

FACT SHEET

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KEYS TO PROFITABLE AVOCADO PRODUCTION

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Avocado production in the Lower Rio Grande Valley is a small, profitable industry with promise for rapid expansion. About 400 acres of commercial avocados are in the area, with incomes commonly up to \$1,000 per acre. Approximately 30,000 U. S. avocado acres are concentrated mostly in southern California and southern Florida. Land in these areas is limited and expensive (\$2,500 to \$4,500 an acre), but the Lower Rio Grande Valley has large areas of good land for \$500 to \$1,000 per acre.

As production for avocados increases, South Texas has the potential to become important in production because of land availability and nearness to established avocado markets. San Antonio and Dallas are the third and fifth ranking markets for avocados in the U. S.

LAND AND WATER REQUIREMENTS

Soils of the Lower Rio Grande Valley vary widely, ranging from deep sandy loams to heavy clays. The best avocado soil is a deep, well-drained sandy loam with no impervious clay layers in the sub-soil. Poorly drained soils require tile drainage for satisfactory avocado production.

Leveled land generally is better for avocado production because of increased efficiency of irrigation and other cultural practices. Slow growth rates sometimes occur on leveled land, when fertile top soil is removed and young trees are planted in an exposed sub-soil. In such cases, it takes several years for trees growing in the cut areas to achieve the growth of those growing in the fill. For best

results, each pan should have no more than a 2-foot fall before leveling operations begin.

To lessen these surface deficiencies, some growers make use of undercutting. All topsoil is moved to one side of the field and only the sub-soil is leveled. Once this operation is complete, the topsoil is replaced evenly, leaving a relatively uniform planting site.

AVOCADO RACES

West Indian race. Characterized in the Lower Rio Grande Valley by fast-growing trees that are salt tolerant and cold tender (29-31 degrees F). The large (10-30 ounce), sweet-flavored fruit has a big seed, thick peel and matures from mid-August through October. Fruit will range from green to purple, depending on variety. Most commercial varieties of this race are produced in Southern Florida.

Guatemalan race. Characterized in the Lower Rio Grande Valley by fast-growing trees that are salt tolerant and intermediate in cold hardiness (25-29 degrees F). The fruit, which matures from October through January, is sweet to nutty flavored, variable in size (6-30 ounces), has a thick rind and small seed. The foliage appears leathery and fruit color ranges from green to black, depending on variety. Commercial types of this race are produced in California and Florida.

Mexican race. This race must be grafted onto West Indian or Guatemalan rootstock to be grown in the Lower Rio Grande Valley because its own roots are intolerant of salt and the high soil pH of the area. Grafted trees are fast growing, salt tolerant and cold hardy (20- 25 degrees F). The Mexican avocado matures from June through September, is nutty-flavored, variable in size (2-10 ounces)

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and has a large seed and thin skin. Fruit color ranges from green to black, depending on variety. Its thin skin makes it susceptible to anthracnose, a fungus disease, which rots the avocado, making it unmarketable. The foliage is small compared to other races and has an anise (licorice) odor when crushed. Commercial production is limited to California.

VARIETIES

Avocados belong to one of three races or are hybrids of them. The only variety currently recommended for commercial production in the Lower Rio Grande Valley area is the Lula (West Indian x Guatemalan hybrid), because of its consistent yields, cold hardiness and tree vigor. The fruit is green, pear-shaped and can be harvested from mid-September to February. Harvesting later than January 10 causes reduced production the following season. California, the major avocado producing state, has a limited supply of fruit from September through December, which leaves an excellent market for Texas fruit. Yield records show the fruit averages about 12 ounces in weight. Six-year-old trees have produced an average of 95 pounds per tree. Lula fruit ripens uniformly (usually around September 15) and may be picked immediately or stored on the tree through January. Mexican race avocados, on the other hand, mature individually and must be picked upon maturity, otherwise they will drop from the tree.

Mexican avocado strains are more cold hardy, but they should not be planted in commercial blocks because of their high susceptibility to anthracnose. If an economical means of anthracnose control could be found, the Mexican strains could be grown on a commercial basis in the Lower Rio Grande Valley and in colder areas of South Texas. Several Mexican varieties are satisfactory for landscape plantings.

ROOTSTOCKS

Because of the salt content of the Lower Rio Grande Valley water, avocados must be grown on West Indian rootstock or West Indian-Guatemalan hybrids, otherwise they are short-lived and poor producers. *Trees produced in California should not be planted in South Texas* since California nurseries use Mexican rootstock. Also, many of the better California varieties will not produce well in the Lower Rio Grande Valley.

PRODUCTION PRACTICES

Spacing. The recommended spacing for avocados is 15' x 25', about 116 trees per acre. Tighter spacings crowd by the fourth or fifth year. Increased income from additional trees will be offset by higher costs.

Plantings. In planting a new avocado orchard, bury the graft union about 1 to 2 inches deep. Although not recommended for other fruit crops, this allows the tree to sprout from the grafted top rather than the seedling rootstock following a freeze.

Windy conditions and high temperatures in this area require young trees to be shaded the first year in the field. For more complete details, see MP-974, *Planting and Care of Avocado Trees, Lower Rio Grande Valley*, available from your county Extension agent.

Fertilization. Nitrogen is the only major element required by the Lower Rio Grande Valley avocado trees, although small trees often have an iron deficiency during their establishment period. A soil application of iron chelate is the most effective way to correct iron chlorosis. Bearing groves require 100 to 150 pounds of nitrogen per acre annually during January.

The fertilization of non-bearing trees requires three applications per year for the first 2 years at the rate of $\frac{1}{8}$ pound nitrogen per tree in February, May, and September. Three and 4-year-old trees should receive $\frac{1}{4}$ pound of nitrogen in February and May.

Tree age	Total pounds actual nitrogen per acre applied per year
4	50*
5	75
6	100
7	100
8	125
9	125
10 & over	150

*To be applied in January or early February.

Weed control. Weed control in most avocado plantings in the Lower Rio Grande Valley is accomplished by mechanical cultivation. Practiced as needed, five to eight diskings a year usually amount to one more than the number of irrigations applied. Avoid cultivation in December and January because of increased possibility of freeze injury. Although growers are currently experimenting successfully with chemical weed control, no recommendations can be made at this time.

Spray program. Although minor insects and diseases are occasionally found on the Lula variety, no spray program is currently employed in commercial groves. As the acreage increases, pests may also increase and make spraying necessary. Until economic damage occurs, however, growers are encouraged to withhold sprays and rely on biological controls.

Mexican strains are severely infested with anthracnose at maturity, but no economical control has yet been developed. Should a control be developed, these varieties would require spraying for commercial productions.

Pruning. The only pruning required in avocado planting is topping trees too tall for ease in harvesting. Cutting the tops back to 20 feet after about 5 to 7 years is usually necessary. Thereafter, topping is required every other year.

Irrigation and drainage. Inadequate rainfall in South Texas makes irrigation the most important single factor in avocado production. Five to seven irrigations are required per year in flood irrigation to achieve optimum fruit set and tree growth. Late

spring and summer normally are the most critical irrigation periods. Grove owners have to acquire additional water over their allotment for their land, to have sufficient irrigation water. Trials indicate that trickle irrigation is well adapted to the high value crop of avocados.

Adequate drainage is very important in avocado plantings; standing water or accumulated salts will kill avocados. If drainage problems arise a careful study should be undertaken, and the proper drainage system installed before permanent damage occurs.

Cold protection. One major advantage of avocados is that mature trees can be frozen to the ground and still return to full production within a few years. The Lula variety will sustain its first leaf injury at 27 degrees F and be killed to the ground at 20 degrees F. When bud unions are buried at planting, however, these trees will produce new tops and bear fruit the second year after a freeze. The infrequency of hard freezes in the Lower Rio Grande Valley causes cold protection to be economically questionable. The fruit is undamaged at temperatures as low as 24 degrees F.



Although such a temperature will injure leaves and small twigs or kill a young tree, the heavy expense of trying to protect one year's production with current technology is prohibitive.

Marketing. Most plantings are not yet in production, but much interest has been expressed by

citrus shippers to buy Valley-grown avocados for shipment to other areas.

Before large-scale plantings mature, growers should meet and consider the available marketing alternatives. This may help them to realize their crops' full economic potential.

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