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KEYS TO PROFITABLE PRODUCTION

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KEYS TO FRESH MARKET CUCUMBER PRODUCTION

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Texas fresh market cucumbers in 1977 brought a farm value of $8.6 million from 8,600 acres (2,900 spring, 1,600 summer and 4,100 fall). Fresh market cucumbers comprised 2.6 percent of the state's vegetable acreage and 3.1 percent of the value. The 8,600 acres harvested during 1977 compare with 6,700 acres in 1976 and 6,250 acres during 1975. Total United States acreage in 1977 was 56,540.

Production Areas

Fresh market cucumbers are grown statewide, but the major production areas are the Lower Rio Grande Valley, Coastal Bend, Winter Garden and High Plains areas. Early spring planting begins in January in the Rio Grande Valley and continues northward through April. Harvesting in the Rio Grande Valley begins in early April with production from other areas beginning during May from spring plantings and continuing through June.

Late summer and early fall planting begins in the latter half of May and continues into August. Harvest begins in the High Plains in July and furnishes cucumbers through September. Supplies from the San Antonio-Winter Garden area are available in Sep-

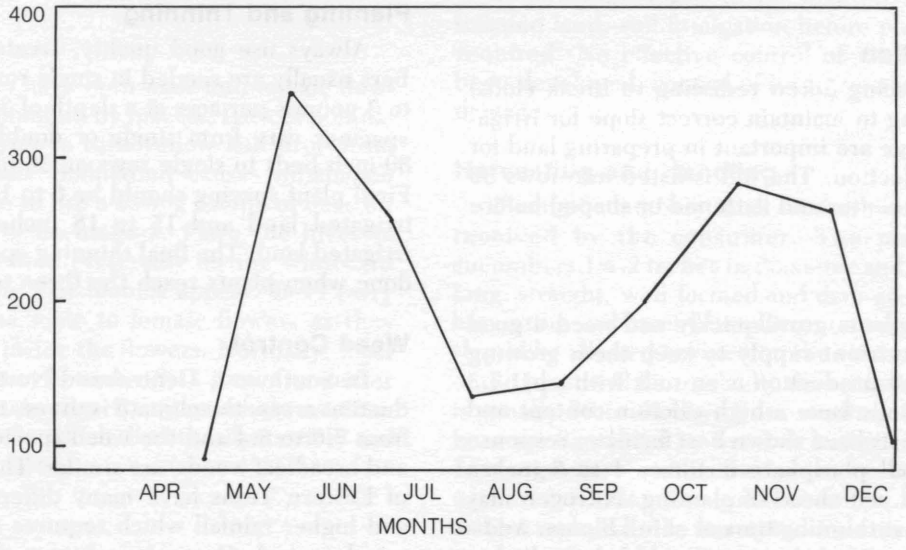

Fig. 1. CUCUMBERS — TEXAS SEASONAL SHIPMENTS IN CARLOT EQUIVALENTS BY MONTHS FOR 1977. (Source: Market News, USDA)

*Respectively, Extension horticulturist — vegetables, area extension vegetable specialist, and Extension horticulturist — vegetables.

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tember and from other southern areas in October with production continuing until frost in December.

Seasonal Movement

The shipments of fresh market cucumbers, figure 1, show 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 plants are injured by frost or cold winds. Best quality and production require day temperatures ranging from 80° to 90°F and night temperatures of 60° or 70°F. Low humidity is more favorable to cucumber production because of the lower incidence of foliar diseases. Under favorable growing conditions, cucumbers may be harvested within 60 days of seeding. Temperatures below 60°F will delay growth by 10-15 days to maturity. Extremely high temperatures (93°F and above) may cause bitterness of the fruit.

Soil Types

Cucumbers can be produced successfully on almost any well-drained and fertile soil. Light, sandy soils are preferred for early spring production because they "warm up" quicker in the spring; where heavy yields are most important, a good loam or clay loam is preferred. Soils infested with nematodes should be treated with a nematocide before planting. Cucumbers will tolerate fairly acid soils of 5.5 pH, but most Texas production areas have soils of pH 7.5 to 8.4.

Land Preparation

Plowing, discing (often rediscing to break clods) and land planing to maintain correct slope for irrigation and drainage are important in preparing land for cucumber production. The soil is listed into rows 36 to 48 inches on center and flattened or shaped before or at planting.

Fertilizing

Cucumber plants grow quickly and need a good moisture and nutrient supply to keep them growing vigorously. Most production is on soils with a pH 7.5 to 8.4. These soils have a high calcium content and experimental tests have shown best fertilizer response from banding all phosphate fertilizer 4 to 6 inches below the seed just ahead of planting. Nitrogen may be sidedressed at thinning time or at full bloom. Additional 30 to 40 units of nitrogen should be supplied in irrigation water as plants show the need.

Total nutrient requirements on high pH soils range from 40-60-0 to 70-100-0. Experimental results show no response to potassium fertilization in highly calcareous soils. On sandy soils, nutrient requirements range from 60-60-30 to 90-120-60 where potassium and additional nitrogen are beneficial.

On deep sandy soils with pH 7.0 or below, a balanced fertilizer such as 10-20-10 may be broadcast or banded into the soil before planting at rates of 300 to 600 pounds per acre. Additional nitrogen sidedressing may be needed about the time of first harvest. No minor elements have shown to be economically feasible for cucumbers. Foliar feeding is a very expensive way to apply nutrients.

Varieties

Select the variety or hybrid that possesses the best performance record in the area and one which has disease resistance. Cucumber plants have both male and female flowers on the same plant. The open pollinated varieties have a ratio of about 6 to 10 male flowers for each female flower. Only female flowers can produce fruit. Some hybrids have a ratio of 2 to 6 male to female flowers. Gynoecious hybrids have nearly all female flowers and therefore produce a heavier, early crop; seed of a pollinator variety must be planted with gynoecious hybrids to provide pollen from male flowers. Bees are a must for cucumber production.

Recommended Varieties

OPEN POLLINATED	HYBRIDS
Ashley	Cherokee
Crackerlee	Explorer
Palomar	Gemini
Poinsett	
Tex-long	

Planting and Thinning

Always use good quality, treated seed. Cucumbers usually are seeded in single rows at the rate of 2 to 3 pounds per acre at a depth of 3/4 to 1 inch. Row spacings vary from single or double rows on 72- to 80-inch beds to single rows on 36 to 40 inch centers. Final plant spacing should be 6 to 10 inches apart on irrigated land and 15 to 18 inches apart on non-irrigated land. The final thinning operation should be done when plants reach the three to four leaf stage.

Weed Control

In Southwest, Central and Northwest Texas production areas, the climate is dryer, the soil pH ranges from 7.0 to 8.4 and the weed species (annual grasses and broadleaf weeds) are similar. The acid, sandy soils of Eastern Texas have many different weed species and higher rainfall which requires more attention to weed control. Cucumbers have a shallow, spreading root system. Hold mechanical cultivation to a minimum and when needed, keep it shallow.

In South, Central and West Texas use Prefar applied as a pre-emergent treatment to the soil for controlling certain weeds and grasses listed on the chemical label. 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. Incorporation depth should be limited to 2 to 3 inches and is more thoroughly mixed with dry soil. In East Texas sandy, acid soils use a combination of 2 to 4 pounds Alanap liquid plus 4 to 6 pounds Prefar as a tank mix per acre incorporated pre-emergent to the crop and weeds.

After the cucumber plants have emerged, 6 to 10 pounds of W-75 Dacthal per acre or ½ to 1 pound of Treflan per acre may be applied as a directed spray to the soil between cucumber plants. Use lower rates in sandy soils. Dacthal requires 50 to 60 gallons of water per acre plus good tank agitation to get adequate mixing and soil coverage. Treflan may be applied in 10 to 20 gallons of water per acre but must be disced or incorporated into the soil.

An application of Prefar in 12 to 15 inch bands at planting, followed by a lay-by application of Treflan or Dacthal when cucumbers have 4 true leaves, usually results in satisfactory and economical weed control. When careless weeds are a serious problem, Prefar applied to the soil surface after planting followed by furrow sub-irrigation may prove more beneficial than 3 inch incorporation.

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. Place the hives in groups around the field preferably on the windward side by the time the first blooms appear. Bees carry the pollen from the male to female flowers as they collect nectar from inside the flowers. Normally, most bee pollination occurs between 8-11 a.m. Cucumber flowers open only one day. Rainy or windy weather reduces insect activity which directly affects yield and quality 5 to 7 days later.

Insects

Major pests of cucumbers are aphids, squash bugs, cucumber beetles, 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 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. 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°F are favorable for the development of downy mildew.

Powdery mildew can be controlled by growing resistant varieties 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°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

Slicing cucumbers must be fresh and crisp when received by the consumer. The market desires cucumbers 1½-2 inches in diameter and 6 to 10 inches long, straight, well-formed and dark green. Frequent harvesting and careful handling are required. No fruit should be allowed to ripen on the vine as further yield of the plant will be markedly decreased. First harvest is usually 60 to 65 days from seeding. Fresh cucumbers are harvested by hand in baskets or field sacks. Large growers utilize tractor-drawn conveyor belts as harvest aids. The pickers follow the conveyor on foot and place the harvested fruit directly onto the conveyor belt, which moves the fruit into boxes on towed wagons or trucks. The trucks then haul the produce to packing sheds where the tote boxes are unloaded with fork-lifts.

Grading and Packing

Slicing cucumbers are graded on the basis of size, shape and general appearances. U.S. Fancy, U.S. No.

1 and U.S. No. 2 are the standard grades. Some defects of fruit are misshapen, lack of green color, tapered fruit, insect or disease damage, shriveling and size. Slicing cucumbers are packed in waterproof cardboard cartons after being cleaned and waxed. Cartons are placed in refrigerated holding rooms, then shipped by refrigerated trucks to distributor warehouses.

Marketing

Cucumbers are commonly shipped to distant markets under refrigeration, primarily by trucks. Competition among buyers is very keen and sales made on price per carton depending on the grade, size of lot and product availability. Per capita consumption of slicing cucumbers in the U.S. has increased from 7 pounds in 1960 to 9 pounds during the mid-70's.

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