the latter being well adapted to dryland growing conditions.

Planting

Always use good quality, treated seed. Cucumbers usually are seeded in single rows at the rate of 2 to 3 pounds per acre at depth of $\frac{3}{4}$ to 1 inch. Row spacings vary from double rows on 72- to 80-inch beds to single rows on 36-inch centers. Final plant spacing should be 6 to 8 inches apart on irrigated land and 15 to 18 inches on dry land. The thinning operation should be done when plants reach the four-leaf stage.

Weed Control

A preplant application of 4 to 6 pounds per acre of Prefar incorporated 1½ to 2 inches deep assures early control of most annual grasses and weeds. When Prefar is used, hold mechanical cultivation to a minimum and if needed, keep it shallow. Treflan, at the rate of 1 to 2 pints per acre, or Dacthal, at 6 to 10 pounds per acre, may be applied as a postemergence lay-by application (last cultivation). Treflan must be incorporated and care must be taken to prevent incorporation implements from damaging the plants.

An application of Prefar in 12- to 15-inch bands at planting, followed by a lay-by application of Treflan at the 3- to 4-true leaf stage, usually results in satisfactory and economical weed control. When the primary problem is careless weeds, Prefar applied to the soil surface after planting (not mechanically incorporated) followed by furrow irrigation may prove beneficial.

Irrigation

Cucumber plants require a constant supply of adequate moisture and supplemental irrigation usually is required for maximum yields. Normally three to four irrigations are sufficient, depending on the soil type and rainfall. Light, frequent irrigations are best, since cucumbers are shallow rooted.

Pollination

Cucumber vines have both male and female flowers and require pollination by insects. Lack of pollination causes small fruit to turn yellow and drop from the vine. Inadequate pollination causes misshapen fruit. It is profitable to use a strong colony of bees for each 1 to 2 acres of cucumbers. The hives should be on the windward side of the field by the time the first blooms appear. Bees must carry the pollen from the male flowers to the female flowers. Most varieties have a ratio of six to ten male flowers to each female flower.

Insects

Major pests of cucumbers are aphids, squash bugs, cucumber beetles, cutworms, spider mites, leaf hoppers, leaf minors and pickleworms. Applications of Sevin at 1 pound per acre will control cucumber beetles, pickleworms and squash bugs. Parathion at 0.25 pound per acre will control aphids, cutworms and leaf hoppers but should not be applied within 7 days of harvest. Leaf miners and spider mites can be controlled with Parathion at the above rate or Ethion at 0.5 pound per acre. Apply all insecticides in late afternoon to prevent injury to bees. If the wind is blowing across the field toward the hives, remove bees to a safe distance. *Read and follow label directions concerning pesticide rates, time of application and safety precautions.*

Diseases

Cucumber diseases are controlled best by a combination of practices, which includes growing resistant varieties, crop rotation and preventive fungicide applications. Downy mildew is controlled best by growing resistant varieties such as Poinsett and Tex-Long. When resistant varieties are not grown, foliar sprays of Maneb at 2 pounds per acre in sufficient water for good coverage, or Difolatan at 2½ to 3 pints per acre should be applied throughout the season at 7- to 10-day intervals after runners are formed. Rainy weather and cool temperatures around 68 degrees F. are favorable for the development of downy mildew.

Powdery mildew can be controlled by growing resistant varieties such as Poinsett and Tex-Long, or spraying once the disease is observed at 7- to 10-day intervals with Karathane at 1 pound per acre. Optimum temperature for infection of powdery mildew is 80 to 90 degrees F.

Angular leaf spot can be controlled by spraying when the first symptoms are visible by using a mixture of Zineb (2 pounds per acre) and fixed copper (3 pounds of metallic copper per acre) at 7- to 10-day intervals.

If cucumbers are to be planted in nematode-infested land, soil fumigation before planting may be required. No effective control of virus diseases has been developed; control of insect vectors may reduce damage.

Harvesting and Handling

Generally, cucumbers are harvested every other day but under ideal growing conditions, daily harvest may be warranted. Cucumbers are harvested by hand, placed in field bags and hauled to packing sheds where they are washed, hydro-cooled, waxed, graded and packed in fiberboard cartons which hold 50 pounds. Then they are shipped to market in refrigerated cars or trucks and sold at prevailing market prices.

Slicing cucumbers should be firm, straight, uniformly smooth and deep green. The desired length is 6 to 8½ inches, with a diameter of 1½ to 2¼ inches.

Cost and Returns

Table 1 shows the estimated costs and returns of Texas cucumbers on a per acre basis.

Cash expenses, land and overhead cost estimates a total of \$176.06 per acre. The figures represent an average for South Texas, but may vary because of area and season.

Table 2 shows the cost of producing and marketing cucumbers per 50-pound carton. Harvesting and marketing costs per acre vary with yield. The

Table 2. Cost of producing and marketing a 50-pound carton of Texas cucumbers as influenced by marketable yield

Yield - cartons per acre	Production	Harvesting, packing, selling	Total F.O.B.
100	\$1.76	\$1.50	\$3.26
150	1.17	1.50	2.67
200	0.88	1.50	2.38
250	0.71	1.50	2.21
300	0.58	1.50	2.08
350	0.50	1.50	2.00
400	0.44	1.50	1.94

Table 1. Estimated costs and returns per acre of irrigated South Texas fall cucumbers—1970

	No. of units and value per unit		Value or cost	
Production receipts	150 ctn.	@ 3.15		\$472.50
Cash expenses				
Tractor equipment	13 hrs.	@ 0.80	\$ 10.40	
Tractor labor	15 hrs.	@ 1.50	22.50	
Other labor (irrigation, hoe, etc.)	15 hrs.	@ 1.50	22.50	
Seed	2 lbs.	@ 2.50	5.00	
Insecticide	4 applications	@ 2.00	8.00	
Herbicide Prefar	1 gal.	@ 11.00	11.00	
Fertilizer (40-80-0)	120 lb.	@ 0.11	13.20	
Fungicide	2 applications	@ 4.00	8.00	
Bees—rent	0.4 hives	@ 5.00	2.00	
Irrigation water	3 applications	@ 3.00	9.00	
			\$111.60	
Interest on operating capital @ 8% for 6 mo.			4.46	
Total				\$116.06
Land expenses				
Taxes			\$ 11.00	
Interest on land investment (6% on \$400/A.)			24.00	
Overhead			25.00	
Total				60.00
Total production expenses				\$176.06
Harvesting and marketing expenses				
Harvesting	150 ctn.	@ 0.40	\$ 60.00	
Packing-grading	150 ctn.	@ 0.45	67.50	
Paper carton	150 ctn.	@ 0.40	60.00	
Selling	150 ctn.	@ 0.25	37.50	
Total		1.50		\$225.00
Total expenses				\$401.06
Return to management				\$ 71.44

production cost per carton decreases with higher yield, while harvesting and marketing costs per carton remain the same. Selling costs generally average about 10 percent of the f.o.b. price received.

Figure 2 shows the f.o.b. price per carton necessary to break even at various yields. The curve in figure 2 can be used by individuals to estimate potential returns based on expected yield and price.

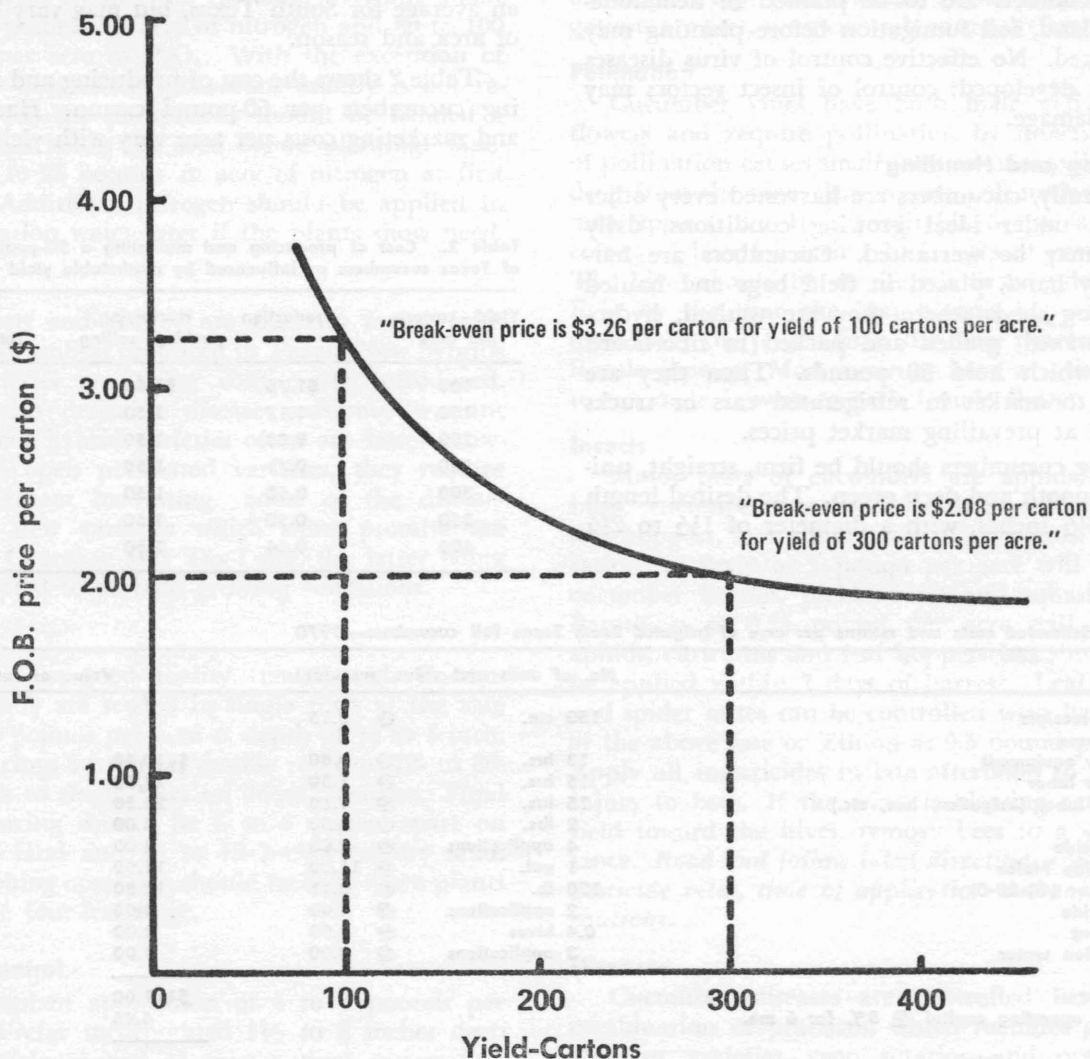


Fig. 2. Selling price of cucumbers f.o.b. per 50-pound carton required to break even at given yields. Based on cost figures in Table 1.