

Transgenic produce slow to enter evolving global marketplace

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IF and when genetically engineered (GE) horticultural products become more widely available and adopted, they will enter an expanding marketplace that is becoming globally integrated and more consolidated. Fewer, larger firms will control access to a rising share of the world's population, including rapidly growing middle-income consumers in the developing world. Consumers everywhere will be increasingly focused on convenient, ready-to-eat and value-added products. In order to compete on a global scale, GE produce must meet the challenges of the quickly evolving market for fruits and vegetables.

In the United States alone, the estimated final value of fresh produce sold through retail and food-service channels surpassed \$81 billion in 2002. Europe-wide fresh produce sales through supermarket channels alone (excluding green grocers and food service) were estimated to exceed \$73 billion in 2002, and total final sales to exceed \$100 billion.

Worldwide, consumption and cultivation of fruits and vegetables is increasing. Between 1990 and 2002, global fruit and vegetable production grew from 0.89 billion tons to 1.3 billion tons, and per capita availability expanded from 342 pounds to 426 pounds (FAO 2003). Much of this growth has occurred in China, which is aggressively pursuing agricultural biotechnology (see page 112).

The global fresh fruit-and-vegetable marketing system is increasingly focused on adding value and decreasing costs by streamlining distribution and understanding customer demands. In the United States and Europe this dynamic system has evolved toward predominantly direct sales from shippers to supermarket chains, reducing the use of intermediaries. Food-service channels (hotels, restaurants and institutions) are absorbing a growing share of total food volume and are also developing more direct buying practices. The year-round

availability of fresh produce is now seen as a necessity by both food service and retail buyers.

Product form and packaging are also changing as more firms introduce value-added products, such as fresh-cut produce, salad greens and related products in consumer-ready packages. Estimated U.S. sales of fresh-cut produce were over \$12 billion in 2002. Fresh-cut sales are even higher in Europe and beginning to develop in Latin America and Asia as well. The implications of this trend may become as important to the biotechnology industry as the changes in market structure, since fresh-cut processors are increasingly demanding specific varieties bred with attributes beneficial to processing quality.

International trade

The streamlining of marketing channels poses both challenges and opportunities for horticultural biotechnology. A smaller number of larger firms, controlling more of world food volume, now act as food-safety gatekeepers for their consumers, reflecting the diversity of consumer preferences in their buying practices. Where consumers perceive products utilizing biotechnology to be beneficial, retail and food-service firms will provide them. Products with specialized input traits valued by consumers, such as unique color, flavor, size or extended shelf-life, are the most likely to succeed in today's marketplace.

While large food-service and retail buying firms and international traders may offer easy access to consumer markets, if major buyers adopt policies unfavorable to GE foods, distribution obstacles could become insurmountable. Such policies are common among European food retailers, reflecting strong consumer concern there over GE products.

The challenge to supply seasonal, perishable products year-round has favored imports, and increased horizontal and vertical coordination and integra-

tion among shippers regionally, nationally and internationally. Seasonality in the production and consumption of perishable commodities, due to natural climatic conditions, causes much horticultural trade to be counter-seasonal, such as the shipment of Southern Hemisphere grapes and stone fruits from Chile to the United States and Europe in order to meet consumer demand during the Northern Hemisphere's winter, when domestic supplies are low.

Integration among international traders and grower-shippers allows them to position themselves as consistent year-round suppliers of differentiated products; these firms increasingly seek out varieties that offer superior



Global consumption of fruits and vegetables is on the rise, but important markets for California produce growers such as Europe and Japan, above, have taken a cautious approach toward imports of transgenic foods.

flavor and other attributes. For example, Sun-World, a California fresh fruit shipper is pursuing a strategy of marketing differentiated, proprietary varieties where possible. These varieties must be provided from multiple locations in the Northern and Southern Hemispheres so that shippers can provide customers around the world with a year-round supply of consistent quality. Long-term, breeding a set of attributes into a particular fruit or veg-

etable variety in one location will be insufficient to meet these goals.

The United States is the world's largest importer and exporter of fruits and vegetables. U.S. imports of fruits and vegetables grew from \$6.7 billion in 1990 to \$10.8 billion in 2001, while imports by E.U. countries (including intra-E.U. trade) grew slightly to about \$36 billion. Germany has long been the most important import market within Europe, accounting for 12% of world fruit and vegetable imports in 2001. However, a declining import share for Germany is largely responsible for a drop in the E.U.'s share of world imports from 56% in 1990 to 48% in 2001. Japan imported \$5.9 billion worth of fruits and vegetables in 2001, accounting for about 8% of world imports since 1993.

While the influence of the European Union and Japan on world horticultural markets has not been growing, they will remain vitally important. Leading and emerging fruit and vegetable suppliers will continue to vie for these lucrative markets and will respond to market signals conveying evolving European and Japanese preferences regarding the use of biotechnology. Furthermore, in the case of Japan, declining domestic horticultural production over time and economic recovery are expected to eventually cause imports to rebound.

The importance to the United States of European and Japanese preferences regarding GE foods is evident. In 2001, the United States exported \$1.1 billion of fresh and processed fruit, vegetables and nuts to the European Union and had a \$300 million trade surplus with the European Union in these products (USDA 2002). Nuts, raisins and fruit juices are most important, with about two-thirds of the trade in those categories, while fruits such as table grapes, stone fruit and citrus are also important. In 2001, the United States also shipped fresh fruit worth \$537 million to Japan, accounting for 40% of the market (USDA 2003). On the other hand, the United States is now a minor player in the Japanese vegetable import market, shipping \$278.3 million worth of vegetables in 2001, a 14% share. China has become the leading (and still growing)

supplier of fresh vegetables to Japan, with a 57% share. Hence, Japanese consumer preferences regarding GE foods will affect the U.S. fruit industry more than the vegetable industry.

Countries well known for their fruit exports, such as Chile, Brazil, Argentina and Ecuador, have market shares of 2.3% or less, and Australia and New Zealand hover at the 1% level. While some countries may hold important market shares in certain individual products, in general, there is still great geographic diversification in the world fruit and vegetable trade. For fresh vegetables, the world's top five exporters (the Netherlands, Spain, Mexico, United States and China) contributed

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59% of total export value in 2001. Only the United States was ranked within the top five both as an importer and exporter, making decisions in the United States regarding biotechnology especially important to vegetable breeders.

Retail markets

Over the past decade the world has experienced a high rate of mergers and acquisitions in the grocery retailing industry, both in home country markets and across borders via foreign direct investment. Over the past decade this trend led to an estimated 30 firms accounting for 10% of global grocery sales (M+M PlanetRetail 2003). Many of these chains are European and Asian, but with store locations in numerous countries, enhancing their global buying power.

Latin America and Asia have experienced striking growth in the role of supermarkets in food retailing over the past decade, with southern and eastern Africa engaged in the same transformation process (Weatherspoon and Reardon 2003). Over the next decade the rapid evolution of supermarkets should induce more direct linkages between suppliers and retailers on a global scale, gradually eroding the dominant role of traditional wholesalers, open street markets and small-scale fruit and vegetable vendors, following the trend occurring in

the latter half of the 20th century in the United States and Europe.

With store locations in 10 countries, Wal-Mart is the one U.S. firm with a global presence, and it is also the world's largest grocery retailer. Approximately 30% of Wal-Mart's \$259 billion in global 2003 sales were estimated as grocery-equivalent, generating impressive new buying power in the food industry. To date, Wal-Mart's policy is to market GE food products.

As the food distribution system consolidates, retailers are seeking larger suppliers that come closer to matching their scale, as well as suppliers offering more services and marketing support, tailored to their specific needs. This

movement toward account-based marketing is making the food system more technology-intensive, including the introduction of demand-based information management practices to stimulate sales and profits for retailers. To compete effectively, both suppliers and buyers must be consumer-driven, utilizing modern information management practices in all aspects of the vertical food system. The adoption (or not) of GE foods will depend on consumer response as measured by commercial buyers acting as food safety gatekeepers.

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References

- [FAO] Food and Agricultural Organization. March 2003. United Nations. www.fao.org.
- M+M PlanetRetail. 2003. www.planetretail.net.
- [USDA] U.S. Department of Agriculture. 2002. Gain Report #E22104. European Union trade data – multiple commodities only – fruit and vegetables – CY 2001 statistics. Nov. 6. Foreign Agricultural Service, Washington, DC.
- [USDA] U.S. Department of Agriculture. 2003. GAIN Report #JA3701. Market brief for Japanese food processing sector. Feb. 20. Foreign Agricultural Service, Washington, DC.
- Weatherspoon D, Reardon T. 2003 (May). Development Policy Rev: 21(3).