



Agriculture & Horticulture
DEVELOPMENT BOARD



Grower Summary

SF 92a

Field evaluation of new main season
strawberry selections in the UK

Final 2012

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Project Leader:	Chris Creed
Contractor:	ADAS Boxworth
Industry Representative:	Graham Moore, FAST
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Headline

- **Sonata, Fenella and Elegance** show great promise for use on UK farms for all market outlets.

Background and expected deliverables

For the UK strawberry industry to maintain and expand fresh fruit sales, it is vital that it is capable of consistently producing a high quality product over a long season. Significant changes are taking place in the range of varieties now used for fresh fruit production.

Of the June bearer (JB) varieties, **Elsanta** still occupies a large area of production due to its high yield, good fruit quality and long shelf life. It does however, have shortcomings in that it is very susceptible to several devastating, soil borne diseases which include verticillium wilt, red core and crown rot. In addition Elsanta also produces a high percentage of Class 2 fruit in the second or maincrop season, which increases the cost of picking and packhouse labour. Manipulating the production of Elsanta to extend its season to meet the demand from customers is an additional cost and one that could be avoided with new June bearing varieties with earlier or later cropping periods.

The use of selected new strawberry varieties to extend the season would help reduce production costs and capitalise on the strong sales opportunities in the late June and early July period. With new production techniques being employed such as bed replanting, more robust varieties are needed to help reduce production costs and increase sustainability.

In a previous HDC funded variety trial (SF 40d), **Sonata, Figaro and Elegance** performed particularly well, and Sonata is now being widely planted as a direct alternative to Elsanta both for 60-day and mainseason cropping. The industry is therefore beginning to replace Elsanta with new varieties that compare favourably. However, there is still a requirement for new advanced selections to further improve upon Elsanta and extend the production season.

The industry also needs to identify varieties that can be used for specialist niche growing, such as PYO/direct and organic sales, with the long-term aim of planning an improved production profile and targeting production to specific outlets.

The aim of this project was to provide scientifically-robust comparative data on the performance of new strawberry varieties in field soils compared with existing commercial varieties when grown under commercial conditions. The specific objectives were:

- To quantify the relative yield and quality characteristics of new varieties grown under standard conditions.
- To evaluate the susceptibility of new varieties to pest and disease compared with existing commercial varieties.
- To determine the shelf life and other post harvest attributes of new varieties and to provide fruit samples for major retailers to evaluate.
- To demonstrate the varieties to growers in a commercial setting.

Summary of the project and main conclusions

The experimental work encapsulated promising new varieties from overseas breeding programmes in addition to numbered selections from the East Malling breeding programme (Table 1). HDC is a member of the new East Malling Strawberry Breeding Club (EMSBC), allowing it to include EMR selections in HDC funded trials. Elsanta was included as a standard variety for comparison. Varieties that have performed well in previous trials were included to test continuity, consistency and comparison over time. These included Fenella and Elegance.

The trial was hosted by George Busby and Sons, Littywood Farm, Bradley, Stafford. The field soil was a loamy sand texture, sterilised with Basamid, formed into polythene-mulched beds for three plant rows per bed in a commercial plantation of 60-day Elsanta under Spanish tunnels. The trial was planted on 28 April 2010, in a randomised block with three replicate plots. Table 1 lists the varieties/selections included, their origin, production season and crown diameter of plants supplied.

In addition to the main replicated trial plots, nine grower plots were planted with 100 plants of varieties that had performed well in previous trials to gain a better feel for the variety and fruit quality. These varieties included **Sonata, Lucy, Darselect, Figaro, Syria, Florence, Millewa, Sweetheart** and **Cupid**, along with a series of numbered selections bred at EMR.

Table 1 Summary of varieties, season, origin, supplier and crown diameter as supplied

Variety/selection	Production season	Country of origin	Supplier of plants	Crown diameter supplied
Anitabis	Very early	Italy	Vivai Molari	9 mm
Rumba	Early	Netherlands	Fresh Forward	13 mm
EM1643	Early	UK	Meiosis Ltd	11 mm
Elianny	Early-mid	Netherlands	Vissers	14 mm
Elsanta	Mid	Netherlands	Fresh Forward	16 mm
EM1677	Mid	UK	Meiosis Ltd	11 mm
EM1727	Mid	UK	EMSBC	14 mm
EM1752	Mid	UK	EMSBC	11 mm
EM1756	Mid	UK	EMSBC	10 mm
Elegance	Mid-late	UK	Meiosis Ltd	13 mm
Fenella	Mid-late	UK	Meiosis Ltd	9 mm
Isaura	Mid-late	Belgium	Fresh Forward	16 mm
EM1607	Mid-late	UK	EMSBC	13 mm
EM1682	Mid-late	UK	EMSBC	14 mm
Malwina	Late	Switzerland	Meiosis Ltd	Potted plants
Salsa	Late	Netherlands	Fresh Forward	17 mm
EM1636	Late	UK	Meiosis Ltd	11 mm
EM1733	Late	UK	EMSBC	14 mm
EM1746	Late	UK	EMSBC	14 mm

Results collected in the first year of the project are published in the 2011 annual report and are available from HDC.

In 2011 the plants were forced for an early crop, fleeced in January 2011 and covered with a Spanish tunnel in March 2011. Picking commenced on 27 April and finished on 1 July. Varieties were assessed for plant and fruit quality attributes. April 2011 was a very warm month and early crops were advanced, May was much cooler and probably delayed fruiting in late varieties.

Records of maincrop yields, Class 1 (g/plant) and 50% harvest date are shown in Table 2. Records of fruit flavour, (based on blind tasting), fruit firmness, shelf life (5 days at a nominal 2°C) and Brix measurements at picking are summarised in Table 3.

Table 2 Results of Class1 and 2 yields, % Class 1, average berry weight and 50% harvest date – Maincrop 2011

Variety	Class 1 yield (g/plant)	Class 2 yield (g/plant)	% Rots	% Class 1 (marketable yield)	Average Berry weight (g)	50% harvest date 2011
Anitabis	154	107	17	58	12	14-May
Rumba	773	106	8	85	10	16-May
EM1643	459	220	5	68	8	12-May
Elianny	469	118	4	80	13	23-May
Elsanta	421	163	6	72	13	23-May
EM1677	478	213	4	69	9	18-May
EM1727	380	129	9	75	11	23-May
EM1752	566	175	5	76	7	23-May
EM1756	664	115	4	80	10	16-May
Elegance	833	110	1	86	11	16-May
Fenella	421	88	0	82	16	02-Jun
Isaura	703	74	10	90	26	11-Jun
EM1607	424	115	4	79	8	29-May
EM1682	606	118	2	84	18	31-May
Malwina	357	49		88	20	20-Jun
Salsa	660	166	1	80	21	31-May
EM1636	421	61	3	87	13	02-Jun
EM1733	275	93	4	73	14	04-Jun
EM1746	553	171	1	76	18	31-May
F.pr	ns	<0.001	ns	<0.001		
LSD 5%	338.6	50.6	6.9	8.8		

Table 3 Fruit Quality attributes on a 1-10 scale - 2011 Maincrop (NB Brix readings taken at harvest, not after storage)

Variety	Fruit Flavour 1 = Poor 10 = Good	Firmness 1 = Poor 10 = Good	Shelf Life 1 = Poor 10 = Good	Mean Brix Higher score = sweeter
Anitabis	6.4	7.8	4	9.0
Rumba	6.4	6.2	6	9.0
EM1643	6.8	8.4	6	10.0
Elianny	7.4	6.0	6	9.0
Elsanta	7.0	4.8	8	9.0
EM1677	6.2	9.4	8	8.0
EM1727	6.8	7.0	6	10.0
EM1752	6.2	4.6	8	8.0
EM1756	7.4	8.8	8	9.5
Elegance	6.8	9.0	8	8.0
Fenella	7.8	6.6	8	11.5
Isaura	7.6	5.2	6	6.0
EM1607	6.0	6.8	8	6.0
EM1682	6.8	6.8	4	7.5
Malwina	7.0	7.0	6	7.0

Salsa	5.6	5.8	4	10.0
EM1636	5.8	5.6	6	8.0
EM1733	6.8	5.8	6	6.6
EM1746	7.2	7.2	6	7.5

The trial picked over a long period with 50% picking dates ranging from 12 May (**EM1643**) to 20 June (**Malwina**) so there is scope to extend the Elsanta season with variety choice.

Observations from the 2011 season

Elsanta produced a high percentage of Class 2 fruit in this trial, which was typical of industry findings elsewhere.

Of the early varieties, **Rumba** produced the highest yields along with a high percentage of Class 1 fruit. **EM1643** also yielded well for an early variety, was very attractive in the punnet and produced firm fruit. **Anitabis** however produced very low yields.

Of the mid season varieties, **Elegance** performed best producing the highest yields, highest percentage of Class 1 fruit, good shelf life and firm fruit. **Fenella** also produced very high quality fruit with excellent flavour and shelf-life, although yields were lower than both Elegance and Elsanta. This is a vigorous variety which lends itself to bed replanting. **Elianny** produced a good looking berry, but yields were lower than Elegance and fruit was softer. **Isaura** produced high yields and high percentage of Class 1 fruit along with good flavour, but the fruit was very soft.

Of the mid season EM series, **EM1756** performed best producing good yields, high percentage of Class 1 fruit, good flavour and excellent shelf-life. **EM1727** was very attractive but yielded poorly. **EM1682** yielded well and looked good but had a poor shelf-life.

Of the late varieties, **Salsa** produced the highest yield but fruit was uneven in shape and colour and shelf-life were poor. Of the late season EM series, **EM1746** produced higher yields than the others but flavour and shelf-life were disappointing. **Malwina** was the latest fruiting variety of all so may be of interest for extending the season. However, yields were rather disappointing.

In addition to the main trial some varieties were planted in unreplicated plots on a PYO fruit unit with a very high level of Verticillium. The varieties selected were: **Figaro, Cupid, Sweetheart, Lucy, Elsanta, Fenella, Sonata, Elegance**, and, following consultation with Meiosis, EM numbered selections: **EM1677, EM1580, EM1643, EM1552, EM1682, EM1636, EM1659, EM1597, EM1696, EM1680, EM1669, EM1607** and **EM1634**. These were planted on 10th May 2010 within a commercial crop of PYO strawberries of the variety **Symphony**.

Of special interest were EM1696, EM1597, EM1659, EM1552, EM1643, EM1580, and Sonata which demonstrated equal tolerance to wilt as Symphony. Cupid and Lucy also showed promise. Resilient varieties allow for lower input growing, can greatly reduce pesticide use and help with the lack of field rotation on some PYO sites.

Financial benefits

The high percentage of Class 1 fruit produced by many varieties compared to Elsanta, will help to reduce picking and marketing costs. It should also reduce the amount of fruit that has to be marketed through other outlets such as wholesale, where prices are a lot less certain.

Growers are also likely to benefit from the added bonus of soil borne disease resistance in some varieties. This will help growers to reduce costs involved in field fumigation. It will also enable them to re-use beds that are still covered with plastic and reduce the need to move tunnel structures.

Re-use of beds could save around £3,600 per ha alone by saving on plastic, irrigation and tunnel movement costs.

Action points for growers

- Assess some of these new varieties on your own farm.
- Examine the benefits of bed re-planting using varieties which lend themselves to this (eg Fenella).