

SCIENTIFIC COMMUNICATION

‘SCS421 CAROLINA’, FIRST JAPANESE PEAR CULTIVAR DEVELOPED IN BRAZIL¹IVAN DAGOBERTO FAORO²

ABSTRACT – The new SCS421 Carolina cultivar, belonging to the *Pyrus pyrifolia* var. *culta* species, is classified as an Asian pear type or more specifically Japanese pear type. It was obtained from the Kousui x Osanijisseiki crossing made at Epagri / Caçador Experimental Station. Its flowering occurs from the second half of September to mid-October, similarly to Housui cultivar. According to preliminary results, ‘Yali’ and ‘Housui’ may be used as pollinators. The harvest takes place in the first half of February and production is above 20 t / ha. Plants produce more rounded and symmetrical fruits compared to Housui cultivar. The fruit skin is golden, the pulp is crispy, soft, sweet, very juicy and slightly aromatic. Fruits can be stored for up to four months in conventional cold storage. The incidence of scabies and dry branch diseases in the field has not been recorded. It is recommended for cultivation at colder regions of southern Brazil.

Index terms: *Pyrus pyrifolia* var. *culta*; pear; fruit quality.

‘SCS421 CAROLINA’, PRIMEIRA CULTIVAR DE PEREIRA-JAPONESA DESENVOLVIDA NO BRASIL

RESUMO – A nova cv. SCS421 Carolina, pertencente à espécie *Pyrus pyrifolia* var. *culta*, é classificada como pereira do tipo asiática ou, mais especificamente, japonesa. Foi obtida do cruzamento entre Kousui x Osanijisseiki, realizado na Epagri/Estação Experimental de Caçador. Sua floração ocorre desde a segunda quinzena de setembro até meados de outubro, similar à cv. Housui. Conforme resultados preliminares, ‘Yali’ e ‘Housui’ podem ser utilizadas como seus polinizadores. A colheita ocorre na primeira quinzena de fevereiro, e a produção situa-se acima de 20 t/ha. Suas plantas produzem frutos arredondados e mais simétricos que os da cv. Housui. A epiderme da fruta é dourada, sendo a polpa crocante, doce, muito suculenta e levemente aromática. Os frutos podem ser conservados até quatro meses em câmara fria convencional. Não tem sido registrada a incidência de sarna e seca dos ramos nas plantas, a campo. É indicada para o cultivo nas regiões mais frias do Sul do Brasil.

Termos para indexação: *Pyrus pyrifolia* var. *culta*, pera, qualidade do fruto.

The main Japanese pear cultivars originated in other countries (FAORO, 2001), in colder regions with more stable temperatures than those in southern Brazil. When cultivated here, they manifest a series of physiological disturbances due to their genetic constitutions not adapted to such edaphoclimatic conditions. This is reflected in problems in plant development, such as emission of few branches or buds, poor flowering and poor flower formation and, in many cases, lack of resistant to the main diseases present here, such as entomosporiosis

(*Entomosporium mespili*), the dry branches (*Botryosphaeria* sp.) and scabies (*Venturia* sp.). As a consequence, productivity becomes smaller and fruits are of poor quality and often require greater application of agrochemicals for the control of diseases and pests. To overcome these deficiencies, the best option is the generation of cultivars better adapted to the cultivation conditions in southern Brazil (FAORO et al., 2015), that is, in regions with approximately 500 or more Cold Units (CU - Modified North Carolina Method).

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SCS421 Carolina cultivar is the result of the crossing between 'Kousui' (♀) and 'Osanijsseiki' (♂) carried out in 1998 at the Epagri / Caçador Experimental Station (Figure 1). Osanijsseiki cultivar is a mutation for self-fertility (S2S4sm) of Nijisseiki cultivar (S₂S₄).

From this crossing, 172 plants were obtained and 77 of them were initially selected. In 2003, six genotypes with good sprout, flowering and no symptoms of dry branch and scabies diseases were selected. From 2011, due to the good quality of fruits, only SCS421 Carolina cultivar was maintained. Its inbreeding rate is 12.5% due to the common ancestry between 'Nijisseiki' and 'Osanijsseiki'.

Observations carried out in Caçador, SC, indicate that SCS421 Carolina cultivar can be grown in regions with more than 550 hours of cold <7.2 °C or with more than 1,000 CU. Artificial dormancy induction is necessary in regions with similar or lower thermal sums than those cited above.

Plant has medium vigor, similar to that of Housui cultivar, and shows lateral ramifications of medium intensity and semi-open growing habit; year branches have few lenticels and internodes are medium. Leaves, without stipules, are in ascending position and have long and wide limb, with great length / width ratio; the base of the leaf limb is obtuse and the apex has a right angle, and the leaf has sharp serrated incisions at its margin and the curvature of the central vein is medium and the petiole is long in length. It first emits the leaves and then the flowers, which have recurved sepals with respect to the corolla; the edges of petals are superimposed and have a broad oval shape with rounded base. Generally, the stigma remains above the stamens.

On average, the beginning of flowering occurs on 09/16, full flowering on 09/ 29 and the end of flowering occurs on 10/10, and these dates are close to those of Housui cultivar (Table 1). According to preliminary results, Yali and Housui cultivars can be used as pollinators. The harvest takes place on the first half of February. The fixation and the fruit / plant loading is good and production is above 20 t/ ha; post-harvest conservation reaches four (4) months in a conventional cold chamber. To date, field observations have not detected the incidence of scabies and dry branch diseases, but the occurrence of entomosporiosis in leaves was detected in 2015.

The main differential of 'SCS421 Carolina' is the production of fruits of medium size, rounded shape and more symmetrical when compared to those of Housui cultivar. It has a very attractive golden skin when bagged and the pulp is thin, soft and juicy and has mild aroma, characteristics not observed in

Housui cultivar.

Fruits have a small length / diameter ratio because they are rounded and the position of the maximum diameter lies in the equatorial region (Table 2). It is slightly asymmetrical in the longitudinal section. The background skin color is yellowish green and the golden surface color covers all the fruit. The length and thickness of the peduncle are medium and its position in relation to the longitudinal axis is oblique. The pistillate cavity is shallow, with medium width and slightly corrugated relief. The seed has an elliptical shape. Fruits are resistant to crack and bagging improves the appearance.

'SCS421 Carolina' (Figure 2) is registered with the Ministry of Agriculture, Livestock and Supply (MAPA) / National Register of Cultivars on behalf of Epagri under number 33949. It is not protected in the National Service of Protection of Cultivars of MAPA and, therefore, can be freely multiplied provided that its trade name is respected.

For further information and to obtain small segments of branches of this cultivar, the author of this article can be contacted at the following address: Epagri/Estação Experimental de Caçador, Rua Abílio Franco 1500, bairro Bonsucesso, Caixa postal 591, CEP 89500-000, Caçador, SC, Brasil, Phone: +55 (49)3561-2000 , Email: eeed@epagri.sc.gov.br .

SCS421 Carolina cultivar is a result of the pear breeding program of Epagri / Caçador Experimental Station, obtained by geneticist D.Sc. Ivan Dagoberto Faoro.

TABLE 1- Mean phenological data of Carolina and Housui SCS421 cultivars obtained from Epagri / Caçador Experimental Station, SC ⁽¹⁾.

Cultivar	Budding (Beginning)	Flowering			Harvest
		Beginning	Full	Final	
SCS421 Carolina	09/16	09/16	09/29	10/10	1 st fortnight of Feb.
Housui	09/16	09/18	10/02	10/12	01/15~02/10

(1): averages of data are 16 years for 'Housui' and four years for 'SC421 Carolina'.

TABLE 2- Main characteristics of fruits from SCS421 Carolina cultivar.

Characteristic	Discrimination
Shape	Rounded
Superficial color	Golden
Pulp color	White
Pulp texture	Crispy and juicy
Average weight	240 g
Pulp firmness	7.2lbs
Pulp sugar content	12.6 ~ 13.9 °Brix
Sugar: acidity ratio	53.9
Background color for harvest ¹	4a ~ 4b

(1): Background color based on the general color chart developed in Japan.

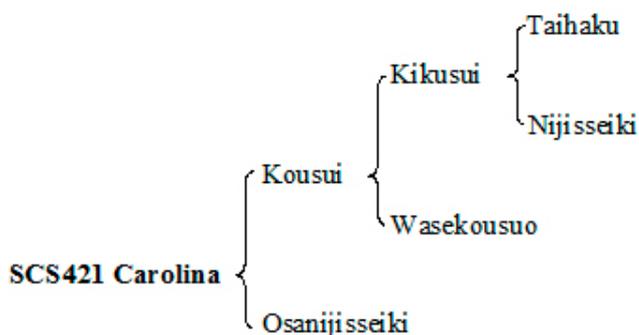


FIGURE 1- Genealogical tree of SCS421 Carolina cultivar.

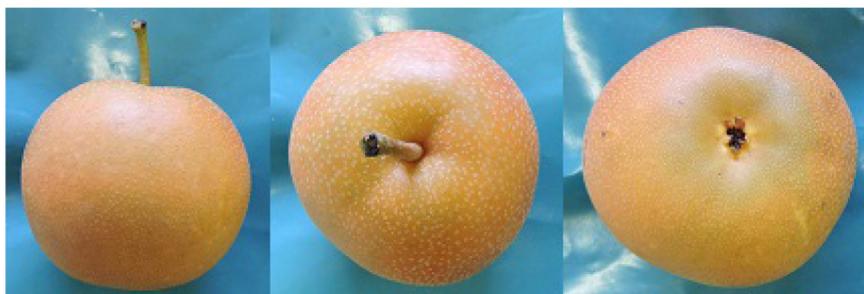


FIGURE 2-Fruits from SCS421 Carolina cultivar.

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