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HI - TECH CITRUS MANAGEMENT

- ★ IMPROVEMENT
- ★ BIOTECHNOLOGY
- ★ PRODUCTION SYSTEM
- ★ PEST AND DISEASE MANAGEMENT
- ★ POST-HARVEST TECHNOLOGY

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SP-12689

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Inventariado 1115117
Responsável A

The History, Routes of Dispersion and the contribution of the Bahia (Navel) orange for the International citrus industry

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The introduction of sweet orange in Brazil

Brazil was discovered in 1500 by the Portuguese, two years later the United States be discovered by the Spanish. On April 22th, reaching the South coast of the State of Bahia, they said the famous phrase: "Terra à vista" (land is seen). For this reason it is admitted the Brazilian citrus industry has also its origin in this State, although the first mention of sweet orange had come in 1540 from the Cananea island by a Spanish author. More concerned to the trades with India after the famous discovery of the way in 1498, only 30 years after the discovery, the government of Portugal decided to colonize the country. In order to protect the new colony against possible invasions of French, Spanish, Dutch and English, which boats were seen frequently sailing along the coast, they divided the territory among a dozen trusted men. As a payment for the land grant, the new settlers should grow sugar cane for exporting to Europe. At that time, the first seeds of tropical fruits including sweet orange were introduced. The Jesuit priest Manoel da Nobrega wrote a letter from Bahia in 1549 pointed out the high production of citron, orange and lemon trees. Other comments written in the XV century on the existence of the citrus species in Brazil are in the literature. Four centuries were passed until the citrus industry become an economic activity contributing four decades later for the Brazilian world leadership in terms of citrus production and exporting of frozen concentrate orange.

The origin of the 'Bahia' orange

Among the historical facts of the citrus industry in Brazil, however, the occurrence of the 'Bahia' orange in the State of Bahia seem to be the most relevant. Recognized as a bud mutation of the 'Seleta orange', there is no statement on the exact date of occurrence. Vilhena in his letter written in 1802 to the kingdom of Portugal quoted the orange "de umbigo" (navel) in Bahia is bigger and juicier than in Portugal and has different qualities. At the same year, the priest Aires de Casal observed the excellent fruits of 'Bahia' orange in a tour along several Brazilian states. Von Martius & Spix in 1818 mentioned the existence of the 'Bahia' orange praised it for the excellent quality of the fruits. Based on these earliest references it is possible to estimate the advent of the 'Bahia' orange as the approximate end of the XVIII century or the beginning of the

XIX century according to the last autor. The first propagation is credited for a Portuguese gardner who lived at Cabula, a neighbourhood of Salvador, capital of the State. Salvador is located in the Northeastern region.

The begining of the XIX century with the arrival of the Imperial family from Portugal to Rio de Janeiro is considered as the rediscovery of Brazil. A new and tropical world completely different from the civilized and conservative Europe started to be known including by the brazilian. The colonial axis moved from the Northeast to Southeast and the population exceeded 2 millions inhabitants mostly indians and negroes (slaves). It could be considered as the most impressive actions related to agriculture at that time the foundation of the Imperial Institute of Agriculture (Agricultural School) in Bahia and the Botanical Garden in Rio de Janeiro. The distinguished shape and taste of the 'Bahia' orange called the attention of famous visitors, who visited the State of Bahia by 1820, such as the french botanist Saint Hilaire, the germany Prince Maximiliano, the british teacher Maria Graham, the french painter Debret, besides the germany zoologist Spix and the botanist Martius, who wrote the masterpiece on the brazilian "flora" entitled *Flora brasiliensis*.

Under Bahia conditions, the 'Bahia' orange is a high tree, 5 meters high at 11 yeras old, round-topped, scion circumference around 20 meters and trunk diameter 0,20m at 0,30 m above the soil. The leaves are large of a deep green color. The fruits are large (300 to 350 gr), spherical, navel large to medium, juicy and seedless. It is a midseason variety, being harvested from May to July or during an out-off-bloom season from January to April. The fruits do not hold much time on tree. Flesh color deep, but light yellow in the peel. In a 3-year study to determine the seasonal changes of commercial varieties at Cruz das Almas, BA, were collected for the 'Bahia' orange at the harvesting peak (June), the following data: juice content - 50.08, acidity - 0.4, total soluble solids (TSS) - 7.8 and TSS/acidity - 19.9:1

The 'Bahia' orange in Brazil

Until 1900, citriculture in Brazil was of little importance. Although the 'Bahia' orange was known, only a few orchards and backyard trees of it had been planted. In 1926, the Bahian Society of Agriculture published a book entitled "Culture and commerce of the 'Bahia' orange and distributed during the First Competition of 'Bahia' fruits. In this publication it is observed the efforts of the Government to develop the citrus industry based on this variety. These efforts probably came after the visit of the american researchers P.H. Dorset, A D. Shamel and W. Popenoe who published in 1917 the USDA Bulletin No. 445 entitled *The Navel orange of Bahia*; with notes on some little-known Brazilian fruits. Regarding to an experimental shipment of 'Bahia' fruits to Washington, D.C. they sad "there is little doubt that the Bahia orange can be sucessfully carried to the leading markets of the world". The first statistical refference on the 'Bahia'

population came in 1913: only 73,000 trees in the State of Bahia, planted mostly in Salvador and nearby.

From there, the 'Bahia' was exported to the States of Rio de Janeiro, the first capital of the Country, and São Paulo, where the citrus industry also was developing. In the thirties, Brazil had about 20 million orange trees, half in the State of São Paulo and two million boxes of citrus were exported. About 650,000 boxes came from São Paulo and of these, almost 90 % were 'Bahia' orange. The Brazilian citrus industry continued to increase until to 1940, when the tristeza virus destroyed more than ten million orange trees. In some states such as Bahia and Sergipe the use of 'Bahia' was almost 100%. In the post-tristeza period, a late-maturing and more productive variety named 'Pera' began to be grown. Due to the redirection of the citrus industry for the frozen concentrate juice processing in the sixties, this and other seedy varieties become more popular in most parts of the country as is seen in the Table 1.

Table 1. The utilization of sweet orange varieties in Brazil

STATE	VARIETY (%)		
	PERA	VALENCIA/NATAL	OTHERS
São Paulo	41	49	10
Bahia	90		10
Sergipe	90		10
Minas Gerais	70	?	?
Rio Grande do Sul		?	?

Source: Passos et al. (1999).

These percentages were amplified in the seventies when Brazil ranked first as a juice exporting country (almost 50% of the world exports in 1995). With the exception of a few orchards in São Paulo and Bahia with 'Bahia' and 'Baianinha', a local bud mutation occurred in São Paulo, this variety was almost eliminated from the Brazilian orchards. After the recent troubles in the juice exporting, which caused reduction the quotas exported, the local demand for fresh fruit started to be better considered. The annual average for internal consumption in Brazil had been approximately 400 millions boxes which can be increased if the population of 160 millions inhabitants is taken in consideration.

The routes of dispersion and the contribution of the 'Bahia' orange for the citrus industry in the world

As H.J. Webber wrote regarding to the spread of the citrus species, one could say the history of the 'Bahia' orange reads like a romance, started by the mother nature becoming possible the existence of a new variety originated as a bud mutation probably from the

'Seleta' orange, a variety introduced from Portugal, a portuguese grower (not identified) who made the first propagation and the Presbyterian Rev. F.I.C. Schneider who received budded trees from Mr. Teixeira and dispatched it to the United States in 1870. This is, indeed, the first step of the internalization of the 'Bahia' orange. The receptor in Wasnigton D.C. was the Horticulturist William Saunders, Landscape gardener and Superintendent of Gardens and Grounds of USDA, who grafted on sweet orange seedlings and three of these propagations were sent to Mrs. Tibbets in Riverside, California. The ripe fruits were so impressive for the shape and appearance that they decided to name the variety as Riverside Navel and later on Washington Navel. The value of this introduction has been commemorated by the Californians. In Riverside, a 'Bahia'orange tree palnted on Mgnolia Avenue became a monument. There is a fence surrounding it and a bronze plaque in which is written in 1820: To Honor Mrs. ELIZA TIBBETS and to commend her good work in planting at Riverside, Native to Bahia, Brazil, proved the most valuable fruit introduction yet made by the United States Department of Agriculture. Mrs. Tibbets was recognized as the "Mother of the Navel orange" or the Orange Industry"and her work contributed more than the gold extracted from the California soils.
