

Mango hybrids and improved cultivars

The abundance of mango varieties in India is well-known throughout the world. There are thousands of varieties in the country, practically all of which are the product of selections made from the seedling population. A few decades ago, there was a tradition of orchard plantations utilising seedling plants. Almost all varieties have one or more defects, giving rise to mango breeding efforts around the country. Various organisations have developed / identified over 60 hybrids/ selections, but only a few of these are being multiplied on a bigger scale and planted by farmers.

EACH mango variety has its own set of advantages and disadvantages. Clonal selection and hybridization have been employed for the development of new mango varieties with desired features. The goal of the initial breeding program was to create a dwarf and regular bearing mango cultivar. However, towards the end of the century, the creation of export-ready colour varieties was also promoted. Breeders strived to develop spongy tissue tolerant cultivars for the commercial production of Alphonso.

Mango hybrids

Farmers have embraced only a few hybrids due to distinct climate requirements for quality production and regional consumer preferences. Nonetheless, a few hybrids, such as Amrapali, Mallika, Ambika and Arunika, are being cultivated in various agroecologies around the country. Whereas, excellent hybrids like Ratna are limited to Alphonso growing belt of Maharashtra.

Although the first mango hybrid was released from Bihar Agriculture College Sabour in 1951, large scale multiplication and plantation of hybrids started with Mallika and Amrapali developed at IARI, New Delhi in the seventies of the last century. ICAR-Indian Agricultural Research Institute, New Delhi developed several mango hybrids

and improved varieties including Mallika (Neelum × Dashehari), Amrapali (Dashehari × Neelum), Pusa Peetamber (Amrapali × Lal Sundari), Pusa Arunima (Amrapali × Sensation), Pusa Pratibha (Amrapali × Sensation), Pusa Shrestha (Amrapali × Sensation), Pusa Lalima (Dashehari × Sensation) and Pusa Manohari (Amrapali × Lal Sundari).

Amrapali is well known for its regular bearing and excellent performance in areas with good humidity, particularly in coastal parts of West Bengal and Odisha. It has become a popular variety of kitchen gardens and also many high-density plant orchards are coming up in different subtropics of the country. Amrapali has been used as one of the parents in hybridization programs. Hybrids

made out of Amrapali have wider adaptability and regular cropping. The fruits have high carotenoid content. Mallika has been found as a high yielding variety in different parts of the country and has become popular in Karnataka and some southern parts of India.

At ICAR-Indian Institute of Horticultural Research, Bengaluru, hybrids like Arka Anmol (Alphonso × Janardan Pasand) Arka Aruna (Banganapalli × Alphonso), Arka Neelkiran (Alphonso × Neelum) and Arka

Puneet (Alphonso × Banganapalli) have been developed. Arka Udaya (Arka Amrapali × Arka Anmol) was released in 2015 with firm pulp and deep yellow, high TSS and



better quality. Recently Arka Suprabhat (Amrapali × Arka Anmol) was released.

ICAR-Central Institute for Subtropical Horticulture, Lucknow developed and released Ambika (Amrapali × Janardan Pasand) in 2000. It is a regular and late bearing variety. The fruits are bright yellow with a dark red blush, with a dark yellow pulp that is firm and lacking in fibre, weighing 300-350 g. Arunika (Amrapali × Vanraj) released in 2008 has dwarf canopy, regular bearing with red peel. The fruit is smooth, orange yellow with a red blush, medium size, ovate oblique, pulp orange yellow, firm with scanty fibre, pulp about 65%, TSS 24.6 °B. Due to its attractive fruit colour, it has potential for internal and export markets. It has shown wider adaptability and performs well in the subtropics, particularly where the climate is not very dry and irrigation facilities are available. Several other hybrids (H-949, H-1084, H-1739) are in the pre-evaluation stage.

The Regional Fruit Research Station, Vengurle released Ratna (Neelum × Alphonso) in 1981. It is a regular bearing, medium-sized fruits, orange-coloured pulp, free of spongy tissue and fibre. Sindhu (Ratna × Alphonso) born fruits in clusters with a seedless fruit having a very thin stone. Konkan Ruchi (Neelum × Alphonso), Suvarna (Alphonso × Neelum), Konkan Raja (Bangalore × Himayuddin) and Konkan Samrat (Alphonso × Tommy Atkins) are some other hybrids released from Vengurle.

The Agricultural Experiment Station, Navsari, Paria developed and released the hybrids Neeleshan Gujarat (Neelum × Baneshan), Neeleshwari (Neelum × Dashehari), Neelphonso (Neelum × Alphonso) and Sonpari (Alphonso × Baneshan).

Bihar Agricultural University, Sabour, Bhagalpur, released Prabhashankar (Bombay × Kalapady) in 1951 as a first mango hybrid. Alfazli (Alphonso × Fazli), and Sundar Langra (Langra × Sunder Pasand) were released in 1980.

Sabari (Gulabkhas × Bombai) has a red peel and a reddish yellow pulp. Jawahar (Gulabkhas × Mahmood Bahar) is a mid-season cultivar with greenish-yellow ripening fruits that taste sweet and agreeable.

The Horticultural Research Station, Periyakulam, developed PKM-1 (Chinna Suvarnarekha × Neelum) and PKM-2 (Neelum × Mulgoa), respectively, in 1981 and 1990. Both bear regularly, producing good-quality cluster fruits. Mahatama Phule Krishi Vidyapeeth, Rahuri developed Sai Sugandha (Totapari × Kesar) and released it in 1998.

Clonal selections

There has been a lot of variability in the most popular commercial mango types. In addition to hybridization, clonal selection has been employed to identify promising seedlings. The clonal selection or superior seedlings have been identified in different mango growing areas of the country. When compared to the parent type, these clones may produce higher yield, have a better look, or mature earlier. Primarily, fruit yield and quality have been used to identify superior clones.

Cardozo Mankurad is a selection from Mankurad made by the Central Coastal Agricultural Research Institute, Ela, Old Goa. Paiyur-1 is a clonal selection of Neelum mango, released in 1992. It is a regular bearer, with good quality fruits and excellent taste.

Dashehari-35, a clonal selection from Dashehari made at ICAR-CISH, Lucknow, has a consistent yield and is recommended for cultivation in Telangana. GBPUA&T, Pantnagar Dashehari clonal selections are, viz. Pant Chandra and Pant Sinduri.

At Sabour, Subhash from Zardalu seedling and Menaka from Gulabkhas seedling were selected. At CHES, Bhubneshwer, Arka Neelachal Kesari, a clonal selection of Gulabkhas was selected. The Fruit Research Station, Sangareddy released Manjeera in 1985.



Amrapali



Arunika



CISH-Ambika



CISH-Ambika in fruiting

Vasantryao Naik Marathwada Krishi Vidyapeeth, Parbhani released Niranjana, as a selection from the Royal.

Phule Abhiruchi is a selection of GK-PM-5 in 2014 and is recommended for pickling in Maharashtra. Indira Gandhi Krishi Viswavidyalaya, Chattisgarh released in 2015, Nandiraj is a clonal mango selection from Nayapara, Jagdalpur.

Mango is highly heterozygous, and the majority of important varieties have been identified from seedling orchards. With the prevalent practice of commercial variety graft plantations, the chances for variety development

in nature are becoming increasingly slim. As a result, hybridization programmes must be strengthened in order to develop newer hybrids that meet the needs of the domestic and export markets.

For further interaction, please write to:

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