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Prunus tomentosa Thunb. – A lesser known wild fruit plant genetic resource of Kashmir Himalayas

Prunus tomentosa is a naturalized wild species found in some northern Himalayan regions of India including Kashmir valley. It grows mostly on hill slopes and near foot hills at many places across Kashmir. It bears small nutritious, edible cherry like fruit and has been used as rootstock for peaches, plums and sweet cherries in different parts of the world. Unlike other wild fruits, this important species of _Prunus_ is not so popular despite having a great potential to be developed into a commercial fruit crop for promoting resilience, improving livelihood and supporting food security and nutrition. In this article an attempt has been made to present some important features of this lesser known plant genetic resource of Himalayas.

Prunus tomentosa Thunb. (2n=16) or *Lithocerasus tomentosa* Thunb. belongs to the family *Rosaceae,* subgenus '*Lithocerasus*' and is commonly called as Chinese bush cherry. It is also known by various names like Chinese cherry, Shanghai cherry, Ando-cherry, Mountain cherry, Manchu cherry, Nanking cherry or Downy cherry. It grows abundantly in the wild in China, Japan, Tibet and Himalayas and is naturally distributed from Korea through northern and western China and Tibet into the northern Himalayan portion of India. The Chinese called this plant as ying-t'ao (cherry). In Kashmir, *Prunus tomentosa* is locally called as 'Vishkand' or 'Bushkand' and is found growing as naturalized wild species at an elevation of 1,800-2,500 m. Phenotypically diverse populations of this plant are found in Wasturwan hills, in other hilly locations around Tral area, in Zabarwan hills near Srinagar, in Dachigam and in Gulmarg areas. It has also been reported to grow in Pooch area of Jammu province of Jammu and Kashmir at an elevation of 2100 m.

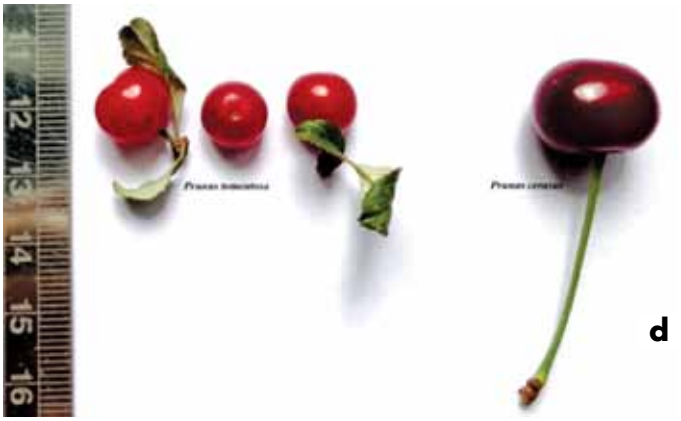
Characteristics

A winter hardy, moderately fast-growing, short-lived, broad spreading, densely twiggy shrub, becoming more open and picturesque with age. It is a very cold tolerant

Prunus tomentosa upright (**a**) and spreading fruiting plants (**b**) growing in natural habitat in Kashmir Himalayas.

species and can endure temperatures as low as - 40°C and tolerate considerable wind and dryness. It is tolerant to draught than all other cherries and thrives well on well drained soils like hill slopes. The plants may be 6-10 feet tall and 4-5 feet wide and are deciduous having stems with shiny brown bark. Soft young branches and leaves are tomentose. Root system is spreading and medium in depth. Leaves are simple elliptic, lanceolate, unlobed and unevenly serrated along the margins; 2- 3 inches in length and 1-1.5 inches in width, medium to dark green above and white hairy below. Flower buds are pinkish, with reddish calyx borne on very short reddish pedicels. Flowers and leaves appear at the same time. Flowers are small but numerous, pinkish in bud condition often changing to white when fully open, fragrant ¾ inches across, blooming during early to mid April. Two plants are required for pollination; however pollination can be effected by plums flowering at the same time. We have found that its fruit yield is enhanced many fold once two plants are sown near each other than growing a single plant. The fruit is cherry shaped bright red drupe, 1/3 inches across, maturing in late May to early June. They are resistant to rain cracking unlike cultivated cherries and ripen synchronously.

We have observed both upright and spreading type *Prunus tomentosa* plants during our survey programmes in the studied areas. The leaves are dark green on upper surface but whitish and pubescent on lower surface. The flowers are always pinkish with five tepals. Mature fruits are more or less round like *Prunus cerasus* but are bright red in colour unlike dark red in later case. Besides, fruit stalk is very short as compared to *Prunus cerasus*. We have recorded an average fruit weight of 0.6±0.1 g, stone weight of 0.1±0.02 g and TSS (Brix) of 14.7±0.5 % in *Prunus tomentosa* fruits while in *Prunus cerasus* the corresponding values are 2.1±0.1 g, 0.3±0.06 g and 18.2±1.3 %. The natural dormancy of seeds (stones) can be broken by cold treatment. Without cold treatment seeds cannot germinate unless well aged. A three months treatment of cold stratification can result in 98% germination. Soft wood cuttings can also be made to root by treatment with rooting hormones.



Prunus tomentosa flowering (**a**) and fruiting plants (**b**) at ICAR-NBPGR Regional Station, Srinagar Farm; leaf upper surface on left and lower surface on right (**c**), fruits with stalks of *Prunus tomentosa* on left and *Prunus cerasus* on right (**d**).

Utilization

In Kashmir the fruits of *Prunus tomentosa* are eaten by locals and are believed to be effective in kidney ailments. They look like sour cherry but are sweeter. In China, local people have been consuming its fruits for more than 2000 years. They can be consumed fresh or as preserved products: wine, pies, jellies, juices, jams, compote, syrup and dried whole. Fruits are rich in vitamins and other antioxidative compounds, such as carotene, vitamins B1, B2, C, D, E and niacin. Fruits have also been found to contain malic, ′-ketoglutaric, aspartic, pyruvic, oxalic, citric, folic and ascorbic organic acids. Ascorbic acid content prevails (16.06 µg/mg dry weight), followed by malic acid (13.34 µg/mg dry weight). The presence of glucose (65.54 µg/mg dry weight), fructose (62.76 µg/mg dry weight), saccharose (3.45 µg/mg dry weight) as well as d-pinitol, d-chiro- and myo-inositol has also been recorded in the fruits of *Prunus tomentosa*). In therapeutics they are not popular, although show some strengthening properties. They also increase appetite, regulate alimentary canal, as well as make easier to digest fat, meat protein and milk. The plant also provides fruit and nesting cover for birds.

Prunus tomentosa is a plant barely propagated in horticulture, mainly grown by amateurs. It has the potential to be cultivated as an ornamental shrub or for fresh fruit production in harsh and cold areas. It may also be used to improve other *Prunus* species as a gene donor because the genus is capable of wide hybridization. A breeding program on *Prunus tomentosa* in China started more than a decade back and several cultivars such as 'Jixiang', an ornamental weeping type and 'Leucocarpa' a white fruit type were released for commercial production, however, they are direct selections from naturally pollinated populations. Although it has been widely used as rootstock for peaches, plums and sweet cherries, the species has not yet been developed into a commercial fruit crop worldwide. In the Himalayan region unlike other wild fruits, it is less popular and not much work has been done on this important wild relative of *Prunus*. The plant has a tremendous potential to be considered as a future crop for promoting resilience, improving livelihood and supporting food security and nutrition.

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