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Characteristic features of *Prunus* Species

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Abstract: Many species of stone fruits are growing wild in the Himalayas and the Khasi and Jaintia Hills. Some of these species are being used locally as rootstock for commercial cultivars of stone fruits. However authentic information regarding the usefulness of these species as rootstock, resistance to diseases etc. is lacking. Consequently, 14 different species of prunus were collected from different places for studying their horticultural characters. Prunus species were collected to study their botanical and horticultural characters. *Prunus cornuta* was considered to be a better root stock for cherry than *Prunus cerasoides*. *Prunus cerasoides* develops delayed incompatibility with stone fruits. Being an evergreen plant, it is unsuitable as a rootstock for stone fruits. Though *Prunus armeniaca*, *Prunus Persia*, *Prunus salicina*, *Prunus sp.* (Behimi) are compatible as a root stock with peach and plum cultivars, it will be advisable to use them as a root stock taking in to consideration the kind of soil on which the planting is to be done. *Prunus cornuta* and *Prunus Persica* are susceptible to powdery mildew, while *Prunus salicina* and *Prunus sp.* (Behimi) are resistant. *Prunus wallichii*, *Prunus undulata*, *Prunus tomentosa*. *Prunus prostrata* and *Prunus jacquimontii* showed incompatibility as a root stock with both peach and plum.

FEATURES OF *PRUNUS* SPECIES

Prunus nepaulensis

It was collected from Umrling (Meghalaya) at an altitude of 1500m ASL. It is locally known as 'Sohiong'. Trees larger than *Prunus cornuta*. Even by stomatal density technique it was found to be more vigorous than *Prunus cornuta*. Bark grey, branches

open, upright. Leaves oblong lanceolate with average length and breadth of 11.2cm and 4.7 cm, respectively, base obtuse, apex acuminate; petiole 2.4cm long, channeled, occasionally glandular; Phyllotaxy alternate. Flowering in October, inflorescence 6.25 to 12.5 cm long, bearing white flowers. Fruits fleshy drupe, ripen in September, black, 1.9 cm in length, globose, cavity

shallow. Stone free, roundish ovate smooth suture raised.

Prunus cornuta

It was collected from Khadralla (Himachal Pradesh) and passibhanjang (West Bengal) at an elevation of 2900m and 3500m ASL respectively. It is Locally known as 'Jaman' in Himachal Pradesh. It has also been found growing from 1700m to 3700m ASL. The tree is more vigorous than *prunus cerasoides*, spreading, deciduous and open headed. Even by stomatal density technique it has been found to be more vigorous than *prunus cerasiides* but shorter than *prunus nepaulensis*. The tree is vigorous, spreading, deciduous and open headed. Bark rough, dark brown and spilt. The leaves elliptic lanceolate with an average length and breadth of 14cm and 4cm respectively, glabrous, apex acute, base truncate, margins serrulate. Petiole glandular, 2mm long, glabrous, deep pink in mature leaves. Phyllotaxy alternate. Flowering from first week of may to 25th may. Inflorescence is a spike with an average length of 13cm and bearing 40 to 50 flowers. Flowers buds are roundish with an average length of 5mm. Fruits ripen in September, black, roundish, length and girth 1.0 and 1.1 cm respectively. Flesh deep purple, tender, slightly bitter, stone brown to wheatish, finely corrugated. It is susceptible to powdery mildew caused by *podosphaera leucotricha* (Ram and Randhawa, 1979) and also to *Polystigma rubrum* (Ram and Randhawa, 1976). It was used as a root stock for cherry cv. Emperor Francis. The grafts on this rootstock were more vigorous than on *prunus cerasoides* (Singh *et al.* 1971). As due to certain difficulties such as poor suckering and poor seed germination, Mazzard (*Prunus avium*) and Mahaleb (*Prunus Mahaleb*) have lost favour with the nurseries, use of *prunus cornuta* as a rootstock for cherry may be encouraged. *Prunus cornuta* rootstock is, however, incompatible with plum cvs. Santa Rosa and Satsuma (Kishore and Randhawa, 1983).

Prunus cerasoides

An evergreen plant, locally known as 'Paja'. It was collected from Shimla an altitude of 1700m ASL. It has, however, wide climatic variability and grows between 1240 to 2170m ASL. It was found to be smaller than both *prunus nepaulensis* and *prunus cornuta* by stomatal density technique. It is a small to medium sized tree, spreading and dense. Bark generally splits, grayish rough and have lenticels. Leaves with an average length and breadth of 8cm and 3.5 cm, respectively, elliptic, apex acuminate, base obtuse, margins serrulate, upper and lower surface velutinous, midrib prominent, pinkish, hairy, petiole 1 to 1.5cm long, pinkish, glandular; stipules lacinate, deciduous.

Flowering in the first week of November, Inflorescence sub-cymose. Flower buds 1 to 4 lateral, concave, 2cm long, pinkish and balloon shaped. Fruits are borne on spurs on 2-3 year old banches and 2 to 3 fruits are produced per node. Fruits ripen at the end of April. Fruits oblong, 1.1cm broad, reddish, flesh yellow, firm, coarse, juicy and of poor quality. Stones free, cream coloured and corrugated. It is resistant to powdery mildew Ram and Randhawa, 1979.

It is used as a rootstock for stone fruits in Himachal Pradesh. However, it develops delayed incompatibility (Singh *et al.*, 1971). It was also found to be incompatible with plum cvs. Santa Rosa and Satsuma (Kishore and Randhawa, 1983). Moreover, as it is an evergreen species, cvs. Grafted on it may enter in to dormancy late, with the result that early snowfall may cause injury to plants. This species has value as avenue trees only, as it flowers in November when there is no other flowering tree in the hills, its red coloured fruits have also ornamental value.

Prunus armeniaca Linn

It was collected from Jubbal, Matiana and Mashobra (Himachal Pradesh) at an altitude of 2000m, 2160m and 1970m ASL, respectively. It is commonly known

as 'Chuli' and 'Zardalu' in different parts of Himachal Pradesh. Its fruit is edible, and kernels are used for the extraction of cooking oil. Tree medium sized, spreading, open and round topped. Branches stocky with spreading upright, dark brown branchlets. Leaves ovate, average length and breadth of 9cm and 3.5 cm respectively, glabrous, base truncate, apex acuminate, margins serrulate; petiole 3 to 4 cm long; stipules deciduous. Flowering in March on one year old shoots but mainly on spurs on older growth flower buds flat, round, 2x1 cm in size. Flowers white with pinkish tinge. Fruits roundish oval, slightly compressed on both the ends, ripen from mid June to mid July, colour deep yellow to pinkish yellow. Flesh deep yellow, tender having typical apricot flavor; free stone, stone large to medium, rough, roundish oval; kernels usually bitter in taste. It is commonly used as a rootstock for stone fruits. Grafts of plum cvs. Santa Rosa and Satsuma were vigorous on this rootstock (Kishore and Randhawa, 1983). It is highly susceptible to collar rot (*Phytophthora cactorum*) though free from most of the common diseases (Randhawa and Ram, 1976).

Prunus salicina

It was collected from Shimla at an altitude of 1928m ASL. Its local name is 'Aloocha'. The trees are of medium size and spreadings. According to stomatal density technique, it is more vigorous than, *Prunus* sp. *Prunus Persia* (Behimi), *Prunus wallichii* and *Prunus jacquimontii*. The branches are glabrous and reddish black. Leaves elliptic with an average length and breadth of 8.5 cm and 3.7 cm respectively, margins serrate, base obtuse, apex acuminate, glabrous above and pubescent below along the veins, venation pinnate. Flowers white in fascicles from lateral buds, appearing before leaves. Fruit globose or oblong, smooth yellow to orange red, glaucous, ripen in June-July. Flesh reddish yellow and firm, acidic with typical flavor of plum. Fruit quality is very poor. Stone smooth and clings to the flesh. The stones are used for producing root stock seedling for peach and

plum. Seed germination is, however, very poor. The seedling make good graft union with plum cvs. Santa Rosa and Satsuma (Kishore and Randhawa, 1983). The seedling are resistant to powdery mildew caused by *Podosphaera leucotricha* (Ram and Randhawa, 1979).

Prunus Persia (Linn.) Batsch.

It was found growing wild at Theog (Himachal Pradesh) and Shillong (Meghalaya) at an altitude of 2000m and 1500m ASL respectively. In Himachal Pradesh it is locally known as 'Aroo'. A small to medium sized tree, deciduous, spreading, open headed. By stomatal density technique, it was found to be more vigorous than *Prunus* sp. (Behimi), and *Prunus jacquimontii*. Branches spreading and have large sized oval lenticels, young shoots smooth and pinkish in colour. Leaves simple, with an average length and breadth of 9.3 cm and 3.2 cm respectively, lanceolate, base obtuse, apex acuminate, margins serrulate. Flowering in the first week of March. Flowers are borne singly on last years shoots, flower buds obovoid, pink and wooly, flowers sessile, hermaphrodite. Fruits ripen in September-October and size of the fruits is 3x3x2.5 cm respectively. Fruits light green, hairy, with equal halves. Flesh yellow, coarse, sweet and juicy. Stone clings, roundish oval, corrugated, suture raised; kernel bitter. Seedling of *Prunus Persia* are widely used as a rootstock for peach, plum, apricot and even for almond. It is, however, susceptible to powdery mildew caused by *Podosphaera leucotricha* (Ram and Randhawa, 1979).

Prunus japonica

It is identified a multiscionic rootstock suitable for grafting in different stone fruits. The rootstock, botanically named as *Prunus japonica* which is also called as bush cherry, oriental bush cherry, Japanese bush cherry is widely grown for ornamental purpose. It is a shrub species in the genus *Prunus* which belongs to family Rosaceae. The shrub reaches up to the height of 1.5 m. Its flowers are hermaphrodite and

are pollinated by insects. The plant blossoms in March-April under temperate conditions (ideal temperature range 12°C -24°C). Its fruit size reaches about 14 mm diameter and has an agreeably sweet flavour, therefore it is used in making pies, but its taste is quite sour, reminiscent of that of cherry. It has been successfully evaluated as a dwarfing rootstock for majority of the stone fruits viz; apricot, peach, plum, almond, cherry etc . It is highly precocious and starts fruiting in the same year after grafting with more than 90% graft success. The plant usually grows from seed but can also be multiplied by cutting or layering. Mound layering before the onset of monsoons has also been found very successful. The growth habit of the plant is very dwarf with profuse ornamental flowering. This selection has a potential for use as a standardized dwarfing rootstock for high density plantings of apricot, plum, almond, cherry and peach as well as for kitchen gardening of stone fruits.(Pramanick *et al.*, 2019)

Prunus sp. (Behimi)

It was collected from Kinnaur and Sarahn (Himachal Pradesh) at an altitude of 3070m and 2500m ASL. 'Behimi' is considered a natural hybrid of almond and peach. Plants are of medium to small size with drooping branches. Old branches are light brown, shoot are greenish with numerous lenticels. By stomatal density technique also , it has been found to be shorter than *Prunus armeniaca*, *Prunus salicina* and *Prunus wallichii* Leaves lanceolate, 12.8cm long and 3.3cm broad, base obtuse, apex aristate, margins serrate; petiole 1.1 cm long and finely channeled. Phyllotaxy alternate. Flowering on shoots in the third week of March. Flowers with white petals. Fruits

slightly oval in shape with pubescence on the surface; stone smooth and oval in shape.

It is commonly used as rootstock for almond, peach and plum. It makes good graft union with plum cvs. Santa Rosa and Satsuma (Kishore and Randhawa, 1983). It is resistant to powdery mildew caused by *Podosphaera leucotricha* (Ram and Randhawa, 1979). Information regarding the influence of this rootstock on the longevity of the graft, yield and quality of the fruit produced is lacking.

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