



Grower Summary

East Malling Strawberry Breeding Club

SF 096a

Annual report 2022

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Project leader: Adam Whitehouse, NIAB EMR

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Location of project: NIAB EMR

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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 (Plant Breeder)

NIAB EMR



Signature

Date 31st May 2022

Katie Hopson

Specialist (Plant Breeder)

NIAB EMR



Signature

Date 31st May 2022

Report authorised by:

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GROWER SUMMARY

Headline

Six new selections; four June-bearers and two everbearers were selected from the 2021 East Malling Strawberry Breeding (EMSBC) preliminary trials to go forward to UK growers' trials. Of the four June-bearers there were three mid-season and one mid-late season types. All these selections will be trialled on UK grower sites in 2023-24.

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 East Malling in 2021 that are part-funded by the AHDB membership of the EMSBC (June-bearer main crop and everbearer trials).

Results of selection trials

Descriptions and results from the most promising selections in each of the 2021 preliminary trials are shown below, accompanied with tables of results for each trial:

NIAB East Malling June-bearer trial

Four selections from the 2021 EMSBC trials showed sufficient potential to progress to small-scale growers' trials in 2023-24. A description of each selection appears below, listed in order of season (earliest to latest), with accompanying data show in Tables 1 and 2:

EM2903 is an early season selection with a high percentage of Class 1 fruit and large fruit size (65% >35mm), but only low-moderate yield. Fruit was attractive and sensory flavour was judged to be sweet on a number of assessments.

EM2910 is an early mid-season selection that was very similar in most respects to Malling™ Centenary but with a better crown rot predictive score (genotype) potentially indicating increased resistance.

EM2925 is a large-fruited, early midseason selection that gave a higher percentage of Class 1 (96%) and Large fruit (84% >35mm) when compared to Malling™ Centenary. Berries are bright, with a lighter skin colour than Malling™ Centenary.

EM2933 is a midseason selection with excellent fruit size (72% >35mm) and a yield similar to Malling™ Centenary. Berries were brighter and glossier in appearance than Malling™ Centenary and had excellent shelf-life scores.

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

| Selection | Class 1 yield (g/plant) | % Class 1 | % large fruit (>35mm) | 50% pick date |
|----------------------------------|----------------------------|-----------|--------------------------|---------------|
| EM2903 ¹ | 181 | 93 | 65 | 15 June |
| EM2910 ¹ | 415 | 90 | 63 | 19 June |
| EM2925 ¹ | 343 | 96 | 84 | 22 June |
| EM2933 ¹ | 444 | 93 | 72 | 21 June |
| <i>M. Centenary</i> ² | 435 | 93 | 59 | 20 June |

¹Mean of two plots ²Mean of eight plots

Table 2. June-bearer selections: mean 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 |
|----------------------------------|---------------------|---------------------------|----------------------------|------------------|------------------------|---------------------------|
| EM2903 ¹ | 5.7 | 6.0 | 6.1 | 5.7 | 4.0 | 7.4 |
| EM2910 ¹ | 5.5 | 5.2 | 5.6 | 5.4 | 2.9 | 8.2 |
| EM2925 ¹ | 5.8 | 6.0 | 5.8 | 5.3 | 3.0 | 8.4 |
| EM2933 ¹ | 5.5 | 5.9 | 6.1 | 5.3 | 3.7 | 8.4 |
| <i>M. Centenary</i> ² | 5.8 | 5.9 | 5.8 | 5.5 | 3.6 | 8.0 |

¹Mean of two plots ²Mean of eight 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.

NIAB East Malling Everbearer trial

Two new selections progressed to small-scale growers' trials to be held assessed in 2023. Descriptions of these selections and associated trial data (Tables 3 & 4) are shown below:

EMR943 is a high-yielding selection (1022g per plant) with an excellent display of attractive berries and pleasant flavour with some complex notes.

EMR965 is a high yielding selection, with peak of production earlier in the season than Malling™ Ace. Good all round fruit characteristics, similar to Malling™ Ace, but with higher, white necks.

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

| Selection | Class 1 yield (g/plant) | % Class 1 | % large fruit (>35mm) | 50% pick date |
|---------------------------------|----------------------------|-----------|--------------------------|------------------|
| EMR943 ¹ | 1022 | 88 | 52 | 23 Aug |
| EMR965 ¹ | 922 | 89 | 61 | 16 Aug |
| <i>M. Ace</i> ² | 868 | 88 | 61 | 19 Aug |
| <i>M. Champion</i> ³ | 606 | 66 | 26 | 13 Aug |
| <i>Murano</i> ³ | 464 | 60 | 26 | 20 Aug |

¹Mean of two plots ²Mean of three plots ³Mean of six 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 |
|---------------------------------|---------------------|---------------------------|----------------------------|------------------|---------------------|---------------------------|
| EMR943 | 5.8 | 5.9 | 5.9 | 5.2 | 3.4 | 7.7 |
| EMR965 | 5.3 | 5.5 | 5.7 | 5.2 | 3.0 | 8.4 |
| <i>M. Ace</i> ² | 6.1 | 5.7 | 5.9 | 5.3 | 2.0 | 8.5 |
| <i>M. Champion</i> ³ | 5.4 | 6.3 | 6.5 | 5.1 | 2.6 | 7.8 |
| <i>Murano</i> ³ | 5.3 | 5.5 | 5.8 | 5.3 | 2.5 | 8.4 |

¹Mean of two plots ²Mean of three plots ³Mean of six 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

Four advanced selections (EM2628, EM2696, EM2721 and EM2723) had been overwintered on growers' sites from the 60-day trials in 2020, and were assessed as maincrop (2nd year) in 2021. EM2723 was deemed to have performed sufficiently well to progress to large-scale trials in 2023. The remaining selections were rejected.

EM2723 is a mid-late season selection, with the bulk of production fitting between Malling™ Centenary and Malling™ Allure, with a pleasant flavour and high average Brix° (9.3°).

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

Five selections had previously been selected (2019) for 60-day trialling in 2021 (EM2583, EM2625, EM2763, EM2770 and EM2797). Two selections, EM2770 and EM2797, performed sufficiently well in the 60-day growers' trials to be overwintered and will be trialled as main crop in 2022. The remaining selections were rejected.

EM2770 a mid-late season June-bearer, with large fruit size (average 26.1g), attractive fruit, good flavour and average Brix score of 8.9°.

EM2797 is a late season June-bearer, characterised by very attractive, glossy berries and excellent, consistently sweet flavour (average Brix of 10.3°).

Offsite everbearer growers' trial

Two advanced selections were trialled in small-scale growers' trials: EMR862 and EMR863, with one advanced selections in large-scale trials: EMR794. EMR794 and EMR863 performed well enough to go forward for large-scale trials in 2023. EMR862 was rejected.

EMR794 is a productive selection that is similar in main attributes to Malling™ Ace, having a high, average percentage of Class 1 fruit (93%), good fruit size (24.2g) and average of 761g of Class 1 fruit per plant (cf. 773g from Malling™ Ace). Berries are attractive, with a pleasant, juicy flavour and average Brix of 8.5°. EMR794 has moderate to intermediate resistance to crown rot, and intermediate resistance to powdery mildew.

EMR863 is a selection that produce sweet-flavoured berries, with an average Brix score of 9.3° across offsite trials. Preliminary disease tests and field observations indicate that EMR863 has moderate resistance to crown rot and powdery mildew.