Prunus domestica subsp. insititia

Scientific Name

***Prunus domestica* L. subsp. *insititia* (L.)** C. K. Schneider

Synonyms

Prunus domestica subsp. *insititia* (L.) Bonnier & Layens, *Prunus domestica* L. subsp. *insititia* (L.) C. K. Schneider (Bullace Group), *Prunus domestica* L. subsp. *insititia* (L.) Poiret, *Prunus domestica* L. var. *insititia* (L.) Fiori & Paoletti, *Prunus insititia* L.

Family

Rosaceae

Common/English Names

Bullace Plum Damask Plum, Damson, Damson Plum, Eurasian Wild Plum, Persian Gum.

Vernacular Names

Austria: Steinkrieche;
Chinese: Ou Ya Ye Li, Wu Jing Zi Li;
Czech: Slíva, Slivoň Obecná, Švestka Domácí;
Danish: Kræge;
Dutch: Kroos, Kroosjes;
Eastonian: Kreegipuu;
Finnish: Kriikuna, Kriikunapuu
French: Crèque, Crèquier, Pruneaulier, Prunier À Greffer, Prunier De Saint Julien, Prunier Sauvage;
German: Haferpflaume, Hafer-Pflaume, Krieche, Kriechenpflaume, Kriechenpflaume, Pflaumenbaum;
Hungarian: Kék Ringló, Kökényszilva;
India: Aaluucaa, Aaluuchaa, Alubukhara, Alucha (Hindu), Aluka (Urdu);
Italian: Prugnola Ciliegia, Prugnola Da Siepe, Susina, Susina Salvatica, Susino, Susino Di Macchia;
Nepalese: Aalucaa, Aluca;
Norwegian: Kreke;
Polish: Śliwa Lubaszka;
Portuguese: Abrunheiro, Ameixieira, Cabrunho;
Russian: Sliva Nenastoiashchaia, Ternosliva;
Slovaščina: Cibora, Trnasta Sliva;
Solvencina: Slivka Guľatoplodá;
Spanish: Ciruelo Silvestre, Endrino, Endrino De Injertar, Endrino Grande, Endrino Mayor, Endrino Prunero, Espino De Injertar, Niso, Niso Ciruelo De San Julián;
Swedish: Krikon;
Ukranian: Ternosliva.

Origin/Distribution

The species is native to south western Asia and Europe. It has escaped and become naturalised from Southeast Russia through Central Europe to

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Western France. It is cultivated in Europe, Western Asia, India, North Africa and North America.

Agroecology

As described for plums, it thrives in areas with a temperate climate. It does best in full sun in moist, well-drained fertile, sandy loams to clayey loams with pH of 4.5–6. It has a low winter chill requirement. It is cold hardy tolerating frost to −20°C. Rain close to harvest is detrimental causing the fruits to crack.

Edible Plant Parts and Uses

The ripe fruit is eaten fresh, made into pies and puddings, preserves or processed into jams and jellies. Fermented damson fruits is processed into wine, gin and in Slavic countries processed into the plum spirit *Slivovitz*.

Botany

A deciduous shrub or tree growing to 6 m tall. Branches grayish black, glabrous, sometimes spiny; branchlets brown, tomentose. Stipules lorate with acuminate apex. Petioles pubescent. Leaves obovate, elliptic, or rarely oblong, 3.5–8 cm by 2-4cm, pubescent beconing glabrescent, abaxially pale green, adaxially dark green, base cuneate to broadly cuneate and with a pair of nectaries, margin coarsely serrate, apex acute to obtuse; midvein and secondary veins prominent (Plate 1). Flowers solitary or in 2-3 flowered fascicles. Hypanthium glabrous. Sepals narrowly ovate to oblong; petals white and inconspicuously purplish veined, broadly obovate, base broadly cuneate and with a short claw, apex obtuse; stamens 20–25, ovary glabrous, superior; stigma disc-shaped. Drupe green becoming purplish-black, oval to ovoid pointed at one end (Plates 1 and 2), 2.5–4 cm diameter glabrous; endocarp small, more or less flattened, nearly smooth. Pulp smooth-textured, juicy and greenish-yellow.

Plate 1 Leaves and fruits

Plate 2 Immature glaucous fruits

Nutritive/Medicinal Properties

For nutrient values of damsom plums see chapter on plums (*Prunus domestica*).

The contribution of the seed and pericarp to the content of malic, quinic, citric and fumaric acids, and sucrose, fructose and glucose was determined during development and ripening of damson plum fruits (Garcia-Marino et al. 2008). In whole fruit, malic and quinic acids were the predominant organic acids and their levels varied significantly, the highest being found at the beginning of the late-green stage of fruit development. The content of citric and fumaric acids was low but fluctuated remarkably towards development and ripening. In the seed, the levels of malic, quinic and fumaric acid were lower in ripening than at the beginning of maturation, and a significant synthesis of citric occurred

from the middle of maturation onwards. In the mesocarp, however, malic, quinic, and citric acids peaked in the middle of maturation, whereas fumaric acid increased appreciably towards ripening. In the epicarp, quinic and malic peaked at the beginning of ripening and maturation. In the seed, all soluble sugars peaked at the middle of maturation, while fructose and glucose (the most abundant soluble sugars) tended to be stored during ripening, sucrose (the most abundant in the edible part of fruit) decreased. All the soluble sugars tend to increase in mesocarp and epicarp throughout maturation and ripening.

Other Phytochemicals

The flower opening of damson plum (*Prunus insititia*) was accompanied by an increase in the content of free-polyamines in the sepals, petals and sex organs, the ovary being most active in accumulating spermine (De Dios et al. 2006). The fertilization process and senescence brought on a decline in ovarian spermine, but stimulated putrescine and spermidine content in the sepals. The mesocarp contributed the most to the total content in free polyamines throughout damson fruit development. The control of S-adenosylmethionine (SAM) distribution towards ethylene and/or polyamine appeared to differ during the development of the endocarp, as the only peak of free-putrescine (detected in S2) coincided with the highest 1-aminocyclopropane-1-carboxylic acid (ACC) accumulation and ethylene production. On the contrary, in S3 it was probable that SAM was transformed preferentially into free-polyamines, given that free-spermidine and spermine were hardly detectable in S1 and S2 phases of fruit development. The endocarp of this climacteric fruit produced only ethylene at the end of the S1 phase and throughout S2, in which there was a great accumulation in ACC and its conjugate, 1-(malonyl-amino)-cyclopropane-1 -carboxylic acid (MACC). The greatest amounts of ACC and MACC were observed in the ripening mesocarp and epicarp.

Traditional Medicinal Uses

The bark of the root and branches is regarded to be febrifuge and considerably styptic. An infusion of the flowers has been used as a mild purgative for children (Grieve 1971). Although no specific mention has been seen for this species, all members of the genus *Prunus* are known to contain amygdalin and prunasin, that hydrolyses to form hydrocyanic acid (cyanide or prussic acid). In small amounts this exceedingly poisonous compound stimulates respiration, improves digestion and gives a sense of well-being (Bown 1995).

Other Uses

Damson trees are fairly wind resistant and can be grown as a shelter-belt hedge.

A green dye can be obtained from the leaves and a grey to green dye from the fruit (Grae 1974).

Comments

There is general consensus that damson (*P. insititia*) is the ancestor of the large-fruited domestic plums (Woldring 1997–1998). Ramming and Cociu (1991) accepted *Prunus insititia* as the species name and commented that it hybridizes with *P. domestica*. According to Depypere et al. (2009) morphometric and AFLP-PCR (amplified fragment length polymorphism-polymerase chain reaction) studies revealed this taxon *Prunus insititia*; both genetically and morphologically to share similar characters with *P. domestica* supporting its inclusion in *P. domestica.*

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