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Key workers:	Adam Whitehouse, Kirsty Hammond, Judi Bell
Location:	HRI, East Malling
Project Co-ordinator:	Mr Andrew Chesson Manor Farm Oldbury Borough Green Kent TN15 9DG
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GROWERS REPORT

SUMMARY OF CONCLUSIONS

- A total of 664 selections from the East Malling breeding programme were evaluated to determine which should undergo further trialling
- From these, 126 selections were chosen to progress for further trialling
- Eight selections are now in advanced, large-scale grower trials and decisions on release will be taken during 2004 and 2005
- Seven selections are in smaller-scale grower trials planted in 2003
- Twenty-one selections are being propagated for planting in grower trials in 2004 or 2005
- Seven cultivars have been released:
 - **Florence** is now the second most popular June-bearer after Elsanta and is widely grown for July production
 - **Sophie** has an established niche as a late season cultivar for PYO and direct sales
 - **Alice** was widely planted in 2001 and 2002 and looks to have potential for all markets in the UK
 - **Mae** and **Anna** were launched in 2003 and will be commercially tested by growers over the next two years
 - **Emily** and **Rosie** have not become established as major cultivars in the UK but continue to be grown commercially on a modest scale.

RESULTS AND DISCUSSION

During the course of the project 10 trials were assessed (Table 1). A total of 664 selections from the East Malling breeding programme were evaluated, along with 77 overseas cultivars and 46 numbered selections from overseas (mostly from Italy). The average number of lines assessed in each trial was 95.

Table 1. Germplasm evaluated from 1994 to 2003

Trial	New selections	Recycled selections	Advanced selections	Overseas cultivars	Overseas selections	Total
1994/95	38	9	3	17	9	76
1995/96	99	9	11	2	2	123
1996/97	59	12	9	15	12	107
1997/98	66	12	4	5	6	93
1998/99	37	5	6	13	3	64
1999/00	106	10	6	3	6	131
2000/01	50	13	4	10	2	79
2001/02	70	11	7	5	0	93
2002/03	56	13	2	3	1	75
2003	83	7	10	4	5	109
Totals	664	101	62	77	46	

During the course of the project 126 selections have been chosen for further trials (Table 2). In many cases these trials are now complete and the selections have been named, discarded or maintained for further breeding. Those that have performed well in the more recent trials are still under consideration and decisions will be taken when grower trials have been completed.

Seven cultivars have been named and released for use by commercial growers in the UK. The breeders descriptions are in Appendix 1. Six of these cultivars are available for all UK nurseries to propagate (under licence from Meiosis Ltd.) but 'Anna' is available exclusively from William Cragg. An additional cultivar 'Perfection' was released for the amateur market and is marketed exclusively by Suttons. Brief descriptions follow for the cultivars available to commercial growers in the UK.

Emily (EM426) (1995) is the earliest fruiting variety currently available, being approximately 10 days earlier than Elsanta for 50% harvest. The berries are firm with a regular shape and dark red colour but rather acidic flavour. Average fruit size is smaller than Elsanta and it is important to protect the early flowers from frost damage to achieve acceptable class 1 yields. Since first selected, this cultivar has demonstrated strong and durable resistance to powdery mildew, which is an extremely useful trait for further breeding. Emily was widely planted from 1996 to 1999 but is no longer popular with domestic growers and plant sales to overseas markets now exceed those in the UK.

- Florence** (EM372) (1997) is 7 to 10 days later fruiting than Elsanta and is currently the most popular of the East Malling cultivars, with total sales of 31 million plants in the six years since release. Plants are very productive with large fruit and erect plant habit, which facilitates rapid harvesting. The berries are firm with a deep red colour and sweet flavour. Florence is a grower-friendly cultivar with useful levels of resistance to powdery mildew, wilt and crown rot and some tolerance to vine weevil. Well suited for organic production systems.
- Sophie** (EM0341) (1997) is approximately two weeks later than Elsanta. The plants are productive but very vigorous and must be planted at a wider spacing than Elsanta. The berries are attractive with a regular shape, strong red colour and glossy skin finish but shelf life is inferior to Elsanta and Sophie is best suited to direct sales or PYO marketing. Sophie has established a niche for production in early and mid July and average sales are around 400,000 plants per annum.
- Rosie** (EM575) (1999) is approximately one week earlier than Elsanta and is best suited to production under tunnels. It has a sweet aromatic flavour and large, regular berries which are glossy with a deep red colour. The plants have moderate vigour and an erect habit but are susceptible to powdery mildew, although this is not normally a problem during the harvesting period. Rosie has not become very popular with UK growers, with annual sales varying between 100,000 and 270,000. However, there is increasing interest in this cultivar from other northern European countries.
- Alice** (EM726) (2000) has a season intermediate between Elsanta and Florence and has a long harvesting period. Yield is similar to Elsanta but with larger average fruit size, giving good harvesting speed. The berries are firm and orange-red with a succulent texture and sweet flavour, which has been consistently well liked in tasting sessions organised at East Malling. Plants are resistant to wilt and crown rot but moderately susceptible to powdery mildew. Alice has been widely planted in the UK in the last two years but it is too early to predict how successful this cultivar will become.
- Anna** (EM3147) (2003) is a mid-season cultivar with similar yield to Elsanta but better average fruit size. The berries are firm with mid red colour and a regular, blunt conical shape. The flavour is sweet and can be aromatic. Plants have moderate vigour and have good resistance to wilt and moderate resistance to powdery mildew. Anna is a grower-friendly cultivar and performs well in a variety of different growing systems and soil types. This cultivar is marketed exclusively by William Cragg and is aimed at growers supplying local retail networks rather than supermarkets.
- Mae** (EM884) (2003) is an early season type which is an improvement on Rosie and Emily. Plants are more productive than Rosie and with better fruit size than Emily. The berries are firm with a regular conical shape and mid red colour. Flavour is good provided that the berries are fully coloured at harvest. Plants have moderate vigour but no strong resistances and should be treated as Elsanta for disease and pest control. Plants of Mae are on sale for the first time in 2004.

Selections in advanced trials

- EM933** A mid season selection with good yield and high percentage of class 1. Large berries in year 1 put mostly medium on second year plants. Very attractive, uniform berries with good firmness, pleasant flavour and shelf life similar to Elsanta. Was the best selection in the 98/99 trial but has performed inconsistently in subsequent grower trials and is too vigorous under tunnels. Advanced trials are continuing with a small number of growers.
- EM934** A high yielding mid season type with large berries and very high percentage class 1. Berries are uniform and glossy with good firmness but darker colour than Elsanta. Flavour scores were inconsistent. Some advanced trials are continuing but this selection is very susceptible to wilt and looks unlikely to be released.
- EM965** An exceptionally late season selection, due to an extended period of dormancy. Approximately five weeks after Elsanta for 50% harvest and the first harvest is typically 7-10 days after the last harvest on Elsanta. Yield is lower than Elsanta but this selection has a unique season and there is no appropriate standard for comparison. Fruit has good shape and colour but is softer than Elsanta with inferior shelf life. Average brix consistently higher than Elsanta at East Malling but sensory flavour scores have been variable. This selection is currently in several large scale plantings on commercial farms and trialling will be completed in 2004. It is most likely to be of interest in the PYO and direct sales sector, where it would provide a valuable extension to the season.
- EM972** One week later than Elsanta. Large, firm berries with high percentage class 1. Berries are firm and sweet with good colour and shelf life but the shape can be irregular. Colour and overall appearance is better than Florence but the yield is lower. Some advanced trials are continuing with this selection.
- EM1024** An early selection with the same season as Honeoye. Very good fruit size but yield less than Elsanta and the plants are more vigorous. Berries are firm and glossy but darker than Elsanta. Good shelf life but variable flavour at East Malling. Susceptible to powdery mildew. This selection is included in advanced trials on several sites that will crop in 2004.
- EM1008** A mid season selection with good yield and better average fruit size than Elsanta. Berries are very attractive with a bright, glossy skin finish, good colour and excellent shelf life. Flavour was consistently good in trials at East Malling. Plants have moderate vigour with erect habit and good fruit display. This selection was considered the best in the 1999/2000 trial and also the best in the 2003 grower trials. It will now progress to advanced trials on commercial farms.

- EM1051** A mid season selection with firm, attractive berries but rather crunchy texture and flavour has been variable. Good yield and size at East Malling but on some grower trial sites the average fruit size was considered to be too small. Vigorous plants with very erect habit. This selection performed particularly well on one grower trial site and may progress to further trialling.
- EM1064** A mid season selection with high yield, large berries and high percentage class 1. The fruit is firm and very attractive with regular shape, mid red colour and glossy skin finish. Shelf life and brix is similar to Elsanta. In most trials the flavour has been rather acid on the early harvests but become sweeter as the season has progressed. Moderately vigorous plants with large leaves. This selection was in grower trials in 2003 and will now progress to advanced trials.

Selections in grower trials planted 2003

- EM1072** Late season (as Florence). Yield slightly less than Elsanta but better average fruit size. Firm berries with good flavour but slightly blotchy appearance. Shelf life similar to Elsanta. Plants have moderate vigour.
- EM1103A** Approximately 10 days later than Elsanta. Good yield and fruit size similar to Elsanta. Attractive firm berries with good flavour. Shelf life similar to Elsanta. Plants rather dense.
- EM1108WR** A mid season selection with good yield, good fruit size with very high percentage class 1. Attractive, firm berries with good colour and regular shape. Good shelf life. Plants have good resistance to Verticillium wilt but are very vigorous on clean land. Upright habit, similar to Florence.
- EM1119** One week earlier than Elsanta with high yield and good fruit size. Berries are glossy and uniform but darker than Elsanta and slightly more prone to bruising. Shelf life and brix similar to Elsanta. Very erect plants which are taller than Elsanta and with very long trusses. If mowed off after harvest this selection will produce a second crop in autumn.
- EM1148** A mid season selection with similar yield to Elsanta but much better fruit size and higher percentage class 1. Firm, glossy berries with regular shape and good flavour. Brix and shelf life similar to Elsanta. Plants have erect habit and are more vigorous than Elsanta.
- EM1159** One week later than Elsanta. Very high yield and large average fruit size with high percentage class 1. Attractive berries with regular shape and good colour. Flavour variable, sometimes bland. Shelf life and brix similar to Elsanta. Quite vigorous plants with erect habit. Susceptible to powdery mildew.

EM1161 A mid season selection with very high yield but average fruit size slightly smaller than Elsanta. Very attractive, glossy berries with good colour and excellent shelf life but weak flavour. Some mis-shapen berries on early harvests. Plants have moderate vigour but are rather dense.

Selections for grower trials to be planted in 2004 or 2005

EM1128 A mid season selection with yield similar to Elsanta but larger berries and higher percentage class 1. Attractive glossy berries with regular shape but darker colour than Elsanta. Scored highly for flavour on several occasions in 2001 and 2002. Shelf life similar to Elsanta but marked down for colour. Brix higher than Elsanta. Plants are compact and would be suitable for intensive growing systems such as peat bags.

EM1131 A mid season selection with high yield and fruit size similar to Elsanta. Attractive, firm berries but darker than Elsanta and some misshapes on early harvests. Good shelf life but lower brix than Elsanta and rather bland flavour. Nice plants with moderate vigour.

EM1144 A mid season with very good yield and fruit size. Glossy berries but rather dark and consequently shelf life was inferior to Elsanta. Flavour rather acidic. Plants have erect habit and similar vigour to Elsanta.

EM1211 A mid season selection with good yield and large fruit size but plants are more vigorous than Elsanta, similar to Alice. Usually given good scores for flavour but very variable brix. Shelf life similar to Elsanta

EM1228 A mid season selection with good yield, large fruit size and attractive, firm berries. Brix similar to Elsanta but shelf life was better. Moderate vigour.

EM1231 An early selection, 11 days before Elsanta for 50% harvest in 2002. Good fruit size but only moderate yield, although the plants were uneven and yield varied considerably from plant to plant. Best in trial for overall fruit quality with very attractive, glossy berries with regular shape and sweet flavour. Shelf life better than Elsanta and slightly higher average brix. Moderate vigour and erect habit. Susceptible to mildew.

EM1232 A mid season selection with good yield and fruit size. Very attractive, firm berries with good shape and colour but variable flavour, sometimes acidic. Shelf life better than Elsanta but lower average brix. Plants have moderate vigour and erect habit. Susceptible to mildew.

EM1246 A mid season selection with good yield and fruit size. Attractive, glossy berries but flavour was variable and brix varied between 4 and 11 in 2002. Shelf life slightly better than Elsanta. Nice plants with moderate vigour.

- EM1248** Six days later than Elsanta with very good yield and fruit size. Attractive berries with regular shape and good colour but flavour was usually bland. Shelf life similar to Elsanta but lower brix. Vigorous plants with erect habit, like Florence.
- EM1256** An early season selection with moderate yield and fruit size, although some flowers had been frosted in 2002. Attractive, glossy berries but dark colour and hence poor shelf life. Consistently good flavour although brix was variable. Plants have moderate vigour but big leaves.
- EM1259** A very early season selection, two weeks before Elsanta for 50% harvest. Only moderate yield and fruit size but a lot of flowers were lost due to frost. Attractive berries with good colour but dark seeds. Consistently good flavour. Shelf life and brix better than Elsanta. Plants have erect habit and are slightly more vigorous than Alice.
- EM1235** Similar season to Symphony. Good yield and fruit size. Very attractive berries apart from a few ribbed primaries. Glossy with good colour and good shelf life. Firmness variable but considered a bit soft on some harvests. Moderate flavour. Plants are vigorous, tall and very erect, with similar habit to Florence.
- EM1265** About 3 days later than Florence with similar yield and fruit size. Regular shape and better colour than Florence but slightly blotchy ripening. Shelf life superior to Florence and Sophie. Flavour often rated rather acidic but brix higher than Florence and Elsanta. Vigorous plants with erect habit.
- EM1276** Similar season to Symphony. Higher yield than Florence and Symphony, very good fruit size. Attractive, glossy berries with good shape and colour. Flavour scores similar to Elsanta but shelf life was superior. Plants are more vigorous than Elsanta and very tall but also very erect. Probably better suited to outdoor production than tunnels.
- EM1281** A mid season selection with yield similar to Elsanta but slightly better fruit size. Very attractive, regular, glossy berries with better shelf life than Elsanta. Flavour a bit variable - sometimes sweet, sometimes sharp. Nice plants with erect habit and moderate vigour.
- EM1294** A mid season selection with yield slightly lower than Elsanta but similar fruit size. Glossy berries with good shape but big calyx. Good shelf life. Consistently good flavour. Plants are a bit more vigorous than Elsanta, with big leaves, not ideal for tunnels. Very long peduncles.
- EM1296** Four days earlier than Elsanta. Moderate yield and fruit size. Berries are glossy and attractive with regular shape but a bit dark. Consistently good flavour but shelf life inferior to Elsanta. Tall, erect plants with big leaves.

- EM1315** A mid season selection with very good yield and fruit size. Attractive, firm, glossy berries with orange-red colour and better shelf life than Elsanta. Flavour a bit variable, sometimes acidic. Nice plants with moderate vigour but a bit taller than Elsanta.
- EM1319** About 3 days later than Florence with lower yield but good fruit size. Berries have good shape and colour but large calyx. Good flavour and higher brix than standards. Overall quality is superior to Florence but large calyx may be a problem. Plants are dense and vigorous.
- EM1324** About 3 days later than Florence but much lower yield. Good fruit size. Very attractive, firm berries with good shape and colour. Good shelf life. Moderate flavour. Plants are dense but quite compact,
- EM1326** Similar season to Symphony. Lower yield than Florence – similar to Symphony but with better fruit size. Attractive berries with good shape and colour but large calyx. Good flavour with higher brix than Florence and Elsanta. Very good shelf life. Moderate vigour and better plant habit than most late-season types but still quite dense with big leaves.

INFORMATION ON VARIETIES RELEASED

Note on availability of following varieties released.

All varieties apart from 'Anna' are available for all UK nurseries to propagate (under licence from Meiosis Ltd):

Meiosis Ltd
Stable Block
Bradbourne House
East Malling
Kent
ME19 6DZ

'Anna' is available exclusively from William Cragg:

William Cragg
Four Winds
Brooker Farm
New Church
Romney Marsh
Kent
TN29 0DU

Anna

a mid-season strawberry variety

Parentage

Anna (EM317) was bred in 1986. It has a complex parentage involving Redgauntlet, Wiltguard, Gorella, Tioga and Elsanta.

Fruit Quality

Berries are very attractive with a bright, shiny skin finish and a very uniform shape. The skin is an orange-red colour. Both skin and flesh are very firm. The fruit develop an aromatic flavour when fully ripe. Good shelf life.

Yield and Fruit Size

Anna has a yield similar to Elsanta but a higher proportion of large berries.

Season

Mid-season, slightly later than Elsanta.

Marketing Suitability

Anna is a high quality dessert type with large fruit. The good shelf life should make it attractive to supermarkets.

Plant Characteristics

Compact plant with upright habit and fruit is well displayed. Runner production is fair.

Disease resistance

Resistant to *Verticillium* wilt. Slightly susceptible to mildew.

Use of the variety

Anna is a mid season competitor for Elsanta but is a more robust and grower-friendly variety . It has a higher proportion of large fruit and the advantage of being resistant to *Verticillium* wilt.

Availability

Anna is marketed exclusively by William Cragg.

Alice

a main season strawberry variety

Parentage

Alice (EM726) was selected in 1993 and has a complex pedigree involving Korona, Totem, Holiday, Tioga, Redgauntlet, Gorella, Redchief, Wiltguard and Surecrop

Fruit Quality

The berries have a regular conical shape, although the larger primaries may be ribbed. Skin and flesh is firm and the flavour is consistently sweet, with a juicy texture. The fruit is attractive with a glossy finish and an orange red colour. The achenes are slightly raised. Shelf life is similar to Elsanta.

Yield and Fruit Size

The net yield has been similar to Elsanta in trials but the average berry size is larger with greater than 70% of the fruit over 35mm. The percentage waste is lower than Elsanta due to more consistent shape, typically 80%+ has been in class 1.

Season

The season is longer than Elsanta and has a less pronounced peak. The 50% harvest date is 7 days later than Elsanta.

Marketing Suitability

Alice is a late mid-season dessert type that offers good fruit size and quality. It should be suitable for all types of retail outlet and taste panel data suggests that the flavour will be very popular with consumers.

Plant Characteristics

Plants are slightly more vigorous than Elsanta with an erect habit. The fruit is well displayed and can be harvested rapidly. Runner production is similar to Elsanta.

Disease resistance

Alice has been resistant to *Verticillium wilt* and crown rot in tests at East Malling. It is less susceptible to powdery mildew than Elsanta but a standard spray programme is recommended for this disease. In grower trials Alice has proved to be a robust variety that has performed well on a range of different sites.

Use of the variety

Alice is a versatile, 'grower-friendly' variety with a flavour and texture that will appeal to consumers. It is suitable for all sectors of the dessert fruit industry. The large berry size reduces picking costs and will also appeal to customers on PYO farms.

Emily

an early season strawberry variety

Parentage

Emily (EM426) was bred in 1988 from the cross Honeoye x Gea.

Fruit Quality

The berries have a very regular conical shape, a deep red colour, similar to Honeoye, and contrasting yellow achenes. The fruit has good skin strength and moderately firm flesh. The flavour is slightly acidic.

Yield and Fruit Size

In trials at East Malling the yield from Emily has been equivalent to or slightly above that of Elsanta. This is unusual as early season types are normally low yielding. Fruit size is less than Elsanta with the bulk of the fruit falling in the medium size category (25-35mm).

Season

Approximately five days before Honeoye and ten days before Elsanta for 50% harvest.

Marketing Suitability

Emily is a dessert type which will compete with Honeoye for the early season. Due to the darker colour than Elsanta, Emily may be more suited to PYO and supplying local markets than for supermarket sales.

Plant Characteristics

Plants are moderately vigorous with an erect habit and the fruit is well displayed. Good runner production.

Disease resistance

Emily is highly resistant to powdery mildew but susceptible to *Verticillium* wilt.

Use of the variety

Emily will offer an alternative to Honeoye for early production both in the open field and under protection. It is earlier flowering than Honeoye so there can be a danger of frost damage and this must be avoided to take full advantage of the early yield.

Florence a late season strawberry variety

Parentage

Florence (EM372) was bred in 1987 from the cross [Tioga x Redgauntlet x (Wiltguard x Gorella)] x (Providence x self)

Fruit Quality

The berries have a regular conical shape, with firm skin and flesh and very good flavour. They have a full red colour and rather matt skin finish, similar to Domanil. Fruit must be picked when fully coloured to achieve the best flavour. Shelf life is very good and the appearance of fully ripe berries does not deteriorate during a standard cool chain process. The best colour is achieved when using a blue or black polythene mulch. White mulch should be avoided.

Yield and Fruit Size

In trials at East Malling the class 1 yield exceeded Elsanta in four years out of six. Florence has larger average fruit size than Elsanta with lower percentage waste.

Season

Seven to ten days later than Elsanta.

Marketing Suitability

Florence is a late dessert type that provides high quality fruit during the period immediately after the Elsanta season. The firm, regular berries are suitable for all outlets and the excellent flavour is a useful attribute for marketing.

Plant Characteristics

Plants are moderately vigorous with an erect habit and the fruit is well displayed. Runner production is very good and the quality of the runner plants means that Florence performs well as a 60-day plant. Planting density should be less than for Elsanta.

Disease resistance

Florence is moderately resistant to powdery mildew and other fungal leaf diseases. It has good resistance to *Verticillium wilt* and crown rot.

Use of the variety

Florence offers growers the option to extend their production of firm, high quality berries after Elsanta and other mid-season varieties have finished cropping. Florence is a robust variety suitable to a range of different growing systems and the multiple disease resistance is attractive to growers on problem sites or wishing to use low input systems.

Mae

an early season strawberry variety

Parentage

Mae (EM884) was bred at East Malling. It was selected in 1995 from progeny of the cross Rosie x Marmolada.

Fruit Quality

The berries have a regular conical shape with firm skin and flesh. Eating quality is good, with a pleasant flavour and juicy texture. The fruit is attractive with a glossy finish and mid red colour, intermediate between Rosie and Elsanta. Shelf life is similar to Elsanta.

Yield and Fruit Size

Mae was trialled at East Malling in 1997-98 and 2000-01. In both trials the yield was less than Elsanta in year 1 but greater in year 2. Fruit size and percentage class1 fruit was superior to Elsanta in all 4 years. Mae maintains large fruit size very well on two-year-old plants which, combined with very low percentage waste, results in rapid and economical harvesting. Mae is more productive than other early season varieties such as Rosie and Honeoye

Season

The season of Mae is seven days earlier than Elsanta.

Marketing Suitability

Mae is an early season dessert type with good fruit quality that is suitable for all retail outlets.

Plant Characteristics

Plants are compact and the fruit is well displayed. If planted as a misted tip, the first year plants are small and would be suitable for a high density planting. Second year plants are slightly less vigorous than Elsanta. Runner production is good.

Disease resistance

Mae does not have strong resistance to any of the common strawberry diseases and a spray programme equivalent to that used for Elsanta is recommended. Soil sterilisation is recommended where there is a risk from *Verticillium wilt*.

Use of the variety

Mae offers growers the opportunity to start the season with a productive variety that fruits one week earlier than Elsanta. The large, well shaped berries will mean rapid harvesting and the good eating quality of the berries will be very acceptable to consumers. Flowering is also early and Mae will perform best under protection in areas where there is a risk of late frosts.

Rosie

an early season strawberry variety

Parentage

Rosie (EM575) was bred in 1991 from the cross Honeoye x (Cardinal x [Belrubi x Holiday])

Fruit Quality

The berries have a very regular conical shape, with firm skin and consistently good flavour – sweet and aromatic. The fruit is very attractive with a glossy finish and a strong red colour. Shelf life is similar to Elsanta.

Yield and Fruit Size

Rosie is early flowering and yields in trials at East Malling have been variable due to problems with late frosts. The percentage waste has been consistently low and generally yield and fruit size has been similar to Honeoye. The large primary berries have a consistent shape and are borne on long stems.

Season

The season is equivalent to Honeoye, approximately one week earlier than Elsanta.

Marketing Suitability

Rosie is an early season dessert type that offers superior quality to Honeoye and other early varieties. Its consistent shape, good shelf life and excellent flavour will make it suitable for all types of retail outlets.

Plant Characteristics

Plants are moderately vigorous with an erect habit and the fruit is well displayed. Runner production is good.

Disease resistance

Rosie does not have strong resistance to any of the common strawberry diseases and a spray programme equivalent to that used for Elsanta is recommended. Soil sterilisation is recommended where there is a risk from *Verticillium wilt*.

Use of the variety

Rosie has superior flavour to most other varieties currently available and this should ensure consumer appeal. Because of its early season, Rosie will perform best under protection in areas where there is a risk of late frosts. The large, long-stemmed primary fruits may be suitable for marketing as 'stem berries'

Sophie

a late season strawberry variety

Parentage

Sophie (EM0341) was bred in 1987 from the cross (Hapil x Streamliner) x Kent.

Fruit Quality

The berries have a regular conical shape and dark red colour, similar to Honeoye. The flesh is moderately firm but the skin can be slightly soft in hot weather when the berries will show bruising if not handled carefully.

Yield and Fruit Size

In trials at East Malling and Brogdale the class 1 yield has consistently been higher than Bogota and usually above Elsanta. The highest proportion of fruit falls in the medium size category (25-35mm) and there are fewer large berries (>35mm) than for Elsanta, but average size is greater than for Bogota.

Season

At least two weeks later than Elsanta for 50% harvest, thus giving little overlap.

Marketing Suitability

Sophie is a very late dessert type with superior fruit quality to Bogota. The fruit is softer and darker than Elsanta and consequently has a shorter shelf life, which makes the variety less suitable for supermarket sales. Sophie is likely to be popular for pick-your-own and farm shop marketing where it offers a useful extension to the season.

Plant Characteristics

Plants are very vigorous with a rather floppy habit but the fruit is reasonably well displayed on long stems and easier to harvest than Pandora. Runner production is very good.

Disease resistance

Sophie is susceptible to powdery mildew and the common soil-borne diseases, so a spray programme equivalent to that used for Elsanta is recommended. The flowering period of Sophie usually coincides with high populations of blossom weevils and a large number of flowers may be lost if the plants are not sprayed to control this pest.

Use of the variety

Sophie is seen as an alternative to Pandora. It has the advantages of being self fertile with a more manageable habit. The berries are slightly firmer than Pandora, with a very regular shape, but the colour is darker.

SCIENCE SECTION

METHODS AND TRIAL DESIGN

During each year of the project a trial was planted during the last week of July or the first week of August. Plants were propagated as misted tips and planted in 10-plant plots on raised beds with opaque polythene mulch, trickle irrigation and netting for bird protection. Each trial was maintained for two cropping seasons and a standard commercial spray programme was used to control pests and diseases.

Each trial comprised 60-80 new June-bearing lines from the East Malling breeding programme, approximately 10 advanced selections (which had also progressed to grower trials) and a variable number of cultivars or selections from overseas. Elsanta was used as a standard cultivar and other standards were chosen as appropriate for each trial – these included Florence, Symphony, Honeoye and Rosie. New selections and untested foreign lines or cultivars were planted in a single 10-plant plot but advanced selections were replicated in two blocks, using a randomised design. There were three replicate plots of Elsanta and two of the other standard cultivars. At the end of the first season any selections that were clearly inferior to the appropriate standard cultivar were removed from the trial. Typically this meant that, in the second year, the number of selections in each trial was reduced by approximately 40%.

Each trial was harvested twice weekly, on Mondays and Thursdays, and the fruit was graded by the pickers into four categories

- Class 1 >35 mm
- Class 1 25-35mm
- Class 1 <25mm
- Class 2 and unmarketable

At each harvest the quality of the fruit was evaluated by a panel of experienced breeders. Using subjective 9-point scales, a score was given for appearance, skin and flesh firmness, flavour and an overall comparison with the standard (selection index). For the promising selections, samples of 15 berries were taken at a minimum of three harvests and placed in a controlled environment cabinet for four days at 18°C. The samples were then assessed for deterioration in comparison with the standards. Brix measurements were also taken from fresh berries of the promising selections on at least three occasions per season. The vegetative characteristics of the plants were recorded once per season and any disease symptoms were noted.

All data were entered on laptop computers and downloaded to an Access database. Analysis procedures were developed to produce summary tables showing the relative performance of lines in each trial and to provide a detailed record for each selection.

CONCLUSIONS

These trials, which are jointly funded by HDC and Meiosis Ltd. are a key stage in the evaluation of seedlings produced in the East Malling breeding programme. During the course of the project, 664 selections were evaluated, of which 36 are currently undergoing further trialling on growers' farms. Seven cultivars have been released during the project:

Florence is now the second most popular June-bearer after Elsanta and is widely grown for July production

Sophie has an established niche as a late season cultivar for PYO and direct sales

Alice was widely planted in 2001 and 2002 and looks to have potential for all markets in the UK

Mae and **Anna** were launched in 2003 and will be commercially tested by growers over the next two years

Emily and **Rosie** have not become established as major cultivars in the UK but continue to be grown commercially on a modest scale

TECHNOLOGY TRANSFER

A fruit walk and sampling session was arranged for levy payers during June of each year. Those attending were able to view the trial plots, talk to the strawberry breeding team and also taste fruit from the promising selections and standard cultivars. Tasters were invited to complete a simple form where they could rate the quality of the samples for flavour, appearance, colour and firmness. These data were then used to assist in decisions on which selections should progress to further trialling.

Factsheets summarising the trial results were produced in 2001, 2002 and 2003.

TABLE 2

Table 2. Selections chosen for further trialling during the course of the project

Selection	Years in trial	Current status
EM0067	95/96	Discarded
EM0208	95/96	Discarded
EM0235	96/97, 98/99	Breeding line
EM0237	95/96	Discarded
EM0255	96/97	Discarded
EM0258	96/97	Breeding line
EM0271	96/97	Discarded
EM0284	96/97	Breeding line
EM0290	96/97	Discarded
EM0317	95/96, 96/97, 97/98, 99/00	Named 'Anna'
EM0319	95/96, 96/97, 97/98	Discarded
EM0336	94/95	Discarded
EM0341	95/96	Named 'Sophie'
EM0344	96/97	Discarded
EM0372	94/95	Named 'Florence'
EM0396	95/96	Discarded
EM0398	96/97, 98/99	Discarded
EM0426	95/96	Named 'Emily'
EM0463	94/95	Discarded
EM0470	94/95, 97/98, 99/00	Discarded
EM0478	94/95, 97/98, 99/00	Discarded
EM0497	95/96	Discarded
EM0502	95/96, 97/98, 99/00	Discarded
EM0503	95/96	Discarded
EM0505	96/97	Discarded
EM0514	94/95	Discarded
EM0517	96/97, 98/99	Discarded
EM0518	95/96	Discarded
EM0521	94/95	Discarded
EM0531	95/96	Discarded
EM0536	97/98	Discarded
EM0537	95/96	Discarded
EM0555	94/95, 96/97, 98/99	Breeding line
EM0557	96/97, 97/98	Discarded
EM0568	95/96	Discarded
EM0574	96/97	Discarded
EM0575	96/97, 98/99	Named 'Rosie'
EM0577	96/97	Discarded
EM0580	96/97	Discarded
EM0601	94/95, 97/98	Discarded
EM0603	98/99	Discarded
EM0605	96/97	Discarded
EM0606	94/95, 97/98	Discarded
EM0621	96/97	Discarded
EM0631	94/95, 97/98	Discarded
EM0634	94/95, 97/98	Discarded
EM0639	95/96, 97/98, 99/00, 01/02	Breeding line
EM0642	94/95, 96/97, 98/99, 00/01	Discarded

EM0645	94/95, 97/98	Discarded
EM0658	94/95, 97/98	Discarded
EM0700	95/96, 97/98, 99/00	Discarded
EM0701	95/96, 99/00	Breeding line
EM0704	95/96, 99/00	Discarded
EM0726	95/96, 97/98, 99/00	Named 'Alice'
EM0762	95/96, 98/99, 00/01	Discarded
EM0772	96/97, 99/00, 01/02	Discarded
EM0773	96/97, 01/02	Discarded
EM0779	96/97, 99/00, 01/02	Discarded
EM0783	96/97, 01/02	Discarded
EM0784	96/97, 98/99, 00/01	Breeding line
EM0788	96/97, 01/02	Discarded
EM0791	96/97, 98/99, 00/01, 01/02	Breeding line
EM0814	96/97, 98/99, 02/03	Breeding line
EM0820	96/97, 02/03	Breeding line
EM0834	97/98, 00/01, 03	Breeding line
EM0835	97/98, 99/00, 00/01, 03	Breeding line
EM0843	97/98, 00/01	Discarded
EM0844	97/98, 99/00, 01/02	Breeding line
EM0845	97/98, 00/01	Discarded
EM0863	97/98, 00/01, 02/03, 03	Discarded
EM0866	97/98, 00/01	Discarded
EM0881	97/98, 99/00, 01/02	Breeding line
EM0882	97/98, 00/01	Discarded
EM0883	98/99, 00/01	Discarded
EM0884	97/98, 00/01, 03	Named 'Mae'
EM0885	97/98, 00/01	Discarded
EM0894	97/98, 99/00, 01/02	Discarded
EM0897	98/99, 00/01, 03	Discarded
EM0901	97/98, 99/00	Discarded
EM0931	99/00, 01/02	Breeding line
EM0933	98/99, 00/01, 03	Advanced trials
EM0934	98/99, 00/01, 03	Advanced trials
EM0965	99/00, 01/02	Advanced trials
EM0972	98/99, 01/02	Advanced trials
EM0995	99/00, 01/02	Discarded
EM1001	99/00, 02/03	Discarded
EM1007	99/00, 02/03	Discarded
EM1008	99/00	Advanced trials
EM1011	99/00, 02/03	Discarded
EM1013	99/00, 02/03	Discarded
EM1017	99/00, 02/03	Discarded
EM1024	99/00, 01/02	Advanced trials
EM1033	99/00, 01/02	Breeding line
EM1039	99/00, 01/02	Discarded
EM1051	00/01	Grower trials
EM1064	00/01, 02/03	Advanced trials
EM1072	00/01, 03	Grower trials
EM1101	00/01, 03	Breeding line
EM1103A	00/01	Grower trials
EM1108	00/01, 03	Grower trials
EM1119	01/02, 03	Grower trials
EM1125	00/01	Breeding line

EM1128	01/02	Grower trials
EM1131	01/02	Grower trials
EM1144	01/02	Grower trials
EM1148	01/02, 03	Grower trials
EM1159	01/02, 03	Grower trials
EM1161	01/02, 03	Grower trials
EM1211	02/03	Grower trials
EM1228	02/03	Grower trials
EM1231	02/03, 03	Grower trials
EM1232	02/03	Grower trials
EM1235	03	Grower trials
EM1246	02/03	Grower trials
EM1248	02/03, 03	Grower trials
EM1259	02/03	Grower trials
EM1265	03	Grower trials
EM1276	03	Grower trials
EM1281	03	Grower trials
EM1294	03	Grower trials
EM1296	03	Grower trials
EM1315	03	Grower trials
EM1319	03	Grower trials
EM1324	03	Grower trials
EM1326	03	Grower trials
LA0934	95/96	Named 'Perfection'