

'Bing' Sweet Cherry

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'Bing' is the predominant sweet cherry cultivar grown in the United States. Significant commercial acreage of 'Bing' is found in Washington, Oregon, and California, all western states. In 1985 Washington State had about 4,900 hectares of 'Bing' sweet cherries representing 72% of its total cherry acreage. Hedrick (7) says of 'Bing' "... few sweet cherries equal it in size and attractiveness and none surpass it in quality, so it may be said to be as good as any of the dessert cherries."

Sweet cherries are thought to have originated in the Transcaucasus region between the Black and Caspian seas. Wild cherries are found throughout Europe and Asia (7). Domestication of cherries began before recorded history. Sweet cherries belong to the genus *Prunus* and are distinguished by having fruit borne on pedicels which are one to one and one-half inches long (8). The specific name, *avium*, was adopted from their nickname bird cherry. Those who have tried to protect a sweet cherry crop from birds understand why they are called bird cherries.

'Bing' sweet cherry originated in 1875 in the nursery of Seth Lewelling of Milwaukie, Oregon, located in the Willamette valley of western Oregon and now a suburb of Portland, OR. It is reported to have been named after a Chinese workman (7). The seed parent was 'Republican' ('Black Republican') and the pollen parent is unknown. 'Bing' is certainly the best known, if not the best quality sweet

cherry, introduced by the Lewelling nursery.

Fruits of cultivated sweet cherries can be divided into two groups according to fruit shape and texture. These groups are subdivided by juice color, which can be either light or dark. Soft, heart-shaped fruit are called heart or Gean cherries. Firm, roundish fruit are of the Bigarreau type. 'Bing' belongs to the dark-juice Bigarreau type (7, 9).

'Bing' bears fruit laterally from simple reproductive buds in the basal nodes of one-year-old wood and on short shoots or spurs on two-year-old or older wood. Terminal buds are always vegetative. Because sweet cherry produces only simple buds, when fruit are borne on the base of one-year-old wood these nodes become "blind" and produce no fruit or spur growth in future seasons. Only one bud is borne in the axil of each leaf, with one to three flowers per bud. Spurs have 3-8 lateral fruit buds and there may be 10-20 fruiting spurs on sections of two-year-old wood. The corolla is white and the fused base of the sepals form a hypanthium. The flower is perigynous and the fruit is a solitary drupe (8). The leaves are large, 10-15 cm long and 5-8 cm wide (45-80 cm²), with prominent glands which exude a gum which is rich in carbohydrates. Glands are located on either side of the petiole just basipetal to the leaf blade.

Bloom occurs sequentially in a basipetal direction on each limb beginning

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with blossoms at the base of one-year-old wood. The best fruit come from flowers distal on the limb which are the earliest blossoms to open (10).

'Bing' is a heavy yielder (approximately 13-19 MT/ha) with large fruit, some more than an inch in diameter. Among sweet cherries, the harvest is midseason, occurring in mid June in the Yakima valley of Washington State. Typical of sweet cherries the interval between bloom and harvest (60 to 75 days) is the shortest of any temperate, deciduous tree fruit. 'Bing,' being a dark Bigarreau cherry, has firm, crisp flesh and dark purplish juice at maturity. The fruit is sweet (soluble solids generally 16 to 20%), and very flavorful with a high aromatic content. The fruit will attain red color without direct exposure to light on the fruit (13). Because the stems must remain in the fruit for consumer acceptance of the fresh crop and because fruit can be easily bruised resulting in cherry pitting (4), the crop must be harvested by hand. The fresh market is based on the 'Bing' cultivar and virtually all of the 'Bing' crop is marketed as fresh fruit. 'Bing' is, however, a popular shipping cherry because it has firm flesh which withstands packing and shipping.

Because of its horticultural quality, 'Bing' has been used extensively in sweet cherry breeding programs (3, 5). Notable progeny include 'Rainier' and 'Chinook' (1). No commercially important sweet cherry cultivars have been selected from sports or bud mutations.

'Bing' does have some production problems. The fruit are susceptible to cracking if rains occur during harvest. Rain cracking is a major reason for the limited geographical distribution of sweet cherries. Though various spray and other control regimes have been tried, such as calcium and gibberellic acid treatments (6), rain cracking will continue to be a major limitation to growing sweet cherries.

Winter hardiness of wood and buds is a problem for 'Bing.' After the winter freeze of 1955 in Washington State clones of 'Bing' which withstood the cold with the least injury were collected, and one of these clones (OB 260) has been used for propagating material by Washington nurseries. The horticultural quality of 35 clones collected in older Washington orchards is currently being investigated at Prosser, WA (12). Full bloom for 'Bing' sweet cherry is in early April, which is before the average date of the last spring frost in the Yakima valley of Washington State (2).

Like all older cultivars of sweet cherry, 'Bing' is self unfruitful. In addition, it is incompatible with many cultivars, requiring careful choice of a pollinizing cultivar. Unfortunately, 'Napoleon' and 'Lambert,' other major western cultivars, are incompatible with 'Bing' (13). 'Van' and 'Rainier' are frequently used as pollinizers.

Unpruned, 'Bing' sweet cherry will grow to a height of 15 m or more with erect, vigorous branches. Trees are typically planted at 250-370 trees per hectare at spacings from 5.5 x 7.3 m to 4.8 x 5.5 m. At present, because of incompatibility problems or because of poor performance in cold climates, no suitable dwarfing rootstock is available for sweet cherry. Research is continuing on this problem (11). Rootstocks currently in use in the Pacific Northwest are seedlings of *Prunus avium* 'Mazzard' or *Prunus mahaleb*. New chemical growth retardants may prove useful in controlling sweet cherry tree size.

After 110 years of cultivation, 'Bing' cherry still remains most highly regarded among dark sweet cherries. It is the standard by which new cherries are judged. 'Bing' may likely remain the premier dark sweet cherry for years to come.

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Mume, a Possible Source of Genes in Apricot Breeding

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Abstract

Mume, which is in section *Armeniaca* with apricots, has a wide genetic variability. Crosses between mume and apricots produce fertile hybrids while plum X apricot hybrids are semi-fertile. Therefore, mume might serve as a good source of genes in apricot breeding. This paper reviews the potential of mume to enhance apricot breeding programs.

Introduction

Mume or Japanese apricot is generally grown for its fragrant and attractive flowers in Japan and North America. However, in China, Japan, and Taiwan it is grown for its fruit. Because its fresh fruits are inedible, mume is pickled or used in liquor. The genetic variability within the species is wide in characteristics such as fruit size, chilling requirement, and disease resistance. Mume is one of the stone fruit species that has been seldom used in breeding. Given its genetic variability, mume could be utilized

in breeding programs to develop low chilling stone fruit with good adaptation to humid conditions. This article describes the genetic, fertility, and evolutionary relationship of mume with other stone fruits and discusses its potential use in apricot breeding.

The genus *Prunus* is within the family Rosaceae and includes such diverse crops as cherry plums, cherries (subgenera: *Eucerasus*); plums, apricots (subgenera: *Prunophora*); peaches and almonds (subgenera: *Amygdalus*) (Figure 1). Among this diverse array, plums show the most diversity (19). The subgenera *Prunophora* includes both apricots (section: *Armeniaca*) and plums (sections: *Euprunus* and *Prunocerasus*). The cultivated apricot has been developed mainly from the European group within the species *P. armeniaca*. Among the five groups within the apricot species, this is the most recently evolved and least vari-

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