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GRAPE GROWING IN MENDOCINO COUNTY

By

Arthur Shultis, Extension Specialist in Farm Management
and

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UC Cooperative Extension

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Wine grapes are the principal fruit crop of Mendocino County in acreage although in some years they are exceeded in value by the pear crop. Certain soils and locations are better adapted to a number of wine varieties of grapes than to any other crop. The climate and rainfall usually result in good commercial yields of grapes of proper sugar and acid content for the manufacture of good table wines. But as in all regions - frosts, dry years, wet years, and late spring or early fall rains, affect yield and quality. Table (1) shows prices for Mendocino County grapes during the last 10 years.

TABLE I
Grape Prices, 1937 - 1946

Year	Mendocino County		State Average Price per ton
	Average Price per ton		
	Black	White	
1937	\$24.00	\$27.50	\$21.00
1938	16.00	16.00	13.00
1939	17.00	19.00	14.00
1940	17.70	22.20	16.00
1941	25.25	35.00	22.00
1942	32.50	40.00	31.00
1943	80.00	90.00	78.00
1944	120.00	130.00	111.00
1945	70.00	85.00	62.00
1946	120.00	137.50	104.00
10 year average	\$52.25	\$60.22	\$47.20

VARIETIES

Most of the acreage is in black table grapes, the Carignane and Zinfandel being the main varieties, but there are some Mission, Alicante Bouschet, Petite Sirah, and other varieties of lesser acreage. The principal white variety is the Golden Chasselas or Palomino, but there are small acreages of a number of other varieties particularly in new plantings. Some varieties are better adapted to certain localities in the county than others. The selection of varieties for new plantings is very important. From the growers standpoint a variety on his land must produce adequate income either by good yields at the prevailing price, or by premium prices if a lower producer.

UTILIZATION

Mendocino County grapes are made into wine or juice concentrates in the several wineries within the county, or are trucked out of the county to wineries in other areas. Most of the production is thus sold commercially although some acreage is operated by winery interests.

PRICE SITUATION

Anyone interested in wine grapes will realize that the fluctuating prices over the last 10 years have greatly affected profit from grape production. The high prices of the last 4 years are partly the result of wartime programs and shortages of alcoholic beverages and liquors, and partly the result of higher consumer purchasing power and higher per capita wine consumption. How much consumers will pay for wines and how much they will consume under more normal peace time conditions remains to be seen. Consumer incomes are expected to decline from recent high wartime levels, and a more abundant supply of all goods and services will compete for this lower income. Hence wine and wine grape prices may be expected to recede from recent high levels. The wine industry in view of the recent upward trend in consumption expects to be able to market all of the wine produced in early future years, and at prices that will give fairly profitable returns to growers for wine grapes. Growers however, will do well to look carefully to the main profit determining factors of yield, price and costs of production, as they develop in the next few years.

COSTS

Production costs have risen rapidly during recent years with the basic hourly wage rising from about \$0.30 an hour in 1937 to \$0.85 an hour in 1946. There will be considerable resistance to lower wages if and when prices decline. Growers may expect reduced profits through reduced prices and continued high production costs that may render some low producing vineyards unprofitable. Since average cost of production for all growers is not available such valid cost information as can be obtained will be helpful to vineyardists. Therefore, a quick survey was made of operation and other cost items in January 1947, and from data obtained from a number of growers, the standard of inputs and costs was made up for a typical Mendocino County vineyard with an average annual yield of 4 tons per acre.

The inputs of labor used are not the highest nor the lowest reported, but were selected as typical of good efficient workers and prevailing methods. Perhaps no grower will have exactly these costs for any item - some will be higher, and some lower. This standard is presented as a guide to anyone who wishes to compute or estimate his own costs for the present or any future year.

WAGES

The prevailing wages paid in Mendocino County in 1946 were \$0.85 an hour, and \$0.25 for picking a 50 pound box which did not always contain 50 pounds of grapes. These prices were used in the standard in Table (2). Items other than man labor have changed less in recent years and may not change much in the future even when wages are reduced. Table (2) shows about 78 hours of man labor involved in an acre of 4 ton grapes. This would vary with different yields. A change of \$0.05 an hour in wage rates would change costs about \$4.00 an acre or \$1.00 per ton. Hence a reduction of \$0.25 to \$0.60 an hour for labor would reduce costs about \$20.00 an acre or \$5.00 a ton below the figures in table (2) if all other costs remained the same. Table (2) showing A Standard of Probable Inputs & Costs follows:

TABLE 2

A Standard of Probable Inputs and Costs for Grapes with a 4 Ton Yield under 1946 Conditions

Mendocino County

	Man Hours per Acre		Hours per Acre		Cost	Cost
	---		14 hp.	1½ t.	per	per
	Oper.*	Total	Tractor	truck	acre	ton
					Dollars	--
Pruning about 600 vines	8	16			\$13.60	
Brush disposal	1	3	1		3.55	
Tying, staking, etc.	1	1			.85	
Suckering	3	6			5.10	
Planting cover crop	1	1			.85	
Fertilizing	1	2		1	2.95	
Sulfuring 3 times av., part hand	2	4		1	4.65	
Cultivation	5	5	5		9.25	
Miscellaneous other work	3	3			2.55	
Total Cultural Labor	25	41	6	2	\$43.35	\$10.84
Picking, piece work & supervision	4	32			47.00	11.75
Hauling to local winery	1	5		3	8.00	2.00
Total Labor	30	78	6	5	\$98.35	\$24.59
Cover crop seed, various kinds and prices					3.00	
Fertilizer, commercial, about 200 lbs. @ \$60.00 a ton					6.00	
Sulfur 40 lbs. @ \$0.04½					1.80	
Miscellaneous, twine, replants, etc.					21.00	
Total Material Cost					\$12.80	\$3.20
General expense 5% of above					5.56	
County taxes					3.00	
Repairs to equipment, except tractor and truck					1.00	
Compensation insurance @ \$1.35 on hired labor					.60	
Total Cash Overhead					\$10.16	\$2.54
Overhead Costs based on a 60 acre unit	Orig. Cost	Av. Value	5% Int.	Depreciation		
	Dollars per acre					
Vines and stakes	\$300.00	\$150.00	\$7.50	\$10.00		
Building for equipment	16.00	8.00	.40	.40		
Tillage equipment	12.00	6.00	.30	1.00		
Misc., boxes, small eqt.	16.00	8.00	.40	2.00		
Land	150.00	150.00	7.50			
Total Investment	\$494.00	\$322.00				
Total Depreciation				\$13.40	\$13.40	\$3.35
Sub Total Cash & Depreciation Costs					\$134.71	\$33.68
Total Interest on Average Investment at 5%			16.10		16.10	4.02
Total Cost of Production					\$150.81	\$37.70

*Operator labor shown in the first column above is the estimated amount that would ordinarily be performed by a working operator with a 60 acre vineyard. It is included in total labor so costs shown are total regardless of percentage of labor hired.

The above is a typical picture of requirements and costs for a good, well managed vineyard with an average yield of 4 tons per acre. It is based on local inquiry of a number of growers. Costs as shown are probably below average for this kind of vineyard in these times, but are intended to represent normal conditions under efficient operations.

Labor costs are computed at the following rates per hour: Man labor \$0.85, 14 drawbar-horsepower tractor \$1.00, 1½ ton truck \$1.25, picking \$0.25 per box of 45 lbs. plus \$2.00 per acre or \$0.50 a ton supervision. The tractor and truck rates are supposed to include depreciation and repairs as well as direct operating costs.

YIELD

Yield per acre times price per ton less cost per acre determines profit. Hence yield is one of the 3 main profit determining factors. As yield increases costs per acre also increase, but cost per ton is reduced. To illustrate the importance of yield, Table (3) has been prepared to show the probable costs under 1946 conditions in vineyards of different producing ability. It is assumed that lower yielding vineyards would have smaller vines and hence lower pruning and certain other cultural costs. They would also be on less valuable soil with lower taxes and interest on investment. The opposite is true for vineyards yielding more than 4 tons per acre.

UNPROFITABLE VINEYARDS

As prices decline there will be some vineyards too low in production to make a profit. This may call for some drastic change such as abandoning or removing the vines for a new planting or some other crop. It is well to discover and avoid financial losses before they occur. Tables (3) and (4) may be used as a guide in estimating probable costs in a particular vineyard that may soon become unprofitable. This information along with price per ton may help the owner of a vineyard to decide when to pull or abandon a vineyard or block. Tables (3) and (4) which show the relationship between costs and yields follow.

TABLE 3

Probable Costs in Vineyards having Different Average Yields with Costs about as in Table (2) for 1946 Conditions.

Mendocino County							
Yield - in tons	1	2	3	4	6	8	10
Cultural labor costs-man & tractor etc.	\$30	\$35	\$40	\$44	\$46	\$48	\$50
Harvesting cost, pick. & haul. \$13 to \$15 a ton	15	29	42	55	80	108	130
Material cost, fertil., sulfur, twine, etc.	2	3	8	13	15	17	19
Cash overhead costs, taxes, gen'l. exp. etc.	5	6	8	10	12	14	16
Total Cash Costs	52	73	98	122	153	187	215
Depreciation on equipment, vines, etc.	\$10	11	12	13	14	15	15
Interest on investment at 5%	12	13	15	16	17	17	18
Total Cost Per Acre	74	97	125	151	184	219	248
Cash Costs per ton	52	37	33	31	26	24	22
Total Cost per ton	74	49	42	38	31	26	25

Yield per acre is the most important profit determining factor in local vineyards. There are poor vineyards on poor soil with yields as low as a ton to the acre. Returns in normal times do not warrant complete cultural care or even operating them at all. On the other hand there are a few excellent vineyards on good soil with yields as high as 10 tons per acre. Most of the good vineyards on usual bench land soils have yields around 4 tons per acre - a good commercial yield as used in the standard in Table (2). The costs in vineyards of different producing ability are not exactly known, but it has been observed that costs per acre are much lower in low producing ones - they have to be. But observation and inquiry as to how certain items occur enables the making of the above computation. With labor at \$0.85 an hour and other costs about as in Table (2), it is believed the above figures are about what costs would be in vineyards with different average yields. These figures do not apply to exceptionally low or exceptionally high yields in a particular vineyard. The next table illustrates that variation.

The above estimates are presented to illustrate the importance of yield if costs are to be below selling price. Even with present high costs, a \$25.00 a ton price will yield wages and interest at 5% in a 10 ton vineyard, while \$74.00 is required in a 1 ton vineyard. This also illustrates the need of a higher price for a low yielding variety than one giving consistently higher yields. A variety yielding 2 tons is shown above to have a probable cost of \$49.00 a ton as compared to \$38.00 for a 4 ton yield, or \$31.00 for a 6 ton yield.

TABLE 4

Probable Costs in a 4 ton Vineyard but with different Yields due to Frosts, Insects, Diseases, or Very Good Conditions.

Mendocino County						
Yield -- in tons	1	2	3	4	5	6
Cultural labor cost per acre	\$40	\$42	\$44	\$44	\$44	\$44
Harvesting cost per acre	15	29	42	55	68	80
Material cost	12	12	13	13	13	14
Cash overhead costs per acre, gen'l. exp. taxes etc.	8	9	9	10	11	12
Total cash costs	75	92	108	122	136	150
Depreciation on equipment, vines, etc.	13	13	13	13	13	14
Interest on investment at 5%	16	16	16	16	16	16
Total cost per acre	104	121	137	151	165	180
Cash costs per ton	75	46	36	31	27	25
Total cost per ton	104	61	46	38	35	30

Suppose you have a vineyard typical of the 4 ton average producer in Table (2); some years you may have frost or other damage and yields as low as 1, 2 or 3 tons per acre, but your costs except harvesting stay up. You prune, cover crop, fertilizer etc. as usual. What effect do these different yields have on your costs per ton? The above table is merely a calculation of probable costs to answer that question. For example, if your yield falls to 2 tons, your cost rises from \$38.00 per ton for a 4 ton yield up to \$61.00 per ton. On the other hand a very favorable year is frequently experienced and your vineyard responds with a splendid yield of 6 tons, and reduces your total cost to \$30.00 a ton.

The above table may help you decide when to sell, pull, or abandon a vineyard in which yield has declined while costs remain high. If the production of a block drops to 2 tons per acre and the price to \$40.00 a ton, your cash cost of \$46.00 a ton indicates a loss. On the other hand a price of \$100.00 a ton would return your cash costs, depreciation, and a little toward interest on investment with only a 1 ton yield. If you want to time your vineyard pulling and replacement to get hurt as little as possible financially, use the above figures and watch prices. As long as prices stay over \$60.00 a ton you can make a little with a yield of 2 tons, but with a price of \$30.00 per ton you will need 5 tons or better unless wages and costs come down - which they probably would.

NEW PLANTINGS

At present there is considerable interest in replanting and establishing new plantings. Only vines with roots of high resistance to phylloxera should be planted. Because of the demand, rooted and grafted vines are very scarce and high in price. Wages and other costs are probably at their peak. A compilation of the probable cost of developing a vineyard under 1946 and 1947 conditions would be frightening. It takes several years and costs considerable to bring a new planting into bearing. After some inquiry the probable cost of developing a vineyard was estimated using costs that may fit current conditions for some growers. Rooted vines and stakes were each figured at \$100.00 per thousand with budding in second year at about \$0.07 a vine. Table (5) presents this calculation in detail with a planting of 600 vines per acre. An 8 x 8 planting would give 681 vines per acre but avenues etc. would probably reduce this to about 600. For ease in machine work growers may well consider different spacing, and in some cases fewer vines per acre. The net cost each year, and the number of years before a vineyard produces a profit, will vary with the price of grapes. Table (5) shows 2 sets of accumulative costs, one with grapes at \$50.00 a ton, and the other at \$100.00 a ton. The answer near the bottom of the table shows a cost by the end of the fourth year of around \$428.00 an acre with grapes at \$100.00 a ton if interest on investment is included, or \$343.00 without any interest. With grapes at \$50.00 a ton, it takes 2 more years and the cost with interest is \$513.00 an acre or without interest the cost is \$400.00 per acre at the end of the fifth year.

It is to be expected that wages, stakes, rooted vines, or cuttings, and other costs will recede somewhat from present high levels. Indications point to a lower cost in developing a young vineyard a few years hence. It does not appear profitable to pull a vineyard that is making a profit in order to replant under current high cost conditions. Table (5) showing the Cost of Developing a Young Vineyard follows:

*see next page for table -

TABLE 3

Cost of Developing a Young Vineyard Under Current Conditions with Costs about as in Table (2), 600 vines per acre.

Mendocino County

Yield - tons per acre	1st yr.	2nd yr.	3rd yr.	4th yr.	5th yr.	6th yr.
	0	0	0.4	1.0	2.0	3.0
Labor costs per acre						
Planting & budding	70.00	50.00	2.00			
Pruning & brush disposal		6.00	7.00	10.00	13.00	16.00
Tying		3.00	3.00	3.00	2.00	1.00
Suckering		3.00	4.00	5.00	5.00	5.00
Sulfuring	1.00	2.00	3.00	3.00	4.00	4.00
Cultivation, hoeing	18.00	10.00	9.00	9.00	9.00	9.00
Miscellaneous	11.00	12.00	3.00	3.00	4.00	6.00
Total Cultural Labor	100.00	86.00	31.00	32.00	37.00	41.00
Harvesting & hauling			8.00	16.00	29.00	42.00
Total Labor	100.00	86.00	39.00	48.00	66.00	83.00
Material costs per acre						
Vines and stakes 600	120.00	20.00	1.00			
Fertilizer & cover crop	3.00		3.00	3.00	6.00	9.00
Twine, sulfur, & misc.	2.00	3.00	3.00	3.00	3.00	3.00
Total Material Cost	125.00	23.00	7.00	6.00	9.00	12.00
Cash Overhead Costs						
General expense	11.00	5.00	2.00	3.00	4.00	5.00
Taxes	2.00	2.00	2.00	3.00	3.00	3.00
Repairs, Ins. & Misc.	3.00	2.00	2.00	2.00	2.00	2.00
Total Cash Overhead	16.00	9.00	6.00	8.00	9.00	10.00
Total Cash Costs	241.00	118.00	52.00	63.00	84.00	105.00
Depreciation (vines 7th yr.)	2.00	2.00	2.00	3.00	3.00	3.00
Total Cash & Depreciation	243.00	120.00	54.00	66.00	87.00	108.00
Int. on invest., land & eqt.	8.00	8.00	8.00	8.00	8.00	9.00
Int. on net cost, vines		13.00	19.00	23.00	25.00	26.00
Total All Costs	251.00	141.00	81.00	97.00	120.00	143.00
Total income, Grapes @\$50.00-T			20.00	50.00	100.00	150.00
Net cost per acre	251.00	141.00	61.00	47.00	20.00	7.00 p.
Accum. net cost-Grapes @\$50.00-T	251.00	392.00	453.00	500.00	520.00	513.00
Net cash & deprec. cost	243.00	120.00	34.00	16.00	p. 13.00	42.00 p.
Accum. net cash & deprec. cost	243.00	363.00	397.00	413.00	400.00	no int.
Income, Grapes \$100.00 T			40.00	100.00	200.00	300.00 400.00
Net cost	251.00	141.00	41.00	p-5.00	p-80.00	157.00 211.00
Accum. net cost, Grapes \$100.00 T	251.00	392.00	433.00	428.00		
(Includes interest)						
Net cash and deprec. cost	243.00	120.00	14.00	p-34.00	p-113.00	p-192.00 266.00
Accum. net cash & deprec. cost	243.00	363.00	377.00	343.00		
(No interest)						

The above calculations show a probable cash and depreciation cost of bringing a vineyard into bearing of around \$343.00 an acre with grapes at \$100.00 a ton at the end of 4th year. With grapes at \$50.00 a ton, cost is \$400.00 at end of

5th year. If interest on investment is included cost is \$428.00 at end of 4th year with grapes at \$100.00 or \$513.00 at end of 6th year with \$50.00 grapes.

WHAT OF THE FUTURE

It appears that grape growing will continue to be a fairly profitable business but with considerable lower prices and profits than during the period from 1942 to 1946. Growers must have good vineyards of the best adapted varieties on resistant roots and on good soils. High yields obtained at low costs will be important. It appears reasonable to expect that in a few years with lower wages and some economy in cutting non essentials that there can still be a profit in grapes at \$25.00 or \$30.00 a ton. But yields of 4 tons per acre or better will be necessary. It also looks like the cost of developing a vineyard under economy conditions within a few years can be reduced to \$300.00 an acre even with grapes at \$30.00 a ton.

SIZE OF FARM BUSINESS

Anyone interested in grape growing for a living should be sure his vineyard is good enough and big enough. It is expected that in time wages and other costs will come down but so will prices of grapes. Also better and cheaper ways of doing things will occur. With labor at \$0.60 an hour and all possible economies practiced, interest on investment at 4% etc., total costs can probably be reduced to \$100.00 an acre or \$25.00 a ton. Out of this the working operator can get \$15.00 an acre by doing a good share of the work himself and \$12.00 interest on investment. Thus, if grapes were only \$25.00 a ton he could make \$27.00 an acre. If he needed \$2000.00 a year he would have to operate 74 acres, be free of debt, and work 1850 hours a year in his vineyard. Also he would have to get the 4 ton yield - he couldn't make much of a living on any lower yield or lower price than \$25.00 a ton. Now if grapes were \$30.00 a ton his net farm income computed as above would be \$47.00 an acre thus requiring 43 acres. Since grapes may be as low as \$20.00 to \$30.00 a ton a family will need around 60 acres of 4 ton vineyard to make a living.

CAPITAL VALUE

What is the agricultural value per acre of a good 4 ton yielding vineyard? That also depends on the price of grapes. Using the assumptions of low costs as discussed in the above paragraph, the capital income can be estimated. If some allowance is made for management, say 5% of the gross income, with grapes at \$25.00 a ton, there would be a capital income of \$7.00 an acre after all other costs are met. That is a 4% return on \$175.00. Hence if grapes are to be only \$25.00 a ton you can pay only \$175.00 an acre for land, vines, and other facilities, for a 4 ton vineyard if you wish to make 4% return on your money. At \$30.00 a ton capital income can be \$27.00 which is 4% on \$675.00. Lower yielding vineyards will not be worth as much and those that produce over 4 tons could be worth more. Good properties are generally bargains at high prices and poor ones are dear at any price.