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Growing Nectarine in Himachal Pradesh: Boon for Farmers

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Himachal Pradesh is known as the Apple Bowl of the India. The gradual rise in the temperature due to global warming is leading to the shift of apple belt to higher ridges of the state. Introduction of new fruit crops in the mid hills of the state will not only lead to an additional income source to the farmers but will also lead to diversified horticultural produce for the consumers.

Introduction

Nectarine (*Prunus persica* var. *nucipersica*) belongs to the Rosaceae family and is thought to have originated in China. It has apparently originated from peach by mutation and the lack of pubescence is controlled by a single recessive gene. Usually, nectarine is smaller than peach, has more red blush than peach, slightly acidic and sour whereas peach is extremely juicy and sweet. The rich winy flavor and supreme aroma of nectarine is more distinct compared to peach.

Nutritional facts of Nectarine are surprising. Eating nectarine at a regular basis can help in keeping away from chronic diseases like heart disease, muscular degeneration and even cancer. These delicate fruits are known to contain phytochemicals like lycopene and lutein. The yellow and red color of nectarine is caused by lutein. Nectarine is also rich in flavonoids, carotenes and natural sugars. Fresh fruits provide twice the vitamin A, slightly more of vitamin C and much more potassium and fibers than peach.

Nectarine Cultivars in Himachal Pradesh

Himachal Pradesh is an ideal place for its high quality production. Some important cultivars namely; Snow Queen, Silver King, May Fire, Red Gold and Independence have shown promise in the recent years for cultivation in the mid hills of Himachal Pradesh.

Silver King: The Silver King nectarine arose as a mutant of an unnamed cultivar in France in 1975. Fruits have a greenish yellowish background color, with a red blush covering 80 per cent of the fruit surface. The flesh is firm and white with red coloration around the pit. Fruits are ready to harvest during last week of May in Himachal. Fruits are of 62.5g, total soluble solids 14.2° Brix, acidity 0.72%, total sugars 11.13% and yield of 6 years old plant is 12.3kg/plant.



Snow Queen: The Snow Queen is sweet and juicy nectarine, suitable for mild winter climates. The trees produce an abundant harvest of delicious nectarines. The fruits are harvested a week before Silver King nectarines. Weight of the fruits is around 55.60g, TSS being 14.0%, acidity 0.78% and total sugars is 10.92%. Yield of 13.3kg/plant is obtained from 6 year old plant.

May Fire: Fruits are attractive, small to medium in size (30-50g) having a glossy skin with attractive red blush turning deep red at maturity, yellow flesh with melting texture, cling stone, with TSS 9-10⁰ Brix. It ripens during the first fortnight of May thus fetching a good price due to its earliness.

Red Gold: Fruits are medium to large in size (80-100g), having glossy deep red and gold skin, yellow flesh with red colouration around the pit, freestone with TSS 10⁰ Brix. It is self-fruitful and ripens during the first week of July. The fruit has good shelf life and is a good shipper. The tree is productive with fair hardiness

Independence: The attractive skin of this variety is gold, blushed with a brilliant cherry red. The flesh is yellow. A firm fruit with good texture and flavor. The tree is productive and vigorous.

Cultivation Practices

Climate: Nectarine is found globally distributed between 30 to 40° latitude where strong light and clear skies prevail. In India, it is grown successfully between elevations of 1000-2000 m above sea level. On average, most cultivars have chilling requirements of 600-900 hrs.

Soil: Soil should be deep, sandy loam, rich in humus with the pH range of 6 - 6.5. Nectarine tree roots are sensitive to water logging so well drained soils are to be preferred. Sites previously planted with nectarines should be avoided since they are prone to the "peach tree short life" syndrome (PTSL, also called peach tree decline), which greatly reduces orchard productivity. Several nematodes attack nectarine roots, resulting in poor growth and reduced longevity.

Propagation: It is usually propagated on wild peach rootstock. Tongue grafting is commercial method of propagation performed in February - March.

Planting: The planting is carried out in winter season. The square system of planting is common. Pits of 1m x 1m x 1m size at a distance of 4.5 m are dug during September - October and the graft union is placed exactly an inch above the soil. After filling the pits, 10 liters solution of Chlorpyrifos (1m/liter) to each pit is added to avoid any damage from insects.

Irrigation: Water is essential for producing large and quality fruits and maintaining healthy trees. Normally trees need water at least every 3 weeks. However, adequate soil moisture during attainment of fruit maturity is essential because of rapid increase in fruit size. Water stress during growing season may result in less terminal growth and reduce winter hardiness. Lack of irrigation during dry and hot summer result in reduced fruit size and also fruit drop. Overwatering can damage or drown trees. Sticky clay soils are especially vulnerable to water saturation and should be allowed to dry for a few days between each watering.

Fertilization: The one year old trees should be supplied with 10 kg of FYM and 70:35:100g NPK viz., 280g CAN, 220g SSP and 166g MOP. The rate of fertilizers application should increase annually at the same rate. After 7 years onwards apply 40 kg FYM, 500g N, 250g P₂O₅ and 700g K₂O through 2000g CAN, 1563g SSP and 1166g MOP. Whole quantity of farmyard

manure along with P and K is given during December-January. Half of N should be given in spring before flowering and the remaining half a month later if irrigation facilities are available. Under rainfed conditions, N fertilizers should be applied in one lot 15 days before bud break.

Weed Control: Weed or grass competition results in severe nitrogen deficiency, trees produce little or no growth. Ideally, keep the soil surface weed free either manually or chemically in an area at least as wide as the limb spread of the tree. Mulching with hay or black polythene mulch, intercropping and green manuring with leguminous crops will also help in reducing the weed competition in addition to improving the nutrient availability hence better growth, cropping and quality of the fruit trees.

Training and Pruning: Nectarines do not require cool nights to develop red skin color like apple. Infact, red color is more a function of cultivar and light exposure. Therefore, the open centre system of training is recommended for nectarine trees for maximum sunlight exposure. Since, the bearing habit of nectarine is lateral and on previous season's growth hence pruning in nectarine is an important horticultural operation to get higher yield of superior quality fruits. Pruning in dormant season every year is the usual practice i.e. in December-January according to climatic conditions.

Harvesting: Harvest date is determined by skin ground color changes from green to yellow and then red in most cultivars and generally the harvesting time in Silver King and Snow Queen cvs. is around last week of May. The nectarine comes into bearing after three years of planting in the field. The plants bear for about 20 years.

Storage: Nectarine fruits have a short shelf life of about 2 weeks under most conditions. They ripen and deteriorate quickly at ambient temperature. Therefore, cold storage is used to slow these processes and delay development.



Insect and Disease Management

The nectarine trees are prone to diseases like 'peach leaf curl', 'bacterial gummosis' and 'brown rot' etc. Therefore, it is important to subject the nectarine tree to effective insecticides and pesticides spray at a regular basis. For peach leaf curl aphid, spray of 0.025 % oxy demeton methyl or 0.03 % dimethoate is recommended.

Conclusion

Nectarine is a perfect summer fruit and is reminiscent of the summer times. The fruits are delicious, having consumer appeal and sold at premium price (Rs. 30/kg) in the local market. Silver King and Snow Queen Nectarines are evaluated potential varieties of Himachal Pradesh. Its cultivation can lead to additional economic benefit to the farmers of the state.