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The 'Tommy Atkins' Mango

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Mango is among the most consumed fruits of the world. It is a highly versatile subsistence and cash crop throughout the African, Asian and the American Tropics and is increasingly important as a cash crop for domestic sale and for export in both tropical and subtropical regions. Within the United States mango is the 12th most consumed fruit, with a rapidly growing recognition and demand fueled by the increasingly ethnic nature of the United States marketplace. Planting continues throughout the tropics and subtropics on a subsistence, small farmer and large-scale commercial level in response to the growing local demand and increasing demand of the export markets of the United States, Europe and Asia.

The commercial mango of the United States marketplace (*Mangifera indica* L.) is one of some 60 or more species of *Mangifera* with edible fruit native from India to peninsular Malaysia and the islands of Borneo and Sumatra (5). The origin and genetic relationship of *Mangifera indica* with other *Mangifera* species remains an open scientific question attracting considerable attention (7,8). *Mangifera indica* culture may date back from 4000 to 6000 years in the region stretching from Assam, India through Myanmar. Human selection helped to create two major *Mangifera indica* types or races in Asia, the "Indian" and the "Southeast Asian" races. These two broad mango types are distinguished by their origin, seed embryony, color, flavor and their adaptability to climatic and edaphic conditions. In the broadest of terms, the fruit of the Indian race has an oblong shape; is of green, yellow or red color; and contains a single embryo in its seed. The fruit of the Southeast Asian race is long and slender, green or yellow, with multiple embryos in its seed.

The mango first arrived in the Americas from southern India – carried by the Portuguese and Spanish sailors in the late 1700s or early 1800s, spreading to the United States (Southern Florida and California) by the late 1800s. The U.S. Dept. of Agriculture's Plant and Seed Introduction Division began the introduction of mango selections from around the world in the 1890s. By the early 1900s seed and clonal mango selections were being routinely introduced from all major production areas of the world to what in those days was a narrow band of urban development in South Florida, between the Everglades and the Atlantic Ocean. The concentration of genetic material in South Florida, coupled with active professional and hobbyist selection programs gave rise to a robust group of mangos with combined traits of both Indian and Southeast Asian types. These selections of the 1940s, 1950s and 1960s in Florida were unique in their suitability for large-scale commercial production, and would come to be termed Florida Mangos (1,6).

The 'Tommy Atkins', with a unique combination of beauty, productivity, disease resistance, and environmental adaptability, was among this select group of Florida mango cultivars. The Florida mangos spread quickly throughout the Western Hemisphere in the 1970s, 1980s, and 1990s providing the planting material for the modern export mango trade. 'Tommy Atkins' was the cultivar of choice in most regions, and soon became

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the dominant export mango in the Western Hemisphere, accounting for over 80% of the mangos imported into the United States. Today, 'Tommy Atkins' is the dominant export cultivar in most major exporting countries of the Western Hemisphere (Brazil, Costa Rica, Guatemala, Honduras, Mexico, Nicaragua), and it continues to increase its share of the market in the Americas (Ecuador, Peru and Haiti), Africa (Ivory Coast, Ghana, Cameroon) and to a lesser extent Asia (China, Taiwan) [4,6]

Origin

The original 'Tommy Atkins' tree grew from a seed of unknown origin planted about 1922 in Broward County, FL, north of Ft. Lauderdale. The tree bore fruit in the 1940s, and the outstanding red color of the fruit attracted the attention of its owner, Mr. T.H. Atkins. Mr. Atkins considered the fruit to have commercial potential, and in 1948 he offered grafted trees for sale. Mr. Atkins repeatedly (1947 through 1951) submitted fruit to the Variety Committee of the Florida Mango Forum for evaluation. The Florida Mango Forum Variety Committee consisted of commercial mango growers, researchers and hobbyists and was charged with the task of selecting potential new varieties for Florida's growing mango industry. Several members of the Variety Committee did not consider 'Tommy Atkins' worthy of acceptance as a variety because it received some poor ratings for flesh texture and flavor. However, commercial growers on and off the committee disagreed, considering it to have potential due to its outstanding color, production and tolerance to anthracnose (*Collectotrichum gloeosporioides*), one of the most serious fungal diseases of mango. The Carmichael family of Perrine, FL acquired one of the original trees and began to graft for commercial orchards established in the 1950s and 1960s. As these original orchards came into bearing with consistent, heavy yields and highly marketable fruit, more orchards were planted in South Florida. 'Tommy Atkins' quickly became the most popular commercial mango in Florida.

Botanical Description and Discussion

'Tommy Atkins' is a vigorous tree, with a high degree of adaptability to climatic and edaphic conditions when compared to other cultivars. Grafted trees begin consistent production within three to four years of planting. Trees are highly productive and consistent, with yields of 150 kg in the sixth to eighth year and approaching 300 kg per tree in mature trees of 12 years or more. Trees managed under modern horticultural schemes with irrigation, proper fertilization, pruning, pest and disease control can attain yields of 20 to 25 MT/ha. This production and consistency is attainable across a wide range of habitats and production programs (6).

'Tommy Atkins' is generally considered a middle season cultivar, although differences in altitude and rainfall between production regions can alter the order of maturity among mango cultivars in a given region. The maturity season extends for more than a month in most regions. In both the arid and humid tropics there may be multiple or extended seasons due to multiple blooms following environmental stresses (temperature, drought). Fruit are medium to large, routinely weighing 500 to 700 g. The fruit are oval to oblong with a broadly rounded tip. The stem insertion is straight and often slightly raised. The skin is thick and highly resistant to mechanical injury and also has considerable resistance to anthracnose infection. The fruit have a bright red blush covering the shoulders and exposed fruit surfaces and an orange-yellow ground color. Fruit produced in the interior of the canopy have a more pronounced green ground color, and a duller, less dominant red blush. In arid production regions such as Israel or Egypt the ground color can be a pure green and the blush a dark purple. The flesh is medium to dark yellow with a fine fiber throughout.

The fine fiber is not objectionable and gives the flesh a firm texture, with considerable tolerance to rough handling and an improved shelf-life. The flavor is fair to good. As with other mango cultivars, fruit produced on trees receiving excessive nitrogen or water have a poor flavor and more abundant and tougher fibers in the flesh. Fruit produced on trees with lower soil fertility, and reduced inputs of nitrogen and water have a superior flavor, color and resistance to internal physiological disorders. The seed weighs from 28 to 42 g and is monoembryonic (2).

'Tommy Atkins' responds well to chemical bloom induction in much of the hot tropics and the cool subtropics. Bloom induction by chemical means and management practices have enabled mango producers to attain commercial harvests in climates that were previously considered unsuited for mango production. Additionally, the natural fruiting season can now be extended for more than a month, either earlier or later, resulting in an extended season and greater overall marketing flexibility. This combined with the excellent shelf-life of the 'Tommy Akins' (3 to 4 weeks) has allowed for the penetration of new, more distant markets.

Conclusions

'Tommy Atkins' has long been criticized for its mediocre eating quality among mango connoisseurs. However, marketing studies and personal experience have shown that among mango importers and handlers, there is no perceived problem with the overall eating quality of the 'Tommy Akins' within the United States market (3). Around the world there are a host of cultivars with varied, truly exceptional flavor. A select few of these alternative cultivars have become commercially available in recent years, but volumes are still quite low and the marketplace does not yet adequately differentiate among mango cultivars. Adoption of new cultivars, both red-, yellow-, and green-skinned types will continue, but will be hampered by a lack of information and organized international effort into the selection and testing of viable alternatives. At present the outstanding characteristics of 'Tommy Atkins' far outweigh its short-comings.

Literature Cited

1. Campbell, R.J., C.W. Campbell and N. Ledesma. 2002. Tropical Mangos: How to grow the world's most delicious fruit. Fairchild Tropical Garden. 71 pp.
2. Campbell, C.W. 1973. The 'Tommy Atkins' mango. Proc. Fla. State Hort. Soc. 86: 348-350.
3. Campbell, C. and R.J. Campbell. 2004. North American importers' viewpoint of a decade of Latin American mango exports. Proc. Interamer. Soc. Trop. Hort. 48:62-64.
4. Galan-Sauco, V. 2004. Mango Production and World Market: Current Situation and Future Prospects. Acta Horticulturae 645:107-116.
5. Kostermans, A.J.G.H. and J. Bompard. 1993. The Mangoes: Their Botany, Nomenclature, Horticulture and Utilization. Academic Press, London.
6. Litz, R (ed). 1997. The Mango: Botany, Production and Uses. CAB International. Wallingford, UK
7. Schnell, R.J., C.M. Romming, and R.J. Knight. 1995. Identification of cultivars and validation of genetic relationships in *Mangifera indica* L. using RAPD markers. Theor. Appl. Genet. 90:269-271.
8. Viruel, M.A., P. Escribano, M. Barbieri, M. Ferri, and J.I. Hormaza. 2005. Fingerprinting, embryo type and geographic differentiation in mango (*Mangifera indica* L. Anacardiaceae) with microsatellites. Mol. Breeding 15:383-393.