



Grower Summary

SF 96a

**East Malling Strawberry
Breeding Club**

Annual report 2019-20

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The results and conclusions in this report are based on an investigation conducted over a one-year period. The conditions under which the experiments were carried out and the results have been reported in detail and with accuracy. However, because of the biological nature of the work it must be borne in mind that different circumstances and conditions could produce different results. Therefore, care must be taken with interpretation of the results, especially if they are used as the basis for commercial product recommendations.

AUTHENTICATION

We declare that this work was done under our supervision according to the procedures described herein and that the report represents a true and accurate record of the results obtained.

Adam Whitehouse
Programme Leader
NIAB EMR



Signature

Date 31st May 2020

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Report authorised by:

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GROWER SUMMARY

Headline

Seven new selections; five June-bearers and two everbearers were selected from the 2019 East Malling Strawberry Breeding (EMSBC) preliminary trials to go forward to UK growers' trials. Of the five June-bearers there was one early-mid, one mid, two mid-late and one very-late season types. All will be trialled on UK grower sites in 2021/2022. In addition, ten advanced selections were trialled on growers' sites in 2019, with two progressing to further trialling (EM2622 and EMR704).

Background

The main objective of the East Malling Strawberry Breeding Club (EMSBC) is to develop and improved strawberry varieties, both June and everbearing with increased yield, larger fruit size, extended season of production and greater resistance to fungal diseases. Funding for the programme was renewed in 2013 to follow on from the first tranche of the EMSBC breeding programme which started in 2008 and that delivered the June-bearer variety Malling™ Centenary. AHDB continues to contribute to the EMSBC via project SF 96a. In 2017 it was agreed that AHDB would continue to remain a member of the EMSBC and continue funding the programme until May 2023.

This report covers two preliminary trials held at NIAB EMR in 2019 that are part-funded by the AHDB membership of the EMSBC (June-bearer main crop and everbearer trials), as well as a brief summary of more advanced selections that have been assessed on offsite EMSBC growers' sites.

Results of selection trials

Descriptions and results from the most promising selections in each of the 2019 preliminary trials are shown below, accompanied with tables of results for each trial:

June-bearer (main crop) NIAB EMR trial

Five selections from the 2019 EMSBC trials showed sufficient potential to progress to small-scale growers' trials in 2021/22. A description of each selection appears below, listed in order of season (earliest to latest), with accompanying data show in Tables 1 and 2:

EM2763, an early-mid season June-bearer. First pick date identical to Malling™ Centenary, but with a 50% harvest date three days earlier. Sensory flavour was judged to be sweet and this was reflected in a high mean Brix^o score.

EM2770, a mid-season selection with very large fruit size and a high percentage Class 1 fruit. It had a good overall fruit quality with a well-balanced, sweet-acid flavour.

EM2583, a mid-late season June-bearer. Good Class 1 yield, with a high percentage of large berries. Performed well in shelf life assessments.

EM2797, a mid-late season June-bearer, 50% pick date three days later than Elsanta. Scored well for sensory flavour and Brix^o. Excellent plant habit for tunnel production, and good fruit display for easy harvesting.

EM2625, a very late season selection with a 50% pick date four days later than Malling™ Allure. Plants were more vigorous than the standards, which may be more suitable for outdoor or soil production.

Table 1. June-bearer selections: yield, fruit size and season

Selection	Trial	Class 1 yield (g/plant)	% Class 1	% large fruit (>35mm)	50% pick date
EM2763	Coir	687	90	54	10 June
	Soil	666	88	60	6 June
EM2770	Coir	860	90	72	20 June
	Soil	619	89	89	17 June
EM2583	Coir	795	79	48	20 June
	Soil	1013	90	61	13 June
EM2797	Coir	727	73	24	20 June
	Soil	1145	86	58	20 June
EM2625	Coir	375	60	37	1 July
	Soil	763	82	58	24 June
<i>M. Centenary</i> ¹	<i>Coir</i>	663	78	51	13 June
	<i>Soil</i>	447	91	51	10 Jun

¹Mean of two plots

Table 2. June-bearer selections: mean fruit quality scores

Selection	Trial	Appearance (1-9)	Skin firmness (1-9)	Flesh firmness (1-9)	Flavour (1-9)	Shelf life (1-5)	Mean Brix ^o
EM2763	Coir	5.5	6.2	6.5	5.5	2.5	9.2
	Soil	5.8	6.2	6.3	5.8	-	-
EM2770	Coir	5.8	6.6	6.4	5.6	3.8	8.3
	Soil	5.5	6.4	6.3	5.7	-	-
EM2583	Coir	5.5	6.1	6.1	5.8	3.2	8.9
	Soil	5.9	5.9	6.0	5.7	-	-
EM2797	Coir	5.6	5.7	6.4	6.0	3.1	9.4
	Soil	6.0	5.9	6.0	5.7	-	-
EM2625	Coir	5.2	6.5	6.4	5.0	3.0	8.9
	Soil	5.0	5.6	6.0	5.4	-	-
<i>M. Centenary</i> ¹	<i>Coir</i>	<i>6.1</i>	<i>6.2</i>	<i>6.1</i>	<i>5.7</i>	-	<i>8.5</i>
	<i>Soil</i>	<i>6.2</i>	<i>6.3</i>	<i>6.4</i>	<i>5.7</i>	-	<i>9.0</i>

¹Mean of two plots

Full descriptions of the fruit quality scoring system can be found in Appendix I of the main report, but as a guide 1=poor, 9=excellent, shelf life comparison 1=worse, 3=same, 5 better than standard.

Everbearer NIAB EMR trial

Two new selections were progressed to small-scale growers' trials in 2021. Descriptions of these selections and associated trial data (Tables 3 & 4) are shown below:

EMR862: Moderate yielding selection with a similar Class 1 yield, similar to Murano, but with better fruit size and a high percentage of Class 1 fruit. Berries were very attractive, with a uniform shape and glossy appearance.

EMR863: A high-yielding selection with excellent fruit size and very high percentage of Class 1 fruit. Berries had a very uniform, glossy appearance.

Table 3. Everbearer selections: yield, fruit size and season

Selection	Class 1 yield (g/plant)	% Class 1	% large fruit (>35mm)	50% pick date
EMR862 ¹	620	81	57	5 Aug
EMR863 ¹	977	88	68	5 Aug
<i>M. Champion</i> ¹	747	73	42	18 July
<i>Finesse</i> ²	854	70	48	18 July
<i>Murano</i> ¹	613	66	43	5 Aug

¹Mean of two plots ²Mean of four plots

Table 4. Everbearer selections: fruit quality scores

Selection	Appearance (1-9)	Skin firmness (1-9)	Flesh firmness (1-9)	Flavour (1-9)	Shelf life (1-5)	Mean Brix ^o
EMR862	6.1	6	5.9	5.6	4.3	8.2
EMR863	6.1	6	5.8	5.4	3	7.8
<i>M. Champion</i> ¹	5.8	6.4	6.4	5.4	3.9	7.4
<i>Finesse</i> ²	4.9	5.4	5.5	5.2	3.2	7.1
<i>Murano</i> ¹	5.1	5.9	6.1	5.4	3.	7.6

¹Mean of two plots ²Mean of four plots

Full descriptions of the fruit quality scoring system can be found in Appendix I of the main report, but as a guide: 1=poor, 9=excellent, and for shelf life comparison: 1=worse, 3=same, 5 better than standard

Offsite main crop (June-bearer) growers' trial

Two advanced selections (EM2464 and EM2494) that had been overwintered on growers' sites from the 60-day trials in 2018 were main-cropped in 2019.

EM2464 is an early--midseason selection, with a moderate yield and a high percentage of Class 1 fruit similar to Malling™ Centenary. Fruit is attractive with a bright, very glossy appearance. EM2464 scored highly across trial sites for fruit quality, with good skin and flesh firmness scores, and Brix scores averaged a high 8.7° across all sites. Plants have moderate vigour, with an upright habit, which combined with fruit held on long trusses allows for easy and rapid harvesting. Initial disease screening assessments at NIAB EMR indicate that EM2464 has useful levels of disease resistance with moderate resistance to crown rot and powdery mildew. EM2464 had already been fast-tracked in trial and will undergo commercialisation with more extensive trialling in 2020.

EM2494 did not progress beyond the growers' 60-day trials, as it showed some susceptibility to crown rot.

Offsite 60-day (June-bearer) growers' trial

One advanced selection, EM2622 performed sufficiently well in the 60-day growers' trials to be overwintered and trialled as main cropping 2020.

EM2622 is a late season selection, with a similar season to Florence (10-14 days later than Malling™ Centenary), plants produced a high percentage of Class 1 fruit. Fruit is attractive, uniform conic, with good colour and flesh firmness. Across 60-day growers' trials, EM2622 scored highly for sensory flavour, and was judged to be sweet, with a high average Brix° score of 9.1°. Plants had quite a dense canopy but with an upright habit and with well-displayed fruit. Initial disease screening assessments at NIAB EMR has intermediate resistance to crown rot (*Phytophthora cactorum*)

Offsite everbearer growers' trial

Three advanced selections were trialled in small-scale growers' trials: EMR773, EMR794 and EMR797 with two advanced selection in large-scale trials: EMR693 and EMR704. Two selections were progressed: EMR794 to large-scale growers' trials in 2020, and additional trialling for EMR704 in 2021

EMR794 is high yielding selection that averaged 1.1 kg/plant in the large-scale trials. It had a high percentage of Class 1 fruit (87%). Berries were attractive, with a uniform skin colour and glossy appearance. Sensory flavour was judged to be sweet, with a mean Brix° of 8.1°. Fruit was well displayed on long trusses. Initial disease screening at NIAB EMR indicates that EMR794 is moderately resistant to crown rot with intermediate resistance intermediate to mildew.

EMR704, is an early-season everbearer that has shown a steady crop profile. Plants produced an average yield of 1.1 kg /plant, and are noted for its large fruit size (mean 23 g/berry). Skin and flesh were firm, sensory flavour scored well with a high mean Brix° of 9.0°. Initial disease screening at NIAB EMR suggests that EMR704 has resistance to crown rot and mildew and intermediate resistance to Verticillium wilt. This selection was of particular interest to growers in Scotland, due an early season of production.