



Dragon Fruit Cultivation: A Profitable Future Crop

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Dragon fruit is one of the fastest growing exotic fruit crops in India due to its market demand, nutritional value, and profitability. It belongs to the cactus family and is scientifically known as Dragon fruit. The fruit is attractive in appearance with bright pink or yellow skin and sweet pulp containing tiny black seeds. Because of its health benefits and export potential, dragon fruit cultivation is becoming popular among farmers in many states of India. In India, cultivation has expanded rapidly in states like Andhra Pradesh, Maharashtra, Karnataka, and Gujarat, where farmers are adopting it as a high-value crop.

Origin and importance

Hylocereus sp. (Dragon fruit) originated in Central and South America, widely cultivated in countries such as Vietnam, Thailand and India and the common names are Kamalam, Pitahaya fruit and Strawberry pear. In India, cultivation is increasing due to good market prices and adaptability to different climatic conditions. The fruit is rich in vitamin C, Antioxidants, dietary fiber, calcium and iron. It is beneficial for improving immunity, digestion and overall health. Its seeds contain healthy fatty acids, while the pulp is low in calories yet packed with energy. This makes it a favourite among health-conscious consumers worldwide.

Species

Hylocereus undatus - White fleshed dragon fruit with pink skin colour

Hylocereus costaricensis - Deep magenta colour fleshed dragon fruit with red skin colour

Selenicereus megalanthus - White fleshed dragon fruit with bright yellow skin colour

Stenocereus spp.- Red/ pink fleshed with green/red skin colour

Soil and climate

Dragon fruit grows well in tropical and subtropical climatic conditions. Since it belongs to the cactus family, it can tolerate dry conditions better than many other fruit crops. The optimum temperature for cultivation ranges between 20°C and 35°C. Well-drained sandy loam soil rich in organic matter is ideal for cultivation, and the suitable soil pH is between 5.5 and 7.0.

Propagation

Dragon fruit is mainly propagated through stem cuttings because it is easy, economical, and gives early bearing. Healthy stem cuttings of 30–45 cm length are selected from disease-free mother plants. The crop requires support structures because it is a climbing cactus plant. Concrete or cement poles are commonly used for supporting the plants.

Planting

Generally, a spacing of 2 × 2 or 3 × 3 m is followed, and around 1700–1800 plants can be accommodated in one hectare. Planting is usually done during the rainy season or when sufficient irrigation facilities are available. Dig pits of about 60 × 60 × 60 cm, fill them with a

mix of soil, sand, and farmyard manure. Maintain 3 m × 3 m spacing for commercial orchards, allowing airflow and sunlight. After planting, light irrigation helps cuttings establish roots. Mulching around the base conserves moisture and suppresses weeds. Within a few weeks, new shoots emerge, signalling successful establishment.

Training

Dragon fruit plants require proper training and support for better growth and yield. Concrete poles of about 6–7 feet height are erected in the field. A circular frame or old tire is fixed at the top of the pole to support hanging branches. Four cuttings are planted around each pole and tied loosely for proper climbing.

Irrigation

Although dragon fruit is drought tolerant, irrigation is essential during flowering and fruit development stages. Dragon fruit plants store water in their fleshy stems, but irregular watering can stress them, leading to poor flowering or cracked fruits. Balanced irrigation ensures steady growth, healthy blooms, and sweet harvests. Drip irrigation is the best method because it saves water and provides uniform moisture. Waterlogging should be prevented because excessive moisture damages the roots.

Manures and Fertilizers

Application of organic manures such as farmyard manure, vermicompost, and neem cake improves plant growth and productivity. Balanced fertilizers containing nitrogen, phosphorus, and potassium are also applied in split doses during the growth period. For dragon fruit cultivation, farmers should apply 15–20 kg of farmyard manure (FYM) per plant annually, along with a balanced fertilizer dose of about 450 g Nitrogen, 350 g Phosphorus (P₂O₅), and 300 g Potassium (K₂O) per plant per year. During fruiting, nitrogen should be reduced and potassium increased to improve yield and quality.

Flowering

Dragon fruit plants usually start flowering within 12–18 months after planting. The flowers are large, white, and fragrant. They bloom during night time and are often called “Moon Flowers” or “Queen of the Night.” After successful pollination, fruits develop within 30–50 days. Flowering takes place in 4-5 flushes from May to September-October. Moths, bats, and bees are the main visitors, transferring pollen as they feed on nectar. Farmers often step in with a small brush, transferring pollen from one flower to another to ensure success.

Fruit set

In India, the fruiting season from the second fortnight of July to September, occasionally stretching into December. Fruits are larger in size, bright red/ yellow skin, with white or pink flesh having black tiny seeds. After successful pollination, the tiny ovary at the base of the flower starts swelling, and within 25 to 35 days the fruit reaches maturity, depending on the variety and climate. In warm, dry conditions, fruit development is faster, while cooler or rainy weather may extend the period. Farmers often observe that the first signs of fruit set appear within a week of flowering, with the fruit gradually enlarging until harvest.

Harvesting

Fruits are harvested when the skin develops full color and scales begin to dry slightly. Under good management practices, dragon fruit can produce 10–15 tonnes per hectare. The economic life of the plantation may extend up to 15–20 years. It is a non-climacteric fruit. For International markets the optimal harvesting maturity is about 32-34 days after bloom and for domestic market is 35-38 days after bloom. Value-added products such as juice, jam, jelly, ice cream, and flavoured drinks can also increase farmer income.

Storage:

Freshly harvested dragon fruits can be kept at room temperature for 3–5 days. Farmers often store them in shaded, well-ventilated areas to avoid sunburn and shrivelling. For longer shelf life, dragon fruits are stored at 8–10°C with 85–90% relative humidity. Under these

conditions, fruits remain fresh for up to 3–4 weeks. Cold storage slows down respiration and prevents fungal growth. Fruits are usually packed in corrugated cardboard boxes or plastic crates lined with soft material to prevent bruising.

Pests

Dragon fruit generally faces fewer pest and disease problems compared to other fruit crops.

Aphids: Small green/black insects that suck sap from young shoots, causing stunted growth and honeydew deposits leading to sooty mould.

Mealybugs: White, cottony pests hiding in stem joints; cause yellowing and wilting.

Scale Insects: Hard or soft scales attach to stems, sucking sap and weakening plants.

Diseases

Root Rot: Caused by overwatering; symptoms include yellowing and mushy stem bases.

Soft Rot (*Xanthomonas/Erwinia* bacteria): Leads to watery, foul-smelling decay in stems and fruits.

Sunburn: Bleached patches on stems in extreme heat, making plants vulnerable to infections. Dragon fruit cultivation is highly profitable because of high market price, low water requirement, less maintenance cost, long productive life, increasing consumer demand, and export opportunities. The demand for dragon fruit is continuously increasing in Indian markets. Government agencies and agricultural universities are also promoting dragon fruit cultivation through demonstrations and awareness programs. Despite its advantages, farmers face challenges such as high initial investment for support structures, limited availability of quality planting material, lack of technical knowledge, and marketing problems. Training programs and government support can help farmers overcome these challenges.

In conclusion, dragon fruit cultivation is emerging as a profitable and sustainable future crop in India. With proper cultivation practices, irrigation management, and market linkage, dragon fruit can improve farmer income and contribute to the diversification of fruit production in India.





Dragon Fruit plant with flowers



Dragon Fruit plant with fruits

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