

PRUNES IN TEHAMA COUNTY

1964

University of California
Agricultural Extension Service
Tehama County

INDEX - - - - -

	Page
SOIL	1
WATER AND IRRIGATION	1
CLIMATE	2
ROOTSTOCKS AND VARIETIES	2
PLANTING DISTANCES	3
COMING INTO PRODUCTION	3
YIELDS	3
COVERCROPS	3
PESTS AND DISEASES	3-4
MAJOR PRUNE BUYERS	4
PRUNE PRODUCTION COSTS	4-8
CAPITAL INVESTMENT AND FIXED COSTS	5
80 acres mechanically harvested, sprinkler irrigated French prunes	
TYPICAL COSTS TO PRODUCE DRIED PRUNES IN TEHAMA COUNTY, 1964	6
80 acres mechanically harvested and sprinkler irrigated	
CAPITAL INVESTMENT AND FIXED COSTS	7
40 acres hand harvested, flood irrigated French prunes	
TYPICAL COSTS TO PRODUCE DRIED PRUNES IN TEHAMA COUNTY, 1964	8
40 acres hand harvested and flood irrigated	
SUGGESTED READING	Inside Back Cover

PRUNES IN TEHAMA COUNTY *

California produces about 85 percent of the world's prune tonnage. In 1963 there were 111,765 acres of prunes in California--25,717 acres which were nonbearing and 86,048 bearing acres. Tehama County is the fifth largest prune growing area in the state with 6,792 total acres -- 3,985 bearing and 2,807 nonbearing acres in 1964. Prunes are especially adapted to Tehama County conditions and are the major tree crop produced.

SOILS Prunes are best raised on the deep well-drained soils found along the Sacramento River and its tributaries. Although possibly best adapted to loam and clay loam soils they also do well on sandy and gravelly soils. A perched water table condition exists on the east side of the valley, on some of the shallow soils overlaying hardpans, which presents some prune production problems.

Dieback, a result of overcropping and/or potassium deficiency is common on alluvial soils associated with the tributaries of the Sacramento River, particularly in areas of cuts made during land leveling.

Fruit thinning and potash fertilizer injected into the soil at rates of 25 to 50 pounds per tree every 4 or 5 years helps correct this condition.

Zinc deficiency is usually found in areas of old corral sites and ancient Indian mounds. It is also often found on sandy soils associated with the Sacramento River. It is corrected by sprays of zinc oxide at the rate of 5 to 6 pounds per 100 gallons of water applied in the spring or summer or 25 pounds of zinc sulphate per 100 gallons of water during dormancy.

Nitrogen is seldom needed until the trees come into bearing. Mature orchards require 80 to 100 pounds of actual nitrogen annually.

WATER AND IRRIGATION

A number of mutual water companies and irrigation districts are located in the county. In many instances arrangements have been made for growers to place pumps in the distribution systems for sprinkler irrigation.

In a few locations on the east side of the Sacramento River, excess boron has been found in ground water being pumped. The known areas are Jelly's Ferry, Salt Creek drainage, and about 3 miles south of Los Molinos. A survey of other areas is now in progress.

Total water requirements of about 2.5 acre-feet per acre have been measured on mature orchards. An irrigation in July will cause fruit cracking if the trees have been under a prior moisture stress.

*by Wallace R. Schreader, Farm Advisor, Tehama County

CLIMATE:

The chief climatic factors in the county are spring frost, spring rains and hail, summer and fall heat, and fall rains.

Spring Frost is spotty and infrequent. It has not proven profitable for growers to use orchard heating practices.

Spring Rains and Hail. In most years there is not enough spring rainfall to add to the effective soil moisture. Frequent light showers often keep the top foot of soil too wet to prepare for flood irrigation—thus causing serious delay in the first irrigation. Some general areas are more prone to hail storms than others. The advice of longtime residents is suggested to get the history of any particular area.

Summer and Fall Heat. These cause two types of damage. Sunburning of exposed fruit causes heavy drop some years. Hot weather during harvest results in pit burning and darkening of flesh color which reduces quality. Heat damaged exposed limbs are often invaded by diseases and pests.

Fall Rains. Light showers in late September usually stop the harvest for one or more days except on the very sandy soils. The fall rains sometime induces the leaf disease peach rust causing premature defoliation—which causes some problems during harvest.

ROOTSTOCKS AND VARIETIES

Plum rootstocks Myrobalan 29C and Marianna 2624 are used for their resistance to oak root fungus and some nematodes. Some newer plum roots are now being tested locally. These roots tend to blow over in the wind during the first five to seven years of growth. Some growers are now using Myrobalan seedlings which are less apt to blow over but are more prone to Oak Root Fungus and nematode invasion.

Peach roots are seldom used except for interplants because of their susceptibility to oak root fungus, nematodes, excessive bearing and dieback. They are more stable in the wind.

French prunes are usually planted because of their consistent bearing of high quality fruit. Gerrans Early French is seven to ten days earlier in maturity and is being used to lengthen the harvest period. Robe de Sargent and Imperial are sometimes used to extend the harvest season. They produce inconsistent crops of lower quality and are more difficult to harvest and dehydrate.

PLANTING DISTANCES

Trees are usually planted 24 or 25 feet apart on the square. Closer plantings (except on gravelly soils) produce more per acre at an earlier age but are not recommended because of the shading out of lower growth as the trees become mature and meet in the middles. Interplanting an orchard with a temporary tree in the center of the square is becoming popular as well as 12' x 24' plantings with the extra trees to be removed later when crowding occurs.

COMING INTO PRODUCTION

Prunes are borne primarily on spurs. In order to encourage spur formation, heading back or excess fertilization is to be avoided. These lead to excessive vegetative growth rather than flower bud formation and can delay bearing one to three years.

YIELDS

Overproduction is the rule rather than the exception. Thinning with poles and by hand is common. During periods of high prices it has proven profitable to tie trees up to prevent limb breakage on young trees.

COVERCROPS

Covercrops are grown during the winter to help improve soil structure. Barley or other grasses are recommended. These can be planted after a fall irrigation or before the rains. The covercrop is disced under in the spring before it becomes mature.

A popular trend is to mow or chop the covercrop rather than disc, particularly on orchards which receive sprinkler irrigation. When used in this fashion a summer growing sod is maintained which requires an additional 40 pounds of nitrogen fertilization in the spring to stimulate decomposition. This summer sod is usually disced under after the second irrigation so the soil can be suitably prepared for harvesting. This system usually requires an extra irrigation.

PESTS AND DISEASES

Insect Pests: Peach twig borer, Red Spider, Brown Almond Mites, Leaf Curl and Mealy Plum Aphid, Red Humped Caterpillar, and San Jose Scale are the most common pests. Others found less commonly in economic amounts are Brown Apricot Scale, Parlatoria Scale, Diabrotic Beetles, Flat Headed Borers, Shot Hole Borers and various nematodes.

PESTS AND DISEASES (continued)

Diseases:

Bacterial Gummosis, Oak Root Fungus, Crown Gall, Crown Rot, Ceratocystic Canker, and Cytospora Canker are the major diseases of this area. Others less commonly found are Peach Leaf Rust and Brown Rot.

LIST OF MAJOR PRUNE BUYERS

California Packing Company, San Francisco. Local representative: Joe Bratton, Chico.
Mayfair Packing Company, San Jose. Local representative: Laurel Hunt, Red Bluff.
Sunsweet Growers, Inc., San Jose. Local representative: Latane Sale, Corning Cooperative Drier, Corning.
Valley View Packing Company, San Jose. Local representative: George Lindauer, Red Bluff.

PRUNE PRODUCTION COSTS

The following cost studies were developed to give an idea of expected costs per acre. The figures are typical costs under assumed conditions and are not representative of any one particular orchard or average for the county as a whole.

There are two different cost studies here comparing a 40-acre, flood irrigated, hand harvest operation to an 80-acre sprinkler irrigated, mechanically harvested orchard.

The important thing to remember is that when considering total costs you must consider all costs both variable and fixed.

Variable Costs are those costs that vary with production such as gasoline, fertilizer, spray materials, hired hourly or piece work labor.

Fixed Costs are those of an "overhead" nature that must be met regardless of production. They are of two types.

Cash fixed costs include taxes, insurance, cash interest on loans, etc. The non-cash fixed costs are primarily depreciation and interest on your capital investment and your own labor and management charge.

A study of this type serves a useful purpose by showing how different combinations of land, labor, capital and management can affect production costs.

It is strongly suggested that you keep records of your operation to supply this information to you and that you budget your operations into the future in a manner similar to this to use as a guide in decision making.

CAPITAL INVESTMENT AND FIXED COSTS--80 ACRES MECHANICALLY
HARVESTED, SPRINKLER IRRIGATED FRENCH PRUNES

Investment	Total Cost	Cost Per Acre	Expected Life	Fixed Cost Per Acre	
				Interest	Depreciation
Land -- 80 acres	\$ 80,000.00	\$ 1,000.00	--	\$ 60.00	--
Trees - 75 per acre	76,000.00	950.00	30 years	28.50	\$ 31.66
Irrigation system	10,000.00	125.00	20 years	3.75	6.25
Wheel tractors (2)	10,800.00	135.00	10 years	4.05	13.50
Chopper	450.00	5.62	10 years	.17	5.62
Disk	1,500.00	18.75	15 years	.56	1.25
Roller	250.00	3.12	20 years	.09	.16
Sprayer	2,800.00	35.00	15 years	1.05	2.33
2 Shakers	5,000.00	62.50	5 years	1.87	12.50
Catching frame	9,000.00	112.50	15 years	3.37	22.50
Bins	1,000.00	12.50	10 years	.37	1.25
Fork lift	1,000.00	12.50	15 years	.37	.84
Pallet wagon	500.00	6.25	20 years	.19	.31
Buck rake	250.00	3.13	10 years	.09	.31
Pickup truck	2,300.00	28.75	10 years	.87	2.87
Shed and shop	5,200.00	65.00	30 years	1.88	2.17
Pruning equipment	500.00	6.25	10 years	.19	.63
TOTAL	\$206,550.00	\$ 2,581.87		\$107.37	\$ 99.09

Interest--6% of one-half the cost per acre on all depreciable items. 6% of the full value of land.
Depreciation--Computed as straight line; i.e. divide the cost per acre by the expected life of equipment.

TYPICAL COSTS TO PRODUCE DRIED PRUNES IN TEHAMA COUNTY--1964

80 ACRES--MECHANICALLY HARVESTED AND SPRINKLER IRRIGATED

Operation	Hours Per Acre	Cash and Labor Costs			Cost Per Acre
		Labor	Equipment	Materials	
Cultural	200.00				
Prune	24.0	\$ 42.00	\$ 1.00		\$ 43.00
Brush Disposal	2.0	3.50	3.00		6.50
Fertilize	3.3	.50	.45	100# Nitrogen 12.00	12.95
Hoe	2.0	2.70			2.70
Chop Covercrop 6 times	1.8	3.15	1.80		4.95
Irrigate 4 times	2.4	4.20	.25	2.5 acre-feet water 12.50	16.95
Thin	7.0	9.45			9.45
Spray 2 times	1.2	2.10	4.20	Chemicals 20.00	26.30
Taxes, Ins., & Misc.				40.00	40.00
Total Cultural and Miscellaneous Cash Costs		\$ 67.60	\$ 10.70	\$84.50	\$ 162.80
Harvest & Process					
Disc 2 times	1.0	1.50	1.65		3.15
Roll	5.5	.75	1.50		2.25
Shake & Catch 90% of crop	4.8	8.40	2.50		10.90
Pick windfalls, 10% of crop @ .50¢ box		13.00			13.00
Haul to dipper		\$3.00 a green ton contract			20.61
Dip & Dehydrate		@\$18.00 a green ton contract			123.66
Total Harvest Cash Cost		\$ 23.65	\$ 5.65		\$ 173.57
TOTAL CASH COSTS					\$ 336.37

Yield -- 2.5 dry tons @ 2.75 to 1 dry away

Total fixed costs per acre \$ 206.46

Total annual per acre cost \$ 542.83

CAPITAL INVESTMENT AND FIXED COSTS
40 ACRES HAND HARVESTED, FLOOD IRRIGATED FRENCH PRUNES

Investment Post	Capital Investment	Investment Per Acre	Expected Life	Fixed Costs Per Acre	
				Interest	Depreciation
Land - 40 acres	\$ 40,000.00	\$ 1,000.00	--	\$ 60.00	
Trees - 75 per acre	38,000.00	950.00	30 years	28.50	\$ 31.66
Irrigation System	2,400.00	60.00	30 years	1.80	2.00
Wheel Tractor (1)	5,400.00	135.00	10 years	4.05	13.50
Disc	1,500.00	37.50	15 years	1.11	2.50
Sprayer	2,800.00	70.00	15 years	2.10	4.66
Ridger	400.00	10.00	10 years	.30	1.00
Landplane	1,500.00	37.50	20 years	1.13	1.87
Roller	250.00	6.25	20 years	.18	.33
Shaker	2,500.00	62.50	5 years	1.87	12.50
Buck Rake	250.00	6.25	10 years	.18	.66
Pickup Truck	2,300.00	57.50	10 years	1.72	5.75
Trailer	500.00	12.50	20 years	.37	.62
Shed and Shop	5,200.00	130.00	30 years	3.90	4.33
Pruning Equipment	250.00	6.25	10 years	.19	.63
Lug Boxes	600.00	15.00	10 years	.45	1.50
TOTAL	\$103,850.00	\$ 2,596.25	--	\$107.85	\$ 83.51

TYPICAL COSTS TO PRODUCE DRIED PRUNES IN TEHAMA COUNTY--1964
40 ACRES--HAND HARVESTED AND FLOOD IRRIGATED

Operation	Hours Per Acre	Cash and Labor Costs			Cost Per Acre
		Labor	Equipment	Materials	
Cultural					
Prune	24.0	\$ 42.00	\$ 1.00		\$ 43.00
Brush Disposal	2.0	3.50	3.00		6.50
Fertilize	6.3	5.50	.45	100# Nitrogen \$12.00	12.95
Hoe	2.0	2.70			2.70
Disc Covercrop	1.0	1.75	1.65		3.40
Irrigate 4 times	16.0	24.00	6.00	2.5 acre-feet water 10.00	40.00
Thin	7.0	9.45			9.45
Spray 2 times	1.2	2.10	4.20	Chemicals 20.00	26.30
Taxes, Ins. & Misc.	5.0	3.20		40.00	40.00
Total Cultural and Miscellaneous Cash Costs	80.0	\$ 86.00	\$ 16.30	\$82.00	\$184.30
Harvest & Process					
Disc 2 times	1.0	1.50	1.65		3.15
Landplane & Roll Shake	1.0	1.50	1.80		3.30
Pick Up & Box	1.0	Contract @ \$8.00 an hour \$12.00 a ton			\$12.00
Haul to dipper	1.0	\$3.00 a green ton contract			82.44
Dip and dehydrate	1.0	\$18.00 a green ton contract			20.61
Total Harvest and Process Cash Cost	5.0	40.00	30.00		\$ 70.00
TOTAL CASH COSTS					\$ 245.16

Yield--2.5 dry tons @ 2.75 ton 1 dry away

Total fixed costs per acre \$ 191.36
 Total per-acre costs \$ 620.82

SUGGESTED READING - - - - -

The following selected publications are available for distribution at your Farm Advisors' Office, P. O. Box 370, Red Bluff. (Upstairs in the Post Office Building or telephone 527-3101.)

1. Foliar Application of Mineral Nutrients to Fruit Trees
2. Insect Pest and Disease Control Program -- Prunes
3. Peach Twig Borer Control
4. Deciduous Orchards in California Winters
5. Propagation of Temperate Zone Fruit Plants
6. Essentials of Irrigation and Cultivation of Orchards
7. Contour Check Method of Orchard Irrigation
8. Sprinkler Irrigation
9. Orchard Flow Pans
10. Fertilizers for Deciduous Fruit and Nut Trees
11. Fertilizers and Covercrops in California Orchards
12. Pruning Deciduous Fruit Trees
13. Oak Root Fungus and Its Control
14. Bacterial Canker of Deciduous Fruits
15. Rootstocks for Plums and Prunes in California
16. Parallel Flow Prune Dehydration
17. Ceratocystis Canker of Almond, Prune, and Apricot
18. Whitewash for Trees

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