

WALNUT PRODUCTION IN MERCED CO. - 1968

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CALIFORNIA AREAS OF PRODUCTION

In California in 1953 the walnut industry was strong in southern California as well as in the central valleys of California. Now the San Joaquin Valley is the center of walnut production in California. The following chart indicates changes which have taken place from 1953 to 1966.

TABLE I
 AREAS OF WALNUT PRODUCTION

Area	% of Acreage in State		
	1953	1963	1966
Area 1 - San Joaquin Valley	29	43	45
Area 2 - So. California	28	10	7
Area 3 - Central Coast	21	16	15
Area 4 - Sacramento Valley	13	20	23
Area 5 - No. Coast	8	10	9
Other	1	1	1
Total Acreage	137,614	163,321 (48.7%)	168,960 (22.8%)

*Production Areas and Acreage trends of Calif. Fruit and Nut Crops - U.C.A.E.S. and California Crop and Livestock Reporting Service.

MERCED COUNTY PRODUCTION AREAS

Walnut production in Merced County is centered in the Gustine area, primarily west of Highway 33 from Romero School to Newman. Smaller acreages are located south and west of Los Banos and in the Planada and Le Grand areas.

In 1967 Merced County had 5912 acres bearing and 1828 acres non-bearing English walnuts. In addition there were 105 acres non-bearing black walnuts which could be considered rootstock for English walnuts. A realistic non-bearing walnut acreage would therefore be 1933 acres, or about 1/4 of our total acreage.

SOILS

The best walnuts are grown on Sorrento or Mocho loams, clay loams, and sandy loams. Some gravelly soil types are planted to walnuts which do fairly well at a closer spacing than would normally be used on a good loam.

Walnuts are deep rooted requiring at least 12 to 15 feet of soil above a water table. Only very slight amounts of alkali are tolerated.

Soils such as Rincon, Lost Hills and Orestimba which have clay layers or zones in the subsoil are poorly suited to walnut production.

These layers impede water and cause root rot and collar rot.

IRRIGATION

The bulk of westside walnuts are irrigated by furrows using water from the C.C.I.D. Canals. Some wells are used and a few orchards are flooded in contour checks or sprinkled.

With furrow irrigation, 9 to 15 furrows are used per middle. In recent years the trend has been to wide bottom furrows which are about 2 feet wide. This puts more surface under water with the convenience of furrow irrigation.

Many growers chisel or subsoil with the shanks set at a close spacing. This is done in the fall after harvest or before irrigations. This practice helps water penetration and seems to not injure the root system if done with care.

VARIETIES

Merced County is a Payne or Payne-type area. It is possible to produce 3 tons of in-shell, dry Paynes per acre. Some new varieties which apparently will equal Payne's production are Ashley, U.C. 52-48, U.C. 52-61, and Marchetti.

Hartley does best in an area which has cool, moist weather during pollination. Gustine is not such an area. Eureka is a trouble-free variety which often produces a ton per acre but only rarely will produce two tons. Franquette types are poorly adapted in this area.

ROOTSTOCKS

The primary rootstock used in Merced County is the Northern California black walnut, Juglans hindsii. It is a vigorous, productive rootstock which is propagated from black walnut seed. Orchard trees may originate from field planted seed, nursery started seedlings or nursery budded seedlings. Northern California black is sensitive to heavy or wet soil conditions and to lesion nematodes, but it is quite resistant to oak root fungus.

Hybrid, or paradox hybrid rootstock, J. hindsii X J. regia is a fairly common rootstock which amounts to 10% or less of our total plantings. It is propagated from black walnuts which are pollenized by the English walnut. Some black walnuts produce 50% to 75% hybrid seedlings. The value of the hybrid is its resistance to wet or heavy soils, and moderate tolerance to lesion nematodes. Hybrids are usually more vigorous than blacks. The shortcomings of the hybrid are its susceptibility to crown gall, possibly poorer yields than black, and canker problems.

The Eastern black walnut, Juglans nigra has been used in some orchards but it has no advantages over the Northern California black. Its deep taproot makes it difficult to dig from the nursery.

English (Persian) walnut, Juglans regia has been used occasionally as a rootstock to avoid crown rot. It is very susceptible to crown gall however, and is a slow growing tree.

The Chinese wingnut, Pterocarya stenoptera has been used in trial planting due to its very good tolerance to root lesion nematode. It is also tolerant of mild salinity. Most varieties make a poor union with the Chinese wingnut with the exception of Eureka. Most growers have trouble budding and grafting wingnut. The stock tends to bleed and flood the bud and it also often overgrows the bud. In addition the stock suckers profusely.

WEED CONTROL

Weeds around tree trunks promote crown rot, produce seed which is spread within the orchard, provide protection for rodents, hide walnuts, and tempt the grower to disc too closely to the base of the tree. Weed growth should be removed from the trunk area each fall and spring. The cost of this operation by hand will vary from a very few dollars per acre in a clean orchard to many dollars in a dirty orchard.

Where weed control costs are high, savings can be realized by using weed oil when the weeds are 1" to 2" tall, or diuron or Simazine before the weed seeds germinate. Diuron and Simazine will control most annual weeds, but not perennials such as Bermuda, Johnsongrass and bindweed.

INSECT PESTS OF WALNUT

The three most bothersome pests of walnut are the codling moth (worms in the nuts), aphids and mites. Most growers spray twice for codling moth, twice for aphid and at least once for mite. One spray application may be intended for two or all three of these pests at one time.

The walnut husk fly is an increasingly prevalent pest which damages the shell appearance and in severe situations, the kernel also. An additional spray may be necessary for most growers in the future.

Scale insects are occasional pests of walnut.

The navel orange worm is an increasingly severe pest of walnut, which can be contained only by good cultural practices.

The lesion nematode is quite a common soil-borne pest of walnut in Merced County.

DISEASES

The primary disease of walnut in this area is walnut blight. Due to our normally dry springs many growers do not spray for blight. Only a few spray more than once a year.

The soil-borne water molds cause crown rot, which is a root rotting disease often of serious proportions. Weeds, heavy soil, wet spots and poor management contribute to crown rot.

Crown gall is a cancerous disorder causing large knots on the roots. A bacterium is responsible for this and surgery plus a bacteriocidal treatment is the cure.

Blackline is a graft union disorder which is sometimes a problem to both black walnut and hybrid rootstocks. The graft union itself breaks down and the tissue becomes necrotic. This disorder can kill a tree gradually, but is usually a chronic problem over a number of years. The tree gradually declines in vigor with yellowing of the leaves and usually profuse suckering from the rootstock.

Sunburning might be called a climatic, nonparasitic disease of walnut. Certain varieties, Payne and other heavy bearing varieties in particular tend to sunburn more than varieties such as Eureka and Hartley which bear lighter crops. A protectant called "Sun-Guard" and other mixes of lime and zinc sulfate plus stickers have been used in the last few years with generally good results. The cost is about \$25 per acre which means that at least 100 pounds of nuts per acre must be saved from damage to pay the cost of the spray. Most growers feel that this spray more than pays for itself.

FERTILIZERS

Walnuts are heavy users of nitrogen. Depending upon the vigor of the orchard a grower may use 125 to 250 pounds of actual nitrogen per acre. Phosphorous and potash are seldom used and are of no benefit except in very special circumstances.

Zinc deficiency is fairly common in Merced County. This nutritional disease is most often seen in old corral areas, possibly due to high levels of phosphorous and salt residues. In the lighter textured soils a soil application of zinc sulfate is often beneficial. In the heavier soils zinc strips driven into the bark of the English part of the walnut aid in curing zinc deficiency. Recently the injection of zinc sulfate solution into the root area of walnuts has shown promise in medium textured soils. Foliage sprays of zinc sulfate are not beneficial since the walnut does not readily absorb zinc through the leaf.

MECHANIZATION

Walnuts are probably our most mechanized tree crop in Merced County with almonds close behind.

Harvest preparations begin with a double discing. Often a roller is added to the disc on the last discing. Then the orchard is rolled once or possible twice again.

Removal of the nuts with tree shakers begins as soon as the hull cracks and can be easily removed from the shell. Any delay after this time will result in darker nut meats and lower quality. Normally the

nuts are swept into windrows with a mechanical sweep and picked up with one of the three common harvesters in the area, Goodwin, Ramacher or Weibe.

After the pickup machine fills each trailer the trailer is pulled to the huller where the hull is removed. The nuts are then conveyed to the dryer and dried for 12 to 36 hours. The dry nuts are then hauled to market.

Some hand harvesting is still being done on smaller acreages. However, custom mechanical harvesting is usually cheaper than hand harvesting if the ground is well prepared.

DISPOSAL

The dry nuts are most often sold through the Modesto Local of Diamond Walnut Growers Association. A few nuts are sold to local independent buyers. Most of the larger commercial growers sell through Diamond Walnut Growers and the independents wind up with the small acreages, border trees, and varieties which are less desirable.

PRICES and VALUE to MERCED COUNTY

The walnut price paid by Diamond Walnut Growers Association is based on the quality of a representative sample. A premium is paid for light colored meats and for large sound nuts. The Diamond Quality are kernels of the lightest color followed by Emerald and then Suntand. Most good walnut growers average 22¢ to 25¢ per in-shell pound of walnuts as they come from the dryer. The California Crop and Livestock Reporting Service lists \$500.00 per in-shell ton as the average grower return in 1967.

The following chart shows the bearing acreage, walnut tonnages, prices, and total values to Merced County for the past nine years.

TABLE II

<u>Year</u>	<u>Bearing Acreage</u>	<u>Total Production</u> <u>Tons</u>	<u>Price Per</u> <u>Ton</u>	<u>Total Value</u> <u>to Merced</u> <u>County</u>
1959	3805	2093	\$450.00	\$ 941,737
1960	3982	1672	520.00	869,668
1961	4142	1864	440.00	820,200
1962	4487	2692	450.00	1,211,400
1963	4916	2900	456.00	1,322,400
1964	5237	3300	455.00	1,502,000
1965	6069	3580	420.00	1,504,000
1966	6428	4500	440.00	1,980,000
1967	5912	4730	54.00	2,554,000