'Dorada' Apricot

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'Dorada' is a late ripening apricot cultivar (*Prunus armeniaca* L.) with high productivity, good fruit quality and an attractive light-orange fruit suitable for the European markets. This cultivar is well adapted to the climatic conditions at the mountains of Spain. 'Dorada' is self-compatible and possesses a high degree of autogamy. 'Dorada' fruit are free stone with a light orange skin color and a yellow-light orange flesh color that make them very attractive. This cultivar is also characterized by its good aptitude for canning.

Origin

'Dorada' resulted from a cross made in 1992 at Murcia (Spain) between the French cultivar, of unknown origin, 'Bergeron', and the Spanish cultivar, of unknown origin, 'Moniquí' (Fig. 1). This cross was made within the apricot breeding program at CEBAS-CSIC in Murcia (Spain) with the objective of obtaining good fruit quality as well as canning aptitude.

Description

Tree description. 'Dorada' was originally selected as a seedling tree on its own roots and then grafted onto apricot seedlings (3 repetitions). Trees of 'Dorada' are large and medium vigorous with a moderate spread. It has a moderate density of flowers (22.9 flowers/cm² of shoots) mainly localized on fruiting spurs of two-year-old branches. Flower density was calculated from the number of flowers on productive shoots, which were about 1.2 m. long and where basal diameter was measured. Flower density was expressed as flowers/cm² of shoot basal section, average of three repetitions. 'Dorada' cultivar showed a very high fruit set (50.5%) (Table 1), this parameter being calculated in the same shoots as flower density by counting the fruit and dividing by the number of flowers. 'Dorada' is characterized by large fruit and very high productivity in comparison

with traditional Spanish apricot cultivars. Tree architecture greatly facilitates pruning (reduced branching habit).

PPV resistance. Sharka disease caused by the plum pox virus (PPV) is a serious limiting factor for temperate fruit production in those areas that are affected (Kölber, 2001). All apricot cultivars traditionally grown in Europe are susceptible to this disease (Martínez-Gómez et al., 2000). Evaluation of PPV resistance in controlled greenhouse conditions (Martínez-Gómez and Dicenta, 1999) has not been tested in 'Dorada' because none of their parents are known as resistant varieties.

Time of bloom. 'Dorada' has medium-high chilling requirements for breaking dormancy, about 1,050 ± 70 chill units (Richardson et al., 1974). The growing degree hour (GDH) requirements (Richardson et al., 1975) between the end of the rest period and full bloom were 5000 ± 500. Under our experimental conditions in Murcia (southeast of Spain, 37°N latitude, 1°W longitude, and 450 m altitude) 'Dorada' full bloom occurred about 14 Mar. (±4 d as average from 3 years), a medium-late flowering date among traditional Spanish apricot cultivars (Table 1).

Self-compatibility and autogamy. Fruit set percentage averaged 50.5% ± 3% over 3 years. The self-compatibility of this cultivar was

Fig. 1. Pedigree of 'Dorada' apricot.

Table 1. Comparative analysis of tree and fruit characteristics of 'Dorada', the Spanish cultivar 'Búlida', the French cultivar 'Bergeron', and the North American cultivar 'Orange Red'.

Characteristics	'Dorada'	'Búlida'	'Bergeron'	'Orange Red'
Tree				
Vigour	Vigorous	Very vigorous	Very vigorous	Vigorous
Flower density (flower/cm ²)	22.9	42.0	31.1	5.1
Flowering date (full bloom)	14 Mar.	8 Mar.	13 Mar.	15 Mar.
Fruit set (%)	50.5	31.6	39.4	13.6
Yield	Very high	High	High	Medium
Fruit				
Ripening date	22 June	26 May	19 June	28 May
Fruit size (g)	73.1	59.8	70.7	61.0
Attractiveness	8.3	6.7	7.2	9.0
Sugar (°Brix)	13.1	10.62	11.90	14.22
Acidity ^a	1.24	1.29	1.73	1.23

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^aTitrate acidity expressed as grams of malic acid per 100 mL.

demonstrated in the field (by bagging branches) and in the laboratory (by observing pollen tube growth in five flowers). The natural autogamy of 'Dorada' was assessed by bagging branches just before anthesis and recording the fruit set.

Fruit size, firmness, and color. Fruit harvested from the original own-rooted seedling tree and from trees of 'Dorada' grafted onto apricot seedlings (three replications) were studied over 3 years. 'Dorada' trees and reference variety trees ('Búlida', 'Orange Red', and 'Bergeron') were cultivated in the same orchard according to habitual apricot orchard management. Fruit characterization of 'Dorada' apricot and reference varieties was made at commercial maturity. 'Dorada' bears large and globose fruit with an average weight of about 73 g, an axial diameter of 4.9 cm, a transverse diameter in suture plane of 5.0 cm, and a transverse diameter at right to suture plane of 5.3 cm (Fig. 2). 'Dorada' fruit are also characterized as firm ($1.72 \pm 0.3 \text{ kg}\cdot\text{cm}^{-2}$) at commercial ripeness, with low skin cracking, and a free stone without pit burning problems. Fruit have light orange skin color (Hue value = 80.8 ± 2.3 , with color space coordinates $L^* = 69.65$, $a^* = 8.05$, $b^* = 50.28$, in chromameter (CR-300; Minolta, Ramsey, N.J.) with a yellow-light orange flesh color (Hue value = 82.1 ± 2.6 , with color space coordinates $L^* = 71.31$, $a^* = 6.92$, $b^* = 49.4$). The attractiveness of 'Dorada' fruit by subjective evaluation of 4 people reached 8.3 on average in a scale between 0 and 10 (Table 1).

Organoleptic characteristics. At the commercial-maturity stage 'Dorada' fruit are sweet (13.1°Brix on average) with low acidity ($1.24 \text{ g malic acid}/100 \text{ mL}$ on average) and a very good eating quality (Table 1). 'Dorada' fruit have a mild apricot aroma.

Maturation time. Fruit of 'Dorada' mature uniformly. In our experimental conditions in Murcia, 'Dorada' matures about 22 June, 25 d later than the North American cultivar 'Orange Red' and the Spanish cultivar 'Búlida'. This cultivar showed a late maturation in comparison with the traditional Spanish apricot cultivars (Table 1).

Canning aptitude. Canning aptitude has been tested in 'Dorada' fruit in the National Research Institute for Canned Goods (Murcia, Spain). Syrup, pulp and puree from 'Dorada' fruit showed very good characteristics concerning color, texture and flavor, as well as relating to conservation.

Fig. 2. Fruit of 'Dorada' apricot. Scale bar in centimeters.

Molecular Characterization

Simple sequence repeat (SSR) analysis.
Eleven SSR markers previously developed

Table 2. Molecular characterization of 'Dorada' apricot cultivar and its parents 'Bergeron' and 'Moniquí' using peach simple sequence repeat (SSR) markers.

SSR marker	Reference	Size of amplified bands (bp)		
		'Dorada'	'Bergeron'	'Moniquí'
BPPCT 017	Dirlewanger et al., 2002	203/203	203/203	203/212
CPPCT 022	Aranzana et al., 2002	238/257	238/238	257/257
UDP 96003	Cipriani et al., 1999	93/93	93/115	93/93
UDP 96008	Cipriani et al., 1999	128/128	128/138	128/128
UDP 96019	Cipriani et al., 1999	170/214	170/214	170/170
UDP 98406	Cipriani et al., 1999	95/95	95/95	95/100
UDP 98412	Testolin et al., 2000	96/114	110/114	96/110

in peach were screened for polymorphism of 'Dorada' apricot DNA. Seven SSR markers were able to distinguish 'Dorada' and its progenitors. The DNA fingerprints of 'Dorada' and its progenitors 'Bergeron' and 'Moniquí' are shown in Table 2.

Availability

Virus-free budwood is available from CEBAS-CSIC (Spain). This cultivar is registered in the European Union Community Plant Variety Office with the registration number 2003/1216. Budwood has been tested and is free of the following viruses: prunus necrotic ring spot virus (PNRSV), apple mosaic virus (ApMV), apple chlorotic leaf spot virus (ACLSV), prune dwarf virus (PDV), and plum pox virus (PPV).

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