‘AAC Lila’ Strawberry

Andrew R. Jamieson^{1,2}

Agriculture and Agri-Food Canada, Atlantic Food and Horticulture Research Centre, 32 Main Street, Kentville, Nova Scotia, B4N 1J5, Canada

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‘AAC Lila’, a short-day strawberry (*Fragaria × ananassa* Duchesne ex Rozier), ripens in the midseason offering growers an alternative to ‘Brunswick’ and ‘Kent’ and a high-quality cultivar to follow the early-season ‘Wendy’. Plants of ‘AAC Lila’ are vigorous, and they produce ample runners to establish matted rows.

Origin

‘AAC Lila’ is a seedling of a ‘Queen Elisa’ × ‘Wendy’ cross made in 2006 at Kentville, Nova Scotia, Canada, under the direction of A.R. Jamieson. ‘Queen Elisa’ [‘Miss’ × (‘Lateglow’ × ‘Seneca’)] is an Italian cultivar noted for its high yields of well-formed, firm, attractive fruit produced on plants with good resistance to soilborne pathogens (Faedi et al., 2003). ‘Wendy’ is a recent introduction from Agriculture and Agri-Food Canada that produces high yields of good-quality fruit in the early season (Jamieson et al., 2009). The cross was made in the winter of 2006 in a greenhouse, seeds were extracted from mature fruit and sowed in Spring 2006, and subsequently transplanted into the field at Sheffield Mills, Nova Scotia. ‘AAC Lila’, tested as K07-21, was selected for its high yield of large, attractive, flavorful fruit in 2007 by A.R. Jamieson. The genetic background of ‘AAC Lila’ places it in the northeastern group of cultivars with influence from the southeastern group through its ‘Queen Elisa’ heritage (Sjulin and Dale, 1987). The AAC designation is indicative of its Agriculture and Agri-Food Canada origin.

Performance

Fruit was harvested from ‘AAC Lila’ at Kentville (lat. 45°04′ N, long. 64°29′ W) in 2009 and 2010 in single 5-m matted rows developed from 10 plants and in replicated

trials in 2011, 2012, and 2013, planted in 2010, 2011, and 2012, respectively. The soil was a moderately well-drained sandy loam of the Berwick series with pH 6.0 to 6.1 and 2.7% to 2.8% organic matter. Kentville is in the mid-temperate zone with temperature extremes moderated by proximity to the ocean. Summer high temperatures rarely exceed 30 °C and winter minimums are rarely below –25 °C. It is in plant hardiness zone 6a (McKenney et al., 2001). Trials were arranged in latinized randomized block designs with genotypes arranged in four blocks. For comparison with ‘AAC Lila’, standard cultivars Annapolis, Wendy, Laurel, and Jewel were included in the 2010 planting; ‘Wendy’, ‘Laurel’ and ‘Brunswick’ were included in the 2011 planting; and ‘Wendy’ and ‘Jewel’ in the 2012 planting. Matted rows in 2010 were developed from seven plants per plot spaced 0.5 m between plants within rows and 1.4 m between rows. Matted rows in 2011 and 2012 were developed from eight plants per plot spaced 0.4 m between plants within rows and 1.4 m between rows. To reduce the plot-end effects, the central 3 m of each plot was harvested. Fruit was harvested two times per week and sorted into marketable and unmarketable categories. Berries were considered unmarketable if they showed symptoms of disease, damage by pests, or were too small—less than 18 mm in diameter. The average fruit weight for the season was a weighted mean based on the mass of 25 randomly selected marketable fruit from each plot from each harvest, and the yield for each plot for each harvest. Similarly, the average harvest date for the season was a weighted mean based on the dates of harvest and the yield for each date. Data from the field trials were subjected to analysis of variance (GenStat 11.1; VSN Intl. Ltd., Oxford, U.K.) and when F probabilities were significant ($P \leq 0.05$), means (Table 1) were separated by least significant difference ($P \leq 0.05$).

Fruit firmness was determined in 2011 by penetration using an Imada Digital Force Gauge (Model DPS-4R; Imada, Northbrook, IL) with a 7.5-mm o.d. V-notched tip. The maximum force (Newtons) during insertion of the probe 6 mm into the side of each of 10 secondary fruit was recorded and averaged. These secondary fruit were picked at Kentville on 5 July (‘AAC Lila’, ‘Wendy’, and ‘Mira’) and 7 July (‘Jewel’) and were selected based on color as fully red but not overripe. The 10 measurements were used to calculate a cultivar mean and sd by Microsoft® Excel® Analysis ToolPak (Microsoft Corporation,

Redmond, WA). Leaf and flower measurements, recorded on 1 June 2011 at Kentville in matted rows established the previous year, were based on 10 plant parts and the flowers selected were secondary flowers.

The mean harvest date of ‘AAC Lila’ was 2 to 4 d later than the early-season cultivar Wendy and 1 or 2 d earlier than ‘Brunswick’ and ‘Laurel’ (Table 1). This places ‘AAC Lila’ in the early-midseason to midseason harvest period of short-day cultivars. In observational rows in both 2009 and 2010, the yield of ‘AAC Lila’ was rated as “heavy.” In performance trials, the marketable yields of ‘AAC Lila’ were 24.4%, 23.5%, and 27.7% higher than the trial means of 13.5 t·ha⁻¹ in 2011, 16.2 t·ha⁻¹ in 2012, and 13.7 t·ha⁻¹ in 2013, respectively. ‘AAC Lila’ has consistently produced high yields at Kentville but not as high as the most productive cultivars. The fruit of ‘AAC Lila’ are well formed indicating a high achene set and the incidence of fruit rot is generally low, both factors contributing to low unmarketable yields (Table 1). The seasonal mean berry weight of ‘AAC Lila’ is similar to ‘Wendy’ and ‘Brunswick’ (Table 1).

Fruit Description

The flavor of ‘AAC Lila’ is frequently described as clean and fresh, a pleasing combination of sweetness and acidity. When rated on a flavor scale of 1 to 9 (where 9 is best) over 5 or 6 years, ‘AAC Lila’, ‘Wendy’, ‘Brunswick’, and ‘Mira’ scored 7.5 ± 0.35 (mean $\pm$ sd), 7.5 ± 0.71 , 6.8 ± 0.42 , and 6.5 ± 0.45 , respectively. ‘AAC Lila’ is quite tart when underripe. ‘AAC Lila’ consistently scores high for flavor, whereas ‘Wendy’ has more year-to-year variability as indicated by its higher sd.

The red-ripe fruit of ‘AAC Lila’ are consistently rated as firm in flesh and skin when manually squeezed and abraded. When firmness was measured by the force of penetration in 2011, ‘AAC Lila’, ‘Wendy’, ‘Mira’, and ‘Jewel’ were 4.5 ± 0.35 (mean $\pm$ sd), 3.7 ± 0.34 , 5.0 ± 0.32 , and 4.4 ± 0.74 , respectively. For comparison selection K04-21, a genotype rated very firm, measured 5.6 ± 1.8 . The fresh fruit appearance ratings on a scale of 1 to 9 (where 9 is best) over 5 or 6 years for ‘AAC Lila’, ‘Wendy’, ‘Brunswick’, and ‘Mira’ were 7.7 ± 0.27 (mean $\pm$ sd), 7.6 ± 0.38 , 7.5 ± 0.44 , 7.6 ± 0.42 , and 7.5 ± 0.45 , respectively. These cultivars produce equally attractive berries.

Primary and secondary fruit of ‘AAC Lila’ are conic with a short neck (Fig. 1). Fruit are as broad as they are long with a length-to-width ratio of 1.03 calculated from 10 secondary berries. Achenes of ‘AAC Lila’ are set just below the surface. Fruit exterior color is bright medium red (Red Group 45A; Royal Horticultural Society, 1986) and interior cortex and pith color is 46B with a narrow band of white tissue beneath the calyx. ‘AAC Lila’ has a medium-sized, reflexed calyx; the calyx diameter is smaller than the fruit diameter (Fig. 1).

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¹Fruit Breeder.

²To whom reprint requests should be addressed; e-mail Andrew.Jamieson@agr.gc.ca.

Table 1. Fruit production² of 'AAC Lila' and standard cultivars for 2011, 2012, and 2013 in Kentville, Nova Scotia, Canada.

Cultivar	Yield (t·ha ⁻¹)		Wt/fruit ^x (g)	Mean harvest ^x (day of year)
	Marketable	Unmarketable		
2011				
Wendy	13.5 b ^y	2.0 b	16.1 a	183.2 d
Annapolis	17.2 b	1.6 bc	14.3 bc	184.2 d
AAC Lila	16.8 b	1.2 c	15.6 ab	187.1 c
Laurel	15.0 b	1.6 bc	15.2 abc	188.7 b
Jewel	22.8 a	3.1 a	13.9 c	192.7 a
2012				
Wendy	24.0 a	3.8 b	17.9 a	178.3 c
AAC Lila	20.0 b	3.5 b	17.3 a	181.6 b
Brunswick	23.0 a	4.1 b	17.9 a	182.9 a
Laurel	17.3 c	5.4 a	15.6 b	183.4 a
2013				
Wendy ^w	14.7 b	4.0 a	14.6 b	180.8 c
AAC Lila	17.5 ab	2.4 b	15.1 b	182.9 b
Jewel	19.1 a	3.7 a	16.7 a	186.1 a

²Data for 2011 from plots established in 2010. Data for 2012 from plots established in 2011. Data for 2013 from plots established in 2012. Data from entire trials, containing 16 genotypes harvested in 2011, 12 genotypes in 2012, and nine genotypes in 2013, were used in the analysis of variance.

³Mean separation within columns and years by least significant difference test at $P \leq 0.05$.

⁴Seasonally weighted means based on the dates of harvest and the yield for each date.

^wFrost injury to primary blossoms on early trusses of 'Wendy' in 2013 resulted in a reduction of yield and berry weight. No injury to 'AAC Lila' and 'Jewel' was observed.

Fig. 1. Field run second harvest, 30 June 2011.

Similar to 'Wendy', immature berries of 'AAC Lila' at the white stage develop a superficial red blush well before they become red-ripe.

Plant Description

Plants of 'AAC Lila' are vigorous; they runner freely producing sufficient daughter plants to establish matted rows. Plant size is medium with leaves of medium length: 39.1 ± 1.99 cm (mean $\pm$ SD) as measured from the crown to the tip of the central leaflet. 'AAC

Lila' leaf blades are medium-sized and the central leaflets are much longer than wide (1.21 length-to-width ratio) with 22.9 ± 2.02 serrations. Leaflets have an obtuse base, are cupped, and have little interveinal blistering. The upper surface of the leaflets is medium green (Green Group 141A; Royal Horticultural Society, 1986) and the undersurface is lighter green (147B). The stipules at the base of the petioles have strong anthocyanin coloration. The flower stalks of 'AAC Lila' are moderately erect and medium long (20.4 ± 1.78 cm), bearing five to nine (usually nine) perfect flowers, which produce ample pollen, and they open level with the canopy. Flowers are white and medium in size with a diameter of 34.8 ± 1.55 mm; petals are longer (14.6 ± 0.97 mm) than they are wide (13.2 ± 0.79 mm).

Disease Response

Reaction to specific races of *Phytophthora fragariae* Hickman var. *fragariae*, the cause of red stele root rot, has not been determined. However, in a severe screening test similar to Scott et al. (1976) with multiple races, including race A-5 to which specific resistance is rare, 'AAC Lila' demonstrated partial resistance. On a scale of 0 (dead plant) to 5 (no disease), 'AAC Lila' scored 2.75,

similar to the broadly resistant 'Laurel' (Jamieson et al., 2012). In field plots at Kentville, foliage of 'AAC Lila' is generally healthy; no significant foliar disease epidemics have occurred except for moderate levels of powdery mildew [caused by *Podosphaera aphanis* (Wallr.) in 2012. 'AAC Lila' plants have demonstrated moderate resistance to leaf scorch [caused by *Diplocarpon earliana* (Ellis & Everh.) F.A. Wolf] and leaf spot [caused by *Mycosphaerella fragariae* (Tul.) Lindau] but susceptibility to powdery mildew. However, powdery mildew has not been observed on the fruit.

'AAC Lila' will be of value as a midseason cultivar providing firm, attractive berries, which are easy to pick. 'AAC Lila' is an alternative to 'Kent' and 'Brunswick' with better flavor for local and regional markets.

Availability

Certified 'AAC Lila' plants are being propagated under royalty agreements with licensed nurseries, the names of whom will be supplied on request. Agriculture & Agri-Food Canada, Kentville, has been granted Plant Breeder's Rights for 'AAC Lila' in Canada (Certificate No. 4566). Nurseries interested in securing a propagating license may contact A.R. Jamieson, Agriculture and Agri-Food Canada, Atlantic Food and Horticulture Research Center, 32 Main Street, Kentville, NS, B4N 1J5, Canada, or Andrew.Jamieson@agr.gc.ca.

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