Report
to the
Horticultural Development Council

Soft Fruit Variety Trialling SF/18
Strawberry Variety Trial 38
Final Report

Introduction

This trial was planted at HRI East Malling due to the closure of Brogdale EHS (The National Fruit Trials) in March 1990. The trial was designed to evaluate five new selections from HRI East Malling, with another six selections being planted in guard plots for observation. Funding for this trial was provided by the Horticultural Development Council, as no money is now available for 'near market' work from MAFF.

Materials and Methods

Varieties/Selections

	ES 986	Cambridge Favourite)	
	ES 1044	Elsanta)	Standards
	EM 90	Honeoye)	
	EM 220		
	EM 227		

Guard plots - ES 919, ES 934, ES 937, ES 969, ES 1041, EM 99.

Planting material was produced by rooting runner tips under mist and then growing on in 7 cm modules, the propagation being carried out at Brogdale EHS. The material was then transferred to HRI East Malling where the trial was planted in August 1989 in double row raised beds covered with white-on-black polythene, together with sub-polythene trickle irrigation. Due to the breakdown of the polythene mulch, leading to large splits/holes after the first year, this was removed prior to the 1991 season and the plants were mulched with straw.

The beds were spaced at 1.9 m between bed centres, with 0.7 m between plants and 0.6 m between rows. A randomised block design was used with three replications, ten plants per plot planted as a double row of five.

Fruit was picked and graded using four grades i.e. Class I large (> 35 mm), Class I medium (25-35 mm), Jam (fruit below 25 mm and slight misshapes) and unmarketable. Fruit was weighed using an electronic balance, the data being transferred directly to an Epson HX-20 microcomputer.

Results and Discussion

The 1991 season was characterised by generally unsettled weather which led to increased botrytis infection of the fruit, resulting in a greater proportion of berries being unmarketable compared to 1990. It was also notable that powdery mildew was very prevalent generally, with susceptible varieties suffering particularly badly. The results obtained in 1991 for some of the varieties may also have been adversely affected by virus infection of a proportion of the plants, this having resulted from problems with the control of aphids during 1990, and consequently should be treated with some caution. Yield and grade-out results for the year are presented in Table 1.

Table 1 - Crop Yield (g/plant) and 50% Pick Date 1991

	Class I (mm)					
Variety	35+	Total	Jam	Unmkt	Total yield	50% Pick Date
C.Favourite(3A)	31	506	160	229	896	8 July
Elsanta	158	722	192	196	1109	7 July
Honeoye	146	572	114	142	829	1 July
EM 90	41	350	186	107	643	12 July
EM 220	185	513	106	220	839	9 July
EM 227	103	413	131	142	687	4 July
ES 986	111	299	94	383	777	3 July
ES 1044	28	376	151	146	673	11 July
SED	-	95.1	-		106.4	

SED = standard error of difference (14 d.f.)

The results confirmed those obtained in 1990 that ES 986 has no potential for commercial production, fruit quality being poor in comparison with the standards with the berries being relatively soft and easily marked, this being reflected in the high proportion of unmarketable fruit.

Although EM 227 did not crop as heavily as Honeoye or Elsanta, several plants could have been infected with virus which would have reduced yields. Fruit quality of EM 227 was good again this year, being very attractive, glossy orange/red in colour and of good shape but less firm than Elsanta and more easily marked, leading to inferior shelf life compared to the standard. This selection was also only a few days earlier than Elsanta in both years of the trial and initial results suggest it has a similar susceptibility to both verticillium wilt and red core.

EM 220 was confirmed as perhaps the most promising selection in the trial, producing the highest class I yield of all the selections but inferior to Elsanta, although again virus infection may well have adversely affected the yield. Fruit quality was very good, the berries being the firmest in the trial and of good appearance, although there was some slight splitting around the calyx on occasions, similar to that affecting Elsanta during 1991. The selection again produced a higher proportion of berries above 35 mm compared to Elsanta.

ES 1044 produced significantly less class I fruit compared to Elsanta in 1991, with very few berries above 35 mm. Fruit quality was good again, however, the berries being firm, of good shape and appearance, with the 50% pick date being four days later. Initial results suggest that this selection has more resistance to verticillium wilt compared to Elsanta.

EM 90 also produced significantly less class I fruit than Elsanta, with a 50% pick date five days later. Like ES 1044, however, fruit quality is good with the berries being firm with a tough skin despite having sunken achenes. Resistance to verticillium wilt appears to be similar to that of ES 1044, but a major drawback is that the plants produce very few runners and would therefore be difficult/expensive to propagate.

The accumulated yields of the main selections plus standards over the two years of the trial are given in Table 2, showing Elsanta as producing the highest class I yield overall, followed by EM 220 and ES 1044. Records were also taken in 1991 of the selections in the guard plots and these results are presented in

Table 3.

Table 2 - Accumulated Crop Yield (g/plant) 1990-91

	Class I (mm)				
Variety	35+	Total	Jam	Unmkt	Total Yield
C. Favourite (3A)	219	1093	260	268	1621
Elsanta	605	1530	281	212	2021
Honeoye	333	912	187	161	1261
EM 90	378	1013	316	132	1460
EM 220	730	1315	216	244	1774
EM 227	466	965	240	154	1360
ES 986	427	845	214	465	1524
ES 1044	351	1138	328	191	1657

Table 3 - Crop Yield (g/plant) 1991 - Selections in Guard Plots

	Class I (mm)				
Selection	35+	Total	Jam	Unmkt	Total Yield
ES 934	106	567	293	327	1186
ES 937	43	245	183	194	625
ES 919	42	174	127	639	939
ES 969	2	99	166	120	385
ES 1041	47	339	111	136	587
EM 99	63	309	81	332	722
EM 227	142	650	179	271	1101

Results obtained from single ten plant plots

Of these selections ES 937 and ES 969 seem to have fruit quality characters suitable for processing i.e. good internal colour and easy calyx removal, while ES 934 produced fruit of very good flavour and is a possible PYO variety. It was notable

that ES 919 suffered very severely from powdery mildew on both leaves and fruits, leading to a very high proportion of unmarketable berries. The relatively superior performance of EM 227 in the guard plot compared to the main trial was also noteworthy, suggesting that, as suspected, plants in the main trial had suffered a degree of virus infection. Full descriptions of all the selections in the trial, including those in the guard plots, were given in last years report.

Conclusions

There are no obvious 'winners' in this trial that are clearly superior to the standards, especially Elsanta, but EM 227 and EM 220 are the most promising selections.

EM 227 is slightly earlier than Elsanta but not sufficiently so, from the results obtained here, to be classed as a different season to the standard. Fruit quality is good, the berries being very attractive but not as firm and more easily marked than Elsanta, and the plant does not seem to be significantly more resistant to soil-borne diseases.

EM 220 produced fruit of excellent firmness and size compared to Elsanta but yields were similar and again it appears not to have any advantages as far as disease resistance is concerned.

Both EM 90 and ES 1044 have fruit of good quality but yields were lower than Elsanta in both cases, although the possibility of virus infection should be borne in mind. EM 90 has the drawback of very poor runner production, while there is some doubt over the fruit size of ES 1044.

ES 986 is clearly inferior to Elsanta and results from this trial suggest that this selection has no commercial potential.

It is difficult to reach any conclusions on those selections in the guard plots but these have been entered for full trial at Brogdale in order to obtain a proper evaluation of their potential.