The Current State of the Satsuma Marketing Effort in Alabama

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Abstract. This article reviews the results of 5 years of marketing research on Alabama satsumas and makes recommendations for future progress. Although there are only 28 ha of satsuma orchards in production in Alabama at this time, there are a number of encouraging developments that suggest considerable potential for expanding the industry such as microsprinkler freeze protection, new early-maturing and cold-tolerant varieties, contract sales through the Farm-to-School Program, and rising demand for premium mandarins. Prospects for the industry marketing effort are considered from the perspectives of analyzing marketing opportunities, identifying market segments, selecting attractive target markets, designing marketing strategies, planning marketing programs, and managing the continuing marketing effort. A number of distinct consumer segments have been identified, including one that prefers fruit that is still slightly green and another that prefers a longer shelf life. A peeled-and-sectioned product also appears to have considerable market potential. Name recognition is still a problem as is insipid flavor from fruit that is marketed beyond its optimal ripeness. Needs for the future are detailed and include the needs of the commodity (freeze protection and expanded acreage), the needs of the market (consistency and quality), the needs of the product (quality standards and consumer awareness), the need for and the needs of a brand (recognition and equity potential), the needs of an organization (cooperation and leadership), and the needs of the industry (processes for building equity, forestalling competition, reducing supply shocks, and attracting investment).

The satsuma mandarin has a long history in Alabama (Campbell, 2004). The first satsuma trees were delivered to Baldwin County from Massachusetts in 1898 (Winberg, 1948a). As satsuma acreage increased rapidly along the coast, producers realized the need for cooperative marketing and established the Gulf Coast Citrus Exchange (Anderson, 1928). There are conflicting reports about where and when the Exchange was founded: either in 1910 by Mississippi growers (Richardson, 1923) or in 1915 by Mobile and Baldwin County growers (Winberg, 1948b). The Exchange supervised the building and equipping of the cooperative's packing houses and directed the marketing of fruit from the entire satsuma-growing region (Richardson, 1923). The 1923 season produced the largest crop—700 railcar loads (Winberg, 1948c). The Gulf Coast Citrus Exchange marketed fruit under the brand name "Sugar Sweet" in 45 cities throughout the North and Midwest, including New York and Chicago. Satsumas were also exported to other countries such as Canada and England (Dozier, 1924).

The success of the Exchange and the industry lasted little more than two decades. Several freezes occurred from 1924 to 1933 that reduced the fruit crop and damaged the trees. Then in Nov. 1940, a sudden drop in temperature occurred while trees were actively growing (Campbell, 2004). The extensive damage caused by this event, combined with frequent freezes and hurricanes plus a world war, all but eliminated the satsuma industry on the Gulf Coast for the next 50 years.

Efforts to revive the industry were initiated by Alabama's Agricultural Experiment

Station and Cooperative Extension System and the Alabama Farmers Federation. The introduction of microsprinkler irrigation during the early 1990s allowed the Alabama satsuma industry to reduce the impact of freezes, and new orchards were planted in Baldwin and Mobile Counties. Since then, satsuma acreage has increased to 28 ha, which has saturated local markets with fruit. This has prompted efforts to explore other markets, including grocery stores and institutional markets such as public schools, prisons, and commissaries.

A systematic approach to developing a satsuma industry was undertaken with support from the Alabama Department of Agriculture and Industries, the Alabama Farmers Federation, and the U.S. Department of Agriculture Federal—State Marketing Improvement Program. One part of this effort focused on production issues and the other part was devoted to marketing issues. This article summarizes the results and conclusions of the evaluation of marketing issues.

THE MARKETING PROCESS

A generally accepted outline of the marketing process includes: 1) analyzing marketing opportunities, 2) researching and identifying market segments, 3) selecting target markets, 4) designing marketing strategies, 5) planning marketing programs, and 6) managing the marketing effort (Kotler and Armstrong, 2004). Subsequently, we follow this outline in describing the current state of the marketing process for Alabama satsumas and conclude with a list of needs for the future.

Analyzing marketing opportunities. In our initial study (Campbell et al., 2004), we showed grocery store consumers high-resolution, digital photographs of satsumas that differed in color, size, seediness, and blem-

ishes and were labeled with different prices, production regions, and production practices. Shoppers were then asked to rate 20 combinations of photographs and labels in terms of their intention to buy. Among the surprising findings of this study, although 80% of our respondents preferred no green in their fruit's skin color, 20% actually preferred the green-yellow color to the yellow-orange and orange colors, so there may be an opportunity to market ripe-but-still-green fruit to this segment, particularly in the early part of the season. This finding also suggests that some shoppers understand that flavor in citrus generally develops before color, rather than after, like in other fruit such as bananas.

Another phenomenon occurred that was related to price preferences; there were more respondents (57%) who preferred the middle price of \$2.18 or the highest price of \$4.39 per kilogram than there were respondents who preferred the lowest price of \$1.07 (43%). This suggests that consumers' perceptions of price may be related to expectations of higher quality, especially if these expectations are subsequently fulfilled. Labels describing where the fruit was grown (Alabama versus the United States) and whether produced by organic methods had relatively little impact on respondents' intentions to buy. Less surprisingly, seeds, blemishes, and small fruit decreased the intention to buy, confirming that supermarket consumers are particular about their citrus fruit purchases. This observation led us to design our second study to display only fruit in the photographs that were large, orange, seedless, and without blemishes. By holding those dimensions constant, we were then able to examine additional attributes such as packaging (loose, bag, box, or clamshell), type of mandarin (satsuma, clementine, or tangerine), shelf life, vitamin C label, and price (Campbell et al., 2006).

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Peeled-and-sectioned fruit in clamshell containers were popular with most consumers. However, there were two groups of consumers, representing $\approx 23\%$ of the respondents, who would not buy the peeled product, suggesting that more than one package type should always be available in supermarkets. This finding is supported by observations of other fruits available in grocery stores; for example, melons and pineapples are offered in both value-added and whole forms.

A simulation model revealed that the peeled-and-sectioned form could raise retail revenues by 250%, even at the highest price of \$15.41 per kilogram. The demand for this form could offer an opportunity to add value to smaller, blemished fruit that still have excellent eating qualities but are unacceptable as whole fruit as a result of their appearance.

The presence or absence of a label stating "high in vitamin C" had little influence on consumer intentions to buy, a result similar to that found in a study on bell peppers (Frank et al., 2001). However, the name of the mandarin in the photograph did have a noticeable influence on the intention to buy, although the fruit pictured in the photographs were all the same type of mandarin. The name "Satsuma" beside the photograph was less preferred than the names "Tangerine" or "Clementine." Because only 32% of respondents of respondents had ever tasted a satsuma, this suggested that tangerines and clementines were more familiar to supermarket shoppers in the survey region, and so they were more comfortable buying products with those names. This emphasizes the need to raise awareness and recognition of satsumas and their qualities outside of their immediate production region in the coastal counties.

The first two studies were based exclusively on visual information and did not offer respondents the opportunity to taste the fruit. Since then, taste testing has been conducted in two additional studies, one in grocery stores and the other in a laboratory setting. The in-store taste test asked consumers to taste a small portion of each of three mandarins—clementine, satsuma, and tangerine—and choose which one they preferred. Measures of the Brix and acid content were also taken from portions matching those that were tasted. These subjective and objective measures were then combined to develop a model of average consumer preference relative to the flavor of the mandarin tasted. The information will be useful in determining how late into the season satsumas should be harvested if the aim is to maintain ideal flavor, particularly in that portion of the crop that is reserved for a premium, branded product.

A sensory evaluation panel tasted mandarins at ratios that were lower than those presented in the in-store study to provide information on how early satsumas can be harvested. Preliminary results indicate that, considering the current lack of postharvest maturation facilities, a conservative mini-

mum ratio of 10:1 for tree-ripened fruit would probably be advisable to ensure flavor quality in even the least-matured fruit in the distribution at harvest. This recommendation is also consistent with Louisiana's harvesting regulations, which require a 10:1 ratio at harvest.

Researching and identifying market segments. One of the benefits of the experimental design used in the first two studies is that the information on individual respondents' preferences can be used to group them into market segments that may then suggest product-positioning opportunities and promotion options. For example, in the first study (Campbell et al., 2004), we identified a "no-blemishes" segment, representing 37% of the respondents. This segment strongly preferred unblemished, large, seedless, nongreen fruit and were relatively insensitive to price. From their responses to our demographic questions, we were able to characterize them as more likely to be frequent purchasers of sweet citrus, younger, female, nonwhite, and parents with young children. We also identified a "price-sensitive" segment (23% share) that showed a significant preference for the lowest price, few seeds, and the Alabama label. On average, these respondents were older, had heard of satsumas before, and tended to buy their citrus fruit at roadside stands and farmers' markets rather than at supermarkets. There was also a "no-seeds" segment (41% share) that strongly preferred seedless, large, nongreen, unblemished fruit with the Alabama label. These respondents tended to be white and unfamiliar with satsumas and bought their citrus at supermarkets, especially for special occasions like Christmas.

In the second study (Campbell et al., 2006), holding constant the most-preferred appearance of the fruit (large, nongreen, seedless, and unblemished), we identified five other potentially useful segments. A "shelf life" segment was willing to pay more for a 31-day shelf life. They tended to be younger and white and purchased their citrus particularly at Christmas. A "convenience" segment was especially fond of the peeled-and-sectioned product, was sensitive to price, preferred a longer shelf life, and bought their citrus mostly in supermarkets. A "loose fruit" segment would almost never buy the bagged, boxed, or peeled forms. These consumers tended to be older, nonwhite, and less frequent citrus buyers. As mentioned earlier, the "no handling" segment was strongly opposed to the peeled-and-sectioned form. They tended to have lower incomes and purchased their citrus at markets other than grocery stores. Finally, another "price-sensitive" segment was identified, and again they tended to be of older-than-average age. Combining segment preferences with promotion based on demographics allows the marketing effort to target different customers with different products in different retail venues.

Selecting target markets. With yields of up to 45,000 kg-ha⁻¹, it does not take much production area to completely saturate the

roadside and farmers' markets in the immediate region, and beyond that, the supply chain is not well developed. Also, there is the phenomenon of "home-grown" product; homeowners in the satsuma-growing areas of the southeast United States often have one or two satsuma trees of their own, which they diligently protect from freezes with makeshift greenhouses and even electric heaters. Considering that a single tree can produce 200 kg of fruit in a season, and many of these are shared with relatives, friends, and neighbors, this further reduces the local demand for satsumas from commercial sources.

Thus, supermarkets outside of the growing region are an obvious and attractive target for the expanding satsuma industry. They represent a large market and have well-established, efficient distribution systems. However, they mostly want fruit that are large, unblemished, seedless, and degreened. They will display fruit in bins, bags, or boxes. From the observation of clementines, we know that some volume of small fruit can be sold in boxes. The peeled form was intriguing to produce managers, but it is likely that they have not yet found it to be cost-effective to do the peeling themselves.

Since 2003, there has been a coordinated effort among several satsuma growers to distribute premium quality fruit to public school systems as part of the Alabama Farm-to-School Program. To date, 15,000 18-kg (net weight) boxes have been delivered. The goal is to provide every child participating in the Alabama school lunch program— $\approx 743,000$ students (Alabama Department of Education, 2006)—with one satsuma on one day. This has created a link between the state school system and local fruit growers that facilitates their access to a large and continuous market while also providing statewide publicity for satsumas.

Military commissaries were also investigated as potential markets. A distributor who specialized in these markets expressed some interest but was unable to reach an agreement with growers. Furthermore, during interviews, it was emphasized that small fruit would not be acceptable to the commissary market. Other markets such as mail order, export, and fundraising events have not received much attention to date but should not be overlooked.

Designing marketing strategies. Because of their distinctive flavor qualities and potential to be perceived as a novel product, satsumas are in a position to secure a premium image and higher price than other mandarins. However, to do so, they must communicate their higher value to the consumer and establish a solid reputation for premium quality in appearance, taste, and convenience. They cannot do this if every satsuma on every tree is dumped into the marketplace.

In designing marketing strategies, emphasis should be placed on positioning satsumas away from tangerines. This should not be hard to do, because satsumas are available earlier than most tangerines.

In terms of special occasions, tangerines are widely available by Thanksgiving, but satsumas could be the preferred mandarin around Halloween. Getting the bulk of the satsuma harvest to market by Halloween would require more emphasis on earlier-maturing varieties and degreening facilities. Despite our discovery of green-accepting respondents in our first survey, these consumers were distributed among all three of the original segments, so further research would be needed to characterize and reach them by their demographics. The remaining 80% of consumers would expect their satsumas to be yellow or orange no matter how early they became available, thus requiring postharvest interventions such as degreening facilities.

Christmas is late for optimal flavor in satsumas but, by refrigerating and waxing fruit, it is possible that flavor quality could be maintained near optimal that far into the season. However, more research is needed in this area.

Finally, a marketing strategy has not yet been articulated for exploiting the opportunity offered by peeled fruit sections. Consumer preference for this form has been demonstrated, but it remains to be seen whether the technology for producing peeled sections is cost-effective. Future research should concentrate on determining the feasibility of entering this market.

Planning marketing programs. In 2002, a marketing plan for satsumas in southeastern supermarkets was developed as an instructional exercise (Campbell et al., 2002). The plan assumed a growth in production area from 20 ha to 200 ha over the 3-year planning horizon with distribution in 30 metropolitan areas across eight states. A first-year rollout in two test markets (Atlanta and Nashville) was designed to capture a 0.5% of the market share of the premium sweet citrus sales in supermarkets. This was planned to increase to 1.5% in the second year in six cities and 5% by the end of the third year in all 30 metropolitan areas. Two-thirds of the fruit was to be sold loose in gravity bins and the other third in attractive, 2.3-kg (net weight) wooden boxes. Only 50% of the harvest was expected to meet the high-quality standards set for the brand; the rest was to be converted to juice. The bin-run fruit was priced at \$1.10 per kg and the boxed fruit at \$3.35 per box (or \$1.43 per kg) wholesale. Aided brand awareness goals were set at 15% in the first year, 30% in the second year, and 80% in the third year. A multifaceted promotional campaign included newspaper inserts, cable television, radio, in-store collateral, coupons, web site, public relations, and grower relations. The campaign aimed to capitalize on the suitability of satsumas for children and its availability as the first domestic citrus of the season, which included a prominent Halloween promotion. Net losses were expected to be incurred in the first year as a result of large promotional expenditures to raise awareness, but net revenue of over \$1 million was predicted by the third year. This was esti-

mated to be approximately twice what growers could expect from continuing their strategy of marketing unbranded, grove-run fruit. Although this particular plan was never implemented, the planning exercise was informative.

Managing the marketing effort. For there to be progress in the development of a satsuma industry, producers need to be considering a strategy of brand management. Currently, the grower community is a loose-knit group of ≈ 20 farmers primarily located in Mobile and Baldwin Counties. The prospects for a grower cooperative have been discussed periodically, but there has not been much forward movement despite a number of successful models in the citrus industry and elsewhere. For example, the Indian River Citrus League was formed in 1931 and currently has 950 members representing 79,000 ha of production. It is estimated that members of the League receive an average of $\approx 30\%$ more for their grapefruit than comparable unbranded fruit from nearby regions in Florida (J.-Y. Lee, pers. comm.). Similarly, Sunkist Growers, the largest agricultural cooperative in the United States, markets over half the citrus grown in California and Arizona. It is organized as a federated cooperative representing 6500 growers, 51 packing houses, and 18 district exchanges (Siebert, 1998). Their trademark was established in 1907 and is now the 47th most recognized brand in the world (Lakeview Technology Inc., 2001). Vidalia onions became a registered trademark of the Georgia Department of Agriculture in 1986 and now command prices that are five times higher than other onions (Hayes et al., 2003). Other successful models of brand management in agricultural products include Smithfield Hams, Certified Angus Beef, Ocean Spray Cranberries, and Welch Foods. Coordination at this level is currently far on the planning horizon for the Alabama satsuma industry.

FUTURE OUTLOOK

It is imperative that research and development move forward simultaneously on at least six fronts: commodity, market, product, brand, organization, and industry. These fronts are discussed subsequently in that order, but although a certain amount of evolutionary progression is to be expected, a systems approach based on foresight and planning would reward an effort to integrate the six fronts.

Commodity needs. Foremost among the persistent problems facing satsumas as a commodity—and growers as a production unit—is freeze protection. Considerable research efforts have been devoted to reducing the physiological and economic damage resulting from freezing weather. These involve such diverse approaches as long-range weather forecasting (Ebel et al., 2005), microsprinkler freeze protection (Nesbitt et al., 2000), earlier maturation and harvesting (Powell and Williams, 1998), geographical dispersion of orchards (Davis et al.,

1997), and crop insurance (Lindsey et al., 2007). Some cost-effective combination of these will be necessary to ensure the sustainability of the production system.

Satsuma production is also at a stage where there is too much of the commodity for local distribution and not enough for regional, national, or international distribution. More trees must be planted for any such expansion in the supply chain to be realized. This is not happening at the rate necessary to take advantage of the marketing opportunities described earlier. Nor is this entirely unexpected; distributors want guarantees of sufficient volume of quality fruit before they will contract local supplies, whereas growers want guarantees of marketability before they will plant additional trees.

Market needs. Supermarkets and their customers want consistency in the availability of their produce. Gone are the days of eagerly awaiting the start of the “season” for each variety of fruit. Even many so-called “farmers’ markets” carry grapes from Chile and tomatoes from Holland when they are out of season locally. Two major factors inhibit consistency in the availability of satsumas: disruption of local supplies and lack of year-round sourcing. Freezing temperatures and hurricanes can disrupt supplies from many counties along the Gulf, although other nearby counties may escape damage. Thus, it would be wise to source from orchards across the broadest possible area from Texas to Florida so that not all production is likely to be interrupted in a single year. This would, of course, require a high degree of cooperation among growers across states and a forswearing of “state-grown” promotion programs. However, if accepted, it would be a simple step to cooperation with other regions such as California and then other countries in the southern hemisphere such as South Africa, allowing at least a second season, if not year-round, supply. Something like this progression was eventually realized in the distribution of kiwifruit in the United States (Yun, 2004).

Consumers also value consistency in quality. Growers may not have to deliver the very highest level of quality, only an experience with the product that is consistent and that confirms or exceeds consumers’ expectations relative to the available substitutes. When there are close substitutes such as with tangerines and clementines, it is important to position the product in a different and distinctive dimension from its competitors. Otherwise, consumers are likely to make their choices based solely on name recognition or lowest price. There are a number of distinct dimensions that satsumas could occupy and exploit, including seedlessness, earliness, peelability, and flavor. As a result of the inherent variability in these attributes, most of these would require the imposition of quality standards and grading to achieve consistency.

Product needs. Our research has revealed a pressing need for quality standards, specifically as a prerequisite for effective brand

development, identity, and differentiation from close substitutes. These standards should at least include quality control and monitoring of size, color, seeds, blemishes, and flavor (Brix/acid ratio). Because these limitations may exclude a significant proportion of the fruit that growers would like to sell, strict adherence to such standards is unlikely without more coordination between stakeholders in the industry.

Alternate product forms such as juice, marmalade, pulp, dried rinds, flavorings, essential oils, and canned segments need to be evaluated to add value to that proportion of the harvest that fails to meet the high standards for whole fruit. Postharvest handling, including degreening, refrigeration, waxing, and fungicide application facilities, will extend the harvest season and storability of the whole fruit. A peeled-and-sectioned form may prove a profitable alternative for fruit that would be culled for failing certain standards of appearance.

Finally, under conditions in which there is sufficient incentive for growers to shift their focus from simply maximizing yields to optimizing production of premium-quality, high-margin fruit, no doubt an array of orchard management techniques will be developed by the growers themselves to minimize skin blemishes, maximize size, color and flavor, and optimize harvest scheduling, inventory, and distribution. One way to provide a focal point for such an incentive system is to brand the product.

Brand needs. Successful brands have very high levels of awareness among consumers. They achieve this partly with aggressive and persistent promotion. For example, Sunkist has a phenomenal 97% brand recognition (Western Farm Press, 2003). Developing brands can take advantage of considerable free publicity in their early stages, because the popular press and its subscribers are interested in new products and tend to publicize entrepreneurship. Of course, awareness is a double-edged sword and must be backed up by perceptions of quality, integrity, credibility, and reputation. This kind of support generates an army of loyal customers and builds brand equity, which can be sold, licensed, or leveraged, just like other assets. All this can be viewed as a form of investment, not in facilities or in training, but in protecting the rights of entrepreneurs to benefit from their ability to exploit market opportunities and their willingness to take risks (Baum and Gosse, 2004; Hart, 1998; Hayes et al., 2003). When managed properly, the returns to brand equity go largely to those stakeholders who made the most investment and can be used to attract even more investment for expansion and product development. The brand, not the orchard, becomes the focus for building equity. However, shifting the focus from the orchard to the brand requires coordination and cooperation among growers and an organizational structure to support the branding effort.

Organization needs. The need to nurture cooperation and forestall competition cannot

be overemphasized. Growers must cooperate with other growers in adhering to quality standards and supply controls. Regions must cooperate with other regions in sharing information, facilities, and harvest labor. States must cooperate with other states in reducing constraints on interstate transport. Nations must cooperate with other nations in structuring effective phytosanitary regulations and eliminating barriers to trade. Without this level of cooperation, any organizational structure will be severely handicapped and expansion limited.

A local cooperative of growers is one approach to organization. Others include a dynamic individual grower who would be the prime mover in expanding the market; contract production by an experienced organization with extensive markets like Sunkist; or investment in expansion by an organization based in another country such as South Africa or Japan.

Whatever the approach, the organization needs leadership with vision. It will need to attract and compensate talented professional managers who are dedicated to building brand equity for investors. Finally, the ideal organization will need to attract sufficient capital to follow an aggressive development path, to take advantage of ephemeral opportunities, and to weather financial crises.

Industry needs. Concerns about the "industry" are largely limited to public servants in government and academia. Day-to-day management is concerned with the brand and the organization. However, public servants can at least describe what needs to be done in terms of "processes" and in some cases facilitate those processes. As W. Edwards Deming, a pioneer in quality control, put it: "If you can't describe what you're doing as a process, then you don't know what you're doing."

To that end, we suggest that the needs of the industry involve four processes: a process for building brand equity, a process for minimizing competition, a process for reducing supply shocks, and a process for attracting investment. Although some of these were introduced briefly here, it will require a concerted effort before they are fully articulated or implemented.

Strategies for building brand equity are complex but aim initially to generate awareness, then to reinforce consistency, and gradually to establish reputation. Both the name of the organization and the name of the product should be trademarked early, and the growing awareness and credibility should be channeled into these names. Likewise, there needs to be an incentive system in place whereby all stakeholders in the industry are motivated to contribute to the brand's reputation, for example, by upholding quality standards, developing innovations, and sharing information.

Competition is generally good for the economy, but as David Sarnoff said, it "brings out the best in products and the worst in people." Competition also tends to dissipate cooperation and, as noted earlier, coop-

eration is what is urgently needed for the organization of the satsuma industry to prosper. Destructive competition with other mandarins can be minimized by carefully differentiating the various products in the consumer's perception. Processes for inducing cooperation and minimizing competition among producers and products still need much in the way of development, consensus-building, and extension.

The process of reducing supply shocks involves two elements: reducing shortages and reducing surpluses. This is part of supply chain management. As mentioned earlier, shortages can be minimized by diversifying sources of supply to reduce exposure to weather and disease risks. The organization should also strive for alternating production seasons in both hemispheres as well as earlier and later maturing varieties and postharvest inventory control. Surpluses can best be managed by segmenting the market, developing new product forms like peeled sections and juices, and imposing stringent quality control standards. Requiring membership in the managing organization such as a cooperative would also regulate orchard expansion in an orderly fashion, at least under the brand name.

Coming full circle, the process for attracting adequate investment capital for expansion is intimately tied to the ability of the brand to accrue equity, because the value of that equity can be shared among investors, unlike higher fruit prices. Member growers are an obvious source of equity funds, but the organization should not find itself restricted to them nor should growers be pressured to become investors. Growers already have the incentive of premium fruit prices to motivate their efforts toward building a strong brand.

To conclude, public servants can facilitate these processes where possible until an organization with competent, professional management can take over and guide the industry into the future. The satsuma grower community is in a position to take advantage of a host of opportunities, but these prospects will not last indefinitely.

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