

'O3A' Apple Rootstock

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Abstract

'O3A' (Ottawa 3 Amélioré, in English 'Ottawa 3 improved') is a new rootstock resulting from a mutation in O.3 stool bed and was discovered at the Agriculture and Agri-Food Canada (AAFC) Research Station, St-Jean-sur-Richelieu, Quebec. It produces dwarf trees similar to 'Ottawa 3' (O.3) but is precocious (early fruiting), having higher yield efficiency (based on yield/trunk cross sectional area), lower suckers and wider branch angles. 'O3A' is similar to 'O.3' in susceptibility to two strains of *Erwinia amylovora* (Burrill) Winslow and four isolates of *Phytophthora cactorum* (Leb. & Cohn) Schroet. It was planted, in 1997, at the Quebec substations of Frelighsburg and L'Acadie as well as in two grower sites. Trials were performed in replicate and in several plots.

Limited quantities of indexed budwoods are available for research purposes (universities and research stations) from Canadian Food Inspection Agency or from Meiosis Inc (Europe) upon written request. Interested Nurseries may inquire about "non-exclusive licenses" directly from AAFC in Canada or Meiosis Inc. in Europe (<http://www.meiosis.co.uk>).

Origin

'O3A' (Ottawa 3 Amélioré in English 'Ottawa 3 improved') is a new rootstock resulting from a mutation in O.3 stool bed and was discovered at the Agriculture and Agri-Food Canada (AAFC) Research Station, St-Jean-sur-Richelieu, Quebec. It produces dwarf trees similar to 'Ottawa 3' (O.3) but is precocious (early fruiting), having higher yield efficiency (based on yield/trunk cross sectional area), lower suckers and wider branch angles. 'O3A' is similar to 'O.3' in susceptibility to two strains of *Erwinia amylovora* and four isolates of *Phytophthora cactorum*. It was planted in 1997 in Quebec substations of Frelighsburg and L'Acadie as well as in two grower sites along with SJM and SJP84 series rootstocks. Trials were performed in replicate and in several plots (Khanizadeh et al. 2007, Khanizadeh et al. 2005, Khanizadeh et al. 2003, Khanizadeh et al. 2000).

Performance

The performance of 'O3A' using 'McIntosh Summerland' as a scion has been monitored since 1997 in two commercial orchards located in Dunham and Mont-St-Grégoire, Quebec. Compared to 'O.3', trees produced on 'O3A' were similar in size but had better yield efficiency, cumulative yield and were more precocious. It also had similar number of burr knots but were lower than 'M.9' having wider branch angles (Khanizadeh et al. 2005, Khanizadeh et al. 2003). Higher number of suckers was observed on 'O3A' but was not significantly different from 'O.3' and 'M.9'.

Availability

A Canadian Plant Breeder's Right has been issued and limited quantities of indexed budwoods are available for research purposes (universities and research stations) from Canadian Food Inspection Agency, Shahrokh Khanizadeh (North America) or from Meiosis Inc (Europe) upon written request. Interested Nurseries may inquire about "non-exclusive licenses" directly from AAFC in Canada or Meiosis Inc. in Europe (<http://www.meiosis.co.uk>).



Description

Own rooted trees are very prolific and begin flowering in L'Acadie, Quebec, on May 15 as for 'O.3'. In full balloon stage, buds are medium pink (RHS 58A) (Royal Horticultural Society Colour Chart, 1995), pedicels are green, flowers are single, averaging 5.1 cm in diameter. In fully opened flowers, petals are circular to oblong shaped and overlapped, while upper side is white and lower side white along with pink blush (RHS 88A). Mature leaves are medium size, length varying from 9.4 to 10.7 cm, width from 5.5 to 7.0 cm and the mean length to width ratio is 1.5. Leaves are medium green, dull on upper side and glabrous on lower side with an outward to downward direction. Petioles range from 1.7 to 2.1 cm long. Shape of the lamina apex is cuspidate with serrated margins and the stipules are large.

Dormant 1 year old shoot is 6 mm thick, length of internodes (at middle third of shoot) is 22.1 mm, flexibility is weak and it includes a numerous number of medium size lenticels.

Fruits are small to very small (34 g), 4.0 to 4.8 cm in diameter, globose or oblong, symmetrical, and have a strong ribbing (Fig 1.). Fruit crowning is intermediate, eye is large, half opened and the calyx is persistent and overlapping at the base. Stalk is thin (1.5 to 2.1 mm), long (1.0 to 2.4 cm) and cavity has a deep board (14-20 mm) depth. Skin is smooth, ground color is yellow (RHS 8C) with an over solid to wash vivid reddish-pink (RHS 47A-B) along with very low amount of russet around the stalk cavity and the eye basin. The lenticels have intermediate prominence on the over color and are small to medium size and the fruit flesh is creamy.

Propagation (Stool Bed). 'O3A' produces the same amount of shoots and root per stool bed as 'O.3'.

Diseases and pests

As for 'O.3', 'O3A' is susceptible to two strains of *Erwinia amylovora* and to four strains of *Phytophthora cactorum* (Leb. & Cohn) Schroet. (Carisse and Khanizadeh, 2006; <http://www.cyberfruit.info/apple/apple-rootstocks/pdf/disease-susceptibility.pdf>).

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