Chiku or Sapodilla - The Neglected Fruit of Sindh

By Mrs. Farzana Panhwar, June 2005

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Sapodilla's rank

With some 85% as edible portion, it ranks among the top performers of high pulp ratio fruits, but it lacks the position it deserves, due to inadequate research and support.

- It originates from tropical South America and was spread by the Portuguese in the tropics of the Old World.
- Popenoe an early American horticulturist in 1920, gives two quotations of his predecessors; Thomas Firminger an English man who lived in India called it; "a more luscious, cool and agreeable fruit, not to be met with in any other part of the world" and French botanist Michel Etienn Descourtilz considered it; "the sweet perfumes of honey, jasmine and lily of the valley".
- The Portuguese established in South India. It is not certain when it came to Sindh. It may have been introduced when Sindh was part of Bombay Presidency and came from there with the immigrant Marhata Gujarati community or it was already here brought by Goa's Portugese Catholics, who established a church on Liari in the present Gulshan-e-Iqbal in 1818 under licence from Mir Karam Ali Khan Talpur, who granted them land and permission to establish a church, to get Portuguese support for guns etc., against the British advances in India.
- Post Independence brought it in Lower Sindh south of line running east to west from Hala to Shahdadpur and to best luck of young trees, there have been no frosts in recent years.
- The severity of frostily winter has been counter-acted by almost perennial irrigation in Kotri and Sukkur Barrage Commands. As a mature tree it can stand frosts up to -2°C.
- Since it can stand high water table, flooding for short time, high humidity, dry weather and even a couple of degree of frost when tree matures, it can very easily be a fruit tree next in importance to mango, only if its post-harvest life is improved.
- In absence of post-harvest technology there is seasonal glut prices come down and farmers get poor returns.
- No attempt has been made to squeeze its harvest within short period and either early or late. Due to short post-harvest life, its export potential has been very limited even in local markets of Pakistan.
- Once efforts to increase its post-harvest life by 10-14 days become possible, it will be the time to improve agronomical practices due to new incentives of prices, which would come automatically.

Agronomical improvements needed

- It has to be planted on its own root stocks instead of Khirol (Mimusops Kauki L.) root stock and, budded instead of approach grafted. Though Khirol gives it dwarfness and early first fruiting, but the method of propagation is slow, cumbersome and costly.
- Layering or marcotting can produce first fruit in year three, but technique needs to be mastered in Pakistan.
- Grafted varieties take 6-10 years to fruit.
- Marcotts can fruit in year 3, but layers and marcotts need 9 months to root.

- They produce two crops a year, but the mid summer flowers are damaged by insects and only vigorous protection programmes can over come the problems.

Future improvement needed to raise status of sapodilla

- Dwarf tree.
- High density planting at 6x6 meters or i.e., 108 trees/acre.
- Limited pruning for size control.
- Control over flower eating larvae, twig borers, scales, aphids, mealy bugs and fruit flies.
- Control over damage by bats.
- Yield of 10 tons per acre per year are common, though 30 tons have been reported from South India, if agronomical practices are improved.
- Introducing new cultivars from other countries and testing them.

Varieties

- There are only two varieties in South-Asia, the ball shaped and the egg shaped. The latter is sweeter with firmer flesh and better keeping quality.
- Ball-shaped were propagated from Karachi in the Lower Sindh some 30 years ago when there was shortage of mother plants to produce approach grafts.
- India has made some new selections from open pollination but have not been popularised.
- Hybridisation has not produced any cultivars in India.
- Some new selections from South America have proved to be better but they have not been introduced in South Asia.
- Some of these varieties yield 150 kg per tree per year even in home gardens, where they usually are neglected. Under field conditions they can produce at least double this yield.
- Some ball shaped fruits have gritty taste and may be avoided.
- Chicku collections now exist in South East Asia, brazil and other Latin American countries and some good selections have been named as; Krasuey, Kai Hann, Markok, Sawo, Brown Sugar, H.C. Tan, Tropical, BKD-110, Oval, Belawi, Sawo, Kulon, Appel Bener, Appel Linn, Mead and Modell. They have not been introduced in South Asia.
- We have seen last 6 varieties. Their fruit is bigger than ours being 3 to 4 inches diameter and round to egg shaped.

Problems in shipping and marketing

- Besides poor post-harvest life, soft fruit cannot be bulk shipped in large crates over long distances.

- The crates have to be single layer packed for good results. With two crops a year, there is no reason for its availability year around.
- Packages similar to those for Kiwi, should easily promote its trade to Europe.
- With refrigerated transport from packing to marketing, it is possible to extend its life from 12 to 20 days.

Post-harvest

- It can easily be damaged by abrasion and impact and care is needed in harvesting it.
- It must be harvested by knives with small stalk that fruit is not pressed during pulling and stalk does not emit latex.
- Stalk must be removed from fruit under water to avoid latex sticking to fruit and developing surface spots and fungal entry.
- Mature fruit ripens in 3-7 days at 25°C and only proper cooling before or after ripening it, can increase its post-harvest life.
- Ripened fruit can be stored at low temperature for about 14 days. This means in the whole market chain, fruit should be cold stored. Storing at low temperature will cause chilly injury.
- Storage temperature is the critical factor in the whole marketing chain.
- Unripe fruit can also be cold stored for 2 weeks before allowing it to ripen at 25°C in 3 days.
- Harvesting immature fruit leads to shrivelling, low sugar and poor taste.

Uses

- It is used mostly as desert fruit, but in its countries of origin it is converted into sweet sherbet due to 14% sugar content.
- It produces gummy latex (15% rubber and 38% resin) in its bark, known as chicle which is major ingredient in chewing gum.
- Chilled fruit can be cut in halves and eaten with spoon as an exotic dish.
- It can be dried but process has to eliminate fungus to make it safe to eat.
- It can be processed into jams, sherbets and yoghurt.

Other Sapotaceous family fruits

The sapotaceous family has some excellent fruit trees, which can also grow in Sindh but no attempt has been made to introduce them.

- The family includes, sapote (fruit similar to Chicku but 3-6 inches long).

- Its other relative Green sapote may not be mistaken for sapote as it will not thrive in hot low lands of land and needs elevation of 3000-7000 feet in tropics.
- Canito or Camito another Chcku relative also called star apple suits climate of Karachi, Thatta and Badin districts.
- Canistel (Lucuma) another fruit of the family can grow in Southern Sindh.
- Yellow Sapote having 4-8 inches long fruit has very large fruit and suits lower Sindh climate.

No attempt has been made to introduce them in Sindh.

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