



# Two new Scab Resistant Apple Cultivars

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## Reinette Russet

'Reinette Russet' is being released as a replacement for 'Golden Russet' that is presently being grown in Eastern Canada for the production of apple cider and for specialty markets. This new cultivar produces larger fruit than 'Golden Russet', is hardier and it is partially resistant to apple scab (*Venturia inaequalis* (Cke) Wint.). The fruit has a pleasant flavor and it is very sweet which should give it a market as a specialty item.



## Galarina

'Galarina' is a 'Gala' type apple (*Malus domestica* Borkh.) that is very attractive, has a pleasant taste and an excellent shelf life. The tree is hardy and the fruit and leaves are resistant to apple scab (*Venturia inaequalis* (Cke) Wint.) thanks to gene Vf that it derived from *Malus floribunda* 821. 'Galarina' is being released by the Quebec apple breeding program (QAPB) located at the Agriculture and Agri-Food Canada (AAFC) station in St-Jean-sur-Richelieu (Quebec) and the Institut National de la Recherche Agronomique (INRA) - Centre d'Angers (France). 'Galarina' (test code Xn982) was evaluated by the QABP at a sub-station located in Frelighsburg (Quebec) for 10 years as part of a group of genotypes sent by INRA for testing in Quebec. It originated by pollinating 'Florina Querina' (Lespinasse et al., 1985) with pollen from 'Gala'. Compared to 'Gala', this new cultivar is hardier, it retains its fresh eating quality longer in storage and it is resistant to apple scab.



### Description:

'Reinette Russet' trees are weak to moderately vigorous with an upright-spreading shape when grafted on the rootstock M.26. The bearing habit is type II which means that the fruit are borne on 2 to 4 year old shoots (Lespinasse, 1977). The trunk cross-sectional area (TCA) as measured at 30 cm was 13.6 cm<sup>2</sup> compared to 18.1 cm<sup>2</sup> for 'McIntosh' on M.26 four years after planting (Martha and Audette, 2000). 'Reinette Russet' trees are hardy at our agricultural sub-station in Frelighsburg, Quebec (latitude 45.0485), which has an average winter minimum temperature of -25 °C. It is resistant to apple scab at our site in Frelighsburg but there has been some evidence of infection at INRA and it is considered only partially resistant at that site. There are no signs of powdery mildew (*Podosphaera leucotricha* (Eh. & Ev.) Salm.) or fireblight (*Erwinia amylovora* (Butt.) Winslow et al.) infections in Frelighsburg. Average yields were slightly lower than for 'McIntosh': 8.9 and 4.9 kg/tree for 'Reinette Russet' compared with 10.2 and 7.24 kg/tree for 'McIntosh' after 3 and 4 years respectively (Martha and Audette, 2000). The leaves are medium-small to medium size and elliptic with serrate to double serrate margins. The underside is very hairy, the apex is acuminate to cuspidate and the base is oblique. The average leaf length to width ratio is 1.6 and the petioles are hairy, 1.7 to 2.9 cm long with long and thin stipules when young. The surface of the leaves is medium green and it is weakly glossy.



### Description:

'Galarina' trees are moderately vigorous with an upright-spreading shape when grafted on the rootstock M.26. The fruit are borne on spurs and shoots which are generally 1 to 3 years of age and the fruiting zone tends to move rapidly away from the trunk to the outside of the tree (type III bearing habit according to Lespinasse, 1977). 'Galarina' trees are hardy at our agricultural sub-station in Frelighsburg, Quebec (latitude 45.0485), which has an average winter minimum temperature of -25 °C. There have been no signs of powdery mildew (*Podosphaera leucotricha* (Eh. & Ev.) Salm.) or fireblight (*Erwinia amylovora* (Butt.) Winslow et al.) infections during the evaluation period. The average yield 4 years after planting was 18.2 kg/tree which was higher than the yield for 'McIntosh' (7.2 kg/tree) (Martha and Audette, 2000). The leaves are small to medium-small in size, ovate to lanceolate and the margins are mainly serrate although they can be double serrate. The underside is hairy, the apex is acuminate and the base is obtuse. The average leaf length to width ratio is 2.2 and the petioles are hairy, 2.5 to 3.8 cm long with short stipules when young. The surface of the leaves is medium green and it is weakly glossy.



Flowering starts May 19 in Frelighsburg at the same time as 'McIntosh' and 3 days after 'Golden Russet'. Unopened flowers are dark pink (60A; Royal Horticultural Society Colour Chart (RHS), 1995) in full balloon stage and the flowers are single. The ovate to oblong petals are touching and are mainly white with dark pink veining (RHS 61B) on the surface. The underside of the petals is similar to the surface except that the veining varies from RHS 61A to 61B. The pedicels are green and red.



Flowering starts May 19 in Frelighsburg at the same time as 'McIntosh' and 1 or 2 days before 'Gala'. Flower buds are dark pink (60A; Royal Horticultural Society Colour Chart (RHS), 1995) in full balloon stage and the flowers are single. The ovate petals are slightly overlapping and are white with a mottling of dark pink (RHS 60C) on both sides. The pedicels are green.

'Reinette Russet' fruit mature in early to mid-October in Frelighsburg, about 1 to 2 weeks before 'Golden Russet', 1 week after 'Cortland' and at least 2 weeks after 'McIntosh'. The fruit vary in size from medium-small to medium-large (axial diameter 52 to 82 mm, transverse diameter 63 to 76 mm). The fruit weight ranges from 117 to 204 g with an overall average of 151 g. The shape can be round-conic, flat-round-conic or oblate and the average length to width ratio is 0.81. The outline of the fruit is mainly regular although it can be slightly angular in some samples. The skin is average in thickness and very rough because it is covered by fine to medium russet. The color is mainly brownish-yellow (RHS 163B) with faded to medium red (RHS 179A) stripes on the sunny side. There is an average number of large and swollen lenticels that can be russeted and the bloom is scant. The stem is short, pubescent, olive-green to reddish-brown and is average in diameter. The cavity is acuminate to acute, russeted, with a medium depth and width. The basin is average depth to slightly deep, medium width to wide and the slightly downy surface is smooth to a bit wavy. The medium size to large calyx is persistent with erect lobes, open, and the calyx tube is funnel-shaped; the stamens are in median position. The closed to partly open core is medium size and is located in median position with prominent clasping core lines. The carpels are ovate and they can be cracked but there is no tufting present. The distal end of the carpels is emarginate and the cells are symmetrical and axile. The seeds are large, flattened on one side, not tufted and have an acute to obtuse tip. The flesh is greenish-white, juicy, breaking, firm (8.1 kg as measured by a EPT-1 pressure tester made by Lake City Technical Products Inc.) and it browns quickly after cutting. The flesh is high in soluble solids (14.9%) and acidity (1.0%). The flavor is very sweet and good. The fruit has a tendency to develop water core especially after storage. After 4.5 months in a regular cold room the flesh is still fairly firm (pressure test 6.7 kg), the acidity is average (0.53%) and the soluble solids are still high (16.1%). The juice produced from stored apples is golden honey yellow. Storage in CA is not recommended since a large percentage of the fruit suffer from senescence during storage.



'Galarina' fruit mature at the end of September to early October in Frelighsburg, about 1 to 2 weeks after 'McIntosh', at the same time as 'Cortland' and usually a bit after 'Gala'. The fruit are small to medium size (axial diameter 46 to 61 mm, transverse diameter 51 to 65 mm). Fruit weights range from 75 to 134 g with an overall average of 108 g at harvest. Fruit shape is mainly round-conic and the average length to width ratio is 0.9. The outline of the fruit is irregular, there is ribbing along the body and the distal end is five-pointed. The skin is smooth, thick and tough. The color is variable: 65-100% blushed to washed orange-red (RHS 179A) to dark red (RHS 185A) fading on the shaded side, with dark red (RHS 185A to 187B) stripes, over a greenish-yellow ground (RHS 2C). There is russeting in the cavity which can sometimes radiate out a bit on the surface of the fruit. The lenticels are conspicuous, medium in size and they increase in numbers at the distal end. Surface bloom is scant. The stem is medium length to long, small to medium in diameter and is green although it can be red on one side. The cavity is acuminate to acute, fairly deep to deep with a narrow to medium width. The basin is prominently ribbed, medium depth to deep with a narrow to medium width. The large calyx is persistent with erect lobes, open, and the calyx tube is funnel-shaped; the stamens are in median position. The medium size core is mainly closed to partially open, it is located in median position with clasping core lines that are not prominent. The carpels are round and they can be cracked but not tufted. The distal end of the carpels is emarginate and the cells are symmetrical and slightly axile. The seeds are large, not tufted, they can be flattened on one side and the tip is obtuse. The flesh is crisp, juicy and very firm (9.5 kg as measured by a EPT-1 pressure tester made by Lake City Technical Products Inc.). The yellowish-white flesh can be tinged with red near the skin and it does not brown very much after cutting. The flavor is good, aromatic and a bit tart. The acidity is average (0.69%) and the soluble solids are low (11.1%). After 4 months in a regular cold room, the fruit is still very firm (8.7 kg) and its fresh eating qualities are excellent. Juice produced from the fruit is very clear, orange-salmon in color, with average acidity (0.57%) and soluble solids (12.2%). After 6 months in CA (2.5% O<sub>2</sub>, 4.5% CO<sub>2</sub>), the fruit is very firm (8.3 kg), the soluble solids and acidity are both average (12% and 0.6%, respectively).



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