

Retail Store Consumer Preference Ratings of Ozark Table Grape Juice vs Two Nationally Established Brands of Grape Juice

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I. Problem

To maintain a competitive edge, the Ozark Table Grape Growers Association, Inc. (OTGGAI) is attempting to develop a strong alternative value added product in a new juice blend. This is necessary to utilize the less desirable grapes which fail to meet the fresh inspection/shipping standards. The Association has completed only its third year of operation and is composed of approximately 50 growers who have 252 acres of vineyards, 75% of which are 3rd year or younger.

The sale of fresh table grapes has been and will remain the primary means of generating income. The alternative juice product will be necessary for profit and in some cases to avoid economic disaster for some vineyards. Estimates have been projected that as much as 40% of the crop from a given vineyard may fall into the category of not meeting fresh table grape shipping standards. Also, there have already been examples where the entire crop from a vineyard became an unacceptable fresh product because of hail damage. In such cases, the juice alternative would become the salvation from a total loss. Even though it may be necessary for the sales of fresh grapes to subsidize the lower priced juice product, a competitive alternative will aid in building this type of grape vineyard into a more economically feasible enterprise.

II. Methodology

The Agricultural Marketing Service, U. S. Dept. of Agriculture, has provided one-year grant fund support for this product development research. The funds were granted through the Federal-State Marketing Improvement Program. In this joint project with (OTGGAI), the University of Arkansas Agricultural Experiment Station has developed a new grape juice product.

"Venus", has been Arkansas most widely produced seedless table grape cultivar. It was chosen over Thompson Seedless and Cardinal in a fresh produce taste test in 1981. On July 23, two lugs of the earliest ripening Venus cultivar seedless grapes were brought to the lab for juice processing. The resulting juice was evaluated by a panel composed of technicians from the University of Arkansas and representatives from the OTGGAI Cooperative. The consensus of the panel was that the juice had an appealing tart flavor but lacked the rich color characteristic of Venus grapes. Lab testings which were conducted revealed that the reddish tint of the fresh processed juice was not stable, turning to a brown-orange. This created a need to purchase red frozen-concentrate grape juice for color adjustment of the final product.

At the end of the fresh market grape season, 27.97 tons of grapes were processed and 4,434 gallons of juice extracted. Representatives from the University of Arkansas supervised the final preparation for bottling of the juice in determining the needed amounts of frozen flavor-neutral red grape juice concentrate (for color) and citric acid (for stability and improvement of the sugar/acid ratio).

Grocery shoppers were asked to evaluate a small sample of three juices for flavor and color. The new juice which is a light shade of red was tested against two nationally established brands: A Concord juice identified as #148 and a red juice identified as X1914. The new juice is labeled "Ozark Table Grape Juice", and was identified only as #579 to participants.

III. Major Findings

Preliminary evaluation of consumer preference tests revealed that more than 707 of respondents gave a favorable rating to the new juice product. Many of the favorable comments were that the flavor was "tangy", "crispy", "not too sweet". Preference rankings were expressed by checking blanks in a scale ranging from "like extremely" to "dislike extremely" for flavor and color of each juice. The flavor of the new juice (0/579) was rated higher than the midpoint value "neither like nor dislike" by more than 70% of the respondents in each store. However, 957 of the higher ratings for flavor were awarded to #148 and 927 to #914 by those participating in the test. The color of the new juice was ranked less favorably (Tables 1 and 2).

Table 1

GRAPE JUICE TASTE PANEL PRELIMINARY RANKING OF THREE UNSWEETENED 100% GRAPE JUICES
RESULTS: FLAVOR AND COLOR PREFERENCE - September 21, 22, and 23, 1989 - Hot Springs

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Scale Values Ranking	Flavor Juice #579		Flavor Juice #148		Flavor Juice #914		Color Juice #579		Color Juice #148		Color Juice #914	
	No of Response	% of Totals	No of Response	% of Totals	No of Response	% of Totals	No of Response	% of Totals	No of Response	% of Totals	No of Response	% of Totals
9 like extremely	37	12.2	87	28.8	61	20.2	17	5.6	119	39.4	24	7.9
8 like very much	54	17.9	119	39.4	107	35.4	47	15.6	118	39.1	83	27.6
7 like moderately	83	27.5	65	21.5	81	26.8	85	28.1	32	10.6	94	31.1
6 like slightly	57	18.9	18	6.0	29	9.6	58	19.2	15	5.0	51	16.9
5 neither like nor dislike	13	4.3	4	1.3	7	2.3	16	5.3	7	2.3	15	5.0
4 dislike slightly	22	7.3	4	1.3	9	3.0	31	10.3	3	1.0	10	3.3
3 dislike moderately	11	3.6	2	0.7	0	0	8	2.6	1	0.3	9	3.0
2 dislike very much	15	5.0	2	0.7	5	1.7	18	6.0	1	0.3	5	1.7
1 Dislike Extremely	10	3.3	0	0	3	1.0	13	4.3	-	-	2	0.7
0 No Answer	-	-	1	0.3	-	-	9	3.0	6	2.0	9	0.7
Totals	302	100	302	100	302	100	302	100	302	100	302	100

- 1) New juice from Ozark Table Grape Growers Association, Inc.
2) Nationally Established Brand, Concord Grape Juice.
3) Nationally Established Brand, Red Grape Juice.

Table 2

GRAPE JUICE TASTE PANEL PRELIMINARY RANKING OF THREE UNSWEETENED 100% GRAPE JUICES
RESULTS: FLAVOR AND COLOR PREFERENCE - September 21, 22, and 23, 1989 - Hot Springs

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Scale Values Ranking	Flavor Juice #579		Flavor Juice #148		Flavor Juice #914		Color Juice #579		Color Juice #148		Color Juice #914	
	No of Response	Scores	No of Response	Scores	No of Response	Scores	No of Response	Scores	No of Response	Scores	No of Response	Scores
9 like extremely	28	8.6	96	29.5	38	11.7	20	6.2	125	38.4	26	8.0
8 like very much	59	18.2	142	43.7	107	32.9	40	12.3	142	43.7	66	20.2
7 like moderately	86	26.5	53	16.4	92	28.3	76	23.4	29	8.9	109	33.6
6 like slightly	60	18.5	20	6.2	49	15.1	66	20.2	9	2.8	46	14.2
5 neither like nor dislike	20	6.2	4	1.2	8	2.5	47	14.5	9	2.8	36	11.1
4 dislike slightly	33	10.1	2	0.6	12	3.7	26	8.0	2	0.6	13	4.0
3 dislike moderately	14	4.3	3	0.9	7	2.2	15	4.6	-	-	7	2.2
2 dislike very much	17	5.2	1	0.3	6	1.8	16	4.9	2	0.6	2	0.6
1 Dislike Extremely	6	1.8	2	0.6	1	0.3	9	2.8	-	-	3	0.9
0 No Answer	2	0.6	2	0.6	5	1.5	10	3.1	7	2.2	17	5.2
Totals	325	100	325	100	325	100	325	100	325	100	325	100

- 1) New juice from Ozark Table Grape Growers Association, Inc.
2) Nationally Established Brand, Concord Grape Juice.
3) Nationally Established Brand, Red Grape Juice.

IV. Implications

If the OTGGAI juice can be sold for \$1.00 per quart or \$4/gal, the return would be \$240 per ton above processing, hauling, and harvesting costs (Table 3). Cooperative members who have vineyards which were established to provide grapes for fresh market consumption should be able to benefit from this alternative as an addition to defray production costs. Because of 1989's smaller than expected crop and relatively strong demand, the fresh grapes were able to command record prices (\$730/ton U.S. Fancy and \$680/ton US #1). The 27.97 tons of grapes for the University of Arkansas juice project plus 14.5 tons to another juice processor represented approximately thirteen percent of the 281 tons which were shipped as fresh market grapes in 1989. Because of maturing young vineyards, the 1990 crop is expected to be approximately 800 tons. Even if only ten percent of these grapes were processed for juice, this would be a four-fold increase. Also, the juicing alternative and processor relationships should be developed, ready to utilize grapes such as those that split during the first week for the 1989 season.

Table 3 Seedless Table Grape Juice Project; Cost and Return Estimates for Ozark Table Grape Growers Association, Inc. 1989 Results

Grapes for Juice:	<u>Tons Delivered</u>	<u>Gallons Processed</u>	<u>Gallons Per Ton</u>
	27.97	4434	158.5
			<u>Dollars/Ton</u>
Estimated Revenue/Ton @ \$4.00/gal			\$634.00
Estimated Cost/ton			
Processing @ \$1.85/gal	\$294.00		
Hauling (Avg. 100 miles)	20.00		
Custom Hand Picking	<u>80.00</u>		
Sub-Total		\$394.00	
Estimated Returns/ton		\$240.00	

Preliminary evaluation of the juice blending studies indicates that new and improved flavors can be created through nonadulterating "extender" products. The Food Science Dept., University of Arkansas has manufactured "new" juices from Arkansas' seedless grape cultivars of Venus, Mars, Reliance, and Saturn. Tests of these juices have formed the core of these preliminary observations. As is the case with apple and some of these table grape juices, the flavor of "extenders" tends to be bland. Also, the surplus of extenders such as apple juice tends to have them selling at a relatively low price.

Juice blending research becomes more imperative when it is considered that the "hot press: juice extraction technology increases output to 200 gallons per ton. This 257 increase over the 160 gallons per ton from the cold press method can be accomplished with relatively minor increases in cost. However, because of the more intense and harsh flavors from hot press juices, blending studies will be required to test the utility and acceptability of these developments. Therefore, it may be possible to create not only a better flavored juice product but also one which would be sold at a more competitive price.