

# California wine grape acreage:

## PROJECTING EFFECTS OF NEW SAN JOAQUIN AND COASTAL PLANTINGS

KIRBY S. MOULTON

If estimated intentions are achieved in 1973, new wine grape plantings should equal 51,300 acres. Under average conditions, the grape supply represented by this acreage probably can be absorbed in 1977 wine and brandy production if demand growth rates continue at about the level of 1972. However, if the demand growth rate continues to decline as noticed between 1971 and 1972, then a surplus of grapes relative to crush needs is possible in 1976. A careful look at specific grape varieties is also desirable because if market demand for wine continues to change in its characteristics, then not all grape varieties will fare equally well in future markets.

**N**EW PLANTINGS of wine grapes in California continue to chase an expanding wine demand. Plantings in 1971 were double their total in 1970. The 1972 total was 50% higher than the previous year's total. Little doubt exists that production from vines currently in the ground can be readily absorbed in a growing market.

The rate of future planting remains an issue. Concern has been expressed that dollars seeking tax shelters in California vineyards will lead to price-depressing surpluses. Evaluation of this likelihood

requires projections of demand change and supply response. This report compares two alternate demand projections with an estimate of supply response based on a recently completed estimate of planting intentions. Using newly available data, it extends the analysis presented in an earlier report.

### Planting intentions

Estimates of intentions to plant grapes in California during 1973 were made by University of California farm advisors located in grape producing counties. Their estimates are based on professional judgment of the local situation existing in January 1973. Obviously, the figures supplied are subject to errors in the estimation process and to changes in intentions. However, such information is necessary if potential impact is to be gauged prior to planting.

If current intentions are realized, 1973 plantings of wine grapes should equal 51,300 acres; raisin grapes, 2,700 acres; and table grapes, 1,700 acres. The estimated level of wine grape planting is approximately 3,000 acres greater than the planting rate of 1972 and 19,000 acres above the 1971 rate. The estimate of planting intentions is shown in tables 1 and 2.

The largest share of new wine grape plantings will occur in the southern San Joaquin Valley—Madera County and southward. New plantings on 19,000 acres are expected if intentions are realized, a drop of 5,700 acres from last year's rate.

Stability in planting rate seems to be the key in Merced, Stanislaus, and San Joaquin counties. Wine grape plantings in this northern San Joaquin area are likely to total 5,400 acres as compared with 5,483 acres in 1973 and 5,463 acres in 1971.

The central coast counties, reaching down to Santa Barbara, continue to be the focus of intense activity. Plantings of 18,500 acres are anticipated. This level is almost 11,000 acres greater than the reported 1972 total.

Total planting in the land-short north coast area will probably cover 6,200

acres, considerably higher than the 1972 level.

Plantings in other areas not mentioned are particularly hard to estimate. Their level can be altered significantly by addition or deletion of a single project. For 1973, it appears new plantings will cover about 1,300 acres.

### Acreage projections

On the average, 1973 plantings should be classed as bearing vines in 1976. Accordingly, 1973 intentions, if realized, should expand California's bearing acreage of wine grapes to 261,570 acres in 1976. This projection uses a general rule that annual removals or mortality equal 2% of bearing acreage. This is a conservative estimate when compared with removals during the past three years. Projections of wine grape bearing acreage to 1976 are shown in table 3.

Projections of grape crush are subject to numerous assumptions about average yield and utilization of table and raisin variety grapes. Yields vary considerably from year to year, reflecting variations in weather conditions. The average yield has been climbing rather steadily over past years. Undoubtedly, emerging varietal, geographic, and age distributions will result in changed yield patterns. For lack of better information, projection of current trends should provide a reasonable estimate of potential average wine grape production in 1976. Such a projection results in a yield of 5.42 tons per acre and a wine grape production of 1,447,000 tons, 97% of which is allocated to crush.

Use of raisin and table varieties for crush depends on the relative attractiveness of the crush market and size of total production. Current indications are that raisin and table grape acreage are relatively stable. If 1971 percentage crush allocations are realized in 1976, reflecting a good demand level, then a crush of 1,314,000 tons from these varieties may be a reasonable expectation.

Based on the projections discussed above, an estimated "normal" crush for 1976 would be 2,717,000 tons. These results are shown in table 5.

Projections of wine demand made by a few banking organizations and other pri-

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vate individuals and organizations suggest a continued expansion of wine demand. However, little unanimity is found concerning the degree and character of expansion.

Recent changes in California wine shipments are shown in table 4. Overall annual growth rates obscure significant performance differences between the various wine classes. The estimated growth for all wine shipments between 1971 and 1972 was 5.6%, significantly less than the 15.4% growth registered in the preceding year. In looking at growth components, it appears that still wines under 14% alcohol (including grape and non-grape "pop" wines) expanded 12.6%, the lowest growth rate since 1967. Dessert wines declined 5.3% and sparkling wines 6.1%. Brandy shipments grew 10.5%.

It is dangerous to generalize about the long-term significance of the 1972 slowdown in wine market expansion. However, analysis can indicate whether growth similar to that achieved in 1972 would use the projected 1976 crush.

Accordingly, analysis was completed of a wine and brandy shipment growth rate equal to that achieved in 1972 (labeled "alternative A"), and a rate assuming a drop in market expansion (labeled "alternative B"). Projections of shipments are carried forward to 1977 on the premise that 1976 crush requirements should equate with shipments of the following year. In both cases, the objectives are to provide a "feel" for the type of growth required to absorb a "normal" grape crush in 1976 and to identify certain key assumptions needed for projections.

#### Alternative A: 1972 growth rate

Alternative A assumes the growth rate of 1972 is sustained through 1977. It uses the following annual growth rates for California shipments: still wines less than 14% alcohol, 12.6%; still wines more than 14% alcohol, -5.3%; sparkling wines, -6.1%; and brandy, 10.5%. The market share of non grape based table wines is assumed to be 25% for alternatives A and B.

Based on the conversion and inventory rules set forth in table 5, the described growth rate would not use the total crush projected for 1976. A potential crush surplus of 4.7% would occur.

However, it may not be reasonable to project the negative growth rates recorded for sparkling and dessert wines during 1972. If the shake-out from Cold Duck has been completed, the expansion

TABLE 1. ESTIMATE OF 1973 WINE GRAPE PLANTING INTENTIONS BY CALIFORNIA AREA

Area§	Acres Planted		
	1971	1972*	1973†
North Coast	3,091	3,850	6,200
Central Coast	3,401	7,691	18,500
North San Joaquin	5,463	5,483	5,400
South San Joaquin	19,626	29,596	19,900
Remainder California	688	2,002	1,300
California Total	32,269	48,622	51,300

\* Reported as standing in 1972; see California Crop and Livestock Service, California Grape Acreage 1972, Revised; February 1973, p. 33.

† Estimates of planting intentions for 1973 made by University of California farm advisors, January 1973.

§ Areas defined according to counties: North Coast = Mendocino, Napa, Lake, Sonoma. Central Coast = Alameda, Santa Clara, San Benito, Monterey, San Luis Obispo, Santa Barbara. North San Joaquin = San Joaquin, Stanislaus, Merced. South San Joaquin = Madera, Fresno, Kings, Tulare, Kern.

TABLE 2. ESTIMATE OF 1973 RAISIN AND TABLE GRAPE PLANTING INTENTIONS FOR CALIFORNIA

Class	Acres planted		
	1971*	1972*	1973†
Raisin	2,522	1,939	2,680
Table	1,048	1,736	1,710

\* Reported as standing in 1972; see California Crop and Livestock Service, California Grape Acreage 1972, Revised; February 1973, p. 7.

† Estimates of planting intentions for 1973 made by University of California farm advisors.

TABLE 3. PROJECTED CALIFORNIA WINE GRAPE ACREAGE BASED ON 1973 ESTIMATED PLANTING INTENTIONS AND 2 PERCENT ANNUAL MORTALITY FOR BEARING ACRES\*

Year	Bearing acreage preceding year	Planting three years previous	Acreage mortality	Projected bearing acreage
1973	137,209	14,331	-3,031	148,509
1974	148,509	32,269	-3,616	177,162
1975	177,162	48,622	-4,516	221,268
1976	221,268	51,300	-5,451	267,117

\* Source: Planting acreage from California Crop and Livestock Reporting Service, California Grape Acreage, 1972, Revised, February 1973, p. 33; 1973 planting estimate from Table 1.

of the sparkling wine market may be similar to that of the table wine market. Dessert wines could return to their one per cent growth rate recorded in 1971. Using these modifications, the projections of alternative A would result in a crush deficit of 250,000 tons, or 8.5% of the total crush requirement. These results suggest that a growth rate close to that achieved in 1972, and extending through 1977,

will be necessary if the "normal" 1976 grape crush is to be absorbed without unduly upsetting the market.

If a decline in growth rates such as noted during 1972 continues, then the 1976 crush will exceed the crush demand based on 1977 wine and brandy shipment projections and the yield and utilization assumptions of table 5. Alternative B is an example of such a growth pattern.

#### Alternative B

The overall annual growth rate in alternative B, 7.5%, is somewhat higher than the estimated 1972 growth of 5.8%. However, it is based on lower growth for the important table wine and brandy sectors, but a higher rate than the perhaps abnormally low 1972 rates for dessert and sparkling wines. Growth for table and sparkling wines is specified at 10%, brandy at 7%, and dessert wines at 0%. Under these conditions, crush demand based on 1977 shipments would be less than the projected crush supply in 1976. The surplus is projected at 147,000 tons, or 5.7% of total crush requirements. The overall growth rate of 7.5% is slightly higher than the 7.2% annual rate which must be sustained if shipments are to be doubled in 10 years.

#### Assumptions

Several variable assumptions have important impact on the results reported in table 5. Crush projections are based on stable table and raisin variety production and utilization. If fresh and raisin markets become significantly stronger, the potential crush availability may decline. Consequently, the grape crush could be absorbed with a lower wine demand growth rate. On the other hand, if crush requirements are less than the projected supply, as in alternative B, then the use of raisin and table varieties might be reduced as they have been in the past.

Assumed conversion rates are based on accepted industry rules of thumb. It may be that a significantly larger share of grape based "pop" wines would change

TABLE 4. CALIFORNIA WINE SHIPMENTS 1965-1971 AND ESTIMATED SHIPMENTS FOR 1972\*

Year	Still wine under 14%		Still wine over 14%		Sparkling wine		All wine	
	Shipments (1,000 gals.)	% Change from Prev. Yr.	Shipments (1,000 gals.)	% Change from Prev. Yr.	Shipments (1,000 gals.)	% Change from Prev. Yr.	Shipments (1,000 gals.)	% Change from Prev. Yr.
1965	52,657	8.1	87,461	-5.0	3,216	17.4	143,334	-0.1
1966	55,230	4.9	85,619	-2.1	3,857	19.9	144,706	1.0
1967	61,590	11.5	82,603	-3.5	4,799	23.9	148,972	2.9
1968	71,038	15.3	79,619	-3.6	6,034	26.3	156,690	5.2
1969	87,581	23.3	75,900	-4.7	8,906	47.6	172,386	10.0
1970	111,084	26.8	70,469	-7.2	14,563	63.5	196,116	13.8
1971	138,327	24.5	71,291	1.2	16,756	15.1	226,375	15.4
1972	155,710	12.6	67,523	-5.3	15,729	-6.1	238,962	5.6

\* Source: Wine Institute, Annual Statistical Reports, 1966-1972; Bulletin, March 1, 1973.

TABLE 5. ALTERNATE SUPPLY AND DEMAND PROJECTIONS, CALIFORNIA GRAPE CRUSH, 1976.

Shipments	Projected 1977 Shipments (1,000 gal)	
	Alternative A*	Alternative B*
Still wine (under 14%)	281,884	250,772
Less		
Non grape wine (25%)	70,461	62,693
Net grape wine (under 14%)	211,383	188,079
Sparkling wine	11,482	25,332
Still wine (over 14%)	51,428	67,523
Brandy	16,738	14,250
Total	361,492	357,877
Crush for 1976 (tons)		
Grape equiv. of 1977 shipments*	2,224,000	2,283,000
Grape equiv. of 1977 estimated inventory adjustment*	370,000	287,000
Total crush demand	2,594,000	2,570,000
"Normal" crush supply†	2,717,000	2,717,000
Surplus or (deficit) supply	123,000	147,000
Percent surplus or (deficit) of total requirement	4.7%	5.7%

\* Relevant assumptions are as follows:

Wine Type	Percentage Annual Growth Rates		Conversion Gallons per Ton	Inventory Sales Ratio
	A	B		
Still, Less than 14%	12.6	10.0	170	1.6
Sparkling	-6.1	10.0	170	1.6
Still, More than 14%	-5.3	0.0	95	1.3
Brandy	10.5	7.0	45	5.0
Overall Wine Growth	7.6	7.5		
Wine and Brandy Growth	7.7	7.5		

† Crush supply based on no change in table and raisin grape bearing acreage, slightly increased yields, and 1971 percentage crush allocation; 261,570 bearing acres of wine grapes, 5.42 tons per acre yield, and 97 per cent allocation to crush.

Wine grape crush 1,403,000 tons  
Other grape crush 1,314,000 tons  
Estimated "normal" 1976 crush 2,717,000 tons

the conversion rate used for table wines. Similarly, a larger share for nongrape wines, assumed at 25%, would alter results. In both cases, increased growth rates would be required to absorb the potential crush supply.

Inventory-to-sales ratios are subject to some management control. It is assumed that they will equal past average levels. Adjustments in this ratio will permit use of the potential crush supply.

Small amounts of crush are used for non-wine and brandy uses. It has been assumed that the crush allocated to inventory adjustment is sufficient to meet these needs.

The use of average yields is necessary if point estimates for 1976 results are to be made. It is apparent that realized yields in 1976 can vary significantly from the projected average. However, in the longer run the average results are meaningful.

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# Effects of NITROGEN and IRRIGATION on YIELD of FEED BARLEY

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Wocus-type feed barleys showed greatest economical yield response to nitrogen fertilization at rates of up to 140 lbs per acre in the Tululake Basin. Irrigation before planting and during the tillering stage was necessary for maximum yields. Additional irrigation at the boot stage resulted in increased yields one year and decreased yields another year. Wocus 71, which is 3 to 4 inches shorter in height than Wocus, yielded 8% more grain per acre.

**F**EED BARLEY is widely grown in the Tululake Basin of Northern California, and the Klamath Basin of Oregon. The acreage devoted to feed varieties of barley is rapidly increasing. Yields vary greatly from year to year and field to field, ranging from 3,000 to 6,000 lbs per acre. These fluctuations can be attributed to various cultural practices including planting time, seeding rate, fertilization, and irrigation. Wocus barley has been widely grown in the Tululake and Klamath basins because it generally produces high yields compared with other barley varieties. The research reported

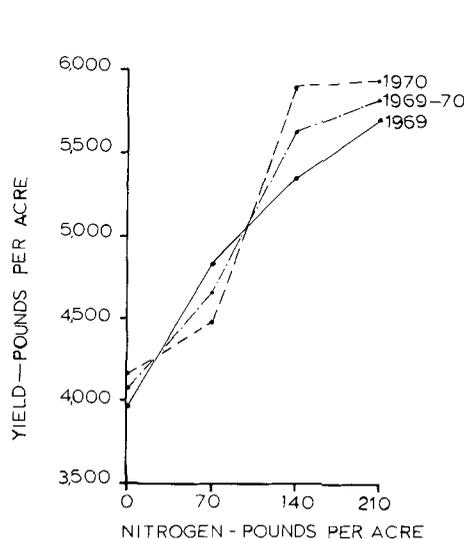
here was needed to establish proper irrigation and fertilization practices for maximum yield and stable performance.

Previous barley fertilization experiments conducted in the Tululake Basin showed the greatest response of barley nitrogen applications. There was a change in the yield ranking of varieties, Traill, Larker, and Wocus at the 84-lb-per-acre nitrogen application rate. At this nitrogen level, yields of Traill, Larker, and Wocus were equal, and all were significantly better than Firlbecks III. The question was raised as to whether the 84-lb-per-acre application rate would result in a maximum yield of the variety, Wocus.

## Wocus-types

Experimental plots were established on organic soil (14%) at the Tululake Field Station in 1969 and 1970. The experimental area was uniformly cropped to wheat for the two previous years with no fertilizer applied. The experimental design was split-plot with four replications. This experiment consisted of two irrigation levels as the main plots and three

GRAPH 1. RESPONSE OF BARLEY (WOCUS-TYPE) TO NITROGEN LEVELS, 1969-1970.



GRAPH 2. RESPONSE OF BARLEY (WOCUS-TYPE) TO NITROGEN LEVELS AT TWO IRRIGATION LEVELS.

