



APPLICATIONS UNDER EXAMINATION

APPLE

APPLE (*Malus*)

Proposed denomination: 'KAR27'
Application number: 09-6626
Application date: 2009/04/22
Applicant: Agriculture & Agri-Food Canada, Kentville, Nova Scotia
Agent in Canada: Agriculture & Agri-Food Canada, Lacombe, Alberta
Breeder: Charles G. Embree, Agriculture & Agri-Food Canada, Kentville, Nova Scotia
David Crowe, Agriculture & Agri-Food Canada, Kentville, Nova Scotia

Varieties used for comparison: 'Novamac' and 'Liberty'

Summary: *There are absent or very few lenticels on the one year old shoot of 'KAR27' whereas there are few on 'Novamac' and many on 'Liberty'. The length/width ratio of 'KAR27' is large whereas it is medium for both reference varieties. 'KAR27' has a smaller flower diameter than that of both reference varieties. The stigma is positioned below the anthers in 'KAR27' and are level with the anthers in both reference varieties. The fruit height of 'KAR27' is shorter than that of both reference varieties. The fruit of 'KAR27' are obloid in shape whereas it is conic in both reference varieties. The relative area of over colour of skin of 'KAR27' is very large whereas it is medium sized on both reference varieties. The eye basin of 'KAR27' is shallow whereas it is medium depth in 'Novamac' and deep in 'Liberty'.*

Description:

TREE: medium vigour, ramified, upright growth habit, bearing primarily on spurs

ONE-YEAR OLD SHOOT: medium thickness, short internodes, dark brown on sunny side, medium density of pubescence on distal half of shoot, absent or very few lenticels

LEAF: upwards attitude in relation to shoot, large length/width ratio, medium green, serrate type 1 margin on upper half, absent or very weak pubescence on lower side

PETIOLE: medium extent of anthocyanin colouration at base

FLOWER: predominantly light pink at balloon stage, overlapping arrangement of petals, stigma positioned below anthers, begins flowering mid-season

YOUNG FRUIT: very large extent of anthocyanin overcolour

FRUIT: small, small height/diameter ratio, obloid shape, absent or weak ribbing, absent or weak crowning at calyx end, small eye, short sepals, mid-season harvest and eating maturity

FRUIT SKIN: strong glaucosity, absent or weak greasiness, yellow ground colour, medium-sized area of russet around stalk attachment, absent or small area of russet on cheeks and around eye basin, medium number of small lenticels

OVERCOLOUR: relatively very large, dark purple red, pattern solid flush with weakly defined narrow stripes

STALK: long and thick

STALK CAVITY: shallow and medium width

EYE BASIN: shallow and medium width

FRUIT FLESH: medium firmness, cream, moderately open aperture of locules in transverse section

FRUIT QUALITY: absent or very weak browning of the flesh one hour after being cut, medium percentage of malic acid and total sugars in the juice

DISEASE REACTION: resistant to apple scab (*Venturia inaequalis*)

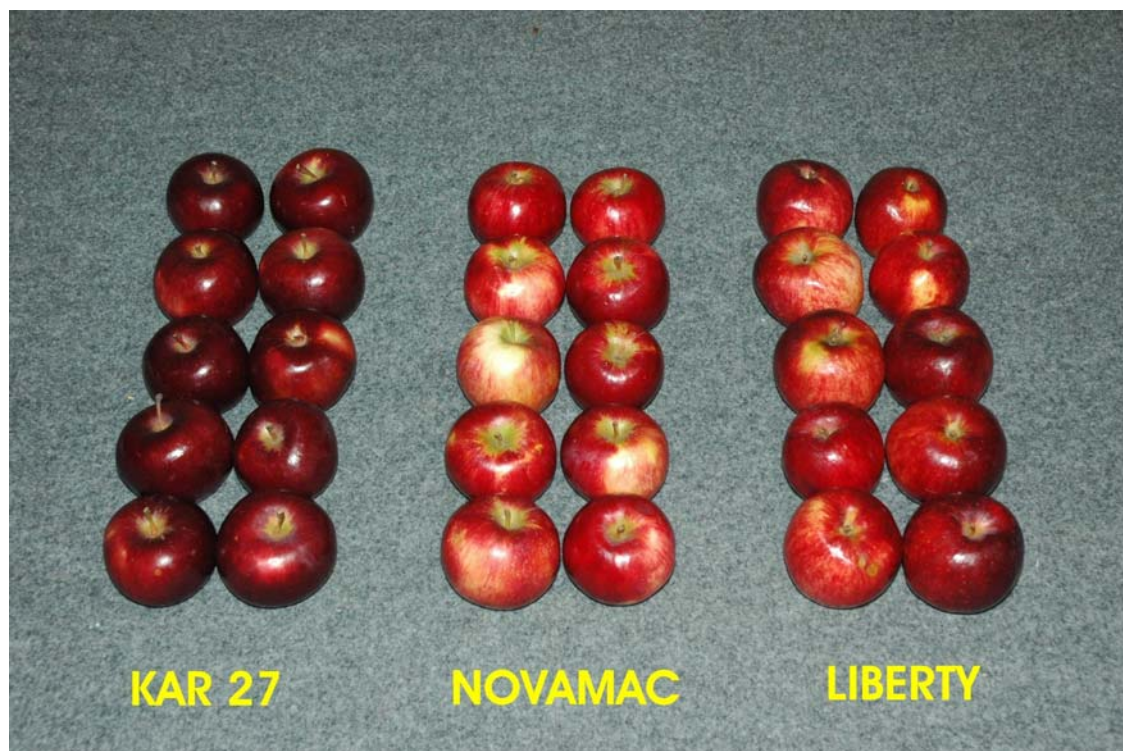
Origin and Breeding: 'KAR27' arose from the cross 'C13-05-01' as the female parent with 'S34-01-19' as the male parent which was conducted in 1978 at the Agriculture & Agri-Food Research Station in Kentville, Nova Scotia. Seedlings of the initial cross were grafted on the semi-dwarf rootstock MM.106 and were planted out in a replicated trial in 1978. The selection criteria included freedom from apple scab and other diseases, fruit colour and flavour.

Tests and Trials: Tests and trials were conducted in 2008 and 2009 at the Agriculture & Agri-Food Horticulture Research Center in Kentville, Nova Scotia. The original planting consisted of 7 trees of 'KAR27', 12 trees of 'Novaspy' and 9 trees of 'Liberty'. The trial was planted in 1998 in a RCB design, with trees spaced 3.5 meters apart within the row and rows spaced 5.0 meters apart.

Comparison table for 'KAR27'

	'KAR27'	'Novamac'*	'Liberty'*
<i>Leaf length (cm)</i>			
mean	8.65	7.39	7.57
std. deviation	1.03	0.61	0.77
<i>Petiole length (mm)</i>			
mean	36.29	33.80	23.69
std. deviation	5.60	4.83	4.24
<i>Flower diameter (when petals pressed in horizontal position) (cm)</i>			
mean	4.21	4.66	5.03
std. deviation	0.33	0.32	0.32
<i>Fruit height (cm)</i>			
mean	5.84	6.24	6.75
std. deviation	0.31	0.38	0.40

*reference varieties



Apple: 'KAR27' (left) with reference varieties 'Novamac' (centre) and 'Liberty' (right)

Proposed denomination: 'KAS22'
Application number: 09-6625
Application date: 2009/04/22
Applicant: Agriculture & Agri-Food Canada, Kentville, Nova Scotia
Agent in Canada: Agriculture & Agri-Food Canada, Lacombe, Alberta
Breeder: Charles G. Embree, Agriculture & Agri-Food Canada, Kentville, Nova Scotia
David Crowe, Agriculture & Agri-Food Canada, Kentville, Nova Scotia

Varieties used for comparison: 'Novaspy' and 'Liberty'

Summary: *The tree of 'KAS22' has an upright growth habit whereas 'Novaspy' has a weeping growth habit and 'Liberty' has a spreading one. The length/width ratio of the leaf of 'KAS22' is large whereas it is medium on both reference varieties. The fruit diameter of 'KAS22' is larger than that of both reference varieties. The overcolour of skin on the fruit of 'KAS22' is a solid red flush with weakly defined stripes whereas it is orange red with stripes only on 'Novaspy' and is a purple red weakly defined flush with strongly defined stripes on 'Liberty'.*

Description:

TREE: strong vigour, ramified, spreading growth habit, bearing primarily on spurs

ONE-YEAR OLD SHOOT: medium thickness, short internodes, light brown on sunny side, dense pubescence on distal half of shoot, medium number of lenticels

LEAF: upwards attitude in relation to shoot, large length/width ratio, medium green, serrate type 2 margin on upper half, absent or very weak pubescence on lower side

PETIOLE: small extent of anthocyanin colouration at base

FLOWER: predominantly dark pink at balloon stage, overlapping arrangement of petals, stigma positioned above anthers, begins flowering mid-season

YOUNG FRUIT: large extent of anthocyanin overcolour

FRUIT: medium size, medium height/diameter ratio, obloid shape, moderate ribbing, moderate crowning at calyx end, medium-sized eye, medium length sepals, mid-season harvest maturity and early eating maturity

FRUIT SKIN: moderate glaucosity, absent or weak greasiness, yellow ground colour, large area of russet around stalk attachment, absent or small area of russet on cheeks and around eye basin, medium number of medium sized lenticels

OVERCOLOUR: relatively large, medium red, pattern solid flush with weakly defined broad stripes

STALK: medium length and thickness

STALK CAVITY: medium depth and broad

EYE BASIN: medium depth and width

FRUIT FLESH: firm, yellowish, moderately open aperture of locules in transverse section

FRUIT QUALITY: strong browning of the flesh one hour after being cut, medium percentage of malic acid and total sugars in the juice

DISEASE REACTION: moderately resistant to apple scab (*Venturia inaequalis*)

Origin and Breeding: 'KAS22' arose from the cross 'S28-18-36' as the female parent with 'Stark Splendor' as the male parent which was conducted in 1975 at the Agriculture & Agri-Food Research Station in Kentville, Nova Scotia. Seedlings of the initial cross were grafted on the semi-dwarf rootstock MM.106 and were planted in a replicated trial in 1979. The selection criteria included fruit size, firmness, flavour, texture, storage adaptability, flavour and texture retention following storage and resistance to disease and insects.

Tests and Trials: Tests and trials were conducted in 2008 and 2009 at the Agriculture & Agri-Food Horticulture Research Center in Kentville, Nova Scotia. The original planting consisted of 5 trees of 'KAS22', 12 trees of 'Novaspy' and 9 trees of 'Liberty'. The trial was planted in 1998 in a RCB design, with trees spaced 3.5 meters apart within the row and rows spaced 5.0 meters apart.

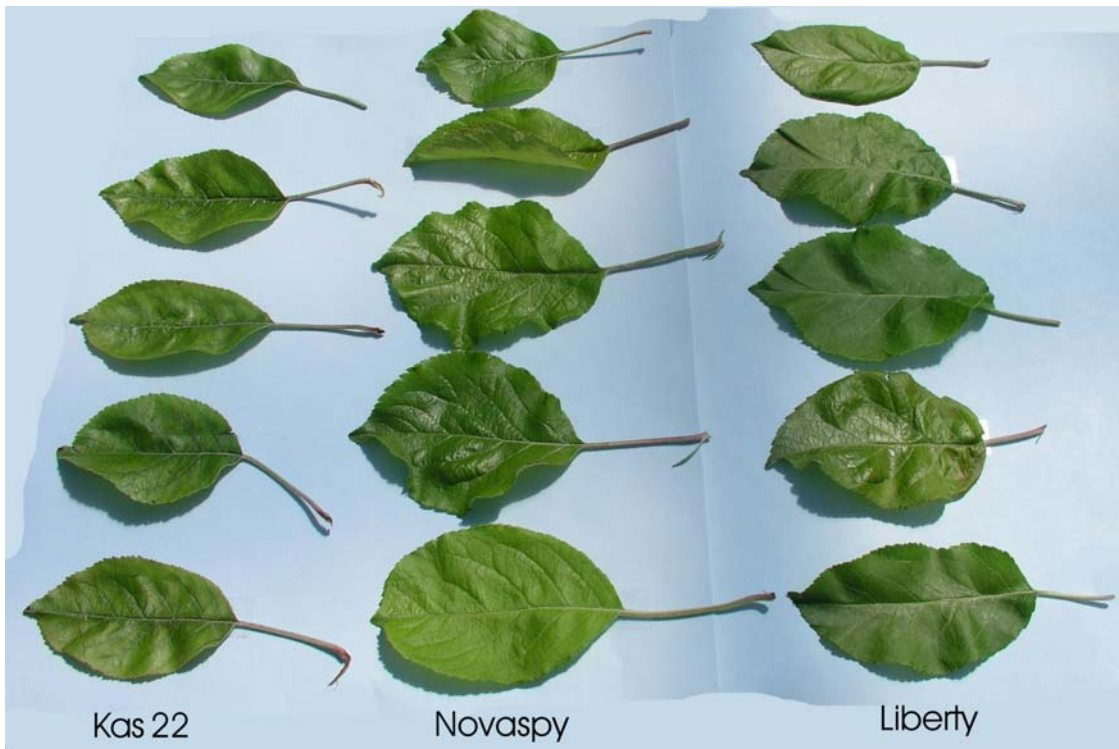
Comparison table for 'KAS22'

	'KAS22'	'Novaspy'*	'Liberty'*
<i>Leaf length (cm)</i>			
mean	6.74	7.25	7.57
std. deviation	0.63	0.99	0.77
<i>Leaf width (cm)</i>			
mean	3.21	4.89	4.89
std. deviation	0.54	0.47	0.68
<i>Flower diameter (when petals pressed in horizontal position) (cm)</i>			
mean	5.04	4.34	5.03
std. deviation	0.27	0.22	0.32
<i>Fruit diameter (cm)</i>			
mean	7.99	7.45	7.24
std. deviation	0.30	0.47	0.35

*reference varieties



Apple: 'KAS22' (left) with reference varieties 'Novaspy' (centre) and 'Liberty' (right)



Apple: 'KAS22' (left) with reference varieties 'Novaspy' (centre) and 'Liberty' (right)