DESCRIPTIVE CHARACTERISTICS OF A 'POLLIZO DE MURCIA':
'PUEBLA DE SOTO AD 101'

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Abstract

'Pollizo de Murcia' is a slow growing plum, *Prunus domestica* or *P. insititia*, of widespread use as rootstock for most stone fruits, in the region of Murcia (Spain). This stock has recently expanded to other fruit growing areas.

'Pollizo de Murcia' is a population variety, for which a selection has been carried out at the Estación Experimental de Aula Dei. A clon coming from Puebla de Soto (Murcia) and named 'Puebla de Soto AD 101' is one of the best of that selection. It displays a better behaviour in terms of lesser suckering and good compatibility with peach cultivars, among other aspects. However, its vegetative propagation aptitude by hardwood cutting is not good, as happens to occur with the other 'pollizos' included in that study. At present it is being propagated by in vitro techniques.

In the present paper the morphological and phenological characteristics of 'Puebla de Soto AD 101' are described.

1. Introduction

According to morphological and phenological characteristics, 'Pollizo de Murcia' should be included within the group of plums named by Bernhard and Graselley (1958) of slow growth. Some authors consider it as *Prunus domestica* (Bernhard and Duquesne, 1961) and others as *P. insititia* (Herrero, 1961) this being a subspecies of *P. domestica*. Salesses determined that chromosome number was $2n=48$ (personal communication, 1989).

Prospection and clonal selection of local plums used as rootstocks in different areas of Spain was initiated by the Estación Experimental de Aula Dei in 1962. A population of 'Pollizo de Murcia' plum was included in the work. The origin of clones and the process of selection, its propagation and performance as rootstock, has already been reported (Cambra, 1970, 1979).

'Puebla de Soto AD 101' is one of the selections of Pollizo de Murcia which has shown a better behaviour. A description of its characters is now presented.

2. Material and methods

Morphological and phenological observations have been made on stockplants growing on their own roots. Some were left to develop freely and others trained for hardwood cutting production.

The guidelines and characters published by the 'Union Internationale pour la protection des obtentions vegetales' (UPOV) (1977) and the 'International Board for Plant Genetic Resources' (IBPGR) (Cobianchi and Watkins, 1984) have been followed for the description of the morphological characteristics. In addition, other aspects considered by Tydeman (1957) and Van Cauwenberghe (1946) have been taken into account.

3. Description

3.1. Origin and denomination

The clon 'Puebla de Soto AD 101' was selected from a population of 'Pollizo de Murcia' and comes from Puebla de Soto (Murcia, Spain) (Cambra, 1970, 1979).

Its designation during the experimental stage and that proposed in this work agrees with the original location (town) and the number corresponding to the clones under selection.

3.2. Sanitary state

'Puebla de Soto AD 101' rootstock is free of ILAR, CLSV and Sharka viruses (Cambra et al., 1980, 1981; Marenaud and Bautista, 1981). A new sanitary check of stockplants was carried out at the Estación Experimental de Aula Dei, in 1988-89. The absence of these viruses has been confirmed.

3.3. Morphological and phenological characteristics

3.3.1. Tree

'Puebla de Soto AD 101' is of medium vigour, somewhat lesser than 'Brompton' and slightly greater than 'St. Julien A'. The tree habit of growth is semi-upright, branches spreading more than 'Brompton' and 'St. Julien A'.

Grafted with peach cultivars this stock develops nursery plants of medium vigour, the trees being smaller than those on peach seedling rootstock. A similar behaviour occurs with orchard trees.

The lesser tendency to sucker is a remarkable character when compared with other clones of 'Pollizo de Murcia'.

One-year-old shoots are of medium thickness, strong hairiness and grey and purplish red colour. Its lenticels, scatterly distributed, are usually small and yellowish brown. Wood buds have conical shape, pointed apex, compact and deep chesnut brown to purple colour. The bud support is large and decurrent. During the growing season the shoot has also a strong hairiness and medium to strong anthocyanin coloration.

3.3.2. Flower

Flower bud break takes place earlier than vegetative bud break. According to average data recorded from 1987 to 1989 flowering occurs in March, beginning the 16th, reaching full bloom on the 20th and finishing on the 26th. Under similar conditions 'Brompton' reaches that stages the 20th, 25th and 31th of March, respectively.

Flowers are situated on short spurs and laterals, they are rosaceous, of medium size, greater than 'Brompton' and 'St. Julien A' flowers. The unopened buds are often tinged with pink at the very beginning. The peduncle is short, stout and pubescent. The receptacle has a medium depth and does not show hairiness. Sometimes sepals are not touching petals nor the receptacle and others adpressed to the petals. The shape of sepals is broad ovate and have hairiness on the inner and outer surface. There are none or very few flowers with double sepals. Petals are touching or slightly overlapping; their colour is white, of medium size, circulars, with a weak waviness of margin and a wide base angle. The upper margin is entire. They are glabrous both in the outer or the inner side, although sometimes some hairs appear at the upper margin. The frequency of flowers with double petals is very small but changes from year to year have been observed. The position of stamens is

perigynous and the anthers colour, just before dehiscence, is yellowish to yellow. It has only one pistil, without hairiness in the ovary nor at the style base. The stigma position is at the same level as compared with the anthers or slightly upper.

3.3.3. Leaf

'Puebla de Soto AD 101' has leaves of european plum of slow growth. Certain differences have been observed between leaves located on vigorously growing shoots and those on weaker shoots. First type is more usual on stockplants which are severely pruned to produce winter leafless cuttings; and second type, on trees left to bear fruit.

Leaves from vigorous shoots:

They have a large size and a broad obovate shape. The base is rounded, U-shaped, and the tip acute and cuspidate. The leaf blade has a medium to deep green colour with a medium glossiness of the upper side. The length/breadth ratio (1.57 ± 0.17) is greater than in 'Brompton' (1.25 ± 0.08) and 'St. Julien A' (1.35 ± 0.09). The margin is often waved and crenate, sometimes showing secondary serrations. The petiole, with an average length of 10.5 ± 2 mm, is distinctly channelled and shows a deep purple colour. The leaf has usually two glands at the base of the leaf blade. At the beginning of growth leaves present long stipules with lanceolate shape, serrate margin and upturned.

Leaves on weaker shoots:

As compared with the above described, leaf blade has a more elliptic shape and with lesser glossiness. The base angle is acute, V-shaped, and the tip angle obtuse and rounded. The length/breadth ratio is greater (1.96 ± 0.12) than those in vigorous shoots, and also in similar shoots of 'Brompton' (1.51 ± 0.08) and 'St. Julien A' (1.77 ± 0.2). The margin division is serrate. The leaf stalk is larger and thinner.

3.3.4. Fruit

Ripening occurs at the end of July, almost one month earlier than in other plums of slow growth used as rootstocks for peach trees: 'Brompton', 'St. Julien A', INRA 'St. Julien GF 655-2' and INRA 'Damas GF 1869'.

Fruit size is greater than those from the above cited and similar to the INRA 'Reine Claude GF 1380'. It has a mean weight of 21-23 g, height of 3.2 cm and thickness of 3.2 cm.

Its general shape in profile is rounded, something oblong and slightly asymmetric. The position of maximum diameter is towards the middle of the fruit. In front view it is rounded, a little flattened at poles, and has often a side more developed than the other, mainly at the apex zone. The suture is defined by a dark line, generally shallow and little perceptible. The apex zone is wide and slightly depressed with exit to the suture. The pistil base is not persisting. The stalk cavity is wide and shallow. The stalk is short, of 11-14 cm, and quite adherent to the fruit, with medium to strong hairiness. The skin is of medium thickness and has a ground colour violet-blue, almost black when fully ripe, with slight roughness and abundant skin bloom. The dots on the skin are colourless and little perceptibles. The colour of flesh is yellowish-green or golden, juicy, sweet and pleasant to eat.

The stone is semi-adherent with a greater adherence at the ventral zone. It has a medium size and a light colour. In profile view

(length/breadth ratio = 1.41 ± 0.11), it has a round-elliptical and asymmetric shape. Considering the ventral view (length/thickness ratio = 2.22 ± 0.14) the stone tends to be sub-globular, symmetric and with the maximum breadth towards the stalk end. The ventral zone is broad and the apex has a rounded shape. The stalk-end angle is right-angle or nearly rightangle and the width is medium. The lateral surfaces show a granular texture and longitudinal lines. There is not outgrowing keel nor fusion of dorsal groove margins which are broken. The fusion of margins of the lateral grooves is partial and the sharpness of the edges weak.

Tables 1, 2 and 3 summarizes the characteristics described.

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References

- Bernhard, R. and Duquesne, J., 1961. Les porte-greffes de l'abricotier. Journ. Nat. de l'Abricot., Perpignan, 5-6 octobre, 101-116.
- Bernhard, R. and Graselly, Ch., 1958. Les pruniers porte-greffes du pêcheur. St. de Rech. d'Arb. Fruit. de La Grande Ferrade, Pont de la Maye, Gironde, 75-100.
- Cambra, M., Llácer, G. and Gella, R., 1980. A survey of Plum Pox Virus (PPV) or Sharka virus in Spain Elisa Method usin. Proceeding of the fifth Congress of the Mediterranean Phytopathological Union. Patras (Greece), 2-27 September, 42-43.
- Cambra, M., Llácer, G. and Gella, R., 1981. Prospección del virus de la Sharka en España mediante la técnica inmunoenzimática ELISA. An. INIA Ser. Agric., 16: 161-173.
- Cambra, R., 1970. Selección de Pollizo de Murcia y otros ciruelos locales españoles. ITEA, 1: 115-126.
- Cambra, R., 1979. Selección clonal de Pollizo de Murcia. ITEA, 36: 21-30.
- Cauwenberghe, E. Van., 1946. Sujets porte-greffes pour arbres fruitiers. Imprimerie G. Leens. Verviers, 257-359.
- Cobianchi, D. and Watkins, R., 1984. Descriptor list for plum and allied species. International Board for Plant Genetic Resources. Commission of european communities. Committee on disease resistance breeding and use of genebanks, 31 pp.
- Herrero, J., 1961. L'abricot en Espagne. Journ. Nat. de l'Abricot., Perpignan, 5-6 octobre, 20-22.
- Marenaud, C. and Bautista, J., 1981. Contribution a l'etude de l'etat sanitaire d'une population de prunier domestique 'Pollizo' utilise comme porte-greffe en Murcia. Acta Hort., 85a: 325-337.
- Tydemar, H.M., 1957. A description and classification of certain plum rootstocks. Rep. E. Mallng Res. Stn. for 1956: 75-80.
- Union Internationale pour la Protection des Obtentions Vegetales (UPOV), 1977. Principes directeurs pour la conduite de l'examen des caracteres distinctifs de l'homogeneite et de la stabilite. Prunier European. 14 pp.

Table 1.- Characteristics of tree, shoot and leaf.

Tree:	
Vigour	medium
Density of the head	medium
Habit of growth	semi-upright
One year old shoot:	
Attitude	semi-upright
Thickness	medium
Internode length	medium
Hairiness	strong
Colour	grey and purplish red
Lenticels: Number	medium
Distribution	scattered
Size	small
Colour	yellowish brown
Shape	round
Wood bud: Size	medium
Shape	conical
Shape of apex	pointed
Position relative to shoot	slightly held out
Compactness	compact
Colour	deep chesnut brown to purple
Wood bud support: Size	large
Decurrence	decurrent
Current season shoot:	
Hairiness	strong
Anthocyanin coloration of shoot tip	medium
Leaf:	
Attitude	horizontal or slightly drooping
Leaf blade: Length/breadth ratio	medium
Shape	broad ovate
Angle of the tip	acute
Shape of the tip	cuspidate
Base	U-shaped
Colour of upper side	medium green
Glossiness of upper side	medium
Hairiness of upper side	very weak
Hairiness of lower side	strong
Division of margin	crenate
Secondary serrations of margin	sometimes present
Petiole: Length	medium
Hairiness of upper side	strong
Pubescence of lower side	medium
Depth of groove	medium
Predominant number of glands	two
Position of glands	on leaf base
Stipule: Size (beginning of growth)	large

Table 2.- Characteristics of the flower.

Time of expansion	somewhat before the leaves
Position	on short spurs and laterals
Unopened buds	oval, often tinged pink
Flowers:	
Number	many
Diameter of the corolla	medium
Peduncle: Length	short
Thickness	stout
Hairiness	present
Intensity of hairiness	strong
Calyx: Sepal: Pose	not touching petals or receptacle
Shape	broad ovate
Hairiness of inner surface	present
Hairiness of outer surface	present
Flowers with double sepals	none or very few
Receptacle: Depth	medium
Hairiness of the inner surface	absent
Hairiness of the outer surface	absent
Petals: Flowers with double petals	none or very few
Arrangement	touching-overlapping
Size	medium
Shape	circular
Colour	white
Waviness of margin	weak
Base angle	wide
Division of upper margin	entire
Hairiness on the inner side	absent
Hairiness on the outer side	absent
Hairiness on the margin	absent
Pistil: Supplementary pistils	none or very few
Stigma: Position as compared with anthers	level
Style: Hairiness at the base	absent
Ovary: Hairiness	absent
Stamens: Position	perigynous
Anthers: Colour just before dehiscence	yellowish to yellow

Table 3.- Characteristics of the fruit.

Size	large
General shape in profile	rounded-oblong
Position of maximum diameter	towards middle
Symmetry (front view)	asymmetric
Depth of suture	shallow
Regularity of suture	constant
Bloom	present
Depression of apex	distinct
Pistil base	not persisting
Hairiness of apex	absent
Stalk: Hairiness	present
Density of hairiness	medium
Depth of stalk cavity	shallow
Skin: Thickness	medium
Reticulation	present
Roughness	present
Ground colour (including its bloom)	violet-blue
Flesh: Colour	yellowish-green
Firmness	medium
Texture	not fibrous
Juiciness	medium
Acidity	weak
Sugar content	high
Stone: Adherence to the flesh	semi-adherent
Size relative to fruit	medium
General shape in profile (length/breadth ratio)	round-elliptical
Shape in ventral view (ratio length/thickness)	sub-globular
Shape in basal view	round-elliptical
Symmetry in profile	asymmetric
Symmetry in ventral view	symmetric
Position of maximum breadth (in ventral view)	towards stalk end
Outgrowing keel (in profile)	absent
Texture of lateral surfaces	granular
Fusion of dorsal groove margins	absent
Fusion of margins of lateral groove	partial
Sharpness of the edges	weak
Width of ventral zone	broad
Width of stalk-end	medium
Angle of stalk-end	rightangle or nearly rectangle
Shape of apex (pistil end)	rounded