The Changing Face of Varieties for the Western Hemisphere

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Abstract
Red-skinned cultivars continue to dominate the Western Hemisphere export market, relying heavily on their eye-appeal in the consumer marketplace. Yellow-skinned mangos are now recognized as a quality product in the market. ‘Ataulfo’ has shown the most change over the past 5 years with increased planting and imports to the United States. Interest is still high and imports should continue to increase, at least in the short term. ‘Kent’ is the other cultivar that has had the most significant increase in volume in the past 5 years, with a value as a fresh fruit and for products. The interest remains high, with increased plantings and imports in the near future. ‘Keitt’ is currently undergoing increased planting and interest throughout the Western Hemisphere, but it is unclear if the trend will continue. ‘Tommy Atkins’ acreage has eroded in the last 5 years and there is little interest in planting, except in the area of organics. ‘Haden’ acreage also continues to erode in the Western Hemisphere and there is little interest in planting. ‘Madame Francis’ is grown almost predominantly in Haiti and shipped to the United States and its importation has remained steady until the recent earthquake in 2010. Cultivars of minor importance but growing interest include ‘Carabao’, ‘Nam Doc Mai’, ‘Alphonso’, ‘Kesar’, ‘Totapuri’, ‘Edward’, ‘Osteen’ and ‘Palmer’.

INTRODUCTION
The export mango industry of the Western Hemisphere continues to evolve and search for new alternatives to the current cultivars that dominate the industry. However, there has been no organized effort to guide the industry in terms of new cultivars or directions for the industry. Decisions have typically been taken by individual growers, small groups or companies and have been in response to informal information gathering and reactions to consumer preferences and prices received for each cultivar in the market.

The objective of this work is to detail the current situation for export mango cultivars in the Western Hemisphere. The results presented are the product of five years of field observations within the major exporting countries of the western Hemisphere and to a lesser extent, observations within the receiving markets of the United States.

GENERAL OBSERVATIONS
Red-skinned cultivars continue to dominate the Western Hemisphere export market, relying heavily on their eye-appeal in the consumer marketplace. In the opinion of the authors, taste remains of secondary importance for the sale of fresh mangos within most markets. Yellow-skinned cultivars are now recognized as a quality product and are increasingly marketed with their yellow skin as strength. This has been a significant change over the past 5 years in the Western Hemisphere marketplace and within the field. Green-skinned mangos are now recognized as a category in the marketplace, but there remains considerable confusion over the maturity and usage of this category. Mainstream United States consumers do not fully understand the use of mature-green mangos, but there has been considerable growth and opportunity in ethnic markets for mature-green fruit.

‘Ataulfo’ is the cultivar that has shown the most change over the past 5 years. It is a yellow-skinned cultivar of 200 to 300 g, selected in Mexico in the 1930s. This mango has created a cross-over effect for yellow mangos in the United States market and in 2009 there were 10 million boxes (5 kg) sold (National Mango Board, 2009).
In this same year the volume of ‘Ataulfo’ exported from Mexico was nearly equal to that of ‘Tommy Atkins’ and prices returned to the growers have been significantly higher on a per box basis throughout much of the season. Marketing has played an important role in the success of this cultivar, and it is currently sold under its own name or under the trademarks of Honey Manila® or Champagne®. The latter has had significant resonance with the United States consumer and Champagne® is recognized as a separate cultivar in many marketing channels of the United States. The positive attributes of this cultivar include its yellow skin color, a long postharvest shelf life, low fiber content and high brix when fully mature. The negative characteristics include a small fruit size, low economic yields, large tree size and inability to adapt to a wide variety of climates. The production potential continues to increase from Mexico, Ecuador and Peru, with the planting of new orchards and the topworking of existing mature orchards. There is considerable interest for this cultivar in other production regions, although removal of acreage and topworking of existing orchards is beginning in Mexico. Grower interest is based on perceived returns received within the United States marketplace.

‘Kent’ is the other cultivar that has had the most significant increase in volume in the past 5 years. ‘Kent’ is a red-skinned cultivar of 600 to 750 g, selected in Florida in 1932. In arid subtropical climates this cultivar has a dark green skin color and only a slight blush and is considered a green-skinned cultivar. The increase in volume of ‘Kent’ is predominantly due to Central and North Mexican production and Peru. The positive attributes of this mango are a manageable tree size, a good economic yield and excellent eating quality. ‘Kent’ is also versatile in its usage, being valuable for juice, fresh cut and dried mango. The ‘Kent’s most important negative attribute is its poor adaptability to humid tropical climates, where it has poor flowering and low economic yields. There are increasing hectares under development and topworking of existing mature orchards over the last few seasons. There is considerable potential for increased volume from Mexico and Peru and interest in the planting of ‘Kent’ in other production locations in the Caribbean, Central and South America. Its versatility for fresh cut, juices and frozen cubes makes ‘Kent’ an attractive option in many locations.

‘Keitt’ is currently undergoing increased planting and interest throughout the Western Hemisphere. It is a pink and green-skinned fruit of 700 to 1500 g selected in Florida in the 1940s. ‘Keitt’ is increasingly planted in Mexico and the Caribbean based on the adaptability and the versatility of the fruit in the marketplace. ‘Keitt’ is sold in significant volumes at the mature-green stage at commercially-attractive prices and it is also acceptable for fresh cut and fresh fruit sales. New acreage and topworking of existing orchards is common in Mexico and the Caribbean, but care should be taken to choose locations that will allow for optimal blush development on the fruit. Often when sold as a mature fresh fruit the prices have been less than desirable due to the poor external color of the fruit (lack of red blush). Yields are excellent and disease tolerance is also excellent, but because the fruit remain on the tree for an extended time they often are subject to attack by fungal diseases. Planting continues throughout the Americas (and Africa) but the long term trend for ‘Keitt’ may have peaked due to the limitations of color and fruit quality. However, the mature-green market may continue to push planting.

‘Tommy Atkins’ acreage has eroded in the last 5 years and there is little interest in planting in the Western Hemisphere. Yet, this remains the most dominant mango cultivar in the export markets of the Western Hemisphere. It is a red-skinned fruit of 450 to 550 g selected in the 1940s in Florida. ‘Tommy Atkins’ is productive, attractive, disease tolerant and adaptable across a range of climates. Its versatility in terms of climatic adaptation may be its most positive attribute. The most significant drawback is its eating quality. At its best it has a good, acceptable commercial flavor, but poor growing and handling techniques have further eroded its quality and tarnished its reputation. Poor quality fruit have sub-par color, soft flesh, low brix and increased fiber content. In recent years there is increasing interest in its use for organic production, where its disease tolerance, productivity and attractive appearance are assets.

‘Haden’ acreage also continues to erode in the Western Hemisphere and there is little interest in planting. ‘Haden’ is a red and yellow-skinned mango of 450 to 600 g selected in 1910 in Florida. The tree is highly productive under tropical conditions, but it is also difficult to control its growth and
the fruit are susceptible to fungal disease. The tree and the fruit are not highly versatile and ‘Haden’ continues to lose market percentage to other varieties; yet, in the early spring in the United States, millions of boxes are still imported from Mexico at attractive prices.

‘Madame Francis’ is grown almost predominantly in Haiti and shipped to the United States and its importation has remained steady until the recent earthquake in 2010. It is a yellow mango of 400 to 600 g that was selected decades ago in Haiti. It continues to be important in ethnic markets of the Eastern United States and there is interest in increased planting of this cultivar in other countries outside of Haiti. The major drawbacks are the rapid growth of the tree, the fiber content of the fruit and its disease susceptibility. When fruit quality is poor there is considerable fiber and a strong flavor that may be objectionable to mainstream consumers.

CULTIVARS OF MINOR IMPORTANCE AND/OR INTEREST IN THE WESTERN HEMISPHERE

‘Carabao’ is a yellow-skinned mango of 300 to 400 g selected in the Philippines. There is interest in the planting of ‘Carabao’ as an export option for the United States market following the success of ‘Ataulfo’. Little is known about the adaptability and commercial reliability of this mango in the Americas, but it has good market acceptability. Test planting have been made in several countries of the Caribbean, Central and South America.

‘Nam Doc Mai’ is a yellow and pink mango of 400 to 450 g selected in Thailand. It is a highly desirable mango in ethnic Asian markets both as a mature fruit and as a mature-green fruit. In the humid tropics it has proven to be reliable, albeit not highly productive cultivar. There are small commercial orchards currently in Mexico, South and Central America. Little is known about its adaptability to hot water quarantine treatments or long distance transport.

‘Aphonso’, ‘Kesar’ and ‘Totapuri’ are three Indian cultivars that have received considerable attention in the United States due to air freight imports from India in the last 3 seasons. ‘Alphonso’ and ‘Totapuri’ have been grown in the Western Hemisphere for decades with little commercial success and ‘Kesar’ is much less known. There have been test orchards planted of ‘Alphonso’ in Florida, Mexico and the Caribbean, but these orchards have economically failed. There is renewed interest in these varieties in Central, South America and the Caribbean.

‘Osteen’ is a red and yellow-skinned mango of 500 to 760 g selected in Florida. This cultivar is a dominant cultivar in mainland Spain and the Canary Islands. The success of these two production areas has increased interest in ‘Osteen’ in the Western Hemisphere. Little is known about this cultivar’s ability to withstand hot water quarantine treatments and shipment and its adaptability to the arid or humid tropics.

‘Edward’ is a yellow and pink-skinned fruit of 500 to 620 g selected in Florida. It has been grown on a small commercial scale in Peru and to a lesser extent in Ecuador. Production has decreased due to problems with shipping to the United States. Production and post harvest handling is perhaps the greatest concern with this mango and there is currently little interest in increased plantings.

‘Palmer’ is a red and yellow-skinned fruit of 525 to 850 g selected in Florida. It is an excellent producer and has excellent eating quality. It is difficult, however, to harvest properly and interest is limited to a few regions of the Caribbean and Brazil.

CONCLUSIONS

We have seen a narrowing of the cultivar mix in the export mango industry in the Western Hemisphere over the last decade. However, as markets continue to experience over-supply and the resulting lower prices, there is increasing interest in market differentiation. The limited development and breeding work undertaken on the mango has produced several promising new cultivars, but promotion has been limited and many of these cultivars have been released with intellectual property protection. Information about these cultivars and their suitability for production in the Western Hemisphere is not generally available and their adoption by the industry has been slow at best. Most new cultivars released by breeding programs in the last 20 years cannot be found within the mango
industry of the Western Hemisphere. The grower is left to make his or her own decision about cultivars and their suitability for specific conditions.

**Literature Cited**