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REPORT OF THE STAGE II MULTI-CENTRE SOFT FRUIT TRIALS 1990**General Introduction**

Three Stage II 'Multi-Centre' soft fruit variety trials were recorded in 1990, although at a reduced number of sites, due to reductions in MAFF funding and related closures of EHS's. These trials were as follows:-

Strawberry Multi-Centre Trial 8

Strawberry Multi-Centre Trial 9

Raspberry Multi-Centre Trial 5

Due to the closure of the National Fruit Trials and the consequent lack of trials co-ordination, the Horticultural Development Council provided funds in order that the results obtained in 1990 from the three trials could be collated by Dr. D. R. Taylor at HRI, East Malling. There follows a separate summary report for each trial.

J. H. Quinlan
20/2/91

STRAWBERRY MULTI-CENTRE TRIAL 8

Introduction

The trial was planted in August 1987 at eight sites in the UK, to compare the yield and fruit quality of three promising new varieties. Closure of various Experimental Horticulture Stations and reduced funding from MAFF meant that results were only obtained from three of the original sites in 1990.

Materials and Methods

Varieties		Standard Varieties
Honeoye	- USA	Bogota
Pandora (JILA 33)	- HRI EM	Cambridge Favourite
Pegasus (ES 608)	- HRI EM	Hapil
		Gorella

Sites

Kirton EHS)	
Castle Huntley, Scotland)	Planted August 1987
Loughall, Northern Ireland)	

Plants for all the sites were produced at Brogdale EHS by rooting runner tips under mist and then growing on in 7 cm modules. A randomised block design was used at each site, with 20-plant plots replicated three times. The trials were planted as single rows at a spacing of 0.5 m between plants and 1.0 m between rows, with routine pest and disease control measures being applied as appropriate, although these varied from site to site.

Results

The planting material of Pegasus was found to be mixed at all sites and rogue plants were removed in 1988; the results presented have been scaled-up to allow for the missing plants and should therefore be treated with some caution.

Kirton

Pegasus produced the highest class I yield in 1990 and compared favourably in this respect to the mid-season standards Cambridge Favourite and Hapil, with the 50% pick date being three and four days later respectively (Table 1). Sixty five percent of the fruit was in the medium sized category in 1990; a similar result is obtained when the accumulated yields are considered (Table 2). Pegasus gave a similar class I yield compared to Cambridge Favourite over the life of the trial and outyielded Hapil, although the fruit size was inferior compared to this standard, with only 20% of fruit above 35 mm compared to 46% with Hapil.

Honeoye produced significantly more class I fruit than Gorella in 1990 with a 50% pick date two days earlier. The majority of the fruit (79%) was in the medium sized category and the size grade-out was similar to Gorella. When the accumulated figures are considered, Honeoye gave 82% more class I fruit compared to Gorella, with 22% of the berries being above 35 mm compared to 10% for Gorella.

Pandora produced a relatively low class I yield in 1990, similar to Bogota. The 50% pick date was five and twenty days later than Bogota and Cambridge Favourite respectively. Over 50% of the total crop of Pandora was in the class II and unmarketable categories; only Bogota was worse in this respect. The accumulated figures show that Pandora produced less class I fruit than Bogota but that fruit size was better, with 33% of Pandora berries being above 35 mm compared to 21% for Bogota.

Castle Huntley

Honeoye was the earliest selection with a 50% pick date three days before Gorella and produced a better class I yield (Table 3). The fruit size of Honeoye was also superior with 44% being above 35 mm compared to only 25% for Gorella. When the accumulated results are considered, Honeoye produced nearly 50% more class I fruit over the three years compared to Gorella and with half the berries being in the large size category (Table 4).

Pegasus produced a comparable class I yield to Cambridge Favourite in 1990 and was superior to Hapil, the 50% pick date being four and nine days later respectively. Fruit size of

Pegasus was superior to Cambridge Favourite (45% above 35 mm compared to only 31%), but was inferior to Hapil (60%). Over the three years, Pegasus gave a greater class I yield than either Cambridge Favourite or Hapil, with half the fruit being in the large size category.

The class I yield of Pandora was lower than Bogota in 1990 but this difference was not statistically significant, both varieties being outyielded by Cambridge Favourite. Pandora was, as expected, the latest variety with a 50% pick date six and twenty days later than Bogota and Cambridge Favourite respectively. When the accumulated yield figures are considered Bogota produced about 25% more class I fruit than Pandora over the three years, but the fruit size of the latter was superior, with a greater proportion of berries over 35 mm.

Loughall

Pandora and Bogota gave the highest class I yields in 1990, being significantly greater than all other varieties (Table 5). The fruit size of Pandora was greater than that of Bogota, with 22% of the berries being above 35 mm compared to only 9%, while the 50% pick date was two days earlier at this site, although still sixteen days later than Cambridge Favourite. Over the three years of the trial Pandora and Bogota produced the highest class I yields, approximately double those of Cambridge Favourite (Table 6).

Honeoye was again the earliest variety with a 50% pick date two days before Gorella and produced a similar class I yield of comparable sized fruit. The yield and grade-out of these two varieties in 1990 reflected their performance over the life of the trial.

The class I yield of Pegasus in 1990 was superior to that of Cambridge Favourite and Hapil, although fruit size was smaller with a lower proportion of berries above 35 mm compared to the two standards. The 50% pick date was similar for all three varieties. Pegasus also gave higher class I yields over the three years compared to Cambridge Favourite and Hapil, but fruit size was only comparable to the former and inferior to the latter.

Table 1 - Kirton - Crop Yield (tonne/ha) and 50% Pick Date 1990

Variety	Class I (mm)				Class II	Unmkt.	Total Yield	50% Pick Date
	35+	25-35	18-25	Total				
Bogota	0.6	7.5	4.3	12.4	8.6	6.5	27.5	12 July
Cambridge Favourite	1.5	8.7	3.4	13.6	2.5	2.5	18.6	27 June
Hapil	2.7	7.2	1.1	11.0	3.8	1.9	16.7	26 June
Gorella	1.2	7.4	2.6	11.2	2.8	1.9	15.9	19 June
Honeoye	2.3	14.0	1.9	18.2	2.9	2.1	23.2	17 June
Pegasus	3.3	13.5	4.0	20.8	3.6	3.4	27.8	30 June
Pandora	1.3	5.1	3.4	9.8	7.9	2.9	20.6	17 July
SED	0.48	0.83	0.36	1.13	1.01	-	1.54	

SED = Standard error of difference (10 d.f.) - SED's not valid. Results of Pegasus were not included in the analysis and SED's are not valid for this variety.

Table 2 - Kirton - Accumulated Crop Yield (tonne/ha) 1988-90

Variety	Class I (mm)				Total Yield
	35+	25-35	18-25	Total	
Bogota	9.1	25.5	8.7	43.3	69.8
Cambridge Favourite	4.7	27.8	8.8	41.2	51.8
Hapil	15.8	16.6	1.7	34.1	46.5
Gorella	2.2	14.4	5.5	22.1	32.5
Honeoye	8.9	28.6	2.8	40.3	51.2
Pegasus	8.5	28.1	6.7	43.3	57.2
Pandora	11.7	19.1	4.6	35.4	51.9

Table 3 - Castle Huntley - Crop Yield (tonne/ha) and 50% Pick Date 1990

Variety	Class I (mm)				Class II	Unmkt.	Total Yield	50% Pick Date
	35+	25-35	18-25	Total				
Bogota	4.6	4.8	2.9	12.3	1.1	0.6	14.0	20 July
Cambridge Favourite	5.3	7.5	4.2	17.0	0.3	1.0	18.3	6 July
Hapil	6.0	2.8	1.2	10.0	0.7	0.7	11.4	1 July
Gorella	2.5	4.5	2.8	9.8	0.9	0.4	11.1	26 June
Honeoye	5.9	5.3	2.2	13.4	1.3	0.4	15.1	23 June
Pegasus	6.8	5.7	2.6	15.1	0.7	0.8	16.6	10 July
Pandora	4.1	4.0	1.6	9.7	1.8	0.5	12.0	26 July
SED	2.16	1.05	0.61	3.33	-	-	3.86	

SED = Standard error of difference (10 d.f.) - SED's not valid. Results of Pegasus were not included in the analysis and SED's are not valid for this variety.

Table 4 - Castle Huntley - Accumulated Crop Yield (tonne/ha) 1988-90

Variety	Class I (mm)				Total Yield
	35+	25-35	18-25	Total	
Bogota	22.8	16.8	9.3	48.9	61.3
Cambridge Favourite	15.6	16.0	8.2	39.8	44.8
Hapil	23.0	7.8	2.4	33.2	39.6
Gorella	8.5	10.0	5.7	24.2	29.1
Honeoye	18.5	12.6	4.5	35.6	40.9
Pegasus	23.7	15.6	6.7	46.0	54.2
Pandora	21.7	13.7	3.1	38.5	47.2

Table 5 - Loughall - Crop Yield (tonne/ha) and 50% Pick Date 1990

Variety	Class I (mm)				Class II	Unmkt.	Total Yield	50% Pick Date
	35+	25-35	18-25	Total				
Bogota	2.5	21.9	2.4	26.8	0.5	1.4	28.7	17 July
Cambridge Favourite	2.9	9.8	0.8	13.5	0.0	1.3	14.8	29 June
Hapil	6.0	8.2	0.5	14.7	0.0	0.7	15.4	25 June
Gorella	3.6	7.3	1.0	11.9	0.1	0.9	12.9	22 June
Honeoye	2.4	6.8	0.7	9.9	0.0	0.4	10.3	20 June
Pegasus	2.5	16.0	2.5	21.0	0.0	2.1	23.1	26 June
Pandora	5.4	15.6	3.1	24.1	0.4	0.5	25.0	15 July
SED	1.32	1.16	0.44	1.79	-	-	1.83	

SED = Standard error of difference (10 d.f.) - SED's not valid. Results of Pegasus were not included in the analysis and SED's are not valid for this variety.

Table 6 - Loughall - Accumulated Crop Yield (tonne/ha) 1988-90

Variety	Class I (mm)				Total Yield
	35+	25-35	18-25	Total	
Bogota	8.2	32.1	3.9	44.2	47.7
Cambridge Favourite	3.3	15.2	1.8	20.3	22.2
Hapil	9.3	13.4	1.0	23.7	25.1
Gorella	4.9	12.1	1.7	18.7	20.4
Honeoye	4.1	12.3	1.7	18.1	19.2
Pegasus	4.2	21.5	3.5	29.2	32.2
Pandora	8.9	25.7	4.1	38.7	40.6

General Discussion

This is written with the help of comments on fruit quality, etc. supplied by the technical officers in charge of the trial at each site.

Honeoye

This variety was consistently the earliest in the trial, with the 50% pick date usually a couple of days earlier than Gorella. Honeoye outyielded the standard at two of the three sites, both in 1990 and overall. The plant habit of Honeoye was generally described as being less vigorous than Gorella with an upright/spreading, open habit, plants being less dense than Gorella. Berries of Honeoye were described as usually crimson red in colour, of a regular round/conical shape and to be firmer than Gorella with a tougher skin. Flavour was thought to be generally more acid than Gorella.

The comments on Honeoye in 1990 were particularly favourable from the site in Scotland, where it seemed to perform very well in comparison to the other sites. Certainly, Honeoye compares favourably with Gorella as an early variety, with higher yields of better quality fruit, but grower reaction to the variety seemed to be mixed in the southern part of the country during the last two hot growing seasons and it maybe that this variety performs best in the cooler norther regions, especially Scotland.

Pegasus

Although the results must be treated with caution due to the number of rogue plants removed at each site, Pegasus generally gave higher yields than either Cambridge Favourite or Hapil. Fruit size was usually better than Cambridge Favourite but inferior to Hapil, while the berries were of a regular conical shape, very glossy, orange/red in colour and firmer than either of the two standards. The flavour was generally described as being rather weak, acid and sometimes insipid. Harvest dates were variable but generally Pegasus seems to be similar to or slightly later than Cambridge Favourite.

Pegasus was released to the industry in 1990 as a possible alternative to Elsanta, having better disease resistance than

this variety and many good agronomic and fruit quality characters, which are confirmed by the results of this trial.

Pandora

Pandora produced lower class I yields than Bogota at all three sites, both in 1990 and over the life of the trial, with a 50% pick date five or six days later in 1990 except at Loughall where it was two days earlier. The relatively high proportion of fruit in the class II and unmarketable categories at ~~Castle~~ *Kinton* ~~Huntley~~ in 1990, was probably due to poor pollination of Pandora leading to misshapen berries. Fruit size and quality is better than Bogota, however, the berries being conical in shape, red to orange/red in colour and with a good flavour. It was thought to have a tougher skin generally but to be of similar firmness to Bogota. Plants of Pandora were described as vigorous with an upright/spreading habit and dense in nature with only moderate/poor fruit display.

Pandora is the latest June-bearing variety available at present and is now widely grown commercially, where the main problems have been lack of adequate pollination of the flowers and the vigorous nature of the plant, although many growers have been successful with the variety. Pollination of Pandora has generally not been a problem in this trial, due to the close proximity of many other varieties, but its relatively poor performance in 1990 at two of the sites perhaps indicates that the vigour/density of three-year-old plants reduces the potential of the variety.

Conclusions

Honeye is an early variety with superior agronomic and fruit quality characteristics to Gorella, but it may perform at its best in the cooler, northern regions of the UK, especially Scotland.

Pegasus is a mid-season variety for the dessert market, giving higher yields of better quality fruit compared to Cambridge Favourite and Hapil.

Pandora is the latest June-bearing variety available, producing better quality fruit than Bogota, but problems can arise if pollination is not adequate and if vigour of growth is too great, especially in the third year.

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Gordon Hanks (Kirton), Philip Killington (Castle Huntley) and Brian Watters (Loughall).

STRAWBERRY MULTI-CENTRE TRIAL 9

Introduction

The trial was planted in August 1989 at four sites and in October 1989 at a further site in the UK, to compare the yield and fruit quality of four advanced selections from the HRI, East Malling and SCRI breeding programmes. Results of the maiden year crop were obtained in 1990 from the four earlier planted sites.

Materials and Methods

Selections			Standard Varieties
ES 582	-	HRI EM	Bogota
78 JM 10	-	SCRI	Cambridge Favourite (3A)
79 RB 28	-	SCRI	Elsanta
79 RN 59	-	SCRI	Gorella

Sites

Efford EHS)	
Kirton EHS)	Planted August 1989
Castle Huntley, Scotland)	
Loughall, Northern Ireland)	
Stockbridge House EHS	-	Planted October 1989

Plants were produced at Brogdale EHS for all the sites by rooting runner tips under mist and then growing on in 7 cm modules. A randomised block design was used at each site, with twenty plants per plot replicated three times. The trials were planted as single rows at a spacing of 0.5 m between plants and 1.0 m between rows, with the exception of Efford where the trial was planted as double rows in a raised bed system at 0.3 x 0.4 m spacing with bed centres 1.52 m apart. Routine pest and disease control measures were applied at each site, although these varied from site to site.

Results

Results were obtained from four of the sites in 1990, no crop being recorded from Stockbridge House due to the late planting date.

Efford

The selection 79 RB 28 produced the highest class I yield, with 30% of the fruit being above 35 mm and a 50% pick date six days later than Elsanta (Table 1). ES 582 gave a slightly lower class I yield, but the majority of the fruit was medium sized (25-35 mm), with a 50% pick date six days later than Cambridge Favourite.

79 RN 59 cropped at a similar time to Elsanta with a slightly lower class I yield, but fruit size was larger with 46% above 35 mm compared to 20% for Elsanta. 78 JM 10 was the earliest selection at this site with a 50 % pick date three days later than Gorella, producing a slightly higher class I yield and with larger fruit than the standard.

Kirton

The yields of all the selections/standards were relatively low at this site, due in the main to lack of irrigation during the cropping season and there was little difference in the class I yields produced. ES 582 gave the highest yield with 57% of fruit in the 25-35 mm size category and a 50% pick date five days later than Cambridge Favourite (Table 2).

The selection 79 RB 28 produced a similar yield to Elsanta with a 50% pick date five days later, while 79 RN 59 cropped at the same time as Elsanta and gave a slightly lower yield. 78 JM 10 produced the lowest class I yield and was the earliest selection at this site, with a 50% pick date two days later than Gorella.

Castle Huntley

ES 582 produced a significantly higher yield than all selections and standards except for Bogota, with a high proportion of the berries above 35 mm (78%) and a similar harvest date to Cambridge Favourite (Table 3). The selection 79 RN 59

was notable for its very large fruit size, 91% of the berries being above 35 mm, with a similar class I yield and pick date to Elsanta.

79 RB 28 also produced a good yield of large sized fruit, with 88% being above 35 mm and a 50% pick date seven days later than Elsanta. The earliest selection was again 78 JM 10, with a 50% pick date four days earlier than Gorella and a comparable yield of larger sized fruit, 88% being above 35 mm compared to 60% for the standard.

Loughall

The selection 79 RB 28 produced a significantly higher class I yield than all other selections/standards except Bogota, with very few berries below 25 mm and a 50% pick date some two weeks later than Elsanta (Table 4). ES 582 gave a slightly higher yield than Cambridge Favourite and significantly greater compared to Elsanta, with the majority of the fruit in the 25-35 mm size category and a 50% pick date three days later than the former.

79 RN 59 produced a slightly higher yield compared to Elsanta, fruit size and pick date being very similar. The selection 78 JM 10 gave a slightly higher yield of better sized fruit compared to Gorella, the 50% pick dates being identical.

Table 1 - Efford - Crop Yield (tonne/ha) and 50% Pick Date 1990

Variety/ Selection	Class I (mm)				Class II	Unmkt.	Total Yield	50% Pick Date
	35+	25-35	18-25	Total				
Bogota	3.8	6.6	2.1	12.5	1.1	3.5	17.1	2 July
Cambridge Favourite	2.2	8.1	2.8	13.1	0.3	2.3	15.7	19 June
Elsanta	2.7	9.0	1.7	13.4	1.0	3.2	17.6	17 June
Gorella	1.3	4.3	1.1	6.7	0.3	3.1	10.1	9 June
ES 582	1.5	10.7	2.5	14.7	2.1	4.5	21.3	23 June
78 JM 10	3.1	4.7	0.7	8.5	0.1	2.2	10.8	12 June
79 RB 28	5.2	10.7	1.3	17.2	0.2	2.0	19.4	23 June
79 RN 59	5.3	5.4	0.6	11.3	0.3	1.6	13.2	15 June
SED	-	1.11	-	1.90	-	-	2.08	

SED = Standard error of difference (14 d.f.). - SED's not valid

Table 2 - Kirton - Crop Yield (tonne/ha) and 50% Pick Date 1990

Variety/ Selection	Class I (mm)				Class II	Unmkt.	Total Yield	50% Pick Date
	35+	25-35	18-25	Total				
Bogota	1.4	2.9	0.3	4.6	2.0	1.1	7.7	3 July
Cambridge Favourite	1.8	4.0	0.6	6.4	0.7	0.6	7.7	22 June
Elsanta	3.2	1.9	0.1	5.2	0.6	0.4	6.2	20 June
Gorella	2.6	2.2	0.1	4.9	1.0	0.5	6.4	15 June
ES 582	2.7	4.2	0.5	7.4	3.0	1.5	11.9	27 June
78 JM 10	1.7	1.7	0.0	3.4	0.2	0.2	3.8	17 June
79 RB 28	2.2	3.3	0.2	5.7	0.8	0.5	7.0	25 June
79 RN 59	2.6	1.7	0.0	4.3	0.6	0.5	5.4	21 June
SED	-	0.53	-	1.11	-	-	1.33	

SED = Standard error of difference (13 d.f.). - SED's not valid

Table 3 - Castle Huntley - Crop Yield (tonne/ha) and 50% Pick Date 1990

Variety/ Selection	Class I (mm)				Class II	Unmkt.	Total Yield	50% Pick Date
	35+	25-35	18-25	Total				
Bogota	9.6	3.9	0.7	14.2	1.1	0.1	15.4	17 July
Cambridge Favourite	3.9	4.8	1.9	10.6	0.2	0.4	11.2	8 July
Elsanta	7.3	2.5	0.4	10.2	0.9	0.1	11.2	1 July
Gorella	4.0	2.2	0.5	6.7	0.8	0.2	7.7	27 June
ES 582	11.4	2.8	0.4	14.6	1.6	0.3	16.5	9 July
78 JM 10	6.1	0.7	0.1	6.9	0.0	0.2	7.1	23 June
79 RB 28	10.3	1.2	0.2	11.7	0.2	0.1	12.0	8 July
79 RN 59	8.5	0.8	0.0	9.3	0.1	0.1	9.6	1 July
SED	1.02	-	-	1.01	-	-	1.05	

SED = Standard error of difference (14 d.f.). - SED's not valid

Table 4 - Loughall - Crop Yield (tonne/ha) and 50% Pick Date 1990

Variety/ Selection	Class I (mm)				Class II	Unmkt.	Total Yield	50% Pick Date
	35+	25-35	18-25	Total				
Bogota	8.3	14.0	0.4	22.7	0.2	1.4	24.3	13 July
Cambridge Favourite	3.2	10.5	1.7	15.4	0.1	1.3	16.8	30 June
Elsanta	7.9	5.7	0.1	13.7	0.3	0.6	14.6	26 June
Gorella	4.2	4.8	0.5	9.5	0.1	1.3	10.9	22 June
ES 582	5.1	11.5	0.5	17.1	2.9	0.9	20.9	3 July
78 JM 10	7.0	4.8	0.3	12.1	0.0	0.9	13.0	22 June
79 RB 28	10.4	11.0	0.4	21.8	0.0	0.6	22.4	10 July
79 RN 59	11.4	5.1	0.1	16.6	0.0	0.8	17.4	26 June
SED	0.85	0.75	-	1.36	-	-	1.41	

SED = Standard error of difference (14 d.f.). - SED's not valid.

General Discussion

This is written with the help of comments on fruit quality, etc. supplied by the technical officers in charge of the trial at each site.

79 RB 28

The results of the maiden year suggest that this selection is perhaps the most promising overall, with a combination of good yields, fruit size and quality. Fruit is generally conical to long conical in shape and described as firm or very firm with a tough skin at all the sites, attractive in appearance and a good red colour. The achenes are prominent, which led to one description of the berries being slightly 'gritty' to eat, and the flavour is acceptable to good. Berries can suffer from white tips which are slow to colour up, this being a similar problem with Elsanta. Shelf-life was as good as Elsanta in tests conducted at Castle Huntley.

79 RB 28 yielded as well as or better than Elsanta at all sites and with similar sized fruit, although the 50% harvest dates varied from five to fourteen days later. Experience from the Stage I trial at the National Fruit Trials suggests that this selection could well be later in season as a two-year-old plant. 79 RB 28 and the other selections from SCRI have field resistance to red core.

79 RN 59

This selection is of the same season as Elsanta and should be compared with this standard as a dessert market variety. Overall, the yields of 79 RN 59 were slightly lower at three sites and higher at the other site compared to Elsanta, although none of these differences were statistically significant. The fruit size of 79 RN 59 is generally better with a higher proportion of fruit over 35 mm but the selection suffers in comparison with Elsanta when fruit quality is considered. The selection is rated as less firm than Elsanta with a weaker skin at three of the sites, the berries being generally conical to long conical in shape, orange/red in colour with a weak flavour.

Shelf life comparisons showed 79 RN 59 to be inferior to Elsanta in this respect. It seems likely that the negative quality aspects would outweigh any advantage of 79 RN 59 over Elsanta in respect of fruit size, especially when considered for the supermarket trade.

78 JM 10

This selection was certainly the earliest in the trial being comparable to Gorella in this respect, the 50% pick date ranging from three days earlier to four days later depending on site. Overall, yields were generally similar but the fruit size of 78 JM 10 was usually better, with a higher proportion of fruit above 35 mm.

78 JM 10 was considered to be firmer than Gorella at most sites but not as firm as Elsanta, while skin toughness was always described as moderate. The berries are attractive, generally conical in shape and of an orange/red colour. Shelf life tests showed 78 JM 10 to be inferior to Elsanta. Certainly, the selection seems to compare well with Gorella, but compared to Elsanta, yields are always lower and the moderate skin toughness will make the handling characteristics of 78 JM 10 suspect, especially for the supermarket trade.

ES 582

This selection was entered in the trial as a potential processing variety only, yields in previous trials having been high and jamming test results being promising, the fruit quality being insufficient for the fresh market. Yields in this trial were always high, especially where total yield is considered, the selection producing the highest yield at three of the sites, but a relatively high proportion of the fruit was downgraded due to poor shape. The berries are round to round/conical in shape, orange in colour and relatively firm but not as firm as Elsanta.

A critical factor in a variety for the processing market is easy calyx removal and this characteristic is described as only moderate to difficult depending on the site concerned. This, together with the fact that the berries 'plug' when the calyx is removed, means that ES 582 is unlikely to make a good processing

variety given the evidence obtained so far from this trial. The selection has also been planted in a stage III grower trial, which hopefully will provide more information regarding its calyx removal and suitability for processing.

Conclusions

Based on one year's results obtained so far from this trial, the conclusions are as follows:-

79 RB 28 is the most promising selection, with a combination of good yields, fruit size and quality, together with the fact that it seems to be significantly later than Elsanta, although season varied considerably from site to site.

79 RN 59 crops at the same time as Elsanta, with similar yields and larger fruit although quality is inferior.

78 JM 10 is an early selection with a season comparable to Gorella. Fruit size and quality is good compared to Gorella but not Elsanta and yields seem to be on the low side.

ES 582 is very high yielding but the relatively poor calyx removal found in this trial means that it is unlikely to make the grade as a processing variety, although further results from a grower trial are expected.

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RASPBERRY MULTI-CENTRE TRIAL 5

Introduction

The trial was planted at seven site in the UK during 1985/86, in order to evaluate seven advanced selections of biennial fruiting raspberries. Closure of Experimental Horticulture Stations and reduced funding from MAFF meant that results were only obtained from two of the sites in 1990.

Materials and Methods

Selections	Standard Varieties
33 R 40	Glen Clova
3650/3	Malling Leo
Glen Garry (18 E 6)	
Glen Lyon (15 C 5)	
Augusta (3650/6)	

Sites

Stockbridge House EHS
Castle Huntley, Scotland

Pot-grown canes were planted at both sites in late spring 1985, being trained to a post and wire system. A randomised block design was used at both sites, with sixteen-plant plots and three replications, planted at a spacing of 0.6 x 2.5 m. An overall herbicide regime was maintained and routine pest and disease control measures were applied.

Results

Stockbridge House

Yields of all varieties/selections were relatively low in 1990 compared to previous years (Table 1). Glen Lyon produced

the highest marketable yield in 1990 and over the life of the trial, being slightly superior to Malling Leo in this respect. Glen Garry also yielded well over the life of the trial, especially in comparison to Glen Clova, which produced the second lowest marketable yield overall.

Augusta gave the lowest yield over the life of the trial but was the latest variety in three out of the four years (Table 2). Glen Clova was the earliest variety overall, with the 50% harvest date being a few days before that for both Glen Garry and Glen Lyon. Overall, 33 R 40 and Glen Garry had the longest harvest interval, with Glen Lyon having the shortest.

Glen Garry clearly produced the largest fruit, the mean weight of 100 berries being 56% greater than Glen Clova overall. The fruit size of Glen Lyon was slightly below the two standard varieties, while that of Augusta was slightly larger than Malling Leo overall.

Castle Huntley

Glen Garry produced the highest marketable yield in 1990, outyielding Glen Clova by 100%, and was also the highest yielding variety over the life of the trial (Table 3). Although Glen Lyon performed relatively less well in comparison in 1990, the overall yield was very similar to Glen Garry and it was the more consistent of the two varieties over the life of the trial.

Augusta again produced the lowest marketable yield in 1990, as in previous years and the overall yield was less than half that of the standard, Malling Leo. However, it was consistently the latest variety in the trial, the 50% harvest date usually being about one week later than Malling Leo (Table 4).

Glen Clova was again the earliest variety in the trial, while Glen Garry and Glen Lyon were slightly later, the 50% harvest dates being six to ten days after the standard.

Malling Leo had the shortest harvest interval overall, while Glen Garry had the longest and also produced the largest fruit of all the varieties, the mean weight of 100 berries being 75% greater overall compared to the two standard

Table 1. Stockbridge House - Crop Yield 1987-90

Variety/ Selection	Marketable Yield (tonne/ha)					% Fruit Marketable			
	1987	1988	1989	1990	1987-90	1987	1988	1989	1990
Glen Clova	2.3	13.6	6.2	2.2	24.3	86	98	97	89
Malling Leo	3.5	15.5	11.6	4.7	35.3	90	96	97	94
33 R 40	5.1	12.8	7.6	4.4	29.9	95	97	95	95
Glen Garry	4.9	16.7	7.1	3.6	32.3	90	96	95	91
Glen Lyon	5.9	15.6	10.5	4.8	36.8	97	98	98	93
3650/3	2.1	13.7	9.0	3.8	28.6	87	96	94	92
Augusta	1.3	11.1	6.2	3.8	22.4	86	94	91	94
SED	1.69	1.70	1.78	0.69	-	-	-	-	-

SED = Standard error of difference (12 d.f.)

Table 2. Stockbridge House - Harvest date and Berry Size 1987-90

Variety/ Selection	50% Harvest Date				Mean Length Harvest (days)	Weight of 100 Berries (g)				Mean
	1987	1988	1989	1990	1987 -90	1987	1988	1989	1990	1987 -90
Glen Clova	15th July	7th July	7th July	5th July	34	364	384	251	200	300
Malling Leo	30th July	19th July	13th July	17th July	34	305	263	304	263	284
33 R 40	28th July	17th July	17th July	21st July	39	417	323	344	303	347
Glen Garry	23rd July	13th July	10th July	2nd July	39	625	400	449	400	468
Glen Lyon	23rd July	14th July	12th July	7th July	33	282	256	259	192	247
3650/3	31st July	21st July	18th July	15th July	38	317	313	281	250	290
Augusta	6th Aug	26th July	21st July	19th July	35	341	323	283	263	302

Table 3. Castle Huntley - Crop Yield 1987-90

Variety/Selection	Marketable Yield (tonne/ha)				
	1987	1988	1989	1990	1987-90
Glen Clova	5.4	11.6	8.5	12.0	37.5
Malling Leo	3.7	7.9	11.3	13.9	36.8
33 R 40	8.9	11.8	6.8	11.2	38.7
Glen Garry	13.6	16.9	5.6	24.0	60.1
Glen Lyon	13.9	18.9	12.1	10.4	55.3
3650/3	3.2	6.2	7.5	9.9	26.8
Augusta	1.5	2.4	5.1	6.8	15.8
SED	0.18	0.68	0.43	0.98	-

SED - Standard error of difference (10 d.f.)

Table 4. Castle Huntley - Harvest Dates and Berry Size 1987-90

Variety/ Selection	50% Harvest Date				Mean Length Harvest (days)	Weight of 100 Berries (g)				Mean 1987 -90
	1987	1988	1989	1990		1987	1988	1989	1990	
Glen Clova	22nd July	12th July	17th July	6th July	33	324	333	417	222	324
Malling Leo	6th Aug	28th July	22nd July	22nd July	27	341	345	313	294	323
33 R 40	7th Aug	25th July	28th July	19th July	39	491	435	385	385	424
Glen Garry	1st Aug	18th July	23rd July	17th July	40	596	667	588	400	563
Glen Lyon	30th July	18th July	24th July	13th July	38	405	400	270	270	336
3650/3	8th Aug	1st Aug	27th July	26th July	30	471	400	345	294	377
Augusta	8th Aug	4th Aug	1st Aug	29th July	36	418	435	418	333	401

varieties. Glen Lyon produced fruit of a similar size to Glen Clova and Malling Leo overall, while fruit size of Augusta was slightly larger than the two standards.

General Discussion

This report is written with the help of comments on fruit quality, etc. supplied by the technical officers in charge of the trial at each site.

Glen Lyon performed well at both sites, with the marketable yield being clearly superior to Glen Clova and a 50% harvest date about one week later. The berries of Glen Lyon were of a similar size or slightly smaller than Glen Clova, rounded in shape, shiny, with an orange/red coloration and the canes spine free.

Glen Garry also cropped well at both sites, but particularly at Castle Huntley where it was the highest yielding variety overall. This variety also produced the largest berries of any variety/selection, (long conical in shape, shiny, rather soft but with a good flavour). Glen Garry has been shown to be genetically unstable which can cause reductions in fruit size, but this problem has not arisen at any of the sites to date.

The selection 33 R 40 also produced large berries, being superior to the standards in this respect (described as being long conical in shape, mid red in colour and rather downy, leading to a dull appearance in the punnet). Yields of this selection were comparable to both standards and it had a similar season to Malling Leo.

Augusta was the latest variety in the trial but yields were the lowest at both sites, this being particularly notable at Castle Huntley where it was recorded that a significant number of stools did not survive the winters and growth of the remaining canes was relatively poor. The berries were similar in size or larger than the standards, round in shape, relatively dark red in colour when ripe and downy, with an acidic flavour.

The selection 3650/3 also produced relatively low yields,

again especially at Castle Huntley, the berries being of moderate size, dark red when ripe and the flavour was described as generally fairly acidic. 3650/3 was found to be a late cropping selection with a season between that of Malling Leo and Augusta.

Conclusions

The varieties Glen Garry and Glen Lyon were the best performers at the two sites, both producing good yields compared to the standards, with the former having the largest berries of all the varieties/selections in the trial.

33 R 40 produced comparable yields to the two standards and the berry size was superior to both.

Both Augusta and 3650/3 were late cropping types and they did not perform well at these two more northern sites, particularly the one in Scotland. It seems likely that commercial use of such late varieties will be restricted generally to the more southern regions of the country.

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