'AC Harflame' Nectarine

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'AC Harflame' nectarine [*Prunus persica* (L.) Batsch] was released for the Ontario fresh market in 1996. 'AC Harflame' is an early season nectarine that begins ripening 1 week earlier than 'Redhaven' peach and 3 days before 'Harblaze' nectarine. This cultivar was recommended for commercial introduction in Canada by members of the Western Ontario Fruit Testing Association (WOFTA) on the basis of its generally favorable performance in regional trials in southern Ontario coordinated by WOFTA. 'AC Harflame' is a cold-hardy, disease-resistant, attractively colored nectarine of medium size and good quality suitable for the fresh market. It likely will be adapted to northern regions where 'Redhaven' peach is grown successfully. An application for Plant Breeders' Rights in Canada was submitted in 1995 (application no. 95–647). The agent in Canada for 'AC Harflame' is Inter-Plant Patent Marketing, Niagara-on-the-Lake, Ontario.

Origin

'AC Harflame' originated at Harrow from a 1979 cross between 'Fantasia' x H7343017 (Fig. 1). Selected in 1983, 'AC Harflame' was then propagated on peach seedling rootstocks beginning in 1984 and testing began at the Ridge Farm at the Harrow Research Centre in 1986 under the designation HW107. Trees of HW107 were placed in regional trials in southern Ontario with members of WOFTA, beginning in 1991. The name 'AC Harflame' signifies its Agriculture Canada–Harrow origin and the bright orange-red of the fruit when ripe.

Description

Trees of 'AC Harflame' are vigorous, semi-erect with medium to wide crotch angles. The reddish-brown bark in midsummer acquires a silvery sheen in midwinter. Leaves are lanceolate in shape, medium to large, and dark green. Based on a random sample of 30 leaves, each taken from the midpoint of 30 randomly selected shoots, the average blade length was 143 mm, width was 35 mm, and petiole length was 10 mm. Leaf margins are serrulate and there are typically two or more reniform-shaped petiolar glands near the leaf blade. Flowering

shoots have weak anthocyanin coloration in midsummer and flower bud density is high, usually two per node. Flowering begins intermediate between early ('Fantasia') and late ('Hardired') blooming cultivars, and petals are showy, rounded, large, and medium pink with no striping. Stamens are generally shorter than the petals while the stigma is above the anthers. Pollen is abundant. The flowering period is of medium duration, typically 5 to 7 days.

Fruit of 'AC Harflame' matures in early to mid-season, 7 days before 'Redhaven' peach and 3 days before 'Harblaze' nectarine. The average fruit development period is 94 days. 'AC Harflame' ripens uniformly, resulting in a short picking season of ≈5 days, and there is very little preharvest fruit drop. Based on a random sample of 30 firm-ripe fruit, 'AC Harflame' had medium to large fruit (64 mm long, 63 mm wide, 142 g) and a medium to large pit (8 g). The oblate fruit (Fig. 2) has a dimpled tip, shallow suture, and a narrow stem cavity of medium depth. The ground color of the skin is yellow and a uniform, bright, glossy, red blush covers ≈75% of the fruit surface. The skin is medium-thick and adheres weakly to the flesh. The yellow flesh is firm and free of anthocyanin coloration in the flesh and around the stone. The melting flesh is smooth and juicy and the flavor is well balanced between sweetness and acidity. We rate the flavor quality as medium to good and fully acceptable for

Fig. 1. Pedigree of 'AC Harflame' nectarine.

Fig. 2. Fruit of 'AC Harflame' nectarine (scale in centimeters).

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the fresh market. The tan stone is elongated, deeply grooved and pitted, and does not adhere to the flesh. There is a very low incidence of split or shattered stones.

'AC Harflame', under natural disease pressure outdoors, appears moderately resistant to canker (*Leucostoma* spp.), brown rot [*Monilinia fruticola* (Wint.) Honey], powdery mildew [*Sphaerotheca pannosa* (Wallr. ex Fr.) Lévl], and bacterial spot [*Xanthomonas campestris* pv. *pruni* (Smith) Dye]. 'AC Harflame' has been indexed free of prunus necrotic ringspot, prune dwarf, and tomato ringspot viruses at Harrow and of all known viruses at the Centre for Plant Health, Sidney, B.C.

'AC Harflame' most closely resembles 'Harblaze', which ripens 3 days later. Trees of 'AC Harflame' are more erect, flower bud density is greater, petals are darker pink, and fruit are smaller than those of 'Harblaze'. The suture of 'AC Harflame' fruit is less prominent than that of 'Harblaze', the skin does not adhere as tightly to the flesh, there is less anthocyanin in the flesh and around the stone, and the flesh is not as firm as that of 'Harblaze'. 'AC Harflame' is slightly more cold hardy and disease resistant than 'Harblaze' (Tables 1 and 2).

Performance

'AC Harflame' was the earliest ripening (6 Aug.) of the five cultivars being compared and will advance the nectarine season in Ontario by at least 3 days (Table 1). The second and third pick of 'AC Harflame' overlap the first and second pick of 'Harblaze'. Overall performance (total score) of 'AC Harflame' exceeded that of 'Fantasia' (the most widely planted nectarine in Ontario) and 'Harko', but was slightly below that of 'Hardired' and 'Harblaze'. 'AC Harflame' had good to very good ratings (≥ 7) for 12 of the 15 rated characters: tree vigor, winterhardiness, perennial canker, bacterial leaf spot, bacterial fruit spot, ripening uniformity, fruit size, attractiveness, blush, flesh adherence to the pit, red pigment in the flesh, and split pits. Productivity, while satisfactory and equal to that of 'Harblaze' and 'Fantasia', was below that of 'Harko' and 'Hardired'. Flesh firmness and flavor equalled those of 'Harko' and 'Hardired' but was lower than for 'Harblaze' and 'Fantasia'. During the test period (1988–95), 'AC Harflame' did not

Table 1. Eight-year mean performance of 'AC Harflame' nectarine compared with four other nectarine cultivars (1988–95).^z

Characters evaluated	Mean cultivar rating ^y				
	AC Harflame	Harblaze	Harko	Hardired	Fantasia
Tree vigor	7	7	7	7	7
Winterhardiness	8	7	8	8	7
Perennial canker	9	8	8	8	7
Bacterial leaf spot	9	8	8	8	6
Bacterial fruit spot	9	9	8	8	7
Productivity	5	5	6	7	5
Ripening uniformity	7	7	7	7	7
Fruit size	7	8	7	7	8
Attractiveness	7	8	6	7	7
Blush	8	9	9	8	8
Flesh firmness	6	7	6	6	8
Flesh adherence to pit	7	7	6	7	7
Red pigment in flesh	8	8	6	8	7
Flavor	6	7	6	6	7
Split pits	7	8	9	9	10
Total score	110	113	107	111	108
Mean ripe date	6 Aug.	9 Aug.	12 Aug.	16 Aug.	3 Sept.

^zRatings were subjective on a scale of 1 (least desirable) to 10 (most desirable). Ratings of 1 to 4 are considered unacceptable for a commercial cultivar, 5 and 6 are commercially acceptable, while ratings ≥ 7 indicate a good level of performance.

^yMeans of three replications. Cultivars were tested in a completely random design at the Ridge Farm of the Harrow Research Centre.

Table 2. Flower bud and xylem hardiness of maximally acclimated, dormant shoots of 'AC Harflame' nectarine compared with 'Redhaven' peach, the medium-hardy standard (1989, 1991, 1992).

Cultivar	T ₅₀ (°C) ^z							
	Flower buds				Shoot xylem			
	1989	1991	1992	$\bar{x}$	1989	1991	1992	$\bar{x}$
AC Harflame	−27.6 a ^y	−28.0 a	−26.5 a	−27.4	−31.7 a	−31.1 a	−30.5 a	−31.1
Redhaven	−27.0 a	−27.6 a	−26.3 a	−26.6	−31.0 a	−30.8 a	−29.6 b	−30.5

^zTemperature required to kill 50% of flower primordia and 50% of shoot xylem.

^yMeans separation within columns by LSD ($P \leq 0.05$).

exhibit major faults that would hamper its commercial use in Ontario.

Controlled freezing tests (1990–92) were carried out on dormant, fully acclimated shoots of 'AC Harflame' in comparison with 'Redhaven' peach, the medium-hardy commercial standard (Table 2), using a standard protocol (Layne, 1992). In each year, flower bud hardiness equalled that of 'Redhaven'. Shoot xylem hardiness of 'AC Harflame' equalled that of 'Redhaven' in 1990 and 1991 and exceeded it in 1992. On average, 50% of the flower buds of 'AC Harflame' were killed at −27.4°C and 50% of the shoot xylem were killed at −31.1°C compared with corresponding values for 'Redhaven' of −26.6°C and −30.5°C. Thus, 'AC Harflame' appears to be adapted to northern areas where 'Redhaven' is grown successfully.

Availability

'AC Harflame' is a protected cultivar under the Canadian Plant Breeders' Rights Act. The agent in Canada for 'AC Harflame' is Inter-Plant Patent Marketing. In the European Union, the agent for 'AC Harflame' in Europe is Star Fruits, 14 les Genêts d'Or, 84430 Mondragon, France. Virus-tested budwood of 'AC Harflame' is maintained at the Harrow Research Centre and also at the AAFC Centre for Plant Health, 8801 East Saanich Rd., Sidney, B.C. V8L 1H3, Canada.

Literature Cited

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