



APPLICATIONS UNDER EXAMINATION

APPLE

**APPLE**  
(*Malus Mill.*)

**Proposed denomination:** 'SJM15'  
**Application number:** 03-3688  
**Application date:** 2003/05/22  
**Applicant:** Agriculture and Agri-Food Canada, Saint-Jean-sur-Richelieu, Québec  
**Breeder:** Shahrokh Khanizadeh, Agriculture and Agri-Food Canada, Saint-Jean-sur-Richelieu, Québec

**Varieties used for comparison:** 'Malling 26' and 'Ottawa 3'

**Summary:** 'SJM15' is an apple rootstock variety which has a higher tendency to produce suckers than 'Ottawa 3' and less pubescence on the upper half of dormant one-year-old shoots than either reference variety. The dormant one-year-old shoots of 'SJM15' are thinner and more flexible with larger lenticels than those of 'Ottawa 3'. The growing tip of the shoot is greenish yellow for 'SJM15' while it is white for 'Malling 26' and red for 'Ottawa 3'. Pubescence of the upper side of the shoot tip leaves is sparse for 'SJM15' while it is dense for 'Malling 26'. The shoot tip leaves of 'SJM15' are bronze green while those of 'Malling 26' are pale green and those of 'Ottawa 3' are green. 'SJM15' has larger leaves than 'Malling 26' and smaller leaves than 'Ottawa 3'. Pubescence on the lower side of the leaves is absent for 'SJM15' while it is dense for 'Malling 26' and sparse for 'Ottawa 3'. Bud burst occurs earlier for 'SJM15' than either reference variety. 'SJM15' produces fruit which is symmetrical in side view and smaller than that of 'Malling 26' whose fruit is asymmetrical in side view. The fruit of 'SJM15' has weaker ribbing than that of 'Ottawa 3'. 'SJM15' has a smaller eye than the reference varieties. The eye basin of 'SJM15' is absent while it is medium deep for 'Malling 26' and very shallow to shallow for 'Ottawa 3'. The fruit stalk of 'SJM15' is thicker and shorter than that of 'Ottawa 3' and thinner and longer than that of 'Malling 26'. 'SJM15' has a very strong bloom of the skin while it is weak for 'Malling 26' and weak to moderate for 'Ottawa 3'. 'SJM15' has a greater amount of skin over colour than both reference varieties. The skin over colour for 'SJM15' is red to dark red while it is orange to pink for 'Malling 26' and pink to red for 'Ottawa 3'. The fruit flesh for 'SJM15' is yellowish while it is white for 'Malling 26' and cream for 'Ottawa 3'.

**Description:**

**TREE:** end use as clonal rootstock, low tendency to produce suckers, poor root anchorage, dwarfing to very dwarfing effect

**BASAL SHOOTS IN STOOL BED:** intermediate vigour, few, straight

**DORMANT ONE-YEAR OLD SHOOT:** sparse pubescence on upper half, strong shine of bark, moderate flexibility, many large lenticels, predominantly reddish brown on sunny side

**LATERAL BUD:** small to medium in size, pointed tip, adpressed position relative to axis of shoot, small to medium sized support

**GROWING TIP:** greenish yellow

**SHOOT TIP LEAVES:** straight in cross section, sparse pubescence on upper side, bronze green on lower side

**LEAVES:** no lobes, medium in size, acuminate apex, serrate margin, moderate glossiness on upper side, no pubescence on lower side, weak anthocyanin colouration of veins, medium green upper side, absent to very weak anthocyanin colouration of upper side, medium to large stipules

**FLOWER BUD:** medium to dark pink at full balloon stage

**FLOWER:** single type, green pedicel

**PETAL:** ranging from almost round to oblong and broad ovate in shape, overlapping margins, purple red (RHS 58A)

blush along margins on upper side, purple red (RHS 58A) irregular patterns on lower side

FRUIT: very small, flat to flat globose in shape, symmetric in side view, very weak to weak ribbing, crowning at distal end absent or weak when present, small eye with closed to half open aperture, persistent calyx in mature fruit, medium to long sepals, variable spacing at base of sepals, either raised or flat distal end in relation to fruit surface, no eye basin, thin and long stalk, medium deep and narrow stalk cavity

FRUIT SURFACE: smooth, very strong bloom, no translucency, yellow ground colour, high amount (60-80%) of red to dark red over colour, solid to washed out over colour, low amount of russet positioned around stalk cavity, small to medium sized lenticels, slightly to intermediately prominent lenticels

FRUIT IN CROSS-SECTION: yellowish flesh, absent or very weak core line, aperture of locules closed

SEED: brown at maturity, ranging from globose and conical to obtuse in shape

REACTION TO INSECTS: resistant to woolly apple aphid (*Eriosoma lanigerum* Hausmann)

**Origin and Breeding:** ‘SJM15’ originated from a cross between *Malus baccata* (L.) Borkh. variety ‘Nertchinsk’ and ‘Malling 9’, a clonal selection of Paradis Jaune de Metz. The cross was conducted at Agriculture and Agri-Food Canada (AAFC) in Manitoba in 1960. This breeding program was terminated and the resulting seedlings were transferred in 1971 to the AAFC Apple and Rootstock Breeding Program in Saint-Jean-sur-Richelieu, Québec for further evaluation. ‘SJM15’ was selected in 1984 based on its winter hardiness, ease of propagation, pest resistance and disease resistance. It was planted in 1997 in several replicated trial plots in Frelighsburg and also at two grower sites in Québec.

**Tests and Trials:** The test and trial for ‘SJM15’ was conducted within stool beds and self rooted orchards at l’Acadie Research Sub Station of Agriculture and Agri-Food Canada in l’Acadie, Quebec during the summers of 2000 and 2003. The trial included 3-4 root stocks of each variety and 4 self rooted trees of the candidate variety, 5 self rooted trees of reference variety ‘Malling 26’ and 8 self rooted trees of reference variety ‘Ottawa 3’. All colour characteristics were determined using the 2001 Royal Horticultural Society (RHS) colour chart and measured characteristics were based on ten measurements except for the measured leaf characteristics of ‘Malling 26’, which were base on 8 measurements.

**Comparison table for ‘SJM15’**

	‘SJM15’	‘Malling 26’*	‘Ottawa 3’*
<i>Dormant one-year-old shoot: thickness (mm)</i>			
mean	5.90	5.57	7.30
std. deviation	0.6	1.2	0.9

\* reference variety



Apple: ‘SJM15’ (left) with reference varieties ‘Ottawa 3’ (center) and ‘Malling 26’ (right)

**Proposed denomination:** 'SJM44'  
**Application number:** 05-4919  
**Application date:** 2005/06/01  
**Applicant:** Agriculture and Agri-Food Canada, St-Jean-sur-Richelieu, Québec  
**Breeder:** Shahrokh Khanizadeh, Agriculture and Agri-Food Canada, St-Jean-sur-Richelieu, Québec

**Varieties used for comparison:** 'Malling 26' (stool bed and self rooted trees) and 'Malling 9' (stool bed only)

**Summary:** 'SJM44' is an apple rootstock variety with wavy basal shoots while those of the reference varieties are straight. 'SJM44' has weak pubescence on the upper half of the dormant one-year old shoots, whereas both 'Malling 26' and 'Malling 9' have very strong pubescence. The lenticels on the shoots are very numerous and small for 'SJM44' and they are less numerous and large for 'Malling 26'. The leaves of 'SJM44' have weak to medium pubescence on the lower side, whereas 'Malling 26' has dense pubescence and 'Malling 9' leaves are glabrous on the lower side. Self rooted trees of 'SJM44' produce white flower buds with pink along the margins, whereas 'Malling 26' buds are medium pink. The flowers of 'SJM44' are larger than those of 'Malling 26'. 'SJM44' produces very small fruit, compared to those of 'Malling 26' which are medium in size. 'SJM44' fruit are globose in shape with a raised eye (calyx) and yellow ground colour, whereas 'Malling 26' fruit are flat in shape, have a medium to deep eye basin and a green-yellow ground colour. The overcolour of 'SJM44' is pink, while it is orange to pink for 'Malling 26'.

**Description:**

TREE: low suckering tendency, poor root anchorage, dwarfing

BASAL SHOOTS IN STOOL BED: intermediate vigour, medium number, wavy

DORMANT ONE-YEAR OLD SHOOT: weak pubescence on upper half, shiny bark, weak to medium flexibility, very many small lenticels, reddish brown colour on sunny side

LATERAL BUD: small, pointed tip, slightly held out relative to axis, small bud support

GROWING TIP: red

SHOOT TIP LEAVES: concave to straight in cross section, very weak pubescence on upper side, green on lower side

LEAVES: dark green, no lobing, medium size, oriented outwards, cuspidate apex, serrate margin, weak to medium glossiness, moderate pubescence on lower side, weak anthocyanin on veins, absent to very weak anthocyanin colouration on upper side

STIPULES: medium size

FLOWER BUD: white (in full balloon stage) with medium pink along the margin

FLOWERS: single, green pedicel

PETALS: white, very large, circular shape, overlapping margins

FRUIT: very small, globose shape, symmetric in side view, weak ribbing, no crowning at distal end, eye is medium to large and closed, persistent calyx, medium to long sepals, sepals overlapping, no eye basin (raised eye)

FRUIT STALK: thin, long, stalk cavity narrow and shallow to medium in depth

FRUIT SURFACE: smooth, yellow ground colour, low to medium amount of pink overcolour, overcolour is washed with streaks and flecks, very low amount of russet around stalk cavity, lenticels small and slightly prominent

FRUIT IN CROSS-SECTION: yellowish flesh, no core line, closed locules

SEED: brown at maturity, normal shape

REACTION TO INSECTS: Resistant to woolly apple aphid (*Eriosoma lanigerum*)

REACTION TO DISEASES: Resistant to scab (*Venturia inaequalis*)

**Origin and Breeding:** 'SJM44' originated from a cross between *Malus baccata* (L.) Borkh. variety 'Nertchinsk' and 'Malling 9', made in 1960 at Agriculture and Agri-Food Canada, Morden Manitoba. The selection was made in 1971 at

AAFC in St-Jean-sur-Richelieu, Quebec based on criteria including vigour, winter hardiness, disease resistance, dwarfing effect and the effect on the tree branch structure.

**Tests and Trials:** Tests and trials for 'SJM44' were conducted at the L'Acadie Research Sub Station of Agriculture and Agri-Food Canada, St-Jean-sur-Richelieu, Quebec. The trial included 3 to 4 root stocks of each variety and 4 self rooted trees of each variety. The stoolbed was planted in 2000 and self rooted trees of the varieties were planted in an orchard in 1999 and allowed to develop into fruiting trees. Measurements and observations were recorded in 2005. Measured characteristics were based on 10 measurements.

**Comparison table for 'SJM44'**

	'SJM44'	'Malling 26'*
<i>Dormant one-year old shoots: thickness (mm)</i>		
mean	6.1	5.3
std. deviation	0.2	0.7
<i>Dormant one-year old shoot: length of internode (mm) (at middle third of shoots)</i>		
mean	13.10	19.48
std. deviation	3.7	3.3
<i>Flower: diameter (cm)</i>		
mean	5.70	4.76
std. deviation	0.6	0.2

\* reference variety



Apple: 'SJM44' (left) with reference varieties 'Malling 9' (center) and 'Malling 26' (right)

**Proposed denomination:** 'SJM127'  
**Application number:** 05-4920  
**Application date:** 2005/06/01  
**Applicant:** Agriculture and Agri-Food Canada, St-Jean-sur-Richelieu, Québec  
**Breeder:** Shahrokh Khanizadeh, Agriculture and Agri-Food Canada, St-Jean-sur-Richelieu, Québec

**Varieties used for comparison:** 'Malling 26' (stool bed and self rooted trees) and 'Malling 9' (stool bed only)

**Summary:** 'SJM127' is an apple rootstock variety with wavy basal shoots while those of the reference varieties are straight. 'SJM127' has weak pubescence on the upper half of the dormant one-year old shoots, whereas both 'Malling

26' and 'Malling 9' have very dense pubescence. The leaves of 'SJM127' have no pubescence on the lower side, whereas 'Malling 26' has dense pubescence. Self rooted trees of 'SJM127' produce very small fruit, compared to those of 'Malling 26' which are medium in size. 'SJM127' fruit are globose to flat globose in shape with a raised eye (calyx) and yellow and orange yellow ground colour, whereas 'Malling 26' fruit are flat in shape, have a medium to deep eye basin and a green-yellow ground colour. There is a medium amount of pinkish red overcolour on fruit of 'SJM127', while 'Malling 26' has a very low amount of orange to pink overcolour.

**Description:**

TREE: low suckering tendency, poor root anchorage, dwarfing

BASAL SHOOTS IN STOOL BED: intermediate vigour, medium number, wavy

DORMANT ONE-YEAR OLD SHOOT: weak pubescence on upper half, medium shine on bark, weak to medium flexibility, many large lenticels, reddish brown colour on sunny side

LATERAL BUD: small, pointed tip, adpressed to axis, small bud support

GROWING TIP: white

SHOOT TIP LEAVES: concave to straight in cross section, no pubescence on upper side, green on lower side

LEAVES: medium to dark green, no lobing, large size, oriented outwards to downwards, cuspidate apex, serrate margin, weak glossiness, no pubescence on lower side, weak anthocyanin on veins, no (or very weak) anthocyanin colouration on upper side

STIPULES: small to medium size

FLOWER BUD: medium pink bud (in full balloon stage),

FLOWERS: single, pedicel green on one side and red on other side

PETALS: white with some medium pink at margins, broad-elliptic to ovate in shape, touching to overlapping margins

FRUIT: very small, globose to flat globose shape, asymmetric in side view, medium ribbing, no crowning at distal end, eye is medium in size and half open, persistent calyx, medium to long sepals, sepals overlapping, no eye basin (raised eye)

FRUIT STALK: thin, very long, stalk cavity narrow and shallow

FRUIT SURFACE: smooth, yellow and orange-yellow ground colour, medium amount of pinkish red overcolour, overcolour is washed and solid, very low amount of russet around stalk cavity, lenticels small and very slightly prominent

FRUIT IN CROSS-SECTION: yellowish flesh, no core line, closed locules

SEED: brown at maturity, normal shape

REACTION TO INSECTS: Resistant to woolly apple aphid (*Eriosoma lanigerum* Hausmann)

REACTION TO DISEASES: Resistant to scab (*Venturia inaequalis* (Cooke) Winter)

**Origin and Breeding:** 'SJM127' originated from a cross between *Malus baccata* (L.) Borkh. variety 'Nertchinsk' and 'Malling 26', made in 1960 at Agriculture and Agri-Food Canada, Morden Manitoba. The selection was made in 1971 at AAFC in St-Jean-sur-Richelieu, Quebec based on criteria including vigour, winter hardiness, disease resistance, dwarfing effect and the effect on the tree branch structure.

**Tests and Trials:** Tests and trials for 'SJM127' were conducted at the L'Acadie Research Sub Station of Agriculture and Agri-Food Canada, St-Jean-sur-Richelieu, Quebec. The trial included 3 to 4 root stocks of each variety and 4 self rooted trees of each variety. The stoolbed was planted in 2000 and self rooted trees of the varieties were planted in an orchard in 1999 and allowed to develop into fruiting trees. Measurements and observations were recorded in 2005. Measured characteristics were based on 10 measurements.

Comparison table for 'SJM127'

	'SJM127'	'Malling 26'*
<i>Dormant one-year old shoots: thickness (mm)</i>		
mean	6.4	5.3
std. deviation	1.6	0.7
<i>Dormant one-year old shoot: length of internode (mm) (at middle third of shoots)</i>		
mean	16.40	19.48
std. deviation	3.5	3.3
<i>Flower: diameter (cm)</i>		
mean	4.20	4.76
std. deviation	0.4	0.2

\* reference variety



Apple: 'SJM127' (left) with reference varieties 'Malling 9' (center) and 'Malling 26' (right)

**Proposed denomination:** 'SJM150'  
**Application number:** 05-4921  
**Application date:** 2005/06/01  
**Applicant:** Agriculture and Agri-Food Canada, St-Jean-sur-Richelieu, Québec  
**Breeder:** Shahrokh Khanizadeh, Agriculture and Agri-Food Canada, St-Jean-sur-Richelieu, Québec

**Varieties used for comparison:** 'Malling 26' (stool bed and self rooted trees) and 'Malling 9' (stool bed only)

**Summary:** 'SJM150' is an apple rootstock variety with wavy basal shoots while those of the reference varieties are straight. 'SJM150' has medium to strong pubescence on the upper half of the dormant one-year old shoots, whereas both 'Malling 26' and 'Malling 9' have very dense pubescence. 'SJM150' has a very high number of lenticels on the one-year old shoots, whereas 'Malling 9' has few to a medium number. The leaves of 'SJM150' have dense pubescence on the lower side, whereas 'Malling 9' has no pubescence. Self rooted trees of 'SJM150' produce very small fruit, compared to those of 'Malling 26' which are medium in size. 'SJM150' fruit are globose to flat globose in shape with no eye basin and yellow ground colour, whereas 'Malling 26' fruit are flat in shape, have a medium to deep eye basin and a green-yellow ground colour. There is a high to very high amount of reddish pink overcolour on fruit of 'SJM150', while 'Malling 26' has a very low amount of orange to pink overcolour.

**Description:**

TREE: very low suckering tendency, poor root anchorage, dwarfing

BASAL SHOOTS IN STOOL BED: intermediate vigour, few in number, wavy

ONE-YEAR OLD SHOOT: medium to strong pubescence on upper half, weak shine on bark, medium flexibility, very many large lenticels, reddish brown colour on sunny side

LATERAL BUD: medium to large size, pointed tip, adpressed to axis, medium sized bud support

GROWING TIP: white

SHOOT TIP LEAVES: concave to straight in cross section, very weak pubescence on upper side, green on lower side

LEAVES: dark green, no lobing, medium size, oriented outwards to downwards, acuminate to cuspidate apex, serrate margin, weak to medium glossiness, strong pubescence on lower side, weak anthocyanin on veins, no (or very weak) anthocyanin colouration on upper side

STIPULES: medium size

FLOWER BUD: bud greenish white at base (in full balloon stage) with patterns of light pink

FLOWERS: single, pedicel greenish white on one side with slight anthocyanin colouration on other side

PETALS: white, circular to oblong in shape, overlapping margins

FRUIT: very small, globose to flat globose shape, mainly symmetric in side view, very weak to weak ribbing, no crowning at distal end, eye is medium in size and closed, persistent calyx, medium length sepals, sepals overlapping at base, no eye basin

FRUIT STALK: thin, very long, stalk cavity narrow and shallow

FRUIT SURFACE: smooth, yellow ground colour, high to very high amount of reddish pink overcolour, overcolour is washed and solid, very low amount of russet around stalk cavity, lenticels slightly prominent and small near the eye medium size on the cheeks

FRUIT IN CROSS-SECTION: yellowish flesh, weak core line, closed locules

SEED: brown at maturity, globose conical shape

REACTION TO INSECTS: Resistant to woolly apple aphid (*Eriosoma lanigerum* Hausmann)

REACTION TO DISEASES: Resistant to scab (*Venturia inaequalis* (Cooke) Winter)

**Origin and Breeding:** 'SJM150' originated from a cross between *Malus baccata* (L.) Borkh. variety 'Nertchinsk' and 'Malling 26', made in 1960 at Agriculture and Agri-Food Canada, Morden Manitoba. The selection was made in 1971 at AAFC in St-Jean-sur-Richelieu, Quebec based on criteria including vigour, winter hardiness, disease resistance, dwarfing effect and the effect on the tree branch structure.

**Tests and Trials:** Tests and trials for 'SJM150' were conducted at the L'Acadie Research Sub Station of Agriculture and Agri-Food Canada, St-Jean-sur-Richelieu, Quebec. The trial included 3 to 4 root stocks of each variety and 4 self rooted trees of each variety. The stoolbed was planted in 2003 and self rooted trees of the varieties were planted in an orchard in 1999 and allowed to develop into fruiting trees. Measurements and observations were recorded in 2005. Measured characteristics were based on 10 measurements.

**Comparison table for 'SJM150'**

	'SJM150'	'Malling 26'*
<i>Dormant one-year old shoots: thickness (mm)</i>		
mean	7.2	5.3
std. deviation	0.5	0.7
<i>Dormant one-year old shoot: length of internode (mm) (at middle third of shoots)</i>		
mean	20.65	19.48
std.deviation	3.5	3.3

*Flower: diameter (cm)*

mean	4.70	4.76
std. deviation	0.2	0.2

\* reference variety



Apple: 'SJM150' (left) with reference varieties 'Malling 9' (center) and 'Malling 26' (right)

**Proposed denomination:** 'SJM167'**Application number:** 03-3689**Application date:** 2003/05/22**Applicant:** Agriculture and Agri-Food Canada, Saint-Jean-sur-Richelieu, Québec**Breeder:** Shahrokh Khanizadeh, Agriculture and Agri-Food Canada, Saint-Jean-sur-Richelieu, Québec**Varieties used for comparison:** 'Malling 26' and 'Ottawa 3'

**Summary:** 'SJM167' is an apple rootstock variety which has a higher tendency to produce suckers than both reference varieties. The dormant one-year-old shoots of 'SJM167' are less flexible with smaller lenticels than those of 'Malling 26'. 'SJM167' has larger lateral buds than either reference variety. The growing tip of the shoot is white for 'SJM167' while it is red for 'Ottawa 3'. Pubescence of the upper side of the shoot tip leaves is dense for 'SJM167' while it is very sparse for 'Ottawa 3'. 'SJM167' has larger leaves than 'Malling 26' and smaller leaves than 'Ottawa 3'. The orientation of leaves for 'SJM167' is downwards while it is outwards for 'Malling 26' and upwards to outwards for 'Ottawa 3'. Pubescence on the lower side of the leaves is sparse to moderate for 'SJM167' while it is dense for 'Malling 26'. 'SJM167' has larger stipules than 'Malling 26'. Bud burst occurs earlier for 'SJM167' than either reference variety. 'SJM167' has a smaller flower diameter than 'Ottawa 3'. 'SJM167' produces fruit which is symmetrical in side view and smaller than that of 'Malling 26' whose fruit is asymmetrical in side view. The fruit of 'SJM167' has weaker ribbing than that of 'Ottawa 3'. 'SJM167' has a smaller eye than the reference varieties. The eye basin of 'SJM167' ranges from absent to sometimes very shallow to shallow while it is medium deep for 'Malling 26'. The fruit stalk of 'SJM167' is thicker and shorter than that of 'Ottawa 3' and thinner and longer than that of 'Malling 26'. 'SJM167' has a strong bloom of the skin while it is weak for 'Malling 26' and weak to moderate for 'Ottawa 3'. 'SJM167' has a greater amount of skin over colour than both reference varieties. The skin over colour for 'SJM167' is red while it is orange to pink for 'Malling 26' and pink to red for 'Ottawa 3'. The colour of the fruit flesh is yellowish for 'SJM167' while it is white for 'Malling 26' and cream for 'Ottawa 3'.

**Description:**

TREE: end use as clonal rootstock, moderate tendency to produce suckers, poor root anchorage, dwarfing effect

BASAL SHOOTS IN STOOL BED: intermediate vigour to vigorous, few to medium in number, straight



DORMANT ONE-YEAR-OLD SHOOT: moderate to dense pubescence on upper half, weak shine of bark, weak flexibility, many small to medium sized lenticels, predominantly reddish brown on sunny side

LATERAL BUD: large to very large, pointed tip, adpressed position relative to axis of shoot, medium sized support GROWING TIP: white

SHOOT TIP LEAVES: concave to straight in cross section, dense pubescence on upper side, pale green on lower side  
LEAVES: no lobes, large, downwards orientation, acuminate and cuspidate apex, biserrate margin, weak to moderate glossiness on upper side, sparse to moderate pubescence on lower side, weak anthocyanin colouration of veins, medium green upper side, absent to very weak anthocyanin colouration of upper side, large stipules

FLOWER BUD: early burst, bright red pink at full balloon stage

FLOWERS: single type, green pedicel

PETALS: ovate to almost oblong in shape, overlapping margins, usually entirely white with occasional purple red (RHS 58A) blush on upper side, purple red (RHS 58A) blush on lower side

FRUIT: very small, flat to flat globose in shape, symmetric in side view, very weak to weak ribbing, crowning at distal end absent or weak to moderate when present, small eye with closed to half open aperture, persistent calyx in mature fruit, short to medium length sepals, touching at base of sepals, mainly raised distal end and sometimes very shallow to shallow and narrow eye basin, thin and long stalk, medium deep stalk cavity

FRUIT SURFACE: smooth, strong bloom, no translucency, yellow ground colour, high to very high amount (60 to >80%) of red over colour, washed out and solid over colour, low to moderate amount of russet positioned around stalk cavity, medium sized lenticels, slightly prominent to prominent lenticels

FRUIT IN CROSS-SECTION: yellowish flesh, weak core line, aperture of locules open to closed

SEED: brown at maturity, obtuse in shape

REACTION TO DISEASES: resistant to scab (*Venturia inaequalis* (Cooke) Winter)

REACTION TO INSECTS: resistant to woolly apple aphid (*Eriosoma lanigerum* Hausmann)

**Origin and Breeding:** 'SJM167' originated from a cross between *Malus baccata* (L.) Borkh. variety 'Nertchinsk' and 'Malling 26' ('Malling 16' x 'Malling 9'). The cross was conducted at Agriculture and Agri-Food Canada (AAFC) in Manitoba in 1960. This breeding program was terminated and the resulting seedlings were transferred in 1971 to the AAFC Apple and Rootstock Breeding Program in Saint-Jean-sur-Richelieu, Québec for further evaluation. 'SJM167' was selected in 1984 based on its winter hardiness, ease of propagation, pest resistance and disease resistance. It was planted in 1997 in several replicated trial plots in Frelighsburg and also at two grower sites in Québec.

**Tests and Trials:** The test and trial for 'SJM167' was conducted within stool beds and self rooted orchards at l'Acadie Research Sub Station of Agriculture and Agri-Food Canada in l'Acadie, Quebec during the summers of 2000 and 2003. The trial included 3-4 root stocks of each variety and 4 self rooted trees of the candidate variety, 5 self rooted trees of reference variety 'Malling 26' and 8 self rooted trees of reference variety 'Ottawa 3'. All colour characteristics were determined using the 2001 Royal Horticultural Society (RHS) colour chart and measured characteristics were based on ten measurements except for the measured leaf characteristics of 'Malling 26', which were base on 8 measurements.

#### Comparison table for 'SJM167'

	'SJM167'	'Malling 26'*	'Ottawa 3'*
<i>Leaf length (cm)</i>			
mean	9.1	7.2	9.0
std. deviation	0.4	0.8	0.9
<i>Flower diameter (cm)</i>			
mean	4.40	4.30	5.56
std. deviation	0.2	0.2	0.4

\* reference variety



Apple: 'SJM167' (left) with reference varieties 'Ottawa 3' (center) and 'Malling 26' (right)

**Proposed denomination:** 'SJP84-5162'  
**Application number:** 05-4924  
**Application date:** 2005/06/01  
**Applicant:** Agriculture and Agri-Food Canada, St-Jean-sur-Richelieu, Québec  
**Breeder:** Shahrokh Khanizadeh, Agriculture and Agri-Food Canada, St-Jean-sur-Richelieu, Québec

**Varieties used for comparison:** 'Malling 26' (stool bed and self rooted trees) and 'Malling 9' (stool bed only)

**Summary:** 'SJP84-5162' is an apple rootstock variety with wavy basal shoots while those of the reference varieties are straight. The candidate variety has a medium to high suckering tendency, whereas for the reference varieties it is absent or very low. 'SJP84-5162' has no pubescence on the upper half of the dormant one-year old shoots, whereas both 'Malling 26' and 'Malling 9' have very dense pubescence. 'SJP84-5162' has weakly shiny bark, whereas 'Malling 9' has strongly shiny bark. The growing tip for the candidate is red, while it is white for 'Malling 9'. The leaves of 'SJP84-5162' have very sparse pubescence on the lower side, whereas 'Malling 26' has dense pubescence. Self rooted trees of 'SJP84-5162' produce very small fruit, compared to those of 'Malling 26' which are medium in size. 'SJP84-5162' fruit are globose in shape with no eye basin (or a raised eye) and yellow ground colour, whereas 'Malling 26' fruit are flat in shape, have a medium to deep eye basin and a green-yellow ground colour.

**Description:**

TREE: medium to very high suckering tendency, poor root anchorage, dwarfing

BASAL SHOOTS IN STOOL BED: intermediate vigour, medium number, straight

ONE-YEAR OLD SHOOT: no pubescence on upper half, weak shine on bark, weak to medium flexibility, medium number to many lenticels, lenticels medium to large in size, reddish brown colour on sunny side

LATERAL BUD: small size, pointed tip, adpressed to held out relative to axis, small to medium sized bud support

GROWING TIP: red

SHOOT TIP LEAVES: concave to straight in cross section, no pubescence on upper side, green on lower side

LEAVES: medium green, no lobing, small size, oriented outwards, acuminate to cuspidate apex, serrate margin, weak glossiness on upper side, very sparse pubescence on lower side, weak anthocyanin on veins, no (or very weak) anthocyanin colouration on upper side

STIPULES: small size

FLOWER BUD: medium pink (in full balloon stage)

FLOWERS: single, pedicel green

PETALS: white with slight pink blush on a few, circular to oblong in shape, overlapping margins

FRUIT: very small, globose shape, eye is small in size, persistent calyx, medium to long sepals, sepals overlapping at base, no eye basin, eye is raised

FRUIT STALK: thin, long to very long

FRUIT SURFACE: smooth, yellow ground colour, very low amount of pink overcolour, overcolour is a blush, lenticels moderately prominent

REACTION TO INSECTS: Resistant to woolly apple aphid (*Eriosoma lanigerum* Hausmann)

REACTION TO DISEASES: Resistant to scab (*Venturia inaequalis* (Cooke) Winter)

**Origin and Breeding:** 'SJP84-5162' originated from a cross between 'Robusta 5' and 'Malling 27', made in 1975 at Agriculture and Agri-Food Canada, St-Jean-sur-Richelieu, Quebec. The selection criteria and evaluation since 1975 for the variety has been on the basis of vigour, winter hardiness, disease resistance, dwarfing effect and the effect on the tree branch structure.

**Tests and Trials:** Tests and trials for 'SJP84-5162' were conducted at the L'Acadie Research Sub Station of Agriculture and Agri-Food Canada, St-Jean-sur-Richelieu, Quebec. The trial included 3 to 4 root stocks of each variety and 4 self rooted trees of each variety. The stoolbed was planted in 2003 and self rooted trees of the varieties were planted in an orchard in 1999 and allowed to develop into fruiting trees. Measurements and observations were recorded in 2005. Measured characteristics were based on 10 measurements.

#### Comparison table for 'SJP84-5162'

	'SJP84-5162'	'Malling 26'*
<i>Dormant one-year old shoots: thickness (mm)</i>		
mean	6.2	5.3
std. deviation	1.1	0.7
<i>Dormant one-year old shoot: length of internode (mm) (at middle third of shoots)</i>		
mean	20.40	19.48
std.deviation	1.7	3.3
<i>Flower: diameter (cm)</i>		
mean	4.60	4.76
std. deviation	0.2	0.2

\* reference variety



Apple: 'SJP84-5162' (left) with reference varieties 'Malling 9' (center) and 'Malling 26' (right)

**Proposed denomination:** 'SJP84-5180'  
**Application number:** 05-4926  
**Application date:** 2005/06/01  
**Applicant:** Agriculture and Agri-Food Canada, St-Jean-sur-Richelieu, Québec  
**Breeder:** Shahrokh Khanizadeh, Agriculture and Agri-Food Canada, St-Jean-sur-Richelieu, Québec

**Varieties used for comparison:** 'Malling 26' (stool bed and self rooted trees) and 'Malling 9' (stool bed only)

**Summary:** 'SJP84-5180' is an apple rootstock variety with wavy basal shoots while those of the reference varieties are straight. 'SJP84-5180' has sparse pubescence on the upper half of the dormant one-year old shoots, whereas both 'Malling 26' and 'Malling 9' have very dense pubescence. 'SJP84-5180' has weakly shiny bark, whereas 'Malling 9' has strongly shiny bark. The leaves of 'SJP84-5180' have sparse to medium pubescence on the lower side, whereas 'Malling 26' has dense pubescence. Self rooted trees of 'SJP84-5180' produce very small fruit, compared to those of 'Malling 26' which are medium in size. 'SJP84-5180' fruit are ellipsoid in shape with a very shallow or no eye basin and yellow ground colour, whereas 'Malling 26' fruit are flat in shape, have a medium to deep eye basin and a green-yellow ground colour.

**Description:**

TREE: low to very high suckering tendency, poor root anchorage, dwarfing

BASAL SHOOTS IN STOOL BED: intermediate vigour, medium number, wavy

ONE-YEAR OLD SHOOT: sparse pubescence on upper half, weak shine on bark, weak flexibility, few lenticels, lenticels small to medium in size, reddish brown colour on sunny side

LATERAL BUD: small to medium size, pointed tip, adpressed to slightly held out relative to axis, medium sized bud support

GROWING TIP: white

SHOOT TIP LEAVES: concave to straight in cross section, very sparse pubescence on upper side, green on lower side

LEAVES: medium to dark green, no lobing, small size, oriented outwards to downwards, acuminate apex, serrate margin, weak to medium glossiness on upper side, sparse to medium pubescence on lower side, weak anthocyanin on veins, no (or very weak) anthocyanin colouration on upper side

STIPULES: small to medium size

FLOWER BUD: medium pink (in full balloon stage)

FLOWERS: single, pedicel green

PETALS: white with slight pink blush, circular to ovate in shape, overlapping margins

FRUIT: very small, ellipsoid shape, symmetric in side view, medium ribbing, weak crowning at distal end, small to medium eye, eye closed, persistent calyx, medium to long sepals, sepals overlapping at base, absent to very shallow eye basin

FRUIT STALK: thin, very long, narrow and shallow stalk cavity

FRUIT SURFACE: smooth, weak bloom, weak waxiness, yellow ground colour, very low amount of pink overcolour, overcolour is a blush, low to medium amount of russet around stalk cavity, lenticels medium size and slightly prominent

FRUIT IN CROSS SECTION: cream coloured flesh, weak core line, variable open and closed locules

SEED: brown at maturity, conical shape

REACTION TO INSECTS: Resistant to woolly apple aphid (*Eriosoma lanigerum* Hausmann)

REACTION TO DISEASES: Resistant to scab (*Venturia inaequalis* (Cooke) Winter)

**Origin and Breeding:** 'SJP84-5180' originated from a cross between 'Robusta 5' and 'Malling 27', made in 1975 at Agriculture and Agri-Food Canada, St-Jean-sur-Richelieu, Quebec. The selection criteria and evaluation since 1975 for the variety has been on the basis of vigour, winter hardiness, disease resistance, dwarfing effect and the effect on the tree branch structure.

**Tests and Trials:** Tests and trials for 'SJP84-5180' were conducted at the L'Acadie Research Sub Station of Agriculture and Agri-Food Canada, St-Jean-sur-Richelieu, Quebec. The trial included 3 to 4 root stocks of each variety and 4 self rooted trees of each variety. The stoolbed was planted in 2003 and self rooted trees of the varieties were planted in an orchard in 1999 and allowed to develop into fruiting trees. Measurements and observations were recorded in 2005. Measured characteristics were based on 10 measurements.

**Comparison table for 'SJP84-5180'**

	'SJP84-5180'	'Malling 26'*
<i>Dormant one-year old shoots: thickness (mm)</i>		
mean	6.2	5.3
std. deviation	1.1	0.7
<i>Dormant one-year old shoot: length of internode (mm) (at middle third of shoots)</i>		
mean	17.60	19.48
std.deviation	0.7	3.3
* reference variety		



Apple: 'SJM84-5180' (left) with reference varieties 'Malling 9' (center) and 'Malling 26' (right)

**Proposed denomination:** 'SJP84-5189'  
**Application number:** 05-4927  
**Application date:** 2005/06/01  
**Applicant:** Agriculture and Agri-Food Canada, St-Jean-sur-Richelieu, Québec  
**Breeder:** Shahrokh Khanizadeh, Agriculture and Agri-Food Canada, St-Jean-sur-Richelieu, Québec

**Varieties used for comparison:** 'Malling 26' (stool bed and self rooted trees) and 'Malling 9' (stool bed only)

**Summary:** 'SJP84-5189' is an apple rootstock variety which has sparse pubescence on the upper half of the dormant one-year old shoots, whereas both 'Malling 26' and 'Malling 9' have very dense pubescence. 'SJP84-5189' has weakly shiny bark, whereas 'Malling 9' has strongly shiny bark. The leaves of 'SJP84-5189' have very sparse pubescence on the lower side, whereas 'Malling 26' has dense pubescence. Self rooted trees of 'SJP84-5189' produce very small fruit, compared to those of 'Malling 26' which are medium in size. 'SJP84-5189' fruit are globose in shape with a very shallow or no eye basin and yellow ground colour, whereas 'Malling 26' fruit are flat in shape, have a medium to deep eye basin and a green-yellow ground colour. In cross-section the fruit of 'SJP84-5189' have a very weak core line, whereas 'Malling 26' has a moderate to strongly distinct core line.

**Description:**

TREE: very low suckering tendency, poor root anchorage, dwarfing

BASAL SHOOTS IN STOOL BED: weak vigour, low number, straight to wavy

ONE-YEAR OLD SHOOT: sparse pubescence on upper half, weak shine on bark, weak flexibility, few to medium number of lenticels, lenticels medium to large in size, reddish brown colour on sunny side

LATERAL BUD: small to medium size, pointed tip, slightly held out relative to axis, small bud support

GROWING TIP: red

SHOOT TIP LEAVES: concave to straight in cross section, very sparse pubescence on upper side, green on lower side

LEAVES: medium green, no lobing, medium size, oriented outwards to downwards, acuminate apex, serrate margin, weak glossiness on upper side, very sparse pubescence on lower side, weak anthocyanin on veins, no (or very weak) anthocyanin colouration on upper side

STIPULES: medium size

FLOWER BUD: medium pink (in full balloon stage)

FLOWERS: single, pedicel green

PETALS: white with slight pink blush, circular to ovate in shape, overlapping margins

FRUIT: very small, globose shape, asymmetric in side view, weak to medium ribbing, weak crowning at distal end, medium eye, eye open, persistent calyx, short to medium sepals, sepals overlapping at base, absent to very shallow eye basin

FRUIT STALK: thin, very long, stalk cavity narrow to medium in width and shallow to medium in depth

FRUIT SURFACE: smooth, weak bloom, yellow ground colour, very low amount of pink overcolour, overcolour is a blush, low amount of russet around stalk cavity, lenticels small and not prominent

FRUIT IN CROSS SECTION: yellowish flesh, very weak core line, open locules

SEED: brown at maturity, globose conical shape

REACTION TO INSECTS: Resistant to woolly apple aphid (*Eriosoma lanigerum* Hausmann)

REACTION TO DISEASES: Resistant to scab (*Venturia inaequalis* (Cooke) Winter)

**Origin and Breeding:** 'SJP84-5189' originated from a cross between 'Robusta 5' and 'Malling 27', made in 1975 at Agriculture and Agri-Food Canada, St-Jean-sur-Richelieu, Quebec. The selection criteria and evaluation since 1975 for the variety has been on the basis of vigour, winter hardiness, disease resistance, dwarfing effect and the effect on the tree branch structure.

**Tests and Trials:** Tests and trials for 'SJP84-5189' were conducted at the L'Acadie Research Sub Station of Agriculture and Agri-Food Canada, St-Jean-sur-Richelieu, Quebec. The trial included 3 to 4 root stocks of each variety and 4 self rooted trees of each variety. The stoolbed was planted in 2003 and self rooted trees of the varieties were planted in an orchard in 1999 and allowed to develop into fruiting trees. Measurements and observations were recorded in 2005. Measured characteristics were based on 10 measurements.

#### Comparison table for 'SJP84-5189'

	'SJP84-5189'	'Malling 26'*
<i>Dormant one-year old shoots: thickness (mm)</i>		
mean	6.03	5.30
std. deviation	1.1	0.7
<i>Dormant one-year old shoot: length of internode (mm) (at middle third of shoots)</i>		
mean	21.45	19.48
std.deviation	2.8	3.3

\* reference variety



Apple: 'SJP84-5189' (left) with reference varieties 'Malling 9' (center) and 'Malling 26' (right)

**Proposed denomination:** 'SJP84-5198'  
**Application number:** 03-3691  
**Application date:** 2003/05/22  
**Applicant:** Agriculture and Agri-Food Canada, Saint-Jean-sur-Richelieu, Québec  
**Breeder:** Shahrokh Khanizadeh, Agriculture and Agri-Food Canada, Saint-Jean-sur-Richelieu, Québec

**Varieties used for comparison:** 'Malling 26' and 'Ottawa 3'

**Summary:** 'SJP84-5198' is an apple rootstock variety which produces more basal shoots in the stool bed than both reference varieties and has a lower tendency to produce suckers than 'Malling 26'. The dormant one-year-old shoots of 'SJP84-5198' are less flexible with smaller lenticels than those of 'Malling 26'. The growing tip of the shoot is white for 'SJP84-5198' while it is red for 'Ottawa 3'. Pubescence of the upper side of the shoot tip leaves is dense for 'SJP84-5198' while it is very sparse for 'Ottawa 3'. 'SJP84-5198' has larger leaves than 'Malling 26' and smaller leaves than 'Ottawa 3'. The orientation of leaves of 'SJP84-5198' is downwards while it is outwards for 'Malling 26' and upwards to outwards for 'Ottawa 3'. Pubescence on the lower side of the leaves is very sparse for 'SJP84-5198' while it is dense for 'Malling 26'. Bud burst occurs earlier for 'SJP84-5198' than either reference variety. 'SJP84-5198' has a larger flower diameter than 'Malling 26'. 'SJP84-5198' produces fruit which is symmetrical in side view and smaller than that of 'Malling 26' whose fruit is asymmetrical in side view. The fruit of 'SJP84-5198' has weaker ribbing than that of 'Ottawa 3'. 'SJP84-5198' has a deeper and narrower eye basin than 'Ottawa 3'. The fruit stalk of 'SJP84-5198' is thicker and shorter than that of 'Ottawa 3' and thinner and longer than that of 'Malling 26'. 'SJP84-5198' has a more shallow and narrower stalk cavity than 'Ottawa 3'. The surface of the fruit is hammered to bumpy for 'SJP84-5198' while it is smooth for the reference varieties. 'SJP84-5198' has a greater amount of skin over colour than 'Malling 26'. The colour of the fruit flesh is yellowish for 'SJP84-5198' while it is white for 'Malling 26' and cream for 'Ottawa 3'.

**Description:**

TREE: end use as clonal rootstock, absent to very low tendency to produce suckers, poor root anchorage, dwarfing effect

BASAL SHOOTS IN STOOL BED: intermediate vigour to vigorous, medium in number, straight

DORMANT ONE-YEAR-OLD SHOOT: dense to very dense pubescence on upper half, weak shine of bark, weak flexibility, moderate number to many medium sized lenticels, predominantly reddish brown on sunny side

LATERAL BUD: small to medium in size, pointed tip, adpressed position relative to axis of shoot, small support

GROWING TIP: white



SHOOT TIP LEAVES: concave to straight in cross section, dense pubescence on upper side, pale green on lower side  
 LEAVES: no lobes, medium in size, downwards orientation, acute and cuspidate apex, biserrate margin, glossiness on upper side absent, very sparse pubescence on lower side, weak anthocyanin colouration of veins, medium green upper side, absent to very weak anthocyanin colouration of upper side, medium sized stipules

FLOWER BUD: vivid, medium pink at full balloon stage

FLOWERS: single type, green pedicel

PETALS: circular to broad ovate in shape, overlapping margins, purple red (RHS 58A) blush on upper side, irregular patterns of purple red (RHS 58A) on lower side

FRUIT: very small, flat to flat globose in shape, symmetric in side view, very weak to weak ribbing, no crowning at distal end, small eye with closed to open aperture, non-persistent and persistent calyx in mature fruit, short sepals, touching at base of sepals, eye basin is narrow to medium in width and medium deep, thin and long stalk, narrow and medium deep stalk cavity

FRUIT SURFACE: hammered to bumpy, moderate amount of bloom, no translucency, yellow ground colour, low to medium amount (20 to 60%) of orange red over colour, washed out over colour, absent to low amount of russet positioned around stalk cavity, small to medium sized lenticels, slightly prominent lenticels

FRUIT IN CROSS-SECTION: absent to very weak core line, yellowish flesh, aperture of locules open to closed

SEED: grey brown at maturity, ranging from globose and conical to obtuse in shape

REACTION TO DISEASES: resistant to scab (*Venturia inaequalis* (Cooke) Winter)

REACTION TO INSECTS: resistant to woolly apple aphid (*Eriosoma lanigerum* Hausmann)

**Origin and Breeding:** 'SJP84-5198' originated from a cross between 'Robusta 5' and 'Malling 27' ('Malling 13' x 'Malling 9'). The cross was conducted in 1975 at Agriculture and Agri-Food Canada (AAFC) in Saint-Jean-sur-Richelieu, Québec as part of the AAFC Apple and Rootstock Breeding Program. 'SJP84-5198' was selected based on its winter hardiness, ease of propagation, pest resistance and disease resistance. It has been evaluated on an ongoing basis since 1984 in several locations including Frelighsburg, Mont-Saint-Grégoire, l'Acadie and Dunham, Québec.

**Tests and Trials:** The test and trial for 'SJP84-5198' was conducted within stool beds and self rooted orchards at l'Acadie Research Sub Station of Agriculture and Agri-Food Canada in l'Acadie, Quebec during the summers of 2000 and 2003. The trial included 3-4 root stocks of each variety and 4 self rooted trees of the candidate variety, 5 self rooted trees of reference variety 'Malling 26' and 8 self rooted trees of reference variety 'Ottawa 3'. All colour characteristics were determined using the 2001 Royal Horticultural Society (RHS) colour chart and measured characteristics were based on ten measurements except for the measured leaf characteristics of 'Malling 26', which were based on 8 measurements.

**Comparison table for 'SJP84-5198'**

	'SJP84-5198'	'Malling 26'*	'Ottawa 3'*
<i>Flower diameter (cm)</i>			
mean	5.40	4.30	5.56
std. deviation	0.3	0.2	0.4

\* reference variety



Apple: 'SJP84-5198' (left) with reference varieties 'Ottawa 3' (center) and 'Malling 26' (right)

**Proposed denomination:** 'SJP84-5217'  
**Application number:** 05-4928  
**Application date:** 2005/06/01  
**Applicant:** Agriculture and Agri-Food Canada, St-Jean-sur-Richelieu, Québec  
**Breeder:** Shahrokh Khanizadeh, Agriculture and Agri-Food Canada, St-Jean-sur-Richelieu, Québec

**Varieties used for comparison:** 'Malling 26' (stool bed and self rooted trees) and 'Malling 9' (stool bed only)

**Summary:** 'SJP84-5217' is an apple rootstock variety which produces more basal shoots in the stool bed than the reference varieties. There is sparse pubescence on the upper half of the dormant one-year old shoots, whereas both 'Malling 26' and 'Malling 9' have very dense pubescence. 'SJP84-5217' has weakly shiny bark, whereas 'Malling 9' has strongly shiny bark. The leaves of 'SJP84-5217' have sparse to medium pubescence on the lower side, whereas 'Malling 26' has dense pubescence. Self rooted trees of 'SJP84-5217' produce very small fruit, compared to those of 'Malling 26' which are medium in size. 'SJP84-5217' fruit have a no eye basin or a raised eye and yellow ground colour, whereas 'Malling 26' fruit have a medium to deep eye basin and a green-yellow ground colour. In cross-section the fruit of 'SJP84-5217' have a weak core line, whereas 'Malling 26' has a moderate to strongly distinct core line.

**Description:**

TREE: very low suckering tendency, poor root anchorage, dwarfing

BASAL SHOOTS IN STOOL BED: weak vigour, medium number, straight

ONE-YEAR OLD SHOOT: sparse pubescence on upper half, weak shine on bark, weak to medium flexibility, many lenticels, lenticels medium in size, reddish brown colour on sunny side

LATERAL BUD: small, pointed tip, adpressed to axis, small bud support

GROWING TIP: red

SHOOT TIP LEAVES: concave to straight in cross section, very sparse pubescence on upper side, green on lower side

LEAVES: medium green, no lobing, medium size, oriented upwards to outwards, acuminate apex, serrate margin, weak glossiness on upper side, sparse pubescence on lower side, weak to medium anthocyanin on veins, no (or very weak) anthocyanin colouration on upper side

STIPULES: medium to large size

FRUIT: very small, weak ribbing, weak crowning at distal end, small to medium sized eye, eye closed, persistent calyx,

short to medium sepals, sepals overlapping at base, absent to very shallow eye basin or raised eye

FRUIT STALK: thin, very long

FRUIT SURFACE: smooth, weak bloom, yellow ground colour, low to medium amount of pinkish red overcolour, overcolour is solid and washed out, very low amount of russet around stalk cavity, lenticels small and very slightly prominent

FRUIT IN CROSS SECTION: yellowish flesh, weak core line, closed locules

SEED: brown at maturity, normal shape

REACTION TO INSECTS: Resistant to woolly apple aphid (*Eriosoma lanigerum* Hausmann)

REACTION TO DISEASES: Resistant to scab (*Venturia inaequalis* (Cooke) Winter)

**Origin and Breeding:** ‘SJP84-5217’ originated from a cross between ‘Robusta 5’ and ‘B.57490’, made in 1975 at Agriculture and Agri-Food Canada, St-Jean-sur-Richelieu, Quebec. The selection criteria and evaluation since 1975 for the variety has been on the basis of vigour, winter hardiness, disease resistance, dwarfing effect and the effect on the tree branch structure.

**Tests and Trials:** Tests and trials for ‘SJP84-5217’ were conducted at the L’Acadie Research Sub Station of Agriculture and Agri-Food Canada, St-Jean-sur-Richelieu, Quebec. The trial included 3 to 4 root stocks of each variety and 4 self rooted trees of each variety. The stoolbed was planted in 2003 and self rooted trees of the varieties were planted in an orchard in 1999 and allowed to develop into fruiting trees. Measurements and observations were recorded in 2005. Measured characteristics were based on 10 measurements.

**Comparison table for ‘SJP84-5217’**

	‘SJP84-5217’	‘Malling 26’*
<i>Dormant one-year old shoots: thickness (mm)</i>		
mean	4.98	5.30
std. deviation	0.9	0.7
<i>Dormant one-year old shoot: length of internode (mm) (at middle third of shoots)</i>		
mean	16.41	19.48
std. deviation	2.8	3.3

\* reference variety



Apple: ‘SJP84-5217’ (left) with reference varieties ‘Malling 9’ (center) and ‘Malling 26’ (right)

**Proposed denomination:** 'SJP84-5218'  
**Application number:** 03-3690  
**Application date:** 2003/05/22  
**Applicant:** Agriculture and Agri-Food Canada, Saint-Jean-sur-Richelieu, Québec  
**Breeder:** Shahrokh Khanizadeh, Agriculture and Agri-Food Canada, Saint-Jean-sur-Richelieu, Québec

**Varieties used for comparison:** 'Malling 26' and 'Ottawa 3'

**Summary:** 'SJP84-5218' is an apple rootstock variety which has a much higher tendency to produce suckers than both reference varieties. Pubescence on the upper half of dormant one-year-old shoots is more dense for 'SJP84-5218' than either reference variety. The dormant one-year-old shoots of 'SJP84-5218' are more flexible with fewer lenticels than those of 'Ottawa 3'. Pubescence on the upper side of the shoot tip leaves is sparse for 'SJP84-5218' while it is dense for 'Malling 26'. 'SJP84-5218' has larger leaves than 'Malling 26' and smaller leaves than 'Ottawa 3'. The upper side of the leaves of 'SJP84-5218' is glossier than that of the reference varieties. Pubescence on the lower side of the leaves is absent for 'SJP84-5218' while it is dense for 'Malling 26' and sparse for 'Ottawa 3'. Bud burst occurs earlier for 'SJP84-5218' than either reference variety. 'SJP84-5218' produces smaller fruit than 'Malling 26'. 'SJP84-5218' has a smaller eye and narrower stalk cavity than the reference varieties. The eye basin of 'SJP84-5218' is absent while it is medium deep for 'Malling 26' and very shallow to shallow for 'Ottawa 3'. The fruit stalk of 'SJP84-5218' is thicker and shorter than that of 'Ottawa 3' and thinner and longer than that of 'Malling 26'. 'SJP84-5218' has no bloom of the skin while it is weak for 'Malling 26' and weak to moderate for 'Ottawa 3'. The colour of the fruit flesh is yellowish for 'SJP84-5218' while it is white for 'Malling 26' and cream for 'Ottawa 3'. The mature seeds of 'SJP84-5218' are conical in shape while those of the reference varieties are globose.

**Description:**

TREE: end use as clonal rootstock, very high tendency to produce suckers, poor root anchorage, dwarfing effect

BASAL SHOOTS IN STOOL BED: intermediate vigour, few

DORMANT ONE-YEAR-OLD SHOOT: very dense pubescence on upper half, weak shine of bark, moderate to strong flexibility, moderate number of small to medium sized lenticels, predominantly reddish brown on sunny side

LATERAL BUD: small, pointed tip, adpressed position relative to axis of shoot, small support

GROWING TIP: white

SHOOT TIP LEAVES: concave to straight in cross section, sparse pubescence on upper side, pale green on lower side

LEAVES: no lobes, medium in size, outwards to downwards orientation, cuspidate apex, biserrate margin, moderate glossiness on upper side, no pubescence on lower side, weak anthocyanin colouration of veins, medium green upper side, absent to very weak anthocyanin colouration of upper side, small to medium sized stipules

FLOWER BUD: medium pink at full balloon stage

FLOWERS: single type, green pedicel

PETALS: oblong to broad ovate in shape, overlapping margins, purple red (RHS 58A) blush on upper side, irregular patterns of purple red (RHS 58A) on lower side

FRUIT: very small, globose to flat globose and oblong conical in shape, variably asymmetric to symmetric in side view, weak to strong ribbing, weak to moderate crowning at distal end, small eye with closed aperture, non-persistent and persistent calyx in mature fruit, short to medium length sepals, touching at base of sepals, either raised or flat distal end in relation to fruit surface, thin and long stalk, medium deep and narrow stalk cavity

FRUIT SURFACE: smooth, no bloom, no translucency, yellow ground colour, absent to low amount (<40%) of orange to pink over colour, blush over colour, absent to very low amount of russet positioned around stalk cavity and on cheeks, medium sized lenticels, slightly prominent lenticels

FRUIT IN CROSS-SECTION: yellowish flesh, absent or very weak core line, aperture of locules closed

SEED: brown at maturity, conical in shape

REACTION TO DISEASES: resistant to scab (*Venturia inaequalis* (Cooke) Winter)

REACTION TO INSECTS: resistant to woolly apple aphid (*Eriosoma lanigerum* Hausmann)

**Origin and Breeding:** ‘SJP84-5218’ originated from a cross between ‘Robusta 5’ and ‘Malling 27’ (‘Malling 13’ x ‘Malling 9’). The cross was conducted in 1975 at Agriculture and Agri-Food Canada (AAFC) in Saint-Jean-sur-Richelieu, Québec as part of the AAFC Apple and Rootstock Breeding Program. ‘SJP84-5218’ was selected based on its winter hardiness, ease of propagation, pest resistance and disease resistance. It has been evaluated on an ongoing basis since 1984 in several locations including Frelighsburg, Mont-Saint-Grégoire, l’Acadie and Dunham, Québec.

**Tests and Trials:** The test and trial for ‘SJP84-5218’ was conducted within stool beds and self rooted orchards at l’Acadie Research Sub Station of Agriculture and Agri-Food Canada in l’Acadie, Quebec during the summers of 2000 and 2003. The trial included 3-4 root stocks of each variety and 4 self rooted trees of the candidate variety, 5 self rooted trees of reference variety ‘Malling 26’ and 8 self rooted trees of reference variety ‘Ottawa 3’. All colour characteristics were determined using the 2001 Royal Horticultural Society (RHS) colour chart and measured characteristics were based on ten measurements except for the measured leaf characteristics of ‘Malling 26’, which were based on 8 measurements.



Apple: ‘SJP84-5218’ (left) with reference varieties ‘Ottawa 3’ (center) and ‘Malling 26’ (right)

**Proposed denomination:** ‘SJP84-5231’

**Application number:** 05-4930

**Application date:** 2005/06/01

**Applicant:** Agriculture and Agri-Food Canada, St-Jean-sur-Richelieu, Québec

**Breeder:** Shahrokh Khanizadeh, Agriculture and Agri-Food Canada, St-Jean-sur-Richelieu, Québec

**Varieties used for comparison:** ‘Malling 26’ (stool bed and self rooted trees) and ‘Malling 9’ (stool bed only)

**Summary:** ‘SJP84-5231’ is an apple rootstock variety with weakly shiny bark, whereas ‘Malling 9’ has strongly shiny bark. The leaves of ‘SJP84-5231’ have sparse to medium pubescence on the lower side, whereas ‘Malling 26’ has dense pubescence and the leaves of ‘Malling 9’ are glabrous on the lower side. Self rooted trees of ‘SJP84-5231’ produce very small fruit, compared to those of ‘Malling 26’ which are medium in size. The fruit of ‘SJP84-5231’ have more prominent lenticels than the fruit of either reference variety. ‘SJP84-5231’ fruit have a raised eye, whereas ‘Malling 26’ fruit have a medium to deep eye basin. In cross-section the fruit of ‘SJP84-5231’ have a very weak core line, whereas ‘Malling 26’ has a moderate to strongly distinct core line.

**Description:**

TREE: very low suckering tendency, poor root anchorage, very dwarfing

BASAL SHOOTS IN STOOL BED: medium vigour, many, straight

ONE-YEAR OLD SHOOT: dense pubescence on upper half, weak shine on bark, weak flexibility, medium number of lenticels, lenticels medium to large in size, red to reddish brown colour on sunny side

LATERAL BUD: small, pointed tip, adpressed to axis, small bud support

GROWING TIP: white

SHOOT TIP LEAVES: concave in cross section, sparse pubescence on upper side, yellowish green on lower side

LEAVES: medium green, no lobing, small size, oriented outwards to downwards, acuminate apex, serrate margin, weak glossiness on upper side, sparse to medium pubescence on lower side, weak anthocyanin on veins, no (or very weak) anthocyanin colouration on upper side

STIPULES: small size

FLOWER BUD: medium pink (in full balloon stage)

FLOWERS: single, green pedicel

PETALS: white, broad ovate in shape, overlapping margins

FRUIT: very small, globose shape, weak to medium ribbing, weak crowning at distal end, medium sized eye, eye closed, persistent calyx, short to medium sepals, sepals overlapping at base, no eye basin (raised eye)

FRUIT STALK: thin, long to very long, stalk cavity shallow to medium depth and narrow to medium in width

FRUIT SURFACE: smooth, moderate bloom, green-yellow ground colour, low to medium amount of orange overcolour, overcolour is solid and washed out, low amount of russet around stalk cavity, lenticels medium sized and prominent

FRUIT IN CROSS SECTION: greenish flesh, very weak to weak core line, closed locules

SEED: brown at maturity, normal shape

REACTION TO INSECTS: Resistant to woolly apple aphid (*Eriosoma lanigerum* Hausmann)

REACTION TO DISEASES: Resistant to scab (*Venturia inaequalis* (Cooke) Winter)

**Origin and Breeding:** 'SJP84-5231' originated from a cross between 'Robusta 5' and 'Malling 27', made in 1975 at Agriculture and Agri-Food Canada, St-Jean-sur-Richelieu, Quebec. The selection criteria and evaluation since 1975 for the variety has been on the basis of vigour, winter hardiness, disease resistance, dwarfing effect and the effect on the tree branch structure.

**Tests and Trials:** Tests and trials for 'SJP84-5231' were conducted at the L'Acadie Research Sub Station of Agriculture and Agri-Food Canada, St-Jean-sur-Richelieu, Quebec. The trial included 3 to 4 root stocks of each variety and 4 self rooted trees of each variety. The stoolbed was planted in 2003 and self rooted trees of the varieties were planted in an orchard in 1999 and allowed to develop into fruiting trees. Measurements and observations were recorded in 2005. Measured characteristics were based on 10 measurements.

**Comparison table for 'SJP84-5231'**

	'SJP84-5231'	'Malling 26'*
<i>Dormant one-year old shoots: thickness (mm)</i>		
mean	5.3	5.3
std. deviation	0.7	0.7
<i>Dormant one-year old shoot: length of internode (mm) (at middle third of shoots)</i>		
mean	15.82	19.48
std.deviation	0.7	3.3

\* reference variety



Apple: 'SJP84-5231' (left) with reference varieties 'Malling 9' (center) and 'Malling 26' (right)

**Proposed denomination:** 'SuperMac'  
**Application number:** 03-3687  
**Application date:** 2003/05/22  
**Applicant:** Agriculture and Agri-Food Canada, St-Jean-sur-Richelieu, Québec  
**Breeder:** Shahrokh Khanizadeh, Agriculture and Agri-Food Canada, St-Jean-sur-Richelieu, Québec

**Varieties used for comparison:** 'Macspur' and 'Spartan'

**Summary:** 'SuperMac' is a fruiting apple variety which produces fruit both on shoots and spurs, whereas 'Macspur' produces fruit on spurs only. The fruit of 'SuperMac' is globose in shape, while 'Macspur' and 'Spartan' both have flat globose (oblate) fruit. 'Spartan' fruit have more prominent ribbing than 'SuperMac'. The fruit skin of 'SuperMac' is not as waxy as 'Spartan' and the ground colour is green, compared with 'Spartan' which has a green-yellow ground colour. There is significantly less overcolour on 'SuperMac' than either reference variety. Lenticels are prominent to very prominent on the skin of 'SuperMac' fruit, while the lenticels are moderately prominent in 'Macspur' and slightly prominent in 'Spartan'. 'SuperMac' matures earlier than both 'Macspur' and 'Spartan'. The flesh of 'SuperMac' has significantly less tendency to turn brown after being cut than the flesh of 'Macspur' and 'Spartan'.

**Description:**

**TREE:** high vigour, upright to spreading habit, medium branch frequency, strong branches, bearing branches at 90 degrees or less to trunk, major fruit load on both spurs and shoots

**ONE-YEAR OLD SHOOT:** dense pubescence on upper half, many to very many lenticels, lenticels large

**LATERAL BUD:** medium size, pointed to rounded tip, adpressed to axis, small to medium bud support

**GROWING TIP:** white

**SHOOT TIP LEAVES:** concave in cross section, sparse pubescence on upper side

**LEAVES:** medium green, no lobing, medium to large size, oriented upwards, acuminate apex, serrate margin, weak glossiness on upper side, dense pubescence on lower side, weak anthocyanin on veins, no (or very weak) anthocyanin colouration on upper side

**STIPULES:** medium to large size

**FLOWER BUD:** white (in full balloon stage) with irregular patterns of reddish purple

**FLOWERS:** single, green pedicel

PETALS: pinkish purple blush, oblong to slightly rounded, touching to slightly overlapping margins

FRUIT: large, globose shape, asymmetric, weak ribbing, medium crowning at distal end, medium to large eye, eye half to fully open, persistent calyx, short to long sepals, sepals free at base, moderately deep and moderately wide eye basin  
FRUIT STALK: thin to medium in thickness, short to medium length, stalk cavity shallow to medium depth and broad in width

FRUIT SURFACE: smooth, moderate bloom, medium waxiness, green ground colour, medium to high amount of pink red to brownish overcolour, overcolour is streaked and solid, very low amount of russet around stalk cavity, lenticels large and very prominent

FRUIT IN CROSS SECTION: white flesh, weak core line, open and closed locules

FRUIT SETTING: persistent, high to very high yield, medium maturity date

FRUIT QUALITY: no cracking of skin in stem cavity, very weak browning of flesh, firm flesh, fine texture, moderate juiciness

SEED: brown at maturity, normal shape

**Origin and Breeding:** 'SuperMac' originated from a cross between 'McIntosh' and '9AR5T17' (PRI674), made in 1971 at Agriculture and Agri-Food Canada, St-Jean-sur-Richelieu, Quebec. The selection criteria and evaluation since 1979 for the variety has been on the basis of mildew and scab resistance, large fruit size, fruit uniformity and storage and shelf life.

**Tests and Trials:** Tests and trials for 'SuperMac' were conducted in 2001 at the L'Acadie Research Sub Station of Agriculture and Agri-Food Canada, St-Jean-sur-Richelieu, Quebec. The trial included 4 to 7 trees of each variety. The trees were grown on 'Malling 26' single coat rootstock. Measured characteristics were based on 10 measurements.

**Comparison table for 'SuperMac'**

	'SuperMac'	'Macspur'*	'Spartan'*
<i>Dormant one-year old shoots: thickness (mm)</i>			
mean	4.7	3.7	4.4
std. deviation	0.6	0.3	0.5
<i>Dormant one-year old shoot: length of internode (mm) (at middle third of shoots)</i>			
mean	30.70	25.60	28.89
std. deviation	6.9	4.1	4.5
<i>Leaf length (4<sup>th</sup> to 6<sup>th</sup> fully expanded leaf) (cm)</i>			
mean	9.0	8.5	9.8
std. deviation	0.6	1.1	0.9
<i>Leaf width (cm)</i>			
mean	5.3	5.9	7.2
std. deviation	0.4	0.6	0.9
* reference variety			





Apple: 'SuperMac' (right) with reference varieties 'Macspur' (left) and 'Spartan' (center)