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# Louisiana Strawberries: Consumer Preferences and Retailer Advertising

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Strawberries have been a leading fruit in terms of growth in per-capita consumption. Between 1990 and 2000, the total increase was about 38 percent, to 2.7 kilograms. Both fresh and processed product forms grew, but per-capita fresh product consumption increased about 48% to 2.2 kg in 2000, while processed product consumption grew by 9% (Cook 2002a). Of 46,100 acres of strawberries harvested in the U.S. in 2001, industry leader California harvested 26,400 acres, and Florida harvested 6,500 acres (NASS 2003). Over the past five seasons, Louisiana has averaged about 390 acres per year (*Ag Summary* 2004), with an average yield per acre of about 15,000 pounds. California and Florida have much higher yields, partly accounted for by long seasons and technology adoption.

Much of the crop is sold to the retail channel, and the remainder moves through foodservice distributors like Sysco and through direct markets (Cook 2002b). California has an advantage because most consumers shop at retail grocery stores. Louisiana's local markets are strong, but only about 40% is sold to grocery retailers. Supply-chain management is a major competitive factor in the grocery industry and has been identified as an efficiency/cost reduction area. The almost year-round shipping potential and large farm and supplier size in California is very attractive in terms of chain management.

A major focus of this project was to understand how consumers choose among strawberry product characteristics such as size, freshness, color, origin, pesticide-residue attributes, and price. Consumer preferences in the Louisiana market area have not been identified, and the promotional efforts of retailers (newspaper advertisements, point of purchase materials, and other store merchandising efforts) have not been documented.

## Study Description and Methodology

A three-part study was conducted to understand consumer behavior and preferences in the state market (Hinson and Bruchhaus 2004). The components were preferences for strawberry products, behavior of retailers in terms of advertising strawberries, and beliefs and attitudes of grocery store produce managers. Information was collected from a mail household survey that covered all of Louisiana and portions of Mississippi and Alabama, collection and analysis of advertisements of Baton Rouge grocery stores, and a personal-interview survey of produce managers in Baton Rouge.

Respondents to the consumer-preferences component were mostly female. Compared to state averages, respondents had more years of education, were older, had about the same rate of full-time employment, had higher levels of household income, had fewer children under 20, and had a smaller minority proportion.

## *The Statistical Procedure: Conjoint Analysis*

Conjoint Analysis (CA) is a multivariate model that helps to understand the structure of consumer preferences for products or services. Products have unique sets of attributes. Consumers evaluate those attributes and choose the product that best fits their needs. For CA, consumers rate or rank of a series of product "profiles," and contributions of individual product attributes to consumer preferences are estimated. Four factors (attributes) were chosen to represent the strawberry products:

- Container—the new clear plastic clamshell and the traditional plastic basket.
- Pesticide strategy—conventional, scheduled application strategy, and reduced-pesticide strategy (similar to Integrated Pest Management). Pesticide residues are food-safety and health issues important to consumers.
- Price per pound—\$1.99, \$2.49, and \$2.99.
- Origin/brand—California, Florida, and a "Louisiana produced" strawberry indicated by a sticker or logo.

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These attributes and levels resulted in 36 possible product combinations ( $2 \times 2 \times 3 \times 3$ ). Using the fractional-factorial method, 11 product combinations (2 holdouts were included for validation) were selected for rating and for estimation of utility values for all attributes and levels.

## Results

### *Consumer Purchase Patterns*

About 82% of respondents reported they eat fresh strawberries at least occasionally. During the Louisiana production season, almost half the respondents who purchased fresh strawberries did so less than once per month, while about one-fifth purchased more than once per week. During the rest of the year, more than 50% of respondents purchased fresh strawberries, indicating continuing demand for the product across the year. Almost two-thirds of respondents believed the strawberries they were purchasing came from Louisiana, while 22% were unaware of the origin of berries. We were interested in the outlets used by respondents to purchase strawberries. From the survey, about 64% purchased strawberries in grocery stores while 36% purchased from direct-marketing outlets. About 42% who purchased strawberries shopped at national grocery chains (Wal-mart, Winn-Dixie, Albertson's, and others), while about 22% purchased at local supermarkets.

### *Willingness-to-Pay*

Preferences for the Louisiana berry may be reflected in a willingness to pay more for the Louisiana prod-

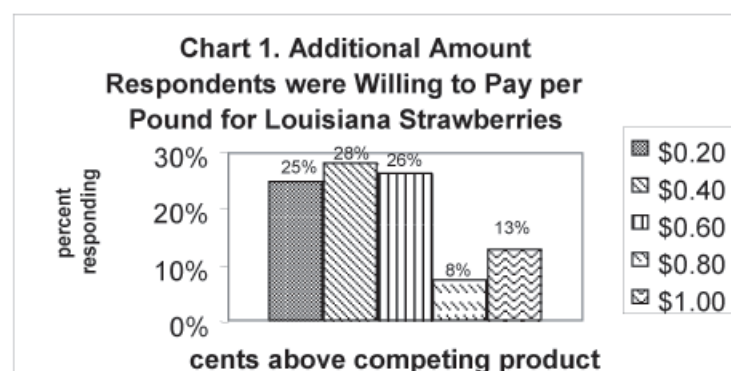
uct. About 76% of all respondents indicated they would pay more (Figure 1). When only those who responded they would pay more were considered, about 60% were willing to pay at least 20 cents more, and about 20% were willing to pay more than 60 cents more. These results seem consistent with other studies of willingness to pay for locally produced fruits and vegetables.

### *Average Ratings of Products*

The 11 profiles (products) were described and instructions provided on the 1-to-7 rating scale used. Average product ratings ranged from 2.7 to 6.0. The product with attributes clamshell, "Louisiana produced" logo, reduced-pesticide strategy, and priced \$1.99 received the highest average rating. Alternatively, the product with attributes plastic basket, major California label, conventional-application strategy, and price \$2.99 received the lowest average rating. None of the products was given a very low rating. Attributes describing the lowest-average rated products were California or Florida label, and conventional-application strategy.

## Overall Conjoint Analysis Results

Analysis of respondents' ratings showed that the attribute origin ("Louisiana produced" logo) was highest in relative importance with a value of 56.1. According to standard interpretations from CA, this value is the percentage that origin part-worths contribute to the sum of all factors' part-worths. As a proportion, this is the relative importance of each factor in explaining respondent ratings. In order of importance, origin was highest, followed by price, container, and pesticide



strategy (Table 1). When combined or decomposed according to demographic segments, potential marketing opportunities may be identified by searching for patterns of behavior that match expected outcomes.

As an example, CA results are compared across household income levels. Origin/brand was expected to have more value in the higher income categories, price was expected to be relatively more important at lower income levels, and higher-income consumers were expected to be more concerned about safety issues such as pesticide residues. Compared to the overall model, price was relatively more important than was origin/brand for the bottom income level (Table 2). The expected relationships were found for origin/brand and price in the remaining income categories.

The relative importance of origin/brand increased with income (from about 33 to about 57, but decreased a bit when the highest category was reached). For price, importance decreased (from about 42 for the lowest category to between 20 and 30 in the higher categories). The importance of pesticide strategy was lowest for the middle income category, and tended to be higher for both the lower and the higher income categories.

### Advertising By Grocers

An understanding of how retailers support and promote strawberries within their overall marketing

mix reveals their perceptions about the contribution of strawberries to their competitive position. Two major grocery chains and five local grocery stores were regular advertisers through newspapers, inserts, and bulk mailing. Over the four-month period of the survey, 24 ads for nationals and 52 for locals (all usually distributed on Thursday) were evaluated. Nationals had a slightly higher percentage of ads that included strawberries, but the local stores were similar. Whether retailers felt that customers were concerned about the origin of berries purchased at retail may be reflected in whether they presented that information in the ad. Nationals identified California in 27% of ads, while no locals did (Figure 2). Just the opposite was the case for specifying Louisiana as an origin. The locals were higher by a margin of 42% to 7%. This suggests that local stores see Louisiana origin as a factor of interest to their customer base.

### Produce Managers' Opinions About Strawberries

Baton Rouge area produce managers were surveyed to learn their perceptions for both Louisiana and out-of-state strawberries. There were 13 produce managers in the survey, including both national and local grocery stores. According to produce managers, 57% of strawberries sold during the Louisiana strawberry season were from Louisiana, followed

**Table 1. Conjoint Analysis Results, All Respondents.**

Factors	Relative importance
Container	12.1
Origin/brand	56.1
Pesticide strategy	7.1
Price per unit	24.7

**Table 2. Conjoint Analysis Results by Demographics: Household Income.**

Factors	Relative importance				
	Less than \$20,000	\$20,000 to \$39,999	\$40,000 to \$59,999	\$60,000 to \$99,999	More than \$100,000
Container	7.14	16.27	10.98	9.54	10.26
Origin/brand	33.33	49.08	56.60	57.26	45.96
Pesticide strategy	17.35	12.07	5.90	12.35	15.60
Price per unit	42.18	22.57	26.52	20.85	28.18

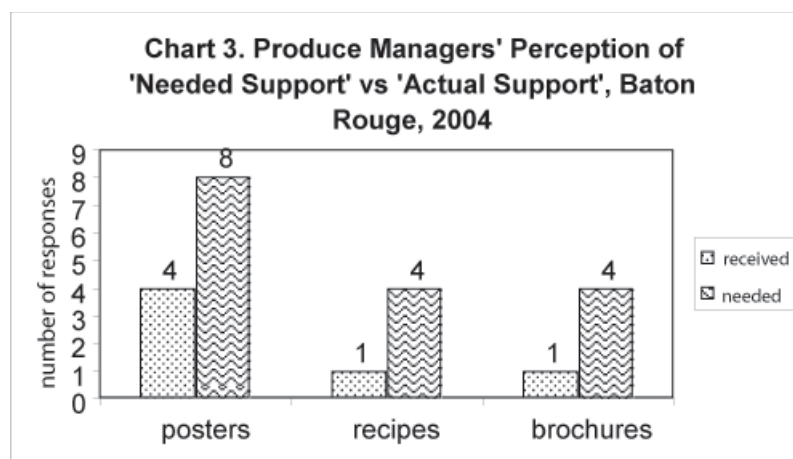
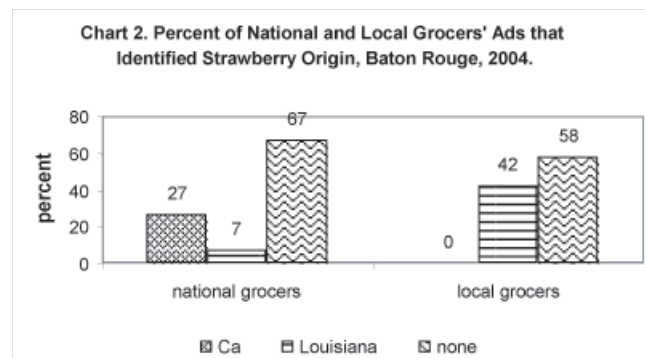
by California, Florida, and Mexico. Another objective of this research was to identify appropriate means to promote Louisiana strawberries to retail consumers, and in this context produce managers reported their perceptions of “needed support” versus “actual support.” Seventy-five percent indicated they need merchandising support (posters, brochures, and recipes) (Figure 3). They stressed the need to draw customers toward strawberry displays and to identify the product by origin/brand name.

### Summary

The components of strawberry marketing covered here were consumer preferences for fresh strawberries, print advertising (newspaper ads, inserts, and direct mail) by local and large chain grocers, and grocery store produce managers’ opinions of strawberries. Conjoint analysis was used to estimate the relative importance of 4 preference factors. In

order of importance, they were origin/brand, price, pesticide strategy, and container. The importance of origin was consistent with expectations, but the low level of importance of reduced pesticide use was not.

For print-advertising results, strawberries were more frequently included in local grocers’ ads, and Louisiana origin was a more-frequently mentioned attribute compared to national chain ads. Produce managers in local and national chains gave Louisiana berries higher ratings compared to competing berries, and they felt that customers preferred the Louisiana berry. In-store support, such as recipes and promotional material (posters, for example), was identified as a problem area. Overall, these responses regarding attributes of the Louisiana berry seem to suggest promotional opportunities and the possibility of enhanced sales of berries in local markets.



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