

‘Murciana’ Apricot

J. Egea,¹ D. Ruiz, F. Dicenta, and L. Burgos

Departamento de Mejora y Patología Vegetal. Centro de Edafología y Biología Aplicada del Segura-Consejo Superior de Investigaciones Científicas, P.O. Box 164, E-30100, Espinardo, Murcia, Spain

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‘Murciana’ is a mid-season ripening apricot cultivar (*Prunus armeniaca* L.) with high productivity, good fruit quality and an attractive red-blushed fruit appropriate for European markets. This cultivar is also characterized by its adaptation to climatic conditions in the South East of Spain and its resistance to sharka (*Plum pox virus*, PPV), a serious limiting factor for apricot fruit production in affected areas (Kölber, 2001). ‘Murciana’ is self-compatible and possesses a high degree of autogamy. Its fruit are free stone with a yellow-light orange skin color, with most of the surface covered by an intense red blush, and orange flesh color that make them very attractive. This cultivar is also characterized by its good aptitude for canning.

Origin

‘Murciana’ resulted from a cross between the North American cultivar ‘Orange Red’ (Hough and Bailey, 1982) and the Spanish cultivar, of unknown origin, ‘Currot’ (Fig. 1). This cross was made in 1996 within the apricot breeding program at CEBAS-CSIC in Murcia (Spain) with the objective of obtaining good fruit quality and sharka resistant cultivars to replace traditional cultivars in areas affected by this viral disease (Egea et al., 1999), as well as canning ability.

Description

Tree characteristics

Tree description. ‘Murciana’ was originally selected as a seedling tree on their own roots and then grafted onto apricot seedlings (three repetitions). Trees of ‘Murciana’ are large, very vigorous and moderately spreading. It has a high density of flowers (31.7 flower/cm² of shoot basal section) mainly localized on fruiting spurs of 2-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 per square centimeter of shoot basal section, average of three replications. ‘Murciana’ variety showed a very high fruit set (81.5%), this parameter being calculated in the same shoots that flower density by counting the fruit and dividing by the number of flowers (Table 1). ‘Murciana’ is characterized by very high productivity in comparison with traditional Spanish apricot cultivars and medium-large fruit. Despite being necessary to thin the trees to obtain good fruit sizes, its high productivity is preferable for croppers because some traditional Spanish apricot cultivars have important productive problems. 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) for three cycles of study, showed the resistance of ‘Murciana’ to PPV Dideron-type isolates. Resistance has also been tested by grafting buds on trees affected by sharka in field conditions and no symptoms of the disease were observed.

Time of bloom. ‘Murciana’ has medium-high chilling requirements for breaking dormancy, about 1,000 ± 50 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 4744 ± 500. Under our experimental conditions in Murcia (southeast of Spain, 37° N latitude, 1° W longitude, and 450 m altitude) ‘Murciana’ full bloom occurred on about 9 Mar. (±4 d as average from 3 years), a medium flowering date among traditional Spanish apricot cultivars (Table 1).

Self-compatibility and autogamy. Fruit set percentage averaged 81.5% ± 5% over 3 years. The self-compatibility of this cultivar was demonstrated in the field (by bagging branches) and in the laboratory (by observing pollen tube growth in five flowers). The natural autogamy of ‘Murciana’ was assessed by bagging branches just before anthesis and recording the fruit set.

Fruit characteristics

Fruit size, firmness and color. Fruit harvested from the original own-rooted seedling tree and from trees of ‘Murciana’ grafted onto apricot seedlings (three replications) were studied over 3 years. ‘Murciana’ trees and reference variety trees (‘Búlida’, ‘Orange Red’ and ‘Bergeron’) were cultivated in the same orchards and all were thinned according to habitual apricot orchard management. Fruit characterization of ‘Murciana’ apricot and reference varieties was made at commercial maturity level. ‘Murciana’

Fig. 1. Pedigree of ‘Murciana’ apricot.

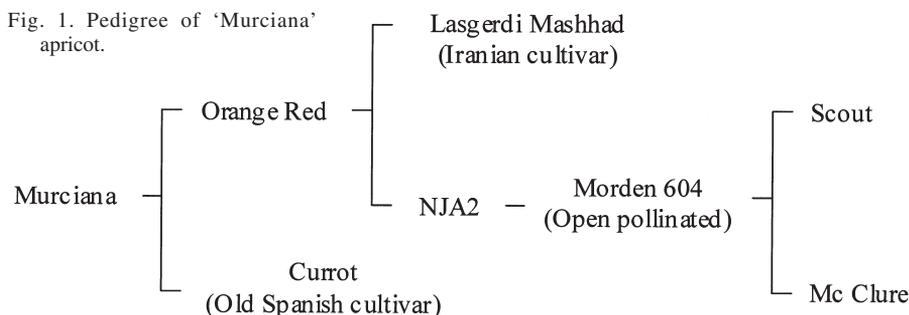


Table 1. Comparative analysis of tree and fruit characteristics of ‘Murciana’, the Spanish cultivar ‘Búlida’, the French cultivar ‘Bergeron’, and the North American cultivar ‘Orange Red’.

Characteristics	‘Murciana’	‘Búlida’	‘Bergeron’	‘Orange Red’
Tree				
Vigour	Very vigorous	Very vigorous	Very vigorous	Vigorous
Flower density (flower/cm ²)	31.7	42.0	31.1	5.1
Flowering date (full bloom)	9 March	8 March	13 March	15 March
Fruit set (%)	81.5	31.6	39.4	13.6
Yield	Very high	High	High	Medium
Fruit				
Ripening date	3 June	26 May	19 June	28 May
Fruit size (g)	62.5	59.8	70.7	61.0
Attractiveness	8.5	6.7	7.2	9.0
Sugar (°Brix)	12.5	10.62	11.90	14.22
Acidity ^z	0.92	1.29	1.73	1.23

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¹Corresponding author; e-mail agr007@cebas.csic.es.

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

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

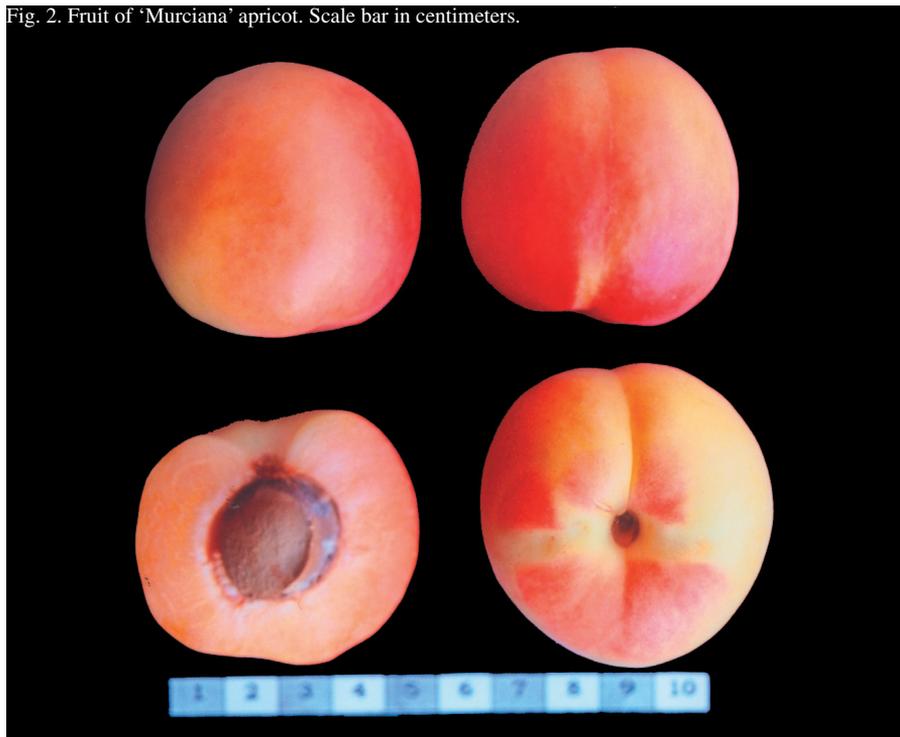


Table 2. Molecular characterization of 'Murciana' apricot cultivar and its parents 'Orange Red' and 'Currot' using peach simple sequence repeat (SSR) markers.

SSR marker	Reference	Size of amplified bands (bp)		
		'Murciana'	'Orange Red'	'Currot'
BPPCT 007	Dirlewanger et al., 2002	143/165	128/165	143/143
BPPCT 017	Dirlewanger et al., 2002	203/218	203/212	191/218
CPPCT 022	Aranzana et al., 2002	270/270	270/278	248/270
UDP 96003	Cipriani et al., 1999	85/93	85/97	93/93
UDP 97402	Cipriani et al., 1999	133/144	131/144	133/144
UDP 98405	Cipriani et al., 1999	100/100	100/100	100/110
UDP 98409	Cipriani et al., 1999	131/161	131/161	146/161
UDP 98411	Testolin et al., 2000	160/180	160/180	160/164
UDP 98412	Testolin et al., 2000	81/103	103/103	81/81

bears medium-large and globose fruit with an average weight around 62 g, an axial diameter of 4.5 cm, a transverse diameter in suture plane of 4.5 cm, and a transverse diameter at right to suture plane of 4.6 cm (Fig. 2). 'Murciana' fruit are also characterized by a high firmness ($2.1 \pm 0.1 \text{ kg}\cdot\text{cm}^{-2}$) at commercial ripening, with low skin cracking, and a free stone without pit burning problems. Fruit have yellow-light orange skin color (hue value = 80.0 ± 0.9 , with color space coordinates of the background color out of the red blush, $L^* = 69.1$, $a^* = 8.6$, $b^* = 48.5$, in a chromatometer (model CR-300; Minolta, Ramsey, N.J.) with part of the surface (about 30%) covered by an intense red blush, and a light orange flesh color (hue value = 75.5 ± 0.65 , with $L^* = 67.5$, $a^* = 11.9$, $b^* = 46.2$). The attractiveness of 'Murciana' fruit by subjective evaluation of four people reached 8.5 on average in a scale between 0 and 10 (Table 1).

Organoleptic characteristics. At the commercial maturity stage 'Murciana' fruit are moderately sweet (12.5° Brix on average) with low acidity ($0.92 \text{ g malic acid}/100 \text{ mL}$ on average) and a very good eating quality (Table 1). 'Murciana' fruit have a light apricot aroma.

Maturation time. Fruit of 'Murciana' mature uniformly. In our experimental conditions in Murcia, 'Murciana' matures about 3 June, 6 d later than the North American cultivar 'Orange Red' and the Spanish cultivar 'Búlida'. This cultivar showed an intermediate maturation in comparison with the traditional Spanish apricot cultivars (Table 1).

Molecular Characterization

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

in peach were screened for polymorphism of 'Murciana' apricot DNA. Nine SSR markers were able to distinguish 'Murciana' and its progenitors. The DNA fingerprints of 'Murciana' and its progenitors 'Orange Red' and 'Currot' 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 2003/1217. 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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