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'Mohawk' Strawberry

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The 'Mohawk' strawberry (*Fragaria ×ananassa* Duch.) was introduced in Feb. 1994 by the U.S. Dept. of Agriculture and the Horticultural Research Institute of Ontario to be available for propagation by American and Canadian nurseries. 'Mohawk' is noted for its attractive, flavorful, early ripening fruit produced on a vigorous plant with resistance to red stele root rot, incited by *Phytophthora fragariae* Hickman. 'Mohawk' ripens earlier and is improved in some important fruit and plant characteristics, when compared to the standard early ripening cultivars Veestar in Ontario and Earliglow at several northeastern U.S. sites. 'Mohawk', in 1994 tests at Beltsville, Md., for example, was superior to its 'Earliglow' parent in total and early yield, fruit size, plant stand, vigor, and leaf disease reaction, while equalling 'Earliglow' in fruit appearance, color, flavor, and "skin" toughness.

'Mohawk' is suggested for trial in southeastern Canada and the northeastern United States as a vigorous, disease-tolerant, high-quality, early ripening strawberry for fresh shipping or local markets. 'Mohawk' was named to honor the Iroquoian native American people whose home centered in the Mohawk River Valley of New York State.

Origin and testing history

'Mohawk', tested as MDUS 5122, was a seedling from the MDUS-4587 x 'Earliglow' cross made by G.J.G. at Beltsville in 1979 (Fig. 1). Seedlings from this cross were screened for resistance to a five-race composite of the red stele root-rot-inciting fungus, *P. fragariae*, in a greenhouse test at Beltsville during Winter 1979–80. Resistant seedlings were transplanted in Spring 1980 to a field at the Univ. of Maryland experimental farm at Wye Research and Education Center, Queenstown, on Maryland's Eastern Shore. 'Mohawk' was selected in 1981 by G.J.G., A.D.D., and H.J.S. Plants of the selection were retested for reaction to the same five races of *P. fragariae*.

'Mohawk' was evaluated at Beltsville during 1983–88 and 1993–94, and was tested also in Pennsylvania, Ohio, Minnesota, New Jersey, Missouri, and Ontario. After the 1988 season at Beltsville, 'Mohawk' was not considered for continued testing, as it did not appear sufficiently superior to its 'Earliglow' parent. In some seasons, 'Mohawk' produced a few somewhat asymmetric ("rough") primary fruit. Subsequent tests in Ontario and a retesting at Beltsville indicated that there was a commercial niche for this selection. 'Mohawk' plants were increased by micropropagation from virus-negative mother stocks, and were released to nursery operators in 1994; it will be introduced commercially in 1995 and 1996.

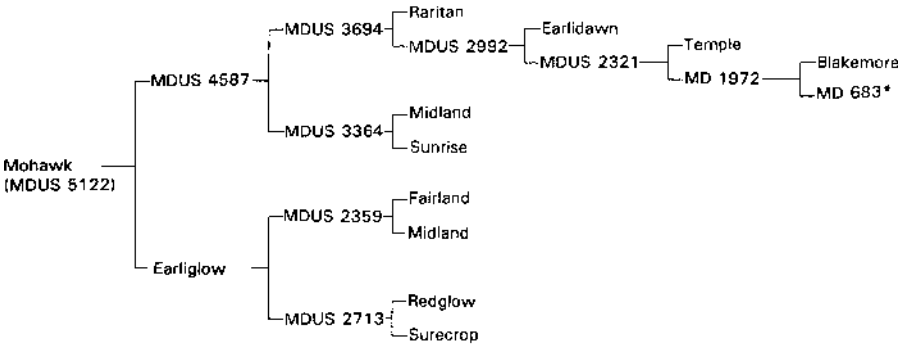

Fig. 1. Pedigree of 'Mohawk' strawberry.

Fig. 2. Fruit of 'Mohawk' strawberry.

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Technical description

Plants. Plants are medium to large, with dense crowns bearing many petioles and leaves. Petioles are erect, thick, almost glabrous at maturity. Leaflets are medium in size, medium green on top and light green below with prominent midveins, broadly elliptic with marginal serrations varying from sharp to rounded. There is abundant production of medium-thick runners that have very fine, sparse hairs and bear sharply serrate subtending three-leaflet bracts at the first and the second runner nodes.

Fruit. Fruit (Fig. 2) are medium-large, irregular short conic, glossy, and have a deep scarlet exterior and pink interior. Achenes are yellow and recessed; calyx consists of two whorls of narrow pointed sepals that are clasping to partially reflexed. Flavor is mild, sweet, and subacidic, with a pleasant aftertaste; flesh is juicy but firm-textured; and skin is firm.

Production

'Mohawk' was evaluated at Beltsville with several standard cultivars (Galletta, 1989) in 1.5- or 3-m-long plots, with 1 m between plots, in a matted-row system. Each entry was replicated four times in a randomized complete-block design. At Simcoe and Vineland, Ont., cultivar standards (Dale, 1989) and selections were planted to nine-plant plots with 0.6 m between plants and 1.2 m between rows and permitted to develop into matted rows. Each entry was replicated four times in a randomized complete-block design.

In the Mid-Atlantic region, 'Mohawk' test plots yielded between 14 and 24 t·ha^{-1} during 1987–94 (Table 1; Goulart, 1990). 'Mohawk' total fruit yield is normally about the same as that of 'Earliglow', 'Redchief', 'Lateglow', 'Raritan', and 'Lester', but usually less than that of 'Allstar', 'Honeoye', 'Glooscap', and 'Kent' (Table 1; Goulart, 1990). In the heat-shortened 1994 season at Beltsville (Table 1), however, 'Mohawk' yielded as well as the normally heavier-yielding 'Allstar' and 'Jewel' (Table 1). At Simcoe, total yields of 'Mohawk' were less than those for 'Veestar' and 'Cavendish' in 1991, and considerably less than all of the other cultivars in 1992 (Table 2). Lower yields of 'Mohawk' in 1992 may have been due to loss of primary flowers following a late freeze (A. Dale, unpublished). At Vineland, 'Mohawk' yielded less than 'Veestar' and nearly the same as 'Redcoat', 'Cavendish', and 'Allstar' in 1991 (Table 2). Yields in 1992 were not significantly different ($P \leq 0.01$) among the cultivars (Table 2). Yields of 'Mohawk' in Missouri (3.8 kg) were somewhat less than those of 'Allstar' (5.1 kg), 'Earliglow' (4.9 kg), and 'Lester' (4.7 kg) and significantly less than those of 'Honeoye' (9.8 kg), 'Kent' (6.9 kg), and 'Redchief' (6.1 kg) for 3 m of row (Kaps et al., 1990), indicating that 'Mohawk' may not be well suited to the South Central region.

Weights of individual 'Mohawk' fruit at Beltsville averaged 11 to 12 g, the same as or larger than those of 'Earliglow' and about the same as those of 'Honeoye', 'Allstar', 'Lester', and 'Kent' (Table 1). The average weight of the largest 'Mohawk' fruit (20 to 24 g, determined from 10- or 25-berry random samples at each harvest) was usually larger than that of 'Earliglow' and about the same as primary fruit of the larger-fruited cultivars such as 'Allstar', 'Lester', 'Lateglow', and 'Kent' (Table 1). At Simcoe and Vineland in 1991 and 1992, mean fruit weights of 'Mohawk' were about the same as those of 'Veestar', 'Governor Simcoe', and 'Redcoat', but less than those of 'Cavendish' and 'Allstar' (Table 2). The mean fruit weight of 'Mohawk' (8.5 g) at Mountain Grove, Mo., was less than that of 'Allstar', about the same as 'Redchief', and higher than that of 'Earliglow' (Kaps et al., 1990). In New Jersey, 'Mohawk' fruit averaged 8.0 g each, which was less than 'Raritan' (9.8 g) and 'Lester' (8.4 g), but slightly higher than 'Earliglow' (7.6 g) (Goulart, 1990).

The marketable yield (total yield less culls due to disease, insect damage, and small or misshapen fruit) of 'Mohawk' at Beltsville usually was similar to that of 'Earliglow', except in years when it had many rough primary fruit (1988, Table 1), but never as high as that of the very symmetrical and sound-fruited

Table 1. Fruit production of 'Mohawk' and several standard strawberry cultivars at Beltsville, Md., in 1987, 1988, and 1994.

Cultivar	Yield (t·ha^{-1})	Berry wt (g) Fruit Large	Berry wt (g) Fruit Overall mean	Marketable yield (%)	Cumulative % fruit yielded at harvest 3	Cumulative % fruit yielded at harvest 4
			1987			
Mohawk	14 b[z]	23.3 a	11.9 a	78 b	89 a	96 a
Earliglow	23 a	16.3 b	9.7 b	82 ab	70 b	85 ab
Lester	16 b	21.5 a	12.3 a	88 a	59 b	77 b
Allstar	28 a	20.8 b	13.6 a	78 b	18 c	43 c
			1988			
Mohawk	24 ef	24.2 a	12.4 b–d	77 f	65 a	86 a
Earliglow	26 ef	22.5 a	12.0 b–d	82 c–e	51 b	69 b
Lester	32 bc	21.4 a	12.5 b–d	84 b–d	32 c	47 cd
Redchief	24 ef	18.9 b	10.3 e	77 f	32 c	54 c
Honeoye	30 c–e	24.4 a	13.3 a–c	78 de	33 c	55 c
Allstar	34 a–c	25.2 a	15.1 a	86 a–c	8 e	32 c
Glooscap	41 a	22.1 a	11.5 cd	71 g	12 d	27 ef
Kent	38 ab	25.9 a	13.0 a–c	77 f	5 e	21 fg
Lateglow	22 f	23.3 a	12.3 b–d	87 a	1 e	17 g
			1994 (condensed season)			
Mohawk	17 a	20.5 ab	11.2 a–c	78 cd	29 b[y]	55 bc[y]
Earliglow	10 a	15.0 b	8.7 c	70 d	48 a	77 a
Lester	14 a	21.4 a	10.9 a–c	84 ab	30 b	59 b
Allstar	14 a	20.5 ab	12.2 a	89 a	12 c	41 cd
Jewel	15 a	19.4 ab	11.6 ab	80 bc	8 c	29 d

[z]Mean separation by Duncan's multiple range test. Values in columns followed by the same letter are not significantly different at $P \leq 0.05$.

[y]The dense plant beds and heavier yields of 'Mohawk' in 1994 slowed down its cumulative ripening, but it had a 38% to 107% higher yield than 'Earliglow' over the first four harvests (data not shown); hence, it still had higher early yields than 'Earliglow'.

Table 2. Mean fruit yield, berry weight, and harvest date indices of 'Mohawk' and several standard strawberry cultivars at Simcoe and Vineland, Ont., in 1991 and 1992.

Cultivar	Yield (t·ha^{-1}) 1991	Yield (t·ha^{-1}) 1992	Berry wt (g) 1991	Berry wt (g) 1992	Harvest index dates: 25% ripe, Harvest date (1.0 = 1 June) 1991	25% ripe 1992	95% ripe 1991	95% ripe 1992
				Simcoe				
Mohawk	12	9	8.6	7.7	0.8[z]	12.3	10.3	26.1
Veestar	18	18	7.0	7.0	2.9	14.7	17.2	28.8
Cavendish	20	26	12.8	11.5	5.1	19.6	19.5	31.0
Governor Simcoe	15	26	8.0	8.8	7.1	21.5	18.5	38.0
Allstar	15	18	8.8	10.8	7.1	19.2	19.7	36.6
$LSD_{0.01}$	4.3	7.5	1.7	2.5	1.5	2.6	1.4	3.3
				Vineland				
Mohawk	14	13	9.3	9.3	3.7	16.4	14.2	29.4
Veestar	22	18	8.5	8.0	6.5	18.9	15.3	28.4
Cavendish	17	12	15.6	13.1	6.3	23.0	18.1	34.4
Redcoat	19	18	8.9	7.6	7.4	20.8	16.3	31.7
Allstar	17	11	11.7	13.2	9.2	22.6	20.5	34.7
$LSD_{0.01}$	6.1	NS	2.2	2.2	1.9	3.4	3.0	5.5

[z]Harvest date values are the mean number of days after 1 June when 25% or 95% of the crop for a particular cultivar was harvested in the stated year and location: hence, in 1991 at Simcoe, 25% of the 'Mohawk' crop was ripe by 1 June, whereas the same proportion of the 'Veestar' crop was ripe on 3 June.

[NS]Nonsignificant.