INTERIM REPORT

to the

HORTICULTURAL DEVELOPMENT COUNCIL

SOFT FRUIT VARIETY TRIALLING

1990/91

CONTENTS

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1. Additional Reports to follow

Reports in course of preparation for presentation to HDC early in 1991:

(i) Multi-Centre Stage II trials. Data from the following trials are being collated by David Taylor:

Raspberry: MC5 trials at Stockbridge House and Castle Huntley

Strawberry: MC8 trials at Kirton and Loughall

Strawberry: MC9 trials at Efford, Kirton, Castle Huntley and Loughall

(ii) Additional analysis of data from Brogdale trials, i.e. on pick dates, comparative data with previous years' results as well as results of processing quality tests on raspberries and blackberries.

2. Establishment of a new strawberry everbearer trial at Efford

HDC funds were allocated for establishment of a trial assessing the performance of autumn (1990) and spring (1991) -planted everbearing strawberries EM25, 26 and 28 (in comparison with Rapella).

3. Stone and bush fruit

A progress report will be given at the meeting on 30th November 1990

J.D.Quinlan

J.Turnbull
29th November 1990

SECTION 1

BROGDALE HORTICULTURAL TRUST

SOFT FRUIT VARIETY TRIALS

SUMMARY REPORT OF R&D FOR HDC

1. Introduction

Following the closure of the National Fruit Trials by MAFF on the 31st March 1990, the Brogdale Horticultural Trust was formed to take over the Brogdale Farm site, variety trials programme and continue to provide a home for the National Fruit Collection. The Trust received the agreement of MAFF to enable it to have access to existing trials during the 1990 season prior to taking full possession of the farm. This opened the way to the recording of key trials and the maintenance of experimental plots. The funding from HDC and APRC has enabled this to be put into effect with HDC funds used as requested for raspberry and strawberry work.

2. Work carried out on behalf of HDC

The funds which were made available enabled the Trust to enable scientific assistants and casual labour to maintain raspberry, maincrop, autumn fruiting and Rubus trials, to retain plot integrity and to record the yields. Due to the time available to reach agreements with MAFF and HDC, the early part of the strawberry season was lost, nevertheless one replicate of the trial was recorded with observations and assessments. This one strawberry trial was also maintained at the end of the season to enable full records to be taken in 1991.

Results

3. Raspberry Variety Trial 7

Planted in April 1987 at a spacing of 2.3m x 0.6m this trial compares 4 seedlings from SCRI and 2 from East Malling with 2 standard varieties. The first crop was recorded in 1989 and the second in 1990.

Although too early to make recommendations for further development, a number of varieties offer improvements to Glen Clova and Leo in cropping potential, berry size and cane characteristics. The heaviest cropping selection to date, 7815 B 8 has large berry size with vigorous cane and fruit well displayed on long laterals. Cane is spineless. Further computations are being made on the data.

Table 3:1 Crop yield 1989

Tonne/ha

Variety	Marketable	Unmarketable	Total	Percentage waste
Glen Clova	13.32	5.55	18.87	29.4
Leo	12.07	6.90	18.97	36.4
7815 A 12	15.81	6.70	22.51	29.8
7815 B 8	23.41	6.06	29.47	20.6
8044 C 9	17.26	8.75	26.01	33.6
795 B 10	15.96	3.32	19.28	17.2
4997/45	15.45	4.39	19.84	22.1
4796/9	13.77	3.94	17.7	22.2

Table 3:2 Crop yield 1990

Tonne/ha

Variety	Marketable Yield	Unmarketable Yield	Total Yield
Glen Clova	9.83	2.77	12.60
Leo	9.08	2.39	11.47
795 B 10	9.21	2.14	11.35
4796/9	6.02	1.21	7.23
4997/45	9.25	2.48	11.73
7815 A 12	11.27	3.96	15.23
7815 B 8	14.93	2.49	17.42
8044 C 9	8.77	3.10	11.87

Table 3:3 Marketable crop yield 1989-90

Tonne/ha

Variety	1989	1990	Total
Glen Clova	13.32	9.83	23.15
Leo	12.07	9.08	21.15
795 B 10	15.96	9.21	25.17
4796/9	13.77	6.02	19.79
4997/45	15.45	9.25	24.70
7815 A 12	15.81	11.27	27.08
7815 B 8	23.41	14.93	38.34
8044 C 9	17.26	8.77	26.03

Table 3:4 Flowering periods 1989

Variety	First Flower	Full Flower
Glen Clova	8 May	15 May
Leo	18 May	24 May
7815 A 12	15 May	24 May
7815 B 8	13 May	26 May
8044 C 9	14 May	20 May
795 B 10	12 May	17 May
4997/45	26 May	1 June
4796/9	19 May	26 May

Table 3:5 Number of Berries/250g sample (Mean of 4 plots)

Variety	Early	Mid	Late	Mean
Glen Clova	96	105	106	102
Leo	70	95	110	92
795 B 10	72	85	113	90
4796/9	92	113	141	115
4997/45	90	116	131	112
7815 A 12	79	91	113	94
7815 B 8	60	67	88	72
8044 C 9	52	55	69	59

4. Autumn Fruiting Raspberry Variety Trial 3

This trial planted in April 1989 in rows 3m apart and 1m between canes, compares 8 selections from East Malling with Autumn Bliss and a recently introduced variety from USA, Redwing. Some canes produced a limited amount of fruit in 1989 but this was not recorded. 1990 gave the first recorded yields.

Most new selections produced smaller fruit than Autumn Bliss, without irrigation in 1990. The selection which gave larger fruit, 5605/12, gave an inferior yield. The heaviest cropping selection was 5963/15 with fruit of comparable size to Autumn Bliss. Further computations on data are in progress.

Detailed evaluations of fruit quality will be made on the 1991 crop.

Table 4:1 Autumn Fruiting Raspberry Variety Trial 3 1990

Mean Yield in Kg/Plot (5 canes)

Variety	Marketable Yield	Unmarketable Yield	Total Yield
Autumn Bliss	4.82	1.59	6.41
Redwing	3.15	1.54	4.69
5602/13	1.70	1.02	2.72
5605/10	2.73	1.27	4.00
5605/12	3.13	2.15	5.28
5961/1	3.19	2.03	5.22
5961/24	3.84	2.43	6.27
5963/15	7.57	2.75	10.32
5965/68	4.09	1.22	5.31
5967/57	4.64	2.03	6.67

Table 4:2 Autumn Fruiting Raspberry Variety Trial 3 1990

Yield in Tonnes/Ha

Variety	Marketable Yield	Unmarketable Yield	Total Yield
Autimn Bliss	3.21	1.06	4.27
Redwing	2.10	1.03	3.13
5602/13	1.13	0.68	1.81
5605/10	1.82	0.85	2.67
5605/12	2.09	1.43	3.52
5961/1	2.13	1.35	3.48
5961/24	2.56	1.62	4.18
5963/15	5.05	1.83	6.88
5965/68	2.73	0.81	3.54
5967/57	3.09	1.35	4.44

Table 4:3 Autumn Fruiting Raspberry Variety Trial 3 1990

Number of Berries/250g sample (Mean 3 plots)

Variety	1st Count	2nd Count	3rd Count	Mean
Autumn Bliss	87	113	102	101
Redwing	123	126	143	131
5602/13	137	140	147	141
5605/10	185	194	176	185
5605/12	74	77	74	75
5961/1	143	156	137	145
5961/24	127	133	127	129
5963/15	81	119	113	104
5965/68	138	130	153	140
5967/57	106	133	146	128

5. Blackberry Variety Trial 2

This trial planted in spring 1988 at 3.5m x 3m, contains 6 selections from SCRI and two recently released varieties from the USA compared with Ashton Cross and Loch Ness. Bedford Giant is also included as a standard but poor establishment necessitated that plants were cut down to encourage strong growth for cropping in 1991. No crop was recorded in 1989.

Considerable variations in season, yield and fruit size were evident. Selections within this trial could offer some useful extension to the blackberry season for some commercial situations. Detailed evaluations of fruit quality will be carried out in 1990.

Table 5:1 Blackberry Variety Trial 2 1990

Mean Yield/1 plant Plot in Kg

Variety	Marketable Yield	Unmarketable Yield	Total Yield
Ashton Cross	6.73	0.83	7.56
Kotata	5.39	0.63	6.02
Loch Ness	5.52	0.50	6.02
Silvan	1.82	0.50	2.32
81309 C 3	3.20	1.06	4.26
82417 A 12	3.12	0.47	3.59
82417 C 2	3.30	0.55	3.85
84204 C 5	4.49	1.15	5.64
84230 G 6	4.96	1.44	6.40

Table 5:2 Blackberry Variety Trial 2 1990

Yield in Tonnes/Ha

Variety	Marketable Yield	Unmarketable Yield	Total Yield
Ashton Cross	6.41	0.79	7.20
Kotata	5.13	0.60	5.73
Loch Ness	5.26	0.48	5.74
Silvan	1.73	0.48	2.21
81309 C 3	3.05	1.01	4.06
82417 A 12	2.97	0.45	3.42
82417 C 2	3.14	0.52	3.66
84204 C 5	4.28	1.10	5.38
84230 G 6	4.72	1.37	6.09

Table 5:3 Blackberry Variety Trial 2

Number Berries/250g Sample (Mean)

Variety	1st Count	2nd Count	3rd Count	Mean
Ashton Cross	108	132	129	123
Kotata	72	89	-	81
Loch Ness	63	69	78	70
Silvan	43	51	-	47
81309 C 3	97	111	109	106
82417 A 12	74	88	97	86
82417 C 2	107	125	146	126
84204 C 5	74	87	99	87
84230 G 6	55	58	64	59

6. Strawberry Variety Trial 37

This trial was planted in August 1988 with 12 selections from East Malling and 4 named varieties from overseas being compared standard varieties. The early season in 1990 tended to show early varieties in a poor light in the assessments which were made.

Full records in 1991 will enable firm recommendations to be made on selections in this trial.

Table 6:1 Yield and grade-out (tonne/ha) 1989

Variety	Class I (mm)				Class		Total	50%
	35+	25-35	18-25	Total	II	Unmkt	Yield	Pick Date
Bogota	2.8	8.1	1.7	12.6	4.7	6.4	23.7	5 July
Cambridge Favourite(3B)	1.4	4.9	0.7	7.0	1.6	2.8	11.4	26 June
Elsanta	2.6	4.0	0.4	7.0	3.9	3.0	13.9	21 June
Gorella	1.7	4.3	0.7	6.7	2.7	2.4	11.8	19 June
EM 20	2.9	4.1	0.4	7.4	4.7	5.5	17.6	2 July
EM 22	3.0	4.0	0.9	7.9	5.4	5.0	18.3	29 June
EM 23	4.0	10.1	0.3	14.4	1.9	2.2	18.5	27 June
EM 29	4.2	4.0	0.4	8.6	3.7	3.8	16.1	29 June
EM 33	1.6	5.5	2.1	9.2	1.9	2.6	13.7	23 June
EM 122	3.6	7.0	0.4	11.0	4.2	3.8	19.0	24 June
EM 147	8.7	4.4	0.4	13.5	5.4	7.7	26.6	10 July
ES 945	3.2	3.4	0.2	6.8	2.1	1.7	10.6	21 June
ES 957	0.2	1.7	0.3	2.2	1.8	2.4	6.4	17 June
ES 983	1.2	3.2	0.5	4.9	1.1	1.3	7.3	20 June
ES 1040	1.9	4.2	0.8	6.9	1.7	2.5	11.1	23 June
ES 1043	1.4	3.8	0.5	5.7	2.8	3.2	11.7	23 June
Annapolis	0.4	0.5	0.1	1.0	0.9	1.1	3.1	17 June
Kouril	3.0	1.6	0.2	4.8	2.7	10.8	18.3	6 July
Manil	2.6	4.3	0.3	7.2	2.5	3.6	13.3	27 June
Pajaro	1.4	1.3	0.0	2.7	0.9	1.0	4.6	23 June
SED	-	-	-	2.8	-	-	3.7	-

SED = Standard error of difference (38 d.f.)

Table 6:2 Strawberry Variety Trial 37 1990

Yield in Kg/10 plant plot (not a mean)

Variety	Class I Large 35+mm	Medium 25-35mm	Small 18-25mm	Total Class I
EM 147	2.71	4.27	0.33	7.31
Manil	0.67	4.70	1.14	6.51
C.Favourite	0.63	4.67	1.08	6.38
ES 1040	0.64	3.82	0.93	5.39
EM 29	1.34	3.57	0.42	5.33
Elsanta	0.92	3.34	0.98	5.24
EM 122	0.68	3.64	0.76	5.08
EM 33	0.16	2.73	1.42	4.31
ES 945	0.18	2.70	0.71	3.59
ES 988	0.94	1.90	0.71	3.55
Bogota	0.93	1.96	0.37	3.26
Gorella	0.50	2.05	0.47	3.02
EM 22	0.12	1.84	0.82	2.78
EM 23	0.57	1.40	0.37	2.34
ES 1043	0.26	1.82	0.21	2.29
EM 20	0.13	0.95	0.23	1.31
Pajaro	0.07	0.78	0.32	1.17
ES 957	0.02	0.79	0.23	1.04
Kouril	0.05	0.48	0.16	0.69
Annapolis	0.18	0.25	0.05	0.48

Conclusions after 1989 crop

EM 23 produced the highest Class I yield in 1989, with glossy red, conical shaped, firm berries with easy calyx removal. This selection performed well in jamming tests conducted by Wilkin and Sons and has potential as a dual purpose variety.

EM 122 has glossy orange/red berries which are firm with a tough skin. Yields and size of fruit was good and this selection has potential for the dessert market.

EM 147 was the latest selection in the trial, 50% pick date being five days later than Bogota and fruit size was also larger. The quality of the berries was poor, however, with many mis-shapes (probably due to bad pollination as EM 147 is male sterile) and the fruit was soft.

ES 945 produced fruit of excellent quality, similar to Elsanta in this respect but performed no better than this standard and is apparently disease susceptible.

Kouril was as late as Bogota with good sized fruit but yield of Class I fruit was much lower, due to a high proportion of unmarketable fruit and the berries were soft with a weak skin.

Field observations taken: 27th June - 1990 crop

Bogota

A small amount of early fruit missed: 2 or 3%. Main crop still green, but a high proportion showing brown blemishes on all three plots. Large, compact and even plants, but those in third block looked yellow.

Cambridge Favourite 3B

Early fruit missed amounted to about 10%. Crop potential looked high with a lot of ripe and repening fruit, mainly medium and small. Untidy rows with profuse runnering. Some brown blemishes in the green fruit in first block.

Elsanta

Early fruit loss estimated around 5-10%. Blocks one and two were poor plots with gaps, poor and dead plants. Third block was better with an even row of healthy plants, and the crop potential appeared good.

Gorella

Quite a high proportion of early fruit lost, especially on the first two blocks, between 25-40%. Loss on third block estimated about 10%. Crop potential good. Some gaps and sickly plants, but third block quite even, with fairly weak plants and few runners.

EM 20

The early loss was estimated at approx. 10%, but the potentially large crop still to come, and still small and green, appeared dried-up, seedy and mildewed, with most being potentially unmarketable. The under-ripe fruits appeared to be going pinkish-brown, with a mildewy 'bloom', and drying rather than sizing up. The plants looked quite even, well-grown and healthy.

EM 22

Early fruit loss about 10%, with a lot of ripe and ripening fruit which was being infected by mildew and rot on the early fruit. Crop potential should have been quite good. The plants were variable; those in the third block being even and healthy, but some sick and weak in the other two blocks.

EM 23

Early fruit loss low, about 5%. Crop potential on first and third blocks looked good, with strong vigourous plants and quite a lot of ripening and green fruit, but also some diseased plants and gaps in first block. Plants in second block were very poor with several dying, and the potential crop here was poor.

EM 29

Crop potential moderate to good, with more early fruit lost in first block (15%-20% with 5-10% loss on second and third blocks). Plants were large and open, with not much foliage covering the fruit, some of which was dried and seedy. The recorded row was rather straggly with one or two sickly plants.

EM 33

Early loss estimated at around 5%. Crop potential overall appeared moderate, with mostly small fruit ripening, and some drying and going hard, and showing brown blemishes. Wide rows of sprawling, low plants, several weak and showing uneven growth. Some fruit on the recorded plot was infected by old rots on the plant.

EM 122

About 10% early fruit lost; mouldy and nothing before harvest. Crop potential looked good, with ripe and ripening fruit but some green fruit was very small, dried and seedy. Plants in the recorded block were uneven and some weak; those in first block neat and upright, with few runners.

EM 147

Just starting to crop, with very small amount lost due to late picking. Some plants still flowering, and a lot of green fruit to ripen. One gap in recorded plot, and patchy runnering. Fairly large, flat and dense plants.

ES 945

Quite a lot of the early crop lost; 15-20%, and a little less (10%) on the third block. Crop potential would have been quite good, especially as there were gaps and stunted weak plants. Crop potential on the strong good plants appeared very good. Some late fruit probably spoilt, due to rot spreading.

ES 957

Early fruit lost was high; 20-25%. Not much still to come, and that mainly small fruit. Some marked with brown blemishes. Crop potential poor to moderate. Plants were sprawling, flat and quite dense and untidy.

ES 983

Early loss about 5%. The first two blocks had very poor diseased and small plants and gaps, and the crop potential on these was poor. The third (recorded) block was better, though uneven, with one or two weak plants and the crop potential was quite good. Plants were wide and flat.

ES 1040

Early losses amounted to 5-10%, but more was lost due to the fruit being very dirty. The plants were large, wide and open and the fruit rather exposed. The crop potential on the first block looked very good, while the recorded block had several small stunted plants and the third block was very poor, with some very weak plants carrying no crop at all. Crop potential with all healthy plants, and properly strawed, looks high.

ES 1043

Plants in the first block nearly all sick and stunted, and a poor crop predictable, even though 2-3% only lost from early fruit. Remaining two blocks had strong healthy plants (one gap only), but some fruit was blemished and mildew was appearing. Crop potential on these two blocks moderate.

Annapolis

Crop potential on all three blocks looked very poor. Little early fruit lost, but little left on the plants. Several plants looked very sick, but the large, vigorous plants carried very little fruit.

Kouril

Very little early fruit missed, but the green fruit was small and dried-up, and mildewed and blemished. The plants were very tight and dense, and the fruit well-hidden. Crop potential possibly moderate, if irrigated and strawed.

Manil

Between 5-10% early fruit lost, with quite a lot still ripening. Crop potential moderate-good, with even rows of healthy plants, showing few runners.

Pajaro

Early crop loss was small; 2-4%, but very little left to pick. Potential crop was poor. There were some gaps and weak plants, but even the stronger plants carried a light crop only. Plants looked loose and sprawling.

7. Strawberry Variety Trial 39

Planted in autumn 1990 contains 16 selections from East Malling and 5 standard varieties for evaluation. Runner tips were taken from all selections in East Malling stock houses. Standard varieties, tip propagated, were bought in from a commercial source as neither East Malling not the Trust had mother stocks. High temperatures and logistical problems resulted in higher losses and a later planting date than would be normally experienced. Mother plants of all varieties have been retained for future propagation.

Varieties:	Elsanta	Honeoye	Bogota
	Hapil	Gorella	
	EM 224	EM 258	
	EM 237	EM 99	
	EM 227	ES 990	
	EM 235	ES 937	
	EM 208	ES 934	
	EM 223	ES 969	
	EM 200	ES 1041	
	EM 255		

SECTION 2

STAGE I STRAWBERRY VARIETY TRIAL 38

Introduction

This trial was planted at BSHR 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 BSHR East Malling, with another six selections being planted in guard plots for observation. Funding for this trial is being provided by the Horticultural Development Council as no money is now available for this 'near market' work from MAFF.

Materials and Methods

Varieties/Selections

	ES 986	Cambridge Favourite
	ES 1044	Elsanta
	ES 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 BSHR 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. 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 mishapes) and unmarketable. Fruit was weighed using an electronic balance, the data being transferred directly to an Epson HX-20 microcomputer.

Results and Discussion

The season was very advanced compared to 'normal', due to the

exceptional weather conditions prevailing in 1990. Yield and grade-out results for the year are presented in Table 1.

The selections ES 986 and EM 227 were the earliest in the trial, having similar 50% harvest dates to Honeoye. Both selections produced significantly higher yields than Honeoye, although this is perhaps misleading, as the evidence from previous trials suggests that the performance of this variety was markedly inferior to that expected. No definite reason for this can be given although the plant size was generally very small and perhaps the health status of the Honeoye was suspect. When ES 986 and EM 227 are compared to Elsanta, both produced significantly less Class I fruit, with 50% harvest dates four and three days earlier respectively. EM 227 produced better quality fruit than ES 986, being a regular conical shape and attractive, glossy orange/red in colour but not quite as firm as Elsanta. The fruit of ES 986 was less firm and the appearance was not as attractive as EM 227.

Table I

Crop Yield (of plant) and 50% Pick Date 1990

Variety	Class I (mm) 35+	Class I (mm) Total	Jam	Unmkt	Total yield	50% Pick Date
C.Favourite	188	587	100	39	725	22 June
Elsanta	447	808	89	16	912	17 June
Honeoye	187	340	73	19	432	14 June
EM 90	337	663	130	25	817	25 June
EM 220	545	802	110	24	935	20 June
EM 227	363	552	109	12	673	14 June
ES 986	316	546	120	82	747	13 June
ES 1044	323	762	177	45	984	23 June
SED	-	70.9	-	-	68.2	

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

From the evidence of this year's results it is unlikely that ES 986 has any potential for commercial production and no further work should be carried out with this selection. The performance of EM 227 was somewhat disappointing given earlier results at BSHR EM but the quality of the fruit is sufficient to warrant the recording of this selection in 1991.

EM 220 was perhaps the most promising selection in the trial, producing a similar, Class I yield to Elsanta with a higher proportion of the berries over 35 mm and a 50% pick date three days later. The berries are round conical in shape and were the firmest in the trial, comparing favourably with Elsanta in this respect. Skin toughness and flavour were good, although the berries tended to have green 'noses' which were slow to colour up, this being a similar problem with Elsanta.

ES 1044 was slightly later than EM 220 with a 50% pick date six days later than Elsanta. Fruit size was inferior to both with 42% of fruit over 35 mm compared to 55% with Elsanta. The berries are very attractive, however, with a regular conical shape, glossy red in colour and firm with a tough skin.

EM 90 was the latest selection in the trial, with a 50% pick date eight days later than Elsanta but a lower Class I yield. Fruit size was good being similar to Elsanta and the berries are attractive, conical shaped with sunken achenes and firm flesh/tough skin. Based on this year's results EM 90 has better fruit size but the plants produced very few runners, while ES 1044 is also higher yielding. Further details of the selections, including those planted in guard plots, are given in Appendix I.

Conclusions

Of the two early selections in the trial EM 227 was more promising with attractive, good quality fruit although the yield was less than Elsanta. The other selection, ES 986, produced relatively poor quality fruit and no further records should be taken.

The selections Em 220, EM 90 and ES 1044 all produced good quality fruit with EM 220 having the better combination of firmness, fruit size and yield. ES 1044 also gave a good yield but fruit size was smaller than Elsanta, while EM 90 gave better sized fruit but yields were lower and the plants produced very few runners.

Of those selections in the guard plots ES 937 and ES 969 have potential for processing, while ES 934 produced the best flavoured fruit in the trial.

APPENDIX I

Descriptions of Plant/Fruit

EM 90 Providence x Linn.

Plant - medium to vigorous, upright to upright/spreading habit. Medium to dark green glossy leaves, slightly up-cupped. Poor runner production.
Fruit - attractive glossy, medium red in colour, conical shape with sunken achenes, firm with a tough skin. Medium size calyx, partially clasping. Acceptable flavour.

EM 220 Elsanta x Allstar.

Plant - moderate vigour, upright/spreading habit, leaves pale to mid-green, up-cupped. Good runner production.
Fruit - attractive, orange/red, round/conical in shape with large number of level achenes, very firm with a tough skin. Tendency for berries to have green 'nose'. Good flavour, medium sized calyx, partially clasping.

EM 227 Honeoye x Hapil.

Plant - moderate vigour, upright/spreading habit, leaves dull (matt) pale to medium green, slightly up-cupped. Good runner production.
Fruit - attractive regular conical shaped berries, glossy orange/red colour, moderate to firm flesh with moderately tough skin. Not as firm as Elsanta and poorer shelf life. Medium sized, partially clasping calyx, flavour acceptable.

ES 986 ES 407 x Cardinal.

Plant - moderate to vigorous, upright to upright/spreading habit. Medium green, slightly up-cupped leaves. Good runner production.
Fruit - conical to round/conical shaped, orange/red to

red in colour, moderate firmness and skin toughness. Small to medium sized, clasping to partially clasping calyx, weak flavour. Shelf life poor in comparison to Elsanta.

ES 1044 ES 407 x Tioga.
Plant - moderate to vigorous, spreading to upright/spreading habit, large, flattish, pale to mid-green leaves. Good runner production.
Fruit - very attractive, glossy red, conical shaped berries, firm with a tough skin. Large calyx, partially clasping, flavour acceptable. Shelf life slightly inferior to Elsanta as fruit more easily marked.

EM 99 Providence x Tioga.
Plant - moderate vigour, upright/spreading habit with dull medium to dark green, flattish leaves. Runner production moderate to good.
Fruit - conical shaped, orange/red to red colour of moderate firmness and skin has tendency to on the weak side which marks easily. Small to medium sized, partially clasping calyx and acid flavour.

ES 934 ES 407 x Rainier.
Plant - moderate vigour, upright to upright/spreading habit with small light to medium green leaves which are flat and tend to be 'floppy'. Runner production is poor.
Fruit - glossy orange/red to red, conical shaped berries with good red internal colour and of moderate flesh firmness/skin toughness. Large calyx, partially clasping to free and good flavour. Fruit well displayed on long pedicels/peduncles.

ES 937 ES 407 x Totem.
Plant - moderate vigour, upright/spreading habit,

light to medium green, flattish leaves. Good runner production.
Fruit - conical shaped, red to dark red colour with good red internal colour. Moderate flesh firmness/skin toughness, with easily removed, moderate sized calyx. Possible processing variety only.

ES 919 ES 407 x Tioga.
Plant - moderate vigour with flattish, pale to mid-green leaves. Moderate runner production.
Fruit- conical to round/conical, red to orange/red colour, moderate firmness with weak to moderate strength skin. Medium sized, free to partially clasping calyx.

ES 969 Tantallon x Shuksan.
Plant - compact plants of moderate vigour, upright/spreading habit with flattish to slightly up-cupped, medium green leaves. Good runner production.
Fruit - mainly conical-shaped, glossy red colour, moderate firmness/skin toughness. Medium sized, partially clasping calyx which is easily removed. Light to medium red internal colour, this being a possible processing variety.

ES 1041 ES 407 x Tioga.
Plant - vigorous, upright to upright/spreading habit with dark green, slightly up-cupped leaves. Good runner production.
Fruit - mainly conical shaped, orange/red coloured with firm flesh and tough skin. Medium to large sized, free to reflexed calyx. Acid flavour. Appearance and fruit size appear to be main drawbacks.

SECTION 3

HRI EFFORD - PLANTING DATE TRIAL RESULTS FOR PANDORA AND ELSANTA

These cold stored plants vs fresh modules were planted up in 1989 on mulched raised beds. Both types of plants were given overhead irrigation as required for up to three weeks during establishment. The charts summarise the effect of planting date on the size of the plants as measured by leaf number, and maiden yield this year.

* The yield from fresh plants plunges after a late July planting by some 9 g/plant for every days delay in planting. At the spacings used in this trial, this equates to over 1/2 ton/acre per day for Pandora and nearly 1 ton/acre per day for Elsanta. The result for Elsanta agrees well with previous trials.

* The size of plants as measured by numbers of leaves is a reasonably good and quick estimate of growth during and after establishment in the year of planting. It shows a good correlation with subsequent yield for planting dates later than the optimum planting date for maiden yields. Note the relatively large size of Pandora plants (which were also given a wider spacing) compared to Elsanta.

* Early plantings of cold stored plants made bigger plants with more leaves than fresh modules in the planting year, but gave no yield advantage for plantings prior to June. There was no difference in fruit size or quality this year between cold stored runners or fresh modules, but larger plants could reduce the life of the plantation and also make spraying more difficult.

* The difference in the latest optimum planting dates between plant types reflects the need for a post chilling phase before flowers can be initiated by cold stored plants.

* The effect of treatments on cropping dates is also important in this trial; results will be available shortly.

* Results from the second year (1991 crop) are needed to see how far initial treatment differences persist for yield, fruit size and quality. Only then can a full commercial assessment be made as most growers are currently cropping these varieties for at least 2 years.

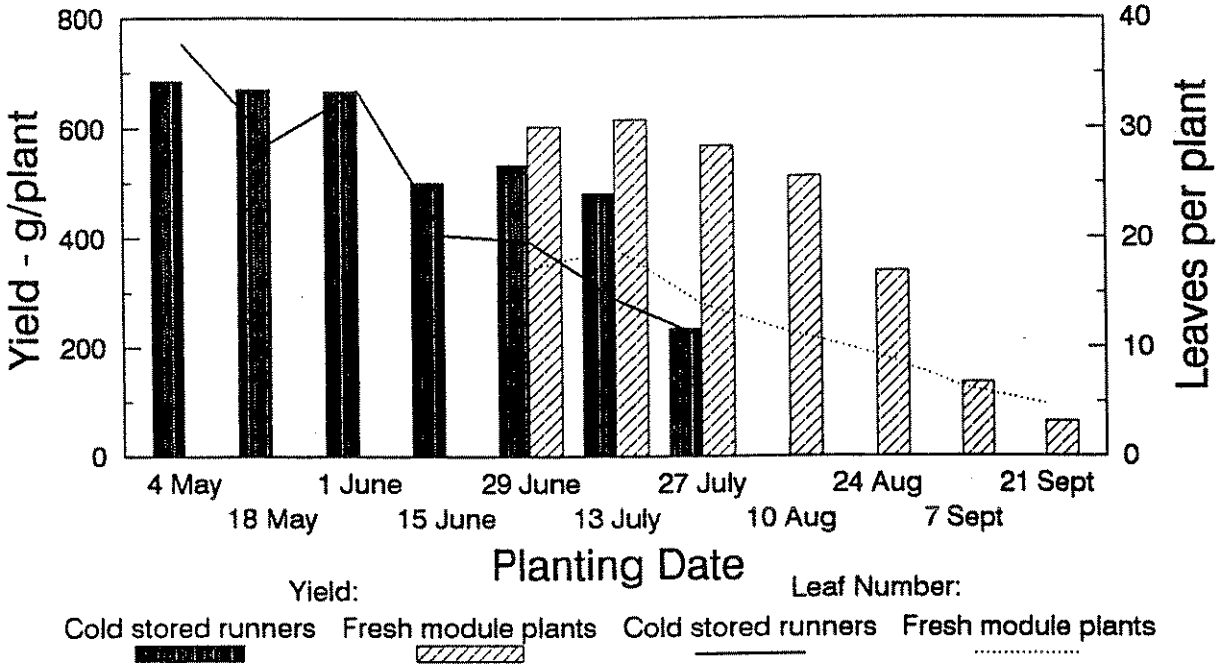
* In summary, to date the trial has shown viable maiden yields can be achieved by both types of plants. Although it has long been known that late planting reduces yields, many growers are still not aware of the magnitude of the losses and consequences for their crop profitability. These results now help quantify the penalties caused by late planting for two important varieties and plant types.

Chris Burgess
HRI Efford
27 November 1990

Effect of Planting Date on Leaf No. and Yield

Cold stored runners and Fresh modules ELSANTA

Leaves counted Nov 1989; Class 1 yield 1990



Effect of Planting Date on Leaf No. and Yield

Cold stored runners and Fresh modules PANDORA

Leaves counted Nov 1989; Class 1 yield 1990