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Passion fruit and its cultivation: A review

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Abstract

Passion fruit is a tropical fruit that belongs to the family *Passifloraceae*. It is native to Brazil and South America and widely cultivated. It grows up to the height of 6m. Yellow and Purple Passion fruit are mostly found among which Purple is most popular. This fruit is rich in fiber, Vitamin-C and Provitamin A. It possesses beta carotene that is good for eyesight, fibres for good digestion and reduces the risk of Type 2 Diabetes as well. For its cultivation, seed, cuttings or grafting can be used. Cuttings are used for commercial cultivation and transplanting is done before monsoon. Staking and trellising is done for the support of the vine.

Keywords: Passion fruit, varieties, medicinal properties, cultivation

Introduction

1. Origin and Distribution

Passion fruit (*Passiflora edulis*) is a tropical fruit belonging to the family *Passiflora* ceae. It is the native fruit of Brazil, Paraguay and Argentina. It is widely distributed in Asia, Europe, South and North America.

2. Description.

It is a vigorous, shallow rooted perennial vines that climbs up by the means of tendrils. The plant grows up to the height of about 6m/20ft. Leaves are alternate with 3 lobes about 8-16cm long and dark green in color. The flowers are solitary, has 5 colored tepals and a large corona possessing radial filament that usually curls.

It usually fruits in about 5 to 18 months depending upon the variety. Fruiting takes place in early summer. It is tropical fruit (but some varieties survives in subtropical climate) which is round or oval in shape. It has tough outer rind and the juicy edible inner portion filled with seeds. It comes in various colors purple, yellow, red and green of which yellow and purple type are most common.

2.1 Varieties

Mainly, this fruit has two varieties

- Yellow: *Passiflora edule f. flavicarpa*
- Purple: *Passiflora edulis*
- Others are Sweet granadilla, Gaint granadilla, Cholupa and Banana Passion fruit, these are not so common.

2.1.1. Purple passion fruit

It is mostly found in upper midland to upper highland zones at above 1200-2000m above sea level. It is small, oval or round shaped with purple skin. The fruits are about 4-5cm in diameter. It is superior and possess aromatic flavor which is most popular in export market than yellow fruit.

2.1.2. Yellow Passion Fruit

It is mostly found in midland and lowland zones and has the fruit size slightly larger than the purple variety. The fruits are about 5-7cm in diameter, round or oval with yellow skin. This variety is more tolerant to soil borne insect pests and diseases like Phytophthora root rot, Nematodes and Brown spots so that it is also used as a rootstock for purple variety.

2.1.3. Sweet granadilla (*Passiflora ligularis*)

It is an oval shaped fruit which is pointed in one of its end. The skin is pale yellowish or grayish in color and has a less acid flavor.

2.1.3. Giant granadilla (*Passiflora quadrangularis*)

It is thick and elongated fruit that has largest size among all the species of Passion fruit and has light green skin. It is tasteless in comparison to other species.

2.1.4. Cholupa/Gulupa (*Passiflora pinnatistipula*)

The skin is yellowish green or reddish brown in color and it is similar to yellow passion fruit.

2.1.5. Banana Passion fruit (*Passiflora mollissima*)

It looks similar to banana and is yellow in color nearly 10 cm long. The pulp is yellow or orange in colour and has sweet or slightly acid taste.

2.2 Nutrient Content

It is rich in nutrient content especially fiber, Vitamin C and Provitamin A. Raw passion fruit contains 70% water, 22% carbohydrates, 2% protein and 0.7% fat. It contains Vitamin A (25%), Vitamin C (50%), Calcium (1%), Iron (8%), Vitamin B6(5%) and Magnesium(7%).

2.3 Medicinal Properties

It is rich in phytochemicals such as polyphenols, carotenoids, yellow variety is rich in prunasin and cyanogenic glycosides are found in the peel and juice.

- Fibre present in it helps to prevent constipation, improves digestion of food.
- It is rich in beta-carotene, body converts this beta-carotene into Vitamin –A which is good for eyesight.
- Also the beta-carotene present in it cause low risk of prostate, colon, stomach and breast cancer.
- It serves as antioxidants that protect our body from free radicals.
- Polyphenols reduces the risk of chronic inflammation and heart disease.
- Seeds are rich in piceatannol which helps to improve the insulin sensitivity reducing type 2 Diabetes.
- Flower of purple Passion fruit is used in treating insomnia, asthma, anxiety and menopause.
- It has high around 5mg of Magnesium that contribute on the brain cells and keep our mood fresh and happy.
- Sodium content is low, this reduces the blood pressure level.

3. Cultivation Practices**3.1 Propagation**

Seeds, cuttings, grafting can be used as a medium for propagation. Cuttings are used for commercial cultivation. For seedling preparation, seeds should be extracted and fermented for 3 days and then shade dried. Seeds should be sown shallowly and germination starts after 14-21 days. Transplanting should be done in the early morning or late evening at the onset of rain or anytime under irrigation.

3.2 Land preparation

It can be conducted one to two months before planting the vines. Perennial weeds should be removed and ploughing followed by pit digging should be done. Pit of size

45*45*45 cm³ with the spacing of 2*3m² is appropriate.

The pits should be filled with the mixture of topsoil, (15kg FYM, 125g TSP) per acre at least 3 weeks before transplanting.

3.3 Training (Staking and trellising)

Trellis construction should be done as Passion fruit is a climber. Trellis may be Overhead, Vertical, T trellis or A frame as per the convenience.

Trellising should be done immediately after transplanting. 3m long and 15cm diameter post with 6m apart in the row can be constructed.

3.4 Pruning

Passion fruit bears on current season's growth so systematic pruning of vine results in new growth and higher yield of fruits. After the harvest of the crop, the laterals should be cut back to 4-5 buds. Pruning should be done after harvesting of the crop in April and December.

3.5 Top dressing

100 g NPK per plant should be top dressed before the start of rainy season. Foliar feed and trace element according to need in every 3 months should be provided.

3.6 Intercropping

Beans, cabbages and tomatoes can be intercropped in the first year but these crops should be fed with their own nutrition. Cucurbits, Maize, cowpea, sorghum, okra and other creepers should be avoided.

3.7 Harvesting

Mainly fruits are ripened in 70 to 80 days after pollination. This makes the ripening season at the end of summer or early winter. Fruits are ready to harvest when they are plump and are fully colored.

4. Conclusion

Major exporting countries of Passion fruit are Brazil, Ecuador and Peru. Recently, the world is more concerned about the health and nutrition. Passion fruit, being loaded with nutrition is becoming popular nowadays. It contains fibre, Vitamin-c and Polyphenols that is useful for human health. Purple Passion fruit is more common than yellow Passion fruit. It can be cultivated through seeds, cuttings or grafting. It fruits after 12 to 18 months after sowing or 70 to 80 days of pollination.

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