'MacExcel' Apple

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'MacExcel' produces a good yield of attractive apples (*Malus ×domestica* Borkh.) on a columnar tree (Fig. 1). It has field immunity to apple scab [*Venturia inaequalis* (Cke) Wint.] and is resistant to powdery mildew [*Podosphaera leucotricha* (Ell. & Ev.) Salm.]. 'MacExcel' is recently released by the Horticultural Research and Development Centre of the Agriculture and Agri-Food Canada Research Station in St-Jean-sur-Richelieu. The fruit weighs an average of 121 g and grows on spurs along the very upright branches. 'MacExcel' is a hardy, disease-resistant cultivar for home gardens with a limited amount of space.

The Quebec apple breeding program was started in 1970 with the transfer of genetic material from Dr. Lloyd Spangelo of the Agriculture Canada Research Station in Ottawa to our field station located in Frelighsburg. The present goals of the program are: 1) to develop hardy and disease resistant varieties for the production of juice and cider; 2) to develop fresh-market varieties with an excellent fruit quality and a long shelf life (Khanizadeh et al., 2000a); and 3) to find new dwarfing and efficient hardy rootstocks (Khanizadeh et al., 2000b). Some of the genetic material that has potential for home gardeners is also being evaluated.

'MacExcel' (cross code 71-72) resulted from crossing O-522 with pollen of 'Starkspur Compact Mac' ('McIntosh Wijcik') (Fig. 2). The cross was made at the Ottawa Research Station in 1971 and the seedling was one of 97 (out of a total of 1593) that were retained. It was planted in the field in Frelighsburg, Quebec, in 1975, and was selected by R. Granger in 1992. It was re-named FER5A38, replanted in 1994, and S. Khanizadeh re-selected it in 1998.

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Description

'MacExcel' trees are moderately vigorous. They are columnar in habit with a few very upright side branches when grafted on the semi-dwarf rootstock MM-106. The tree is hardy at our agricultural substation in Frelighsburg,

Quebec (lat. 45.05), which has an average winter minimum of -25 °C. 'MacExcel' has the gene *V_f* for apple scab resistance, derived from *Malus floribunda* 821 (Crosby et al., 1992). Based on field observations, it is resistant to powdery mildew and to fireblight. The tree gives a good yield of fruits that are borne on spurs along the branches. The yield is similar to that obtained from 'McIntosh Wijcik'. The leaves are somewhat oblong with double serrate margins and the underside is pubescent. The leaf apex is acute to acuminate and the base is obtuse. The average leaf length to width ratio is 1.9 and the petioles are 3.5 to 5.5 cm with large stipules when young.

Bud burst occurs at mid-season, which is around 18 Apr. in Frelighsburg, Quebec. Flowering starts at the same time as McIntosh (around 19 May in Frelighsburg). Unopened flowers are medium pink in full balloon stage and the flowers are single. The ovate shaped petals are slightly overlapping and the pedicels are green in color.

'MacExcel' fruit mature the second week of September in Frelighsburg, ≈2 weeks before 'McIntosh'. Ripening is slightly uneven and the fruit have a tendency to fall upon

Fig. 1. Fruit of 'MacExcel' apple.

Fig. 2. Pedigree of 'MacExcel' apple.

ripening. Fruits are medium in size (axial diameter 56 mm, transverse diameter 69 mm, average weight 121 g), mainly oblate to round-conic with some ribbing. The skin is smooth, medium thick, blotched and striped pinkish-red to dark red [Royal Horticultural Society (RHS 187A)] over a greenish-yellow ground (RHS 4C) with a heavy bloom. The fruits are not russeted and they have an average number of small to medium size inconspicuous lenticels. The stem is short to medium length with a medium thickness. The cavity is acuminate, smooth, with a medium depth and width. The basin is deep, with a narrow to medium width,

and the surface is irregular and ridged. The calyx is persistent with erect lobes, open, and the tube is funnel-shaped; the stamens are in basal position. The core is small, closed at harvest but partly open after storage, and is located in median position with clasping core lines. The carpels are rounded to elliptical, slightly abaxile and unsymmetrical. The distal end is mucronate and the insides are smooth. The seeds are a little flattened, are not tufted and have an acute tip. The flesh is creamy-white, firm, crisp, juicy, and it develops an average amount of browning after cutting. The fruit has 12.4% soluble solids and has low

acidity. The flavor is bland but acceptable and becomes sweeter in storage.

The fruit retains fresh eating quality for up to 2 months under refrigeration and can be processed after 4 months of cold storage.

Availability

Limited quantities of nonindexed budwood are available for research (universities and research stations) from S.K. with a written request. Multiplication licences can be obtained from Agriculture and Agri-Food Canada.

Trees are also available from "Pépinière Dominique Savio Ltée." (5430 Rang des Soixante, Saint-Jean-Baptiste-de-Rouville, Québec, J0L 2B0, tel: 450-460-7962). European nurseries can obtain a multiplication licence from Meiosis (Bradbourne House, Stable Block, East Malling, Kent ME19 6DZ).

Additional information on other advanced selections and released cultivars can be obtained from www.pgris.com or from the author (S.K.).

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