

Scottish Executive Rural Affairs
Department

STUDY ON THE RASPBERRY INDUSTRY

A Report
by



Planning, Economic and Development
Consultants

28 Drumsheugh Gardens
Edinburgh
EH3 7RN

Tel: 0131 225 5737
Fax: 0131 225 5196

Also at Belfast, Birmingham, Bristol, Cardiff,
Dublin, Leeds, London, Manchester and Reading

January 2001

CONTENTS

SECTION	PAGE
EXECUTIVE SUMMARY	(i)
1 INTRODUCTION.....	1
2 INDUSTRY TRENDS	4
3 BACKGROUND TO THE INDUSTRY	11
4 INDUSTRY PERSPECTIVES	20
5 FUTURE OPTIONS AND RECOMMENDATIONS	37
APPENDIX A: TERMS OF REFERENCE	
APPENDIX B: LIST OF CONSULTEES	

EXECUTIVE SUMMARY

INTRODUCTION

1. DTZ Piedad Consulting was commissioned by the Scottish Executive Rural Affairs Department (SERAD) to undertake a review of the current state of the raspberry industry in Scotland. Particular emphasis was placed on evaluating the process by which new varieties of raspberry are produced and delivered to the soft fruit industry. The principal objectives of the study were to:
 - Assess the present roles and activities of those organisations involved in the production and development of new Scottish raspberry varieties;
 - Identify the strengths and weaknesses of the raspberry sector as it currently stands; and
 - Make recommendations for the future arrangements for the process of creating new varieties of raspberry and delivering them to the soft fruit industry.
2. The work was carried out during September to November 2000. It involved a combination of desk research and in-depth interviews with the key organisations in the industry. The consultancy team also undertook some comparative research in England.
3. During the course of the research programme it was agreed between SERAD and DTZ Piedad to extend the scope of the study remit to include consideration of wider industry issues where there was a significant degree of consensus amongst the consultees.

INDUSTRY TRENDS

4. The Scottish raspberry sector has been subject to significant decline during the last 15 – 20 years in terms of the area under cultivation, the yields achieved and the value of output:
 - **Area** of fruiting plantation has halved from 2,400 ha. in 1984 to 1,200 ha. in 1999;
 - **Yield** has declined from an average of 6 tonnes per hectare in the mid 1980s to under 4 tonnes per hectare in the mid to late 1990s; and
 - **Tonnage** harvested has reduced from 14,400 tonnes in 1984 to 4,500 tonnes in 1999;

- **Value** of raspberry production as a proportion of the Scottish soft fruits industry has reduced from 67% in 1984 to 27% in 1999.

5. The key problems facing the Scottish raspberry industry have been:

- adverse weather conditions;
- reduced pesticide usage;
- increased prevalence of disease such as root rot; and
- increased competition from Eastern Europe targeting the processed market in the UK and overseas (the principal target market for the Scottish industry).

These factors have resulted in lower yields, lower prices, the reduction of area under raspberry cultivation and the exit of growers.

INDUSTRY STRUCTURE

6. Table 1 summarises the key stakeholders in the UK raspberry industry.

Table 1 Industry Structure & Key Organisations		
Key Stakeholders	Details	Key Organisations
Research Institutes	New varieties of raspberry are developed through breeding programmes. The main centre for this research is MRS, working in conjunction with SCRI, of which it is the commercial arm. In England, some breeding work takes place at HRI.	SCRI/MRS - Scottish Crop Research Institute/Mylnefield Research Services HRI - Horticultural Research International
Propagators	Propagators are responsible for multiplying up raspberry cane to the levels required for commercial fruit growing. It generally passes through several propagators before reaching the fruit growers.	SAC – Scottish Agricultural College SNSA – Scottish Nuclear Stock Association NSA/MEIOSIS - Nuclear Stock Association/Meiosis is the commercial arm of NSA HFS - Highland Fruit Stocks
Growers	There are between 170 and 180 commercial growers of raspberries in Scotland. Many are involved in other farming activities as well and most are members of the soft fruit growers' co-operative SSFG.	SSFG – Scottish Soft Fruit Growers
Customers	The buyers of the raspberries, these include processors, retailers and, through direct farm sales, members of the public.	

INDUSTRY PERSPECTIVES

- One of the biggest natural problems facing propagators and growers in the raspberry industry at present is raspberry root rot. In addition, the number of chemicals which farmers are allowed to use on their crops is decreasing and, as far as raspberry stock is concerned, there are few alternatives available. Therefore, one of the key requisites for new raspberry varieties is an in-built resistance to pests and diseases, in particular root rot. It also increases the industry's need and sense of urgency for new varieties to be released.

8. However, there is a limited amount of raspberry breeding research being undertaken in the UK, the main programme being that at MRS. This programme began in 1992 and has not yet borne any results that can be made use of commercially; it is estimated that that will take at least another four years. But of more urgent concern is the fact that the European funding through which the research is largely financed, ended in November 2000. Although the industry generally agrees that it would be a huge waste of both time and effort and public funding to terminate the breeding programme at this stage, at present it appears that nothing approaching an alternative funding source has been found.
9. There are also problems at the fruit-growing end of the chain. The Scottish raspberry industry continues to focus mainly on the cheap end of the market – machine harvested fruit going for processing, often to export markets. But this forces Scotland to compete on the world commodity market and it is struggling to do so, given the lower prices, allegedly higher yields of foreign countries, and the high value of the Pound. Those south of the border, where there is much more emphasis on supplying the quality end of the market, reckon that Scotland needs to do likewise if it is to survive, let alone prosper.
10. If more Scottish growers are to market their produce at the quality market, it appears that they will also have to be willing to invest in covering their crops. This would give them a longer growing season, remove the uncertainty in meeting deadlines caused by bad weather, and mean that the fruit would be more likely to reach its destination in better condition. However, this also requires a considerable capital investment and it is doubtful whether most growers would be prepared to, or be financially capable of, taking this step.

FUTURE OPTIONS AND RECOMMENDATIONS

11. **Funding.** Scotland has been 100% dependent on the EU Raspberry Development Programme for the funding of its raspberry breeding activity since 1992. No organisation other than MRS is involved in breeding. As already mentioned, the current EU programme terminated in November 2000 and SSFG is uncertain whether it will pursue a second programme. This termination of EU funding places the raspberry breeding programme in real jeopardy: see Table 2.

EU funding	£40k	34%
UK Treasury	£25k	22%
SSFG membership funding	£35k	30%
HDC	£16k	14%
Total	£116k	100%
Sources: MRS, SSFG, HDC		

12. The UK Treasury's funding is directly linked to the EU Programme, so when the EU funding stopped so did the Treasury funding. The level of funding has thus decreased from £116k per annum to £51k. However, one cannot assume that the SSFG membership will be willing to continue its funding at current levels given the current state of the industry and the general uncertainties surrounding its future. In summary, the total funding package for the breeding programme is likely to collapse. This is 'the' critical issue facing the raspberry breeding programme in Scotland. What are the options for the industry?
13. **Options.** Four basic options are open to the industry: see Table 3. The options are evaluated below in terms of their fundability.

Option	Funding Requirements per annum (indicative costings)
1. Full cost option (status quo model)	£110 – 120k
2. Reduced cost option	£60k
3. Care & maintenance option*	£10 – 30k?
4. Exit option	Nil
Note: * the feasibility of this option needs to be further investigated	

- (i) *Full Cost Option.* Due to the existence of market failure, this option would require a significant level of public sector funding to be viable as the private sector is most unlikely to contribute up to £100k per annum. There is also considerable uncertainty over future EU funding. (At the time of DTZ Piedad's interview with SSFG there was uncertainty as to whether it would apply for a second programme.) Due to policy constraints affecting the funding of near-market research, it is unlikely that SERAD or MAFF will provide core funding.;
- (ii) *Reduced Cost Option.* MRS have indicated to us that a reduced budget of £60k per annum for 4 to 5 years would be sufficient to run a reduced cost programme capable of yielding one or more varieties from its current breeding programme. This is a 'satisficing' rather than maximising option. It should ensure some varietal output but not at the level achievable from the 'full cost option'. There are a number of possible funding sources which could be approached to finance a 'reduced cost option' including HDC, Scottish Society of Crop Research, the multiples and the industry itself;
- (iii) *Care and Maintenance Option.* This option has not been discussed with MRS and therefore it is put forward tentatively for discussion – it requires validation. The idea is based on an even more limited funding environment which would enable the current breeding programme to be put onto a 'care and maintenance' basis only. The indicative cost of £10 – 30k should certainly be achievable;

- (iv) *Exit Option*. Finally, there is the option for Scotland to exit from raspberry breeding altogether. This would involve SCRI/MRS withdrawing from the breeding programme and releasing its land and assets, currently devoted to raspberry development, for alternative uses. Having discussed possible future scenarios with MRS, they made the point quite clearly that they are a commercial organisation and any future involvement in raspberry breeding would have to cover its costs. If no commercially viable alternative is put forward by the industry, it is conceivable that MRS would pursue the exit option.
14. **Recommendations.** The above option analysis has been presented with the sole objective of maximising the future of Scotland's raspberry breeding programme – as per the Terms of Reference - hence the focus on the fundability of the different options. However, if one stands back and considers the wider commercial parameters it may be prudent to review the long term viability of the Scottish raspberry industry. There are important short term priorities which also need to be addressed – arguably in advance of further support to the raspberry breeding programme.
15. There are two key issues:
- (i) **Market focus** – although not directly part of DTZ Piedad Consulting's remit, the study has raised important questions over the focus of Scotland's marketing strategy. It has elected to target the volume processed market which puts it in head-to-head competition with the low cost Eastern European producers. The strategy adopted by England has been to exploit the quality hand-picked market channelled through the multiple chains and they seem to be having some degree of success; and
- (ii) **SSFG Future** – there are key challenges facing the future development of the main raspberry co-operative for Scotland, given the termination of the EU Raspberry Development Programme in November 2000.
16. The Terms of Reference did not present a remit that specifically asked for the above issues to be investigated. However, DTZ Piedad Consulting agreed with SERAD to extend the scope of its work into this broader area. Within this area there was a significant degree of consensus concerning the problems facing the industry.
17. **Our recommendation would therefore be to address the wider commercial needs of the industry first, to determine:**
- **What the future is for the raspberry industry in Scotland;**
 - **Whether the industry is capable of helping itself; and**
 - **If so, what support is required and how it can be prioritised.**

1 INTRODUCTION

STUDY OBJECTIVES

- 1.1 DTZ Piedad Consulting was commissioned by the Scottish Executive Rural Affairs Department (SERAD) to undertake a review of the current state of the raspberry industry in Scotland. Particular emphasis was placed on evaluating the process by which new varieties of raspberry are produced and delivered to the soft fruit industry. The principal objectives of the study were to:
- Assess the present roles and activities of those organisations involved in the production and development of new Scottish raspberry varieties;
 - Identify the strengths and weaknesses of the raspberry sector as it currently stands; and
 - Make recommendations for the future arrangements for the process of creating new varieties of raspberry and delivering them to the soft fruit industry.
- 1.2 During the course of the research programme it was agreed between SERAD and DTZ Piedad to extend the scope of the study remit to include consideration of wider industry issues where there was a significant degree of consensus amongst the consultees.
- 1.3 The full Terms of Reference are contained in Appendix A.

STUDY BACKGROUND

- 1.4 The raspberry industry in Scotland has been in a state of decline during the last two decades in terms of reduced yields due to disease, a contraction of the area under cultivation and the exit of growers. This decline has, if anything, accelerated during the 1990s, despite the fact that a considerable amount of EU funding had been provided to the industry over the last eight years. In addition, and regardless of the funding input, the industry is still facing a crisis. These problems are compounded by the fact that the EU funding ceased in November 2000.
- 1.5 Although the raspberry industry accounts for a relatively small part of the horticulture sector, there are a considerable number of organisations that have a role in the development of new raspberry varieties and in ultimately delivering raspberries to the market place. Through this study, SERAD was keen that their positions within the sector, and their contributions to the development process and supply chain, be clarified. Subsequently, recommendations could then be made on how those bodies involved in the development of new raspberry varieties could best contribute to the future development of the industry.

METHODOLOGY

1.6 There were two aspects to the research stage of this study:

- **Consultations:** Attached to the Terms of Reference, SERAD provided a “starter” list of organisations that it recommended should be interviewed for the study. Through discussions with these bodies and further talks with SERAD this list was expanded upon. The consultations with organisations and individuals based in Scotland were generally face-to-face interviews. Discussions with those based in England took place by telephone. A full list of consultees is included as Appendix B.
- **Secondary research:** Statistics provided by SERAD and MAFF were analysed in order that trends within the raspberry sector could be identified. They also served to provide a comparison between activity in Scotland and England.

1.7 Through analysing the data gathered from the research, DTZ Piedad was able to consider options for the industry, and to make its recommendations. These findings and recommendations have been written up as a conclusion to the report.

QUALIFICATION OF FINDINGS

1.8 This study was commissioned by SERAD as an **external review** of the Scottish raspberry industry and the factors underpinning the development of new varieties. DTZ Piedad Consulting has adopted a totally professional, objective and independent approach in the execution of the study (note: it has no interests in the Scottish raspberry industry whatsoever). However, the consultants were dependent on the goodwill and openness of the consultees in sharing information of both a quantitative and qualitative nature with us. This presented a significant limitation on the study in terms of:

- The refusal of key organisations to provide access to their financial accounts and contractual documents due to issues of commercial sensitivity. The consultants were therefore unable to undertake a thorough audit - instead the focus of the research was on qualitative data through depth interviews; and
- Verification of the views expressed was sometimes difficult due to the vested interests and ‘political’ positioning of the key stakeholders. Often diametrically opposing views were presented to us which were difficult or impossible to reconcile within the scope of this study.

1.9 **DTZ Piedad Consulting therefore has to qualify its findings and the conclusions presented in this report.** We have also had to suppress the following research findings:

- Information of a commercially sensitive nature, given the publication of the report on the world wide web; and
- Research views which have been irreconcilable within a study of this nature.

REPORT STRUCTURE

1.10 The layout of the report is as follows:

- **Section 2** – Industry Trends – an analysis of the raspberry sector in relation to yield and production levels and value;
- **Section 3** – Overview of the Industry – background to the industry, including discussion of the delivery process for new varieties of raspberry and the types of raspberry output that exist;
- **Section 4** – Industry Perspectives – the feedback from the consultations, the links between the various bodies and an analysis of the strengths and weaknesses of the structure; and
- **Section 5** – Future Options and Recommendations – DTZ Piedad's views on how the industry should address current issues and move forward.

ACKNOWLEDGEMENTS

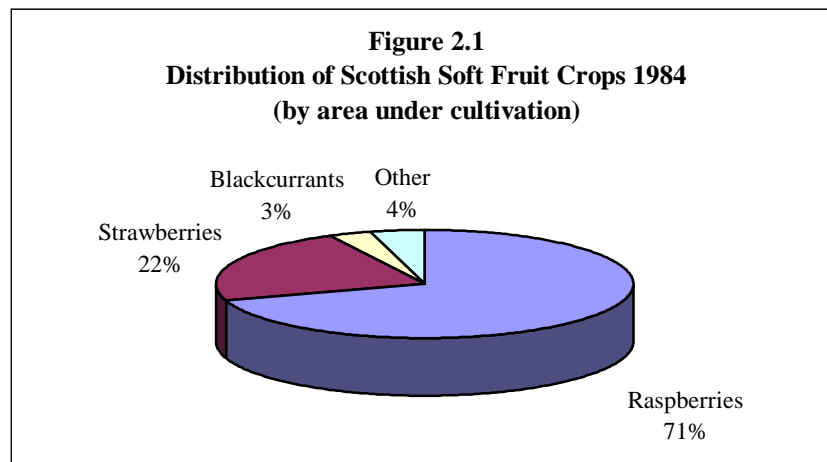
1.11 DTZ Piedad Consulting would like to thank the many organisations and individuals who assisted in this study. These included industry bodies and commercial operations in both Scotland and England. In particular we would like to thank SERAD's Certification Scheme team and steering group members for their guidance and advice. All contributions to the study were much appreciated.

2 INDUSTRY TRENDS

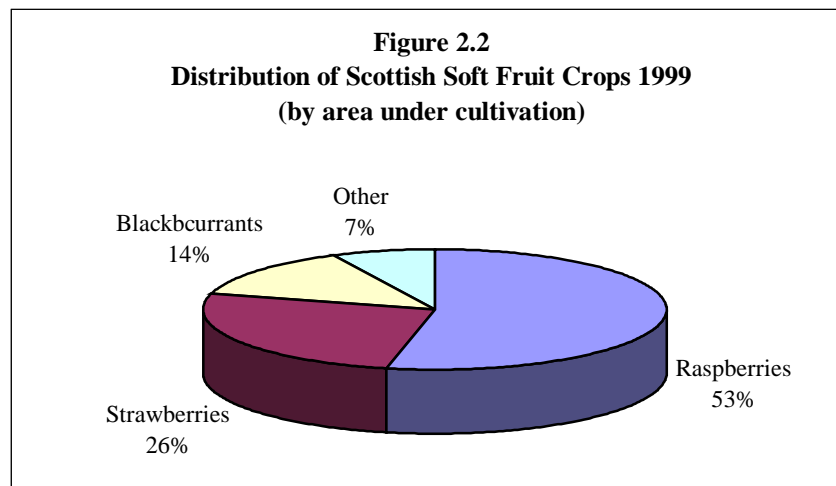
2.1 Although DTZ Pidea was provided with anecdotal evidence that the raspberry industry in Scotland was in decline, it was clearly valuable to review actual figures in order to verify this. In addition, feedback from consultees indicated that the raspberry industry in Scotland performed quite differently to that in England, and that the English sector fared better. These claims were also investigated by reviewing the statistics available.

SCOTTISH RASPBERRY INDUSTRY

2.2 Data on the performance of the Scottish soft fruit sector were available from 1984 to the present. The pie charts below demonstrate how the significance of the raspberry industry within this sector has altered over this time.

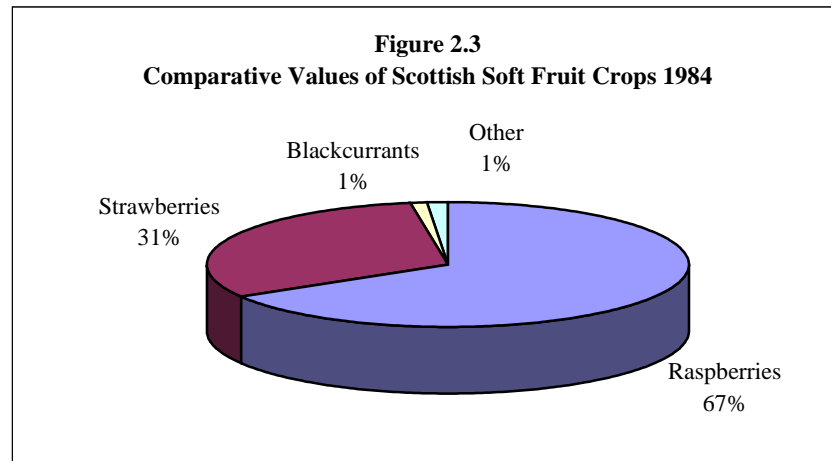


Source: SERAD

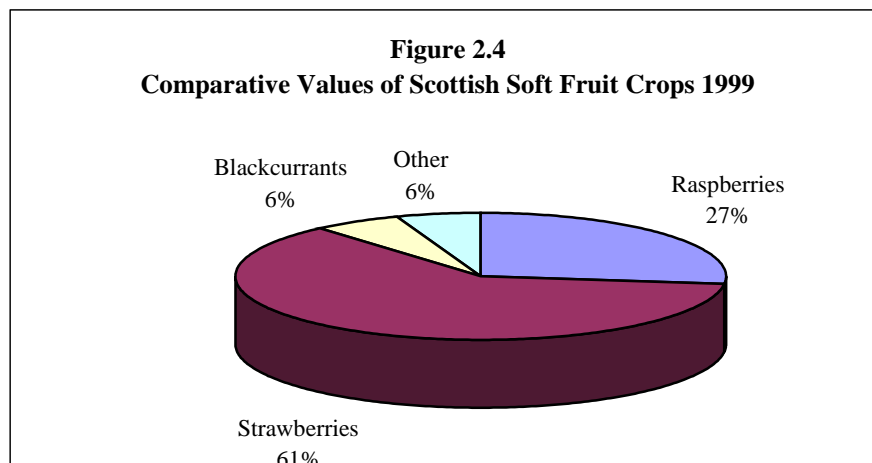


Source: SERAD

- 2.3 Having accounted for almost three quarters of soft fruit crop areas in 1984, raspberry crops constituted only slightly over half of the total soft fruit plantation areas by 1999. The proportions accounted for by all other soft fruit crop areas increased. The drop in market share by crop value was even greater over the same period as Figures 2.3 and 2.4 show below.



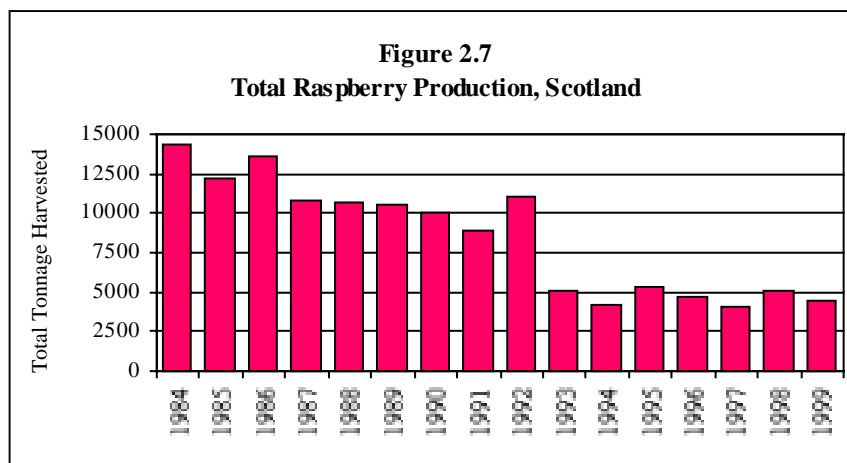
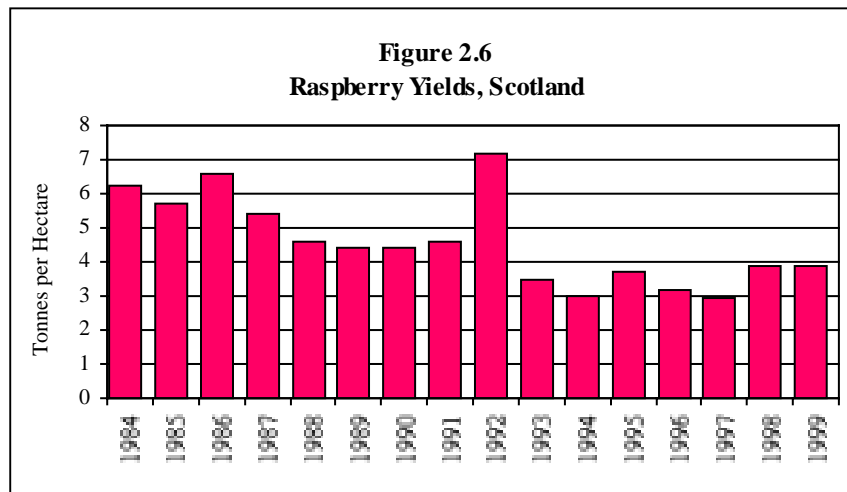
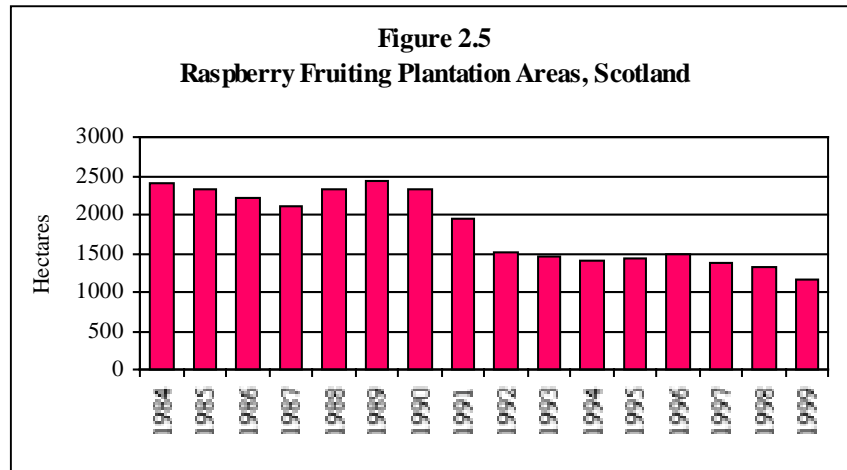
Source: SERAD



Source: SERAD

- 2.4 Two thirds of the total Scottish soft fruit crop value in 1984 was attributed to raspberries, but by 1999 this share had dropped to just over one quarter. Conversely, the strawberry share rose from almost one third to almost two thirds over the same period. The current value of the raspberry crop has been difficult to determine, but is believed to be in the range £3.5m – £5.8m.

2.5 Thus, taken in the context of the soft fruit sector as a whole, the raspberry share has clearly dropped substantially over the past 15 years. Looking at the data on the raspberry industry in isolation, it can be seen that this has not only been because of a growth in other soft fruit markets but also because of a decline in the raspberry industry itself. This is illustrated in Figures 2.5, 2.6 and 2.7 below, which provide a year-by-year breakdown of the trends relating to raspberry production.



2.6 Clearly, because both plantation areas and yield have fallen over the period covered, raspberry output has dropped dramatically – from 14,400 tonnes in 1984 to 4,500 tonnes in 1999. This fall in production is most marked following 1992. It is accentuated by the fact that the weather in 1992 in Scotland was particularly suited to growing raspberries, hence boosting the yield considerably. Since then, adverse weather conditions have persistently affected yield. Summaries of weather conditions that have affected raspberry crops since 1992 are provided below.

Year	Weather conditions
1992	Prolonged dry weather during May/June broke in good time with a short spell of rain to provide sufficient moisture for the crop. An adequate supply of pickers and good weather during the picking period enabled growers to achieve optimal yields.
1993	The dry weather and high yields of 1992 resulted in the production of short canes for the next year's crop. Below average temperatures and sunshine levels in May, June and July compounded to reduce what was already a poor crop.
1994	The 1993 season ended with severe frosts that affected the buds on the cane. This did not become evident until the spring of 1994 when it was noticed that the growth from affected buds was damaged. This resulted in short laterals and reduced yields.
1995	July and August, when the new cane normally makes its best growth, were hot and dry. This resulted in short cane which was again damaged by late frosts.
1996	Extreme frosts in December affected the top foot of the new cane. As a result, new growth wilted during dry spells resulting in die-back. Fruiting laterals which survived were shortened and produced small fruit.
1997	Again, frost damage in November damaged some plantations. Late spring frosts also damaged the primary fruiting buds of the variety Glen Moy, which at this point in time made up half of the Scottish acreage.
1998	This year experienced double the normal rainfall and half the average sunshine for June and July, reducing the potential crop and harvestable yield.
1999	Glen Moy was affected by frost damage again.

Source: SERAD

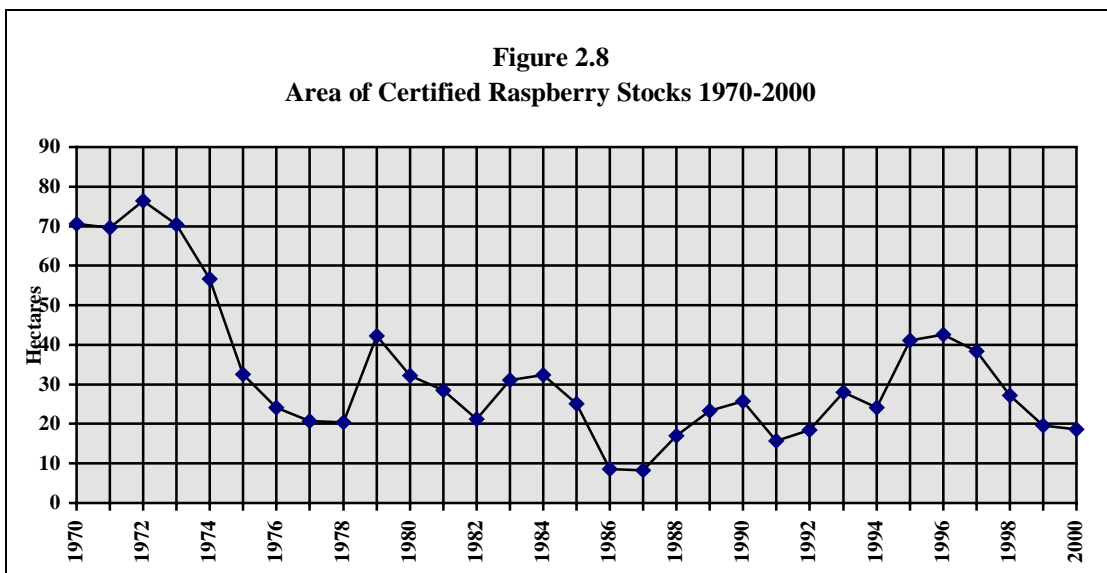
2.7 Other factors contributing to the low production levels may include:

- the increase in incidences of raspberry root rot¹;
- the increasing restrictions on the pesticides that can be used to control pathogens;

¹ Raspberry root rot (*Phytophthora fragariae* var. *rubi*) is a soil and water borne disease and once in the soil is there permanently

- the lack of “staying power” of some of the newer varieties e.g. Glen Moy productivity runs out after about seven years, whereas some of the older varieties could last for twelve years or more;
- reduced maintenance of raspberry plantation areas;
- damage to yield caused by mechanical harvesting (not yet proven); and
- growers exiting the industry due to low prices caused by the strong Pound, and competition from Eastern Europe and Chile.

- 2.8 In Scotland, approximately 20% of the total raspberry tonnage each year is lost to root rot (SCRI estimate). This translates into approximately 1000 tonnes being lost to root rot last year. Breeding for resistance to it is now a major feature of the breeding programme at MRS (see Section 4), whereas five years ago it was not a factor taken into consideration at all.
- 2.9 In comparison to the data on raspberry fruit output which indicates a sharp drop in production following 1992, that on the area of certified raspberry stocks (i.e. cane planted for further propagation) shows a somewhat different pattern of activity. This is presented as Figure 2.8 below.



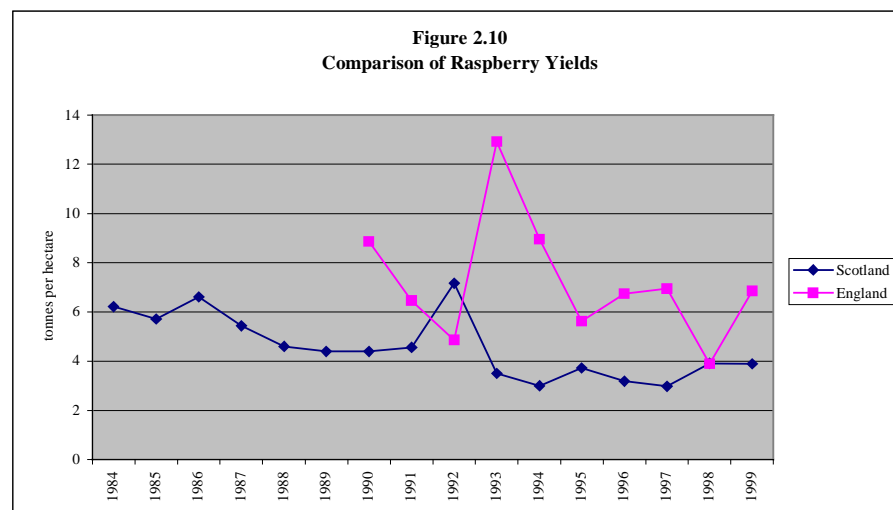
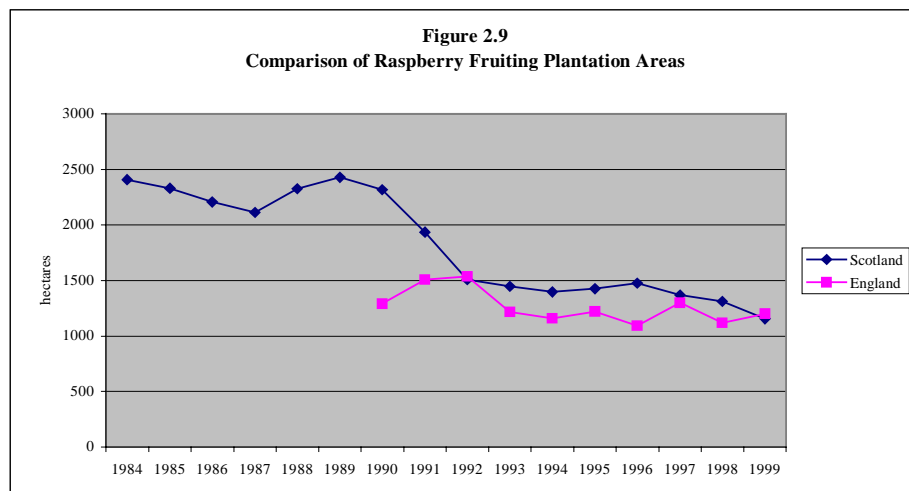
Source: SERAD

- 2.10 From 1984 onwards, raspberry fruiting plantation areas remained fairly constant until the 1990s, when they started to decline. Yet focusing on the same period for certified raspberry cane, it can be seen that a low point was reached in 1986/87 and that this was followed by an overall rise to a peak in 1996, from when there has also been a steady decline. However, in comparison to the early 1970s, all these plantation areas are relatively low; the area of certified raspberry stocks in 1972 was almost twice that of the 1996 peak.

- 2.11 The increase in area of certified stock in the 1990s may have been as a result of the demand on propagators from growers wanting the newly introduced MARS cane (see Section 3). Also, EU funding (discussed more fully in Section 4) became available to assist growers in replanting their farms with new varieties of raspberry. This would also have increased the orders for new cane placed with propagators.

COMPARISON OF SCOTTISH AND ENGLISH TRENDS

- 2.12 Raspberries account for a less significant proportion of the soft fruit sector in England - 21% of the total soft fruit plantation area in 1999 compared to 53% in Scotland. Yet, the raspberry industry does appear to be performing more healthily in England than in Scotland. Figures were available for the UK from 1990 onwards and from these and the Scottish data, comparative figures for England were calculated. The graphs below illustrate ways in which the industry in the two countries differs.



- 2.13 Whereas the fruiting plantation area of raspberries in Scotland has halved in the last ten years, from 2,400 to 1,200 hectares, in England it has remained fairly constant, fluctuating between 1000 and 1500 hectares. As a result, the raspberry plantation areas in England and Scotland are now very similar in size; in 1999, the areas were 1156 ha and 1199 ha for Scotland and England respectively.
- 2.14 Yield values in England appear fairly erratic and, as with Scotland, are generally in decline. However, it is clear that the yield is significantly higher in England for most years. The one exception was 1992 which, as explained above, was a particularly good year for Scotland; it appears that the converse was true of England. A key explanatory factor for the superior performance of England has been its focus on the higher value hand-picked market – a strategy which has been relatively easy to implement in England due to the large number of small growers compared to Scotland.
- 2.15 The total values of the raspberry crops in the two countries were also reviewed. However, it appeared that the methods used for determining these figures differed considerably and it was, therefore, not possible to draw meaningful conclusions from comparing the two sets of results. For example, in 1999 although the total tonnage harvested in England was almost twice that of Scotland, the reported total value of the crop was almost ten times higher than the Scottish figure. While it is quite likely that the English crop has a higher value, it seems doubtful whether the difference could be this great.

SUMMARY

- 2.16 The data reviewed in this section support the views held in the sector that the Scottish raspberry industry is in a state of serious decline. Figures were available dating back to 1984 when raspberries were the most significant soft fruit crop in Scotland with regards to both crop area and value. Now, although raspberries still have the greatest land coverage (albeit a declining one) their value has dropped considerably to well under half that of strawberries. Although due in part to the diminishing overall crop sizes, it is largely because of the significant drop in yield.
- 2.17 The English raspberry sector, however, appears fairly stable with the plantation area remaining within a five hundred hectare band for the ten years that data are available. In addition, although its yield fluctuates, it remains generally higher than that of Scotland, with a higher output value, giving growers a greater incentive to continue producing raspberries in England.

3 BACKGROUND TO THE INDUSTRY

- 3.1 In order to review the current situation within the raspberry industry, and to make recommendations on how it should be developed, it is important to understand the structure and operation of the industry. This section sets out the way in which the Scottish raspberry industry operates and the types of raspberry supplied to the market place.

STRUCTURE AND OPERATION OF THE RASPBERRY INDUSTRY

- 3.2 This sub-section is structured under the following headings:

- Key stakeholders
- Raspberry varieties
- Raspberry grading
- Certification schemes
- Raspberry cane delivery process

Key Stakeholders

- 3.3 The organisational and business types that play a part in the raspberry industry are presented in Table 3.1 below. The organisations mentioned here are discussed in greater depth in Section 4.
- 3.4 However, at this point it is helpful to explain the report's references to SCRI and MRS – the research bodies involved in raspberry research in Scotland. Historically, SCRI was involved in variety development. However, due to a change in government policy, SCRI does not now undertake near-market activities such as the breeding of finished cultivars; any near market research is conducted by MRS, the commercial arm of SCRI launched in the early 1990s. Hence, it is MRS that has full responsibility for the development of new raspberry varieties. SCRI, meanwhile, provides a supporting scientific role to its commercial arm.
- 3.5 That said, because there are important scientific linkages between SCRI and MRS, the report often refers to the bodies jointly as SCRI/MRS. Further explanation of the roles of SCRI and MRS is provided at paragraph 4.10.

Business Type	Details	Key Organisations
Research Institutes	New varieties of raspberry are developed through breeding programmes. The main centre for this research is MRS, working in conjunction with SCRI, of which it is the commercial arm. In England, some breeding work takes place at HRI.	SCRI/MRS - Scottish Crop Research Institute/Mylnefield Research Services HRI - Horticultural Research International
Propagators	Propagators are responsible for multiplying up raspberry cane to the levels required for commercial fruit growing. It generally passes through several propagators before reaching the fruit growers.	SAC – Scottish Agricultural College SNSA – Scottish Nuclear Stock Association NSA/MEIOSIS - Nuclear Stock Association/Meiosis is the commercial arm of NSA HFS - Highland Fruit Stocks
Growers	There are between 170 and 180 commercial growers of raspberries in Scotland. Many are involved in other farming activities as well and most are members of the soft fruit growers' co-operative SSFG.	SSFG – Scottish Soft Fruit Growers
Customers	The buyers of the raspberries, these include processors, retailers and, through direct farm sales, members of the public.	

Raspberry Varieties

3.6 Over the past 30 years, the make-up of raspberry varieties in the UK has changed three or four times. This is due in part to changing market demand and to improvements in the fruit through research. The varieties grown commercially today probably date back, at most, to the 1970s. However, most varieties have been developed during the 1980s and 1990s. There are various routes by which the raspberry varieties grown commercially in the UK will have been introduced. Broadly, these will be one of the following two sources:

- **UK-based breeding programme:** those that have been created in this country are most likely to originate from SCRI/MRS or HRI research (discussed in Section 4).
- **Brought into the country from overseas:** varieties that were developed overseas are sometimes introduced to the country by UK fruit growers. MEIOSIS, the commercial arm of NSA, also sources new varieties from all over the world. If interest is expressed in a variety then it instigates commercial production, retaining a percentage of the royalties.

- 3.7 Five of the most prominent varieties in the UK at present are, in ripening order:
- Glen Moy
 - Glen Ample
 - Tulameen
 - Leo
 - Autumn Bliss (primocane fruiting)
- 3.8 Glen Ample is the most widely grown raspberry in the UK at present. It is one of four varieties - Glens Magna, Ample, Rosa and Shee - which were developed under the same programme and were the most recent new varieties to be released in the UK; they were launched commercially in the mid 1990s. They are referred to collectively as the MARS varieties and were developed, and are owned, by SCRI. MRS licenses MEIOSIS to issue propagation licences and collect the royalties for these varieties.
- 3.9 However, Glen Ample has proved to be the only seriously commercially viable variety out of the four. It was initially developed for machine harvesting but has also been found to be desirable for fresh trade, which has considerably increased its value to the industry. Unfortunately, the fruit tends to crumble and is not suited to IQF (instant quick frozen – see below). That said, there is a big demand for Glen Ample from England and Spain.
- 3.10 Both Leo and Autumn Bliss were developed at HRI in the 1970s and 80s. However, they are not grown in Scotland because their ripening season is too late. (The difference in the growing season between Scotland and England is three weeks.)
- 3.11 Tulameen was introduced to the UK from British Columbia. It became widely spread in this country but remained uncertified until SCRI/MRS “cleaned it up”. Alongside Glen Ample, it is probably one of the most popular raspberries currently grown in the UK.

Raspberry Grading

- 3.12 The fruit itself only ever passes from grower to customer. However, multiplying up the raspberry cane to the quantities required by the grower typically involves a number of propagations. Linked to this is the grading of the cane, an important element of the delivery process. This grading system, and the certification scheme that assigns the grades, are discussed below.

- 3.13 The cane is graded according to its health and purity; at the start of the propagation process this is very high and by the time it has been multiplied up several times to the quantities required by the fruit growers, it will have dropped several grades. The various grades assigned to raspberry cane are listed below.

Grades in order of health and purity	
1. Nuclear Stock	Before a raspberry stock can be declared as Nuclear Stock it must be tested and found free from a wide range of pathogens (EPPO ² recommendation) which can seriously affect fruit production. This material must be kept in a protected environment to prevent re-infection and re-tested at least every two years. SCRI/MRS hold the bulk of raspberry nuclear stock for the UK, and HRI the bulk of the strawberry stocks but both have soft fruit breeding programmes and as a result nuclear stocks can be held by both.
2. Foundation Grade	This is the first stage in the propagation scheme and also requires a protected environment. Only nuclear stock can be used for propagating Foundation stocks. SAC propagates all the raspberry Foundation stock for the UK. Propagators can apply for certification at Foundation Grade but their premises and facilities must be approved by SERAD. SERAD will conduct inspections on the stocks throughout the year to ensure they comply with the Foundation Grade standards.
3. Super Elite Grade	This is the first grade which is grown outdoors as a spawn-bed in field conditions. These stocks must be isolated from raspberry fruiting plantations by at least 1,000m and must be planted with Foundation grade plants. These spawn-beds are eligible for Super Elite for a maximum of 4 years. Propagators purchase SE grade to establish spawn-beds for Elite and Standard grades – SE grade is not normally used to establish fruiting plantations as it is more expensive and cane numbers are limited. However, it has been noted from recent cane sales that some fruit growers are buying SE cane for planting. (Super Elite cane is bought by 7-8 propagators in Scotland.) There is a £60-£80 difference in cost between Super Elite and Elite for 1000 canes e.g. they might typically cost £280 and £200 respectively.
4. Elite Grade	Propagators who buy in Super Elite or Foundation grade cane can establish spawn-beds and have them certified as Elite for 4 years. Most fruit growers buy Elite or Standard Grade to establish fruiting plantations.
5. Standard Grade	Standard Grade spawn-beds are established from Elite grade cane or higher. They are again eligible for 4 years only and thereafter no longer eligible for certification. However, this grade can be used to produce CAC classified material. The health standard required for the lower grades is not so high and they may include some virus disease but at a low level.
6. CAC³	The minimum EC quality standard. Unlike certified grades where there must be an unbroken history of certification, CAC classification can be considered for any raspberry stock irrespective of origin or age. Provided the grower is registered and no quarantine organism is present on the stock, cane can be sold for further propagation (CAC classification only) or for establishing fruiting plantations.

² European Plant Protection Organisation

³ Conformitas Agraria Communitatis

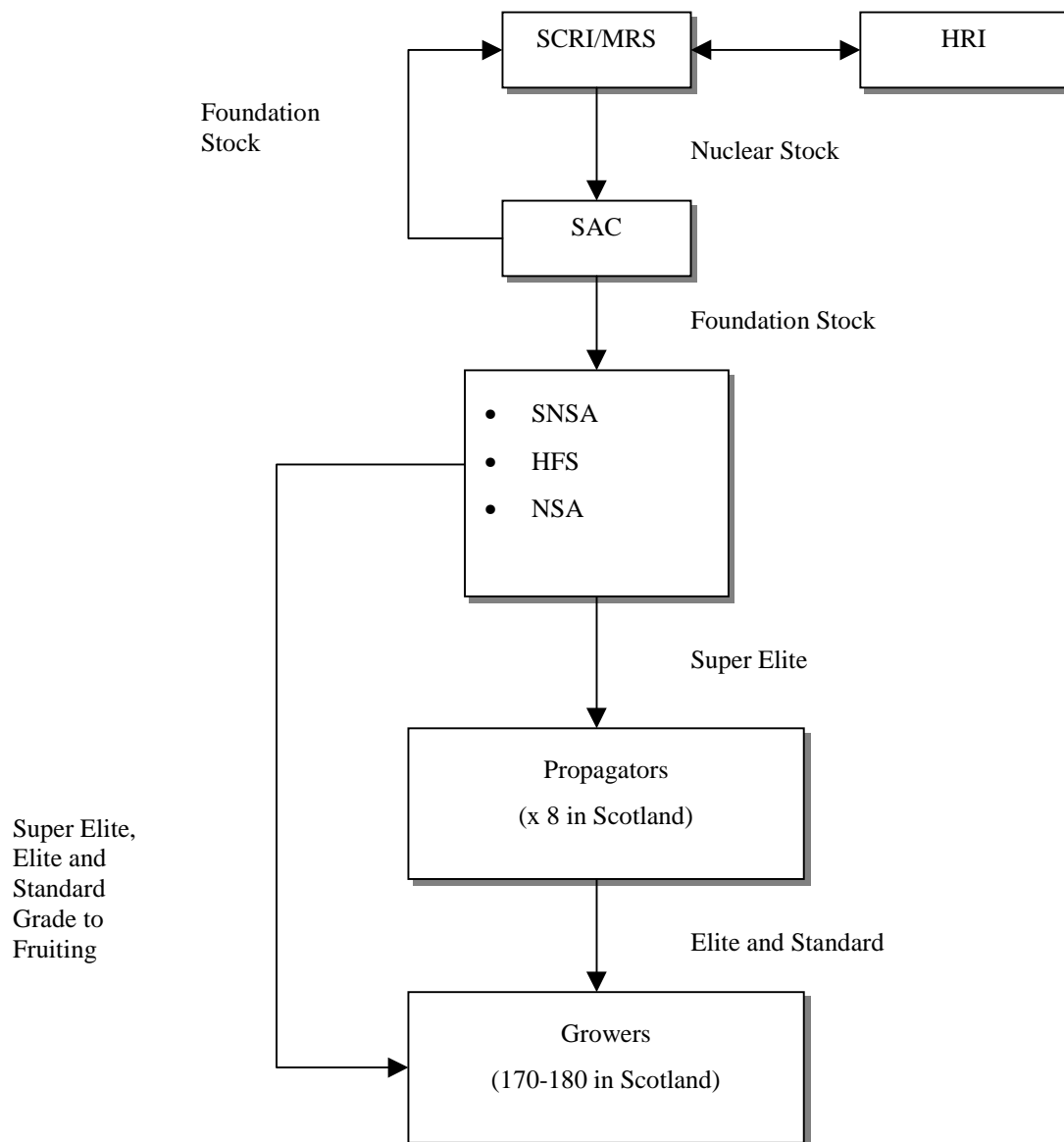
Certification Schemes

- 3.14 Certification schemes are used to ensure that the industry receives planting material of a known health standard and purity. There are Soft Fruit Certification Schemes for *Rubus* (Raspberry), *Fragaria* (Strawberry) and *Ribes* (Blackcurrant). In Scotland these are administered by SERAD. The equivalent in England is the Plant Health Propagation Scheme, which is run by the Plant Health & Seed Inspectorate (PHSI), a division of MAFF. The European Plant Protection Organisation recommends plant health standards on which certification schemes should be based. The UK bases its certification schemes on these EPPO recommendations.
- 3.15 Following the appearance of raspberry root rot in the 1980s, the raspberry scheme took on statutory status in 1991 in order to prevent root rot spreading. Hence, from 1991 all canes had to be inspected and certified before they could be sold or planted. It meant that growers could be confident that any planting material they bought was healthy. (Raspberry fruiting plantations have a 6-15 year life span, depending on variety and health, so it is important that the canes are as healthy as possible at the start.) Each time certified raspberry cane is sold on for further propagation and certification, it automatically drops a grade. The canes have to be inspected every year and if stock does not pass the certification inspection it drops to an appropriate lower grade, to CAC, or is rejected as propagation material. If a serious disease is found at any grade it is immediately rejected and the cane is destroyed.
- 3.16 With the implementation of the EC Marketing of Fruit Plant Material Regulations 1995, participation in soft fruit certification schemes in Scotland is no longer compulsory. However, as the establishment of fruiting plantations is expensive, and because long term growers have come to rely on the higher health status of certified cane, most growers still insist on certified cane when establishing a fruiting plantation.
- 3.17 In addition to the certification scheme, there are also EC single market plant health and marketing requirements that plants must meet before they can be marketed, both between countries and within a country. Under the Plant Health (Great Britain) Order 1993, raspberry cane producers, i.e. propagators, must be registered with SERAD, which then inspects the crop for quarantine organisms. After successful inspection, SERAD then authorises the propagator to issue a “plant passport” which enables the canes to be moved anywhere within the EC. This passport, which is usually in the form of a delivery note, moves with the canes.
- 3.18 In theory there is a charge for both the inspection for passport authorisation and for certification, but as these take place at the same time, in practice propagators are only charged for the certification. (Occasionally, a spawn-bed can be inspected for passport purposes only, where a stock is ineligible for certification). Similarly, the canes must meet the minimum EC quality standard CAC. This was established as part of the Marketing of Fruit Plant Material Regulations 1995.

Raspberry Cane Delivery Process

3.19 The delivery process for raspberry canes, the bodies involved and the grades associated with each stage, are detailed in Figure 3.1 below.

Figure 3.1
Raspberry Cane Delivery Process



3.20 Orders for raspberry cane are placed initially with SAC. The process is as follows:

- SAC's orders for raspberry cane come mainly from propagators. However, SCRI/MRS sometimes also places an order if it requires some nuclear stock to be multiplied up for its own uses.
- SAC orders the requested varieties as nuclear stock root material from MRS.
- MRS collects the requested stock from its protected environment and delivers it to SAC.
- SAC multiplies up the cane and supplies its customers with the requested raspberry cane. SAC's output is Foundation stock and is almost always used for further propagation. An order can be for anything from 500 canes to several thousand.

RASPBERRY HARVESTING, PROCESSING AND MARKETS

3.21 Raspberries are picked both by mechanical harvesters and by hand. The method of harvesting the fruit effectively determines the forms in which the fruit can be sold. For the most part, machine harvested fruit can only be used for processing, whereas fruit picked by hand can be sold at the quality end of the market as dessert fruit, both fresh and frozen. It also reflects the type of market to which the fruit is sold. Processed raspberries are often exported while hand picked fruit is largely sold through the UK multiples. The ways in which raspberries are processed are:

- **IQF (Individual Quick Frozen)** – one way of the buyers ensuring that processed fruit is still of reasonably high quality. It is used when large pieces of raspberry are required e.g. in yoghurt, in catering for raspberry desserts, and also for higher quality jams.
- **frozen other than IQF** – this includes frozen punnets, essentially excess fresh/dessert fruit that is still of high quality. It is complementary to fresh fruit and requires careful (expensive) picking. They are sold to multiples and wholesalers.
- **canned** – the lower priced end of the market and usually exported.
- **pulp/puree** – this is the lower quality end of the market. It is produced in bulk and is nearly always machine harvested. It is often exported.

3.22 Table 3.2 provides a breakdown for 1998 of the processing methods used, and the markets to which the raspberries grown in Scotland were sold.

	Export	Wholesale	Catering	Multiples	Other retail	Picked fresh/ farm shops	Total tonnage	% of total tonnage
Pulp	896t	764t	-	-	-	-	1,660t	39%
IQF	450t	-	582t	-	-	-	1,032t	24%
Canning	700t	-	-	171t	95t	-	966t	23%
Fresh	-	52t	-	274t	-	17t	343t	8%
Other frozen	-	-	112t	-	178t	-	290t	7%
Total tonnage	2,046t	816t	694t	445t	273t	17t	4291t	100%
% of total tonnage	48%	19%	16%	10%	6%	<1%	100%	-

Source: Report prepared for SERAD, *Flows between Scottish Agriculture and the rest of the Scottish Economy*, December 1999

Note: The output going to canning will be eliminated from year 2000 onwards due to the closure of Scotland's last remaining raspberry canning factory.

- 3.23 This indicates that in Scotland in 1998 only 8% of all raspberries produced were sold fresh and most of these went to the multiples. Almost half were exported, the greatest proportion as pulp. Pulp was also the most common form in which Scottish raspberries were sold within the UK.

SUMMARY

- 3.24 New varieties of raspberry are introduced to this country either as a result of breeding research conducted in the UK that has developed and refined new varieties, or through being sourced from other countries. The most popular varieties at present are probably Glen Ample, developed through a breeding programme at SCRI, and Tulameen, brought into the UK from British Colombia.
- 3.25 Involved in the chain that delivers new raspberry varieties to the market place are research organisations, propagators, growers, and often processors. The process of delivering raspberry cane to the growers typically involves several propagators, each multiplying up cane of certain grades. SAC in particular plays a key role as it has the only propagation unit in the UK that produces Foundation stock.

- 3.26 Raspberries are graded according to their health and purity and, through the certification schemes, those operating within the industry can be sure of the quality of the stock that they buy. Although participation in the raspberry certification scheme is no longer compulsory in Scotland, most propagators still use it as the growers buying from them want to be confident that they are purchasing healthy, disease free stock.
- 3.27 Most of the raspberries harvested in Scotland are processed and there are a number of methods used, the most usual of which is to pulp the fruit. Almost half the raspberry output is exported, all of it processed, and most typically as pulp. The small proportion that is sold fresh reaches the public mainly through the multiples.

4 INDUSTRY PERSPECTIVES

4.1 DTZ Piedad spoke to organisations concerned with research, propagation, fruit growing and retailing aspects of the raspberry industry. This section presents the findings from these consultations under the following headings:

- Research
- Propagation
- Raspberry fruit growing
- Organisational links

4.2 It reviews the roles of the key organisations which play a part in the raspberry industry, principally in Scotland, but also covering England. Current issues affecting the different areas of activity are discussed and industry views explained.

RESEARCH

4.3 The industry needs new varieties of raspberry coming through in order that it is not overly reliant on any one species. For example, in the early 1990s Glen Moy was probably the most widely grown variety of raspberry, and growers were fairly happy with it. However, after 1992, which was a particularly good year for it, it started to encounter an increasing number of problems. Its yield was at best average and often poor, the longevity of production was proving poor (it is now only six years), and it was found to be “spectacularly” susceptible to root rot. Glen Clova, another popular raspberry at that time, was also proving problematic.

4.4 When the MARS varieties became available in the mid 1990s, Glen Ample provided growers with an alternative. One grower’s view is that, were it not for Glen Ample, “there would be even more gloom and doom” than there currently is within the industry, and that many more would have left it altogether. Hence, Glen Ample is now a variety grown widely and upon which many growers depend. But the implication of this is that many are relying upon Glen Ample alone, which is clearly not ideal; it implies that there is no alternative if any problem emerges with that variety. In addition, both propagators and growers are aware that it would be much safer to grow a diverse range of varieties, thus lowering the risk of any one problem affecting a large proportion of one’s crop. However, for this to be possible, it is necessary that new varieties continue to be developed.

4.5 The industry wants raspberries that:

- are naturally resistant to pests and diseases, especially root rot, and that therefore require fewer pesticides;
- are high yielding;
- give more consistent performance i.e. similar results across and between crops and similar yields each year;
- are of better quality e.g. with regards to taste and appearance;
- have longer growing seasons, thereby attracting higher market prices at “out of season” times;
- can be machine harvested, bypassing the problem of finding sufficient hand pickers; and
- freeze well i.e. do not crumble on freezing and remain in reasonable condition when defrosted again.

4.6 It takes approximately fifteen years at best to develop and evaluate a line as a new raspberry variety and launch it for commercial production, and that is assuming there are no setbacks. However, raspberry breeding is an ongoing process as all objectives are never all achieved, that is, a perfect raspberry that is resistant to all diseases and pests. Also, fungi and pests can evolve and varieties need to be altered in an attempt to cope with these changes. The arsenal of chemicals which can be used is also changing; large numbers are being struck off and, as regards developing new treatments, chemical manufacturers are really only interested in the top ten crops; raspberries fall well outwith this range. Therefore, the onus lies with the research organisations to develop varieties that are naturally resistant to pests and diseases.

Key Research Organisations

4.7 The two principal organisations in the UK involved in research on raspberries and, moreover, raspberry breeding, are the Scottish Crop Research Institute & Mylnfield Research Services (SCRI & MRS) and Horticultural Research International (HRI), with SCRI/MRS playing the greater role.

- 4.8 In the mid 1980s an informal agreement was made between what was then DAFS (Department of Agriculture and Fisheries for Scotland), and MAFF, whereby SCRI would focus on raspberry and blackcurrant breeding and HRI would focus on strawberry breeding. However, HRI would continue to have an involvement in raspberry breeding, focusing on late summer and primocane fruiting development for the south east of England. (Because of the different climates between Tayside and England, late summer and primocane types were not of interest to the Scottish growers but were of great interest to the English industry.)
- 4.9 There is extensive contact between SCRI and HRI. SCRI conducts the virus testing and produces virus-free elite mother plants for raspberries and blackcurrants, while HRI performs the same task for strawberries. Each institute makes use of the other's service in this respect. HRI also sends raspberry stock to SCRI for the testing of machine harvesting ability. In addition, an international conference on raspberries and blackcurrants, the 8th International *Rubus* and *Ribes* Symposium, is being organised for July 2001 between HRI and SCRI.

SCRI/MRS

- 4.10 SCRI/MRS is a leading centre in the UK for research on potatoes, barley and soft fruit; it estimates that 76% of the raspberries in the UK market place, and over 90% of those in the Scottish market place, have been developed at SCRI/MRS. SCRI is a non-departmental public body and part of the SABRI (Scottish Agricultural and Biological Research Institute) group. Its core funding, which comes from SERAD, constitutes approximately 55% of its total funding. There is no core, i.e. state, funding available for plant breeding. All near market research, including breeding research, is conducted by Mylnefield Research Services, the commercial arm of SCRI.
- 4.11 SCRI/MRS contributions to the raspberry industry include:
- providing advice free of charge to practitioners, growers and processors;
 - managing the raspberry nuclear stock for the country (SCRI/MRS is the only place that maintains raspberry plant material in virus free conditions in the UK); and
 - developing genetic markers (e.g. for nutrition and sweetness) to feed into the raspberry breeding programme at MRS.

The Raspberry Breeding Programme at MRS

4.12 The activity at MRS of greatest interest to this study is the raspberry breeding programme that started in 1992. It was commissioned by SSFG (discussed below) which saw a great need within the industry for new raspberry varieties to be developed, but felt that there was very little research being conducted at that time into breeding new varieties. It appears that there was no new research following on from that relating to the MARS varieties discussed in Section 3. Although Glen Ample is near to what is required – it is not too susceptible to root rot and is high yielding – it crumbles on freezing. MRS is addressing the needs of the industry outlined above, including considering varieties for hand picking. What SSFG needs in particular, and is hoping will be achieved by the MRS programme, is a range of new varieties that:

- are well suited to being mechanically harvested;
- are high yielding;
- can be successfully frozen; and
- have natural resistance to pests and disease, especially root rot.

4.13 The breeding programme entails a continual process of crossing different genetic species and developing them, followed by an evaluation and selection process. Through this, the number of varieties with potential is gradually whittled down. An example of the average timescale for this process is provided in Table 4.1.

Year of Breeding Programme	Number of Plants
1	12,000
2	5,000
5	50-60
8	3-8
11	1-3

Source: SCRI

4.14 Evaluation of the seedlings takes into account characteristics such as fruit size, shape, firmness, flavour and shelf life. The selections made are then tested for qualities such as resistance and yield. Once the final few varieties have been chosen they have to be tested through on-farm trials, which again takes several years.

4.15 The current breeding programme at MRS receives funding from the following sources:

- **The EU Raspberry Development Programme** via SSFG. Funding started in 1992 and finished in November 2000. It provided matched funding with the split being 65% grant aid, 35% SSFG finances. One aspect of the programme addresses plant breeding and this is managed through the MRS programme. £100,000 each year has been spent on the breeding programme, the breakdown of funding being:
 - 40% EU funding i.e. £40,000
 - 25% Treasury funding i.e. £25,000
 - 35% SSFG funding i.e. £35,000
- The **Horticultural Development Council (HDC)** contributes a small amount annually via SSFG. HDC, a non-departmental government body that is funded through an industry levy, supplies SSFG with the grant and they administer it. The grant, which also started in 1992, amounts to £14,000 p.a. in cash and £2,000 p.a. in kind (management etc). HDC saw this as a way of raspberry growers in Scotland benefiting from the levies they pay to HDC.

4.16 Given that the EU funding ended in November, the future of the breeding programme is in doubt; at present it is not clear where alternative funding will come from and clearly the HDC funding alone cannot sustain the breeding programme. However, from the work that has already been achieved, there is much plant material “in the pipeline”. MRS owns the intellectual property rights to the material and does not want to pass the programme over to another research institute. Thus, the options appear to be the following:

- Secure full funding i.e. c.£120,000 p.a., from EU or alternative sources (e.g. SERAD, MAFF, Scottish Enterprise Tayside);
- Secure partial funding – MRS estimates that if it were to focus solely on releasing those varieties that have been identified as “commercially interesting” to the market, it would take a minimum of another five years at a cost of £60,000 p.a;
- Enter into a joint venture e.g. with HRI or MEIOSIS;
- Commence on a go-it-alone strategy i.e. with MRS investing further in the programme itself; and
- Exit the programme and destroy the plants developed so far.

- 4.17 If the programme were to continue, there could be the potential for developing UK or international market opportunities in other countries that produce raspberries, but that do not have any large scale breeding programmes of their own. In the meantime, MRS is asking itself whether it is worthwhile to continue investing in raspberries; royalties alone are not enough to support plant breeders.

HRI

- 4.18 HRI is the prime horticultural research centre in England. It is a public sector research organisation largely funded by MAFF and the Biotechnology and Biological Sciences Research Council. Funding from industry – levy groups and private research funding - is increasing, which implies a simultaneous increase in confidentiality of results. It was the government's intention that this change in funding sources should happen. Staff are heavily involved in seeking funding.
- 4.19 HRI was heavily involved in the UK raspberry industry from the 1940s to 1980s. Some varieties developed there in the 1970s and 1980s are still being grown e.g. Leo and Autumn Bliss. HRI has also developed niche cultivars released in different countries e.g. Canada or USA. If a variety is not suited to the UK then HRI is keen to exploit it in other countries if possible.
- 4.20 The breeding programme at HRI focuses on breeding summer and primocane fruiting raspberries. Funding of research that supports this comes from HDC and East Malling Trust for Horticultural Research. In addition, MAFF has commissioned a study at HRI on the genetic improvement of raspberries to strengthen pest and disease resistance. It is fundamental work that feeds into the breeding programme at HRI and elsewhere. The total funding from these three sources amounts to £140,000 p.a.

Other Breeding Programmes

- 4.21 The only other breeding programmes in the UK are the following:
- **Derek Jennings**, a breeder who retired from SCRI in 1989, has a private raspberry breeding programme in Kent in partnership with a big grower. He is developing exclusive varieties for multiples. However, this is a small scale project.
 - There is a little work at **Reading University** – manipulating fruit to grow at a certain time of the year. It is complementary to the HRI breeding programme.

PROPAGATION

4.22 As is illustrated in Figure 3.1, propagators can be divided into three categories, according to the grade of raspberry cane with which they work:

- SAC is a key player in the propagation chain; it has the sole propagation unit within the UK that propagates nuclear stock. Hence its output is raspberry cane of Foundation grade, the only source of this grade of raspberry cane in the country.
- There are several intermediary propagator organisations, in particular SNSA, NSA and HFS, that buy in this Foundation stock and propagate it further, producing, in the first instance, Super Elite cane. This may either be sold on to other propagators, or propagated further and then sold at Elite and Standard grade to fruit growers directly. If there is excess Super Elite stock, this may be sold directly to the growers.
- The third tier of propagators are typically individual businesses that buy cane at Super Elite grade and sell the multiplied up stock at Elite or Standard grade to fruit growers.

4.23 It is also important to emphasise at this point, the critical part SCRI/MRS plays in the propagation process. As the sole provider of nuclear stock in the UK, SCRI/MRS's role is vital for SAC, which otherwise would not be able to propagate nuclear stock. Further, given that propagators view the soft fruit certification scheme as an integral part of the propagation process, all propagation activities are ultimately dependent on SCRI/MRS. This is due to the fact that for material to be certified, it must originate from nuclear stock i.e. from SCRI/MRS.

Key Propagation Organisations

4.24 The roles of the key organisations referred to above are discussed below.

Scottish Agricultural College

4.25 SAC has a 20 year track record in the production of virus tested stocks of soft fruit. Its Soft Fruit Propagation Unit is based at the Bush Estate, south of Edinburgh. It specialises in the production of high health raspberry, strawberry and blackcurrant fruit stocks.

- 4.26 SAC is the only centre in the UK providing Foundation grade raspberry canes for entry to the UK certification schemes. It acts as the interface between the nuclear stock held at SCRI/MRS and the propagators such as SNSA, NSA, MEIOSIS and other commercial propagators. The Propagation Unit operates to the highest standards in terms of maintaining plant health. Its facilities at Bush are accredited by SERAD under the EU Marketing Scheme, and plant health inspectors from the Horticultural Inspectorate Branch carry out regular inspections of all progeny released by SAC. In addition, 'Trueness to Type' assessments of all raspberry progeny are carried out annually on behalf of the NSA.
- 4.27 In summary, SAC is a critical link in the production and development of healthy raspberry varieties. This is particularly important for two reasons:
- Firstly, it ensures healthy plant stock for established varieties, which is particularly important due to the increased incidence of devastating diseases such as root rot. The propagators in Scotland want the reassurance that they are dealing with high health Foundation stock; and
 - Secondly, the propagation unit provides a key supporting role to SCRI/MRS in its breeding programme for the development of new raspberry varieties. SAC uses micro-propagation and conventional propagation for multiplying up selected varieties for field testing.
- 4.28 With regards to the commercial parameters of SAC, no detailed accounts were forwarded by SAC for its propagation unit. However, it did indicate that a restructuring was required to reduce staff costs. The Propagation Unit is still viable commercially, but only just. There is a real threat from a further decline in orders. The main issue is economies of scale: due to the large element of fixed costs, it is essential for the unit to maintain throughput at a sufficiently high level to break even. At present the Unit is operating at approximately 60% of capacity. Further reductions in the raspberry propagation business are likely to jeopardise the viability of the Unit.

The Scottish Nuclear Stock Association

- 4.29 SNSA is a non-profit making body that was established in 1968 by the soft fruit industry. There are five members on the board, all of whom are, or have been in the past, farmers or growers. It was formed with the aim of accessing high health grade stock to supply to other propagators, who paid a fee to be a member of SNSA. These in turn would then supply Elite and Standard grade to fruit growers. However, this has now changed, as SNSA now also supplies growers direct.

- 4.30 There are 280 recorded members at present, but this figure is not up to date, many of these no longer being serious commercial raspberry growers. The priority is to sell to Scottish growers, but some stock is sold into England as well. If there is surplus cane, SNSA will supply non-members. SNSA sends order forms to its members and all commercial growers it thinks might be interested in buying from them.
- 4.31 SNSA has several contract propagators, all in Perthshire, who act as their suppliers. They are usually propagators in their own right. SNSA chooses propagators whom they believe are particularly competent in this field. SNSA is a recognised producer of high health grade spawn and one of only three that can supply the MARS varieties.

The Nuclear Stock Association

- 4.32 NSA, the English equivalent to SNSA, was formed in the early 1950s to produce high health stocks of first strawberries, and subsequently raspberries. It has seven propagators contracted to them. All are reasonably sized and most are in Norfolk or Lincolnshire. NSA's work is driven by fruit growers wanting specific varieties. Without NSA, growers would buy stock direct from propagators but they would have to cover the cost of buying "clean" plants. NSA has just under 100 members, of whom around 40 are active in the industry. These 40 members that NSA supplies are all propagators, but most are concerned with strawberries rather than raspberries.
- 4.33 Its commercial arm, **MEIOSIS Ltd**, was established in 1989 by the major soft fruit and tree fruit propagators and leading soft fruit marketing groups in the UK. They wanted to learn about all new varieties but could not access them individually. MEIOSIS offers a free service to breeders world-wide to commercialise their varieties. Its aim is to evaluate, protect and commercialise new varieties to the best advantage of the breeder. It sees itself as acting as an information and brokerage service between breeders and the industry.
- 4.34 MEIOSIS has Variety Development Agreements in place with breeders world-wide. Once these agreements are established with breeders, they contact MEIOSIS when they have a new variety. MEIOSIS also reminds breeders annually through a circular, that it is keen to be informed of new varieties. MEIOSIS trials these new varieties and if they seem suitable, and interest is expressed in a propagation licence, then commercial production goes ahead. MEIOSIS collects royalties for the breeder but it is up to the fruit producers, propagators and retailers to market the new variety.
- 4.35 MEIOSIS receives income from licence sales, licence renewals and royalty retention. It manages a number of royalty collections for varieties other than those it has introduced to the UK itself. For example, it collects some of SCRI/MRS's royalties, including those for the MARS varieties. It also receives a small income annually from its associate members, who are kept informed of all new varieties and provided with trial material free of charge.

- 4.36 HRI has a commercial partnership with MEIOSIS for trialling and marketing selected varieties. MEIOSIS provides funding in kind by running trials of HRI selections on grower farms. In exchange, MEIOSIS has first refusal on a Head Licence to market any varieties identified by these trials. The agreement was made in 1997 and the first trials were planted in summer 1999. Thus, there are two trials now in the ground, and more material in propagation.

Highland Fruit Stocks

- 4.37 HFS was established in 1992 and is a co-operative made up of three propagators. All grow high health raspberry canes and are farmers based around Aberfeldy who also farm cattle and sheep and grow arable crops. Raspberry canes are their only joint concern. They are specialist propagators in long cane, a disposable crop used only for one season that is usually grown for fruit in poly tunnels. The income from HFS is significant to each of its members, with all seeing raspberry canes as an important part of their business.
- 4.38 HFS is primarily a marketing unit. It also co-ordinates trials of different varieties for its own use. The three members decide as a group what to grow, although the economic risk is taken by each individual. Between them, they grow about 12 varieties of which 80% is made up of Glen Ample, Glen Lyon and Tulameen. HFS always buys Foundation Grade stock.
- 4.39 HFS has about 20 customers, most of whom are traditional soft fruit growers in Scotland. They also sell to pick-your-own growers in Scotland and wholesalers in England who sell Europe-wide.

Industry Views on Propagation

- 4.40 One of a propagator's hardest jobs is working out what to propagate, especially given the long term nature of the sector. The customers' views often reflect what the supermarkets want - at present Glen Ample. However, canners are interested in the variety that produces the biggest yield per acre. Propagators are resigned to the fact that there will always be much wastage in the sector, largely because customers change their minds about what they want.

- 4.41 Propagators appreciate having the Certification Scheme for raspberries, seeing it as a way of proving to their customers the high quality of their stock. It is clearly also a way of preventing the spread of disease and ensuring customers are not put at risk. Without it, propagators could unknowingly sell on diseased stock, thus damaging their reputation. HFS was of the opinion that it was “crucial and central” to its business; everything at HFS is sold pending certification. They realise that they can sell without a SERAD certificate and it might save money in the short term, but it is definitely not their policy.

RASPBERRY FRUIT GROWING

- 4.42 The Scottish and English growing activities differ considerably, as outlined below:
- **Scotland** appears very dependent on machine harvesting varieties and machine harvesters (rather than hand pickers). This means the fruit can only be used in a processed form and is, therefore, worth much less. Once it is frozen, it has to compete with all the processed raspberries from abroad. Also, machines will only pick fruit that is really ripe. By hand, raspberries can be picked when they are unripe, which means there are at least three days over which they can be transported and sold. (Raspberries have one of the shortest shelf lives of any fruit.)
 - **England** focuses on the fresh market, that is hand-picked, very high quality and high value fruit – a commodity of considerable value. The season covers summer fruiting (mid June – mid August), primocane (late July – mid October) and protected cropping (May/June – Oct./Nov). The aim of the English industry is to have as long a season as possible so as to supply the multiples; they would not be interested if it was a short season. If UK raspberries are not available, the multiples will import them. The multiples import to the UK all the time except July and August. All growers are trying to grow raspberries in “windows” when others are not, as it ensures a higher price.

Scottish Soft Fruit Growers

- 4.43 The key organisation of raspberry growers in Scotland is SSFG, the soft fruit growers’ co-operative. Established in 1992, it was set up to be a single voice for the sector, primarily to market fruit but also to develop new varieties and secure EU funding. The market at the time was very poor, with cheap Polish imports posing a particular threat. SSFG only deals with fruit going for processing. It targets three processed markets – frozen punnets, IQF and pulp.

- 4.44 SSFG started as a trade association but within a year became a growers' co-operative. Almost all Scottish raspberry growers joined and it meant they had bargaining power with the processors; 95% of tonnage processed was committed by SSFG. Raspberries account for >95% of the fruit SSFG deals with. SSFG sells fruit on behalf of its members and takes commission, a major source of SSFG income. The number of members has dropped, however, from 150 to 100. This is a reflection on the decline in the number of raspberry producers in general.
- 4.45 SSFG has suffered through the three canneries in Scotland closing, the last in December 1999. The fruit was collected at the farm gate so there was no need for freezing, and farmers were paid two weeks later, which helped their cashflow. A significant part of SSFG's business was lost with these closures.
- 4.46 However, of major significance to SSFG has been the **EU Raspberry Development Programme**, referred to above. Prior to the establishment of the programme, the following market conditions prevailed:
- 1989-90: Scottish raspberry growers were experiencing a rapid fall in raspberry prices.
 - By 1991: growers were contemplating giving up raspberry production if the decline in prices continued, in which case some would struggle to remain viable through their other business activities. A number of growers organised themselves to look into EU funding possibilities. Their case was well received in Brussels and subsequently the Raspberry Development Programme was established, funding commencing in 1992.
- 4.47 The programme was set up to promote raspberry production in Europe through raspberry co-operatives of a minimum size. However, Scotland was the only country with a co-operative of the required critical mass set up within the time available, this being SSFG. Hence, the programme was essentially set up for SSFG.
- 4.48 Since 1992, SSFG has submitted projected costings for the organisation on a six-monthly basis. Of the total costings accepted, SSFG receives grant aid for 65% of that total (40% EU funding, 25% Treasury funding); it must make up the remaining 35%. Over the past eight years the costings have totalled c.£12 million. That is, SSFG has received an average of almost **£1 million in grant aid p.a.** since 1992. Aside from the raspberry breeding programme at SCRI, this money has funded a range of developments such as:
- the purchase of 60-70 machine harvesters for raspberry growers;
 - improving raspberry plantations through replanting with new varieties, and in wider rows (for machine harvesting);

- new product development (including the building into which SSFG moved earlier this year);
- research and development projects (e.g. at Glasgow University into anti-oxidant levels in raspberries); and
- technical assistance – SSFG employs two agronomists to transfer technical knowledge to growers, important in improving yields and for disseminating information on how to grow new varieties. They also oversee and evaluate trials for the breeding programme.

4.49 There are no plans to extend the EU Raspberry Development Programme and, at the time of interviewing SSFG, it was not at all clear how the organisation would go forward following the cessation of funding in November 2000.

Industry Views on the Development Programme

4.50 Growers involved in the initial stages of the EU development programme had envisaged that by November 2000 the industry would be in a far stronger position through:

- exploiting machine harvesting to compete on a large scale basis with processed products; and
- developing higher value, quality markets for hand harvested fruit.

4.51 It was anticipated that improvements in raspberry varieties would help achieve this. However, progress has been hampered by:

- unfulfilled marketing potential e.g. SSFG has developed a new product, raspberry coulis, which should have excellent potential but for which a market has still to be developed;
- poor yields, due to disease, adverse weather conditions etc., which have not provided the stimulus for new planting/replanting; and
- strength of the Pound leading to poor prices for exporting fruit.

4.52 The industry is not yet self-supporting, and from DTZ Pidea's consultations, it is not clear where funding will come from, either for the breeding programme at MRS or for SSFG itself, since the development programme terminated in November. Apparently, the percentage of SSFG's turnover that would be required to continue funding the breeding programme would be very high and grower members might well decide that they were not prepared to support it.

- 4.53 Speaking to the Scottish Society of Crop Research soft fruit committee, DTZ Pineda learnt that it has been granted access to £6-8,000 p.a. for the next 2-3 years that could be used to assist in keeping the breeding programme running. Feeling that it would be an appalling waste of public funding to end the breeding programme now, it intended to approach Scottish Enterprise Tayside, SERAD and SSFG in an attempt to persuade them to provide the additional funding required.

Industry Views on Raspberry Growing

- 4.54 Views expressed on raspberry growing included the following:
- Multiples are largely interested in fresh, high quality raspberries that give good returns to the growers. Yet growers, and in particular Scottish growers, persist in focusing on machine harvesting and attaining high yields rather than smaller, quality crops.
 - It is unlikely that Scotland can compete successfully at the machine harvested/pulp end of the market. Pulp is a worldwide commodity at the bottom end of the raspberry trade and Scottish prices cannot compete against those of other countries such as Poland or Serbia.
 - Growers have to appeal to the modern market preferences of children and young people and aim for sweet, rather than sharp fruit.
 - Weaknesses in the industry relate to an unwillingness to take up new concepts and address market needs, and that perhaps, with the exception of blackcurrants, the Scottish soft fruit industry has suffered through lack of innovation. It has the potential for creating niche markets, for example, wines, distillates, flavourings or sweet coatings.
- 4.55 It was felt that more emphasis needs to be placed on growing fruit that will sell at a high price and serve the quality end of the market, albeit that that probably requires hand pickers and these can be hard to find. (Due to social change it is now very difficult to employ pickers from this country. As a result, a set quota of foreign students, mainly from Eastern Europe, are now allowed into the UK each year to pick fruit. However, of the 10,000 who arrive, only about 1,400 come to Scotland. The Scottish National Farmers' Union has been in discussions with SERAD, MAFF and the Home Office and as a result growers are hopeful that greater numbers of East European pickers will be allowed into the UK each year. Of course, whether any more make it as far as Scotland remains to be seen.)
- 4.56 Consultees believed that there could be a huge opportunity for the Scottish industry if it realised that it needed to cover its crops, the point being that this would create a mini-climate, protect the fruit from the elements and lengthen the growing season. Also, if a grower can produce raspberries out of season they will achieve a good market price.

- 4.57 The belief amongst many growers is that soon the major retailers will only accept covered crops for their supplies of fresh raspberries. The multiples have historically been wary of agreeing to buy Scottish raspberry crops, as perceived by the Scottish industry; they place great importance on having orders met exactly, and on time, and perceive Scottish supplies as being unreliable due to the wet weather conditions that can occur. The harvesting of covered crops is clearly not dependent on fine weather, and covered raspberries are also less likely to develop grey mould, thus guaranteeing a better shelf life.
- 4.58 However, some growers think that the capital which traditional Scottish growers would need in order to set up for supplying supermarkets from covered crops would be too high an investment, and not feasible for most of them. One grower estimated the cost of setting up covered raspberry crops as being £17,000 per acre, including the cost of planting the crop and installing the tunnels. (That said, he thought that if a farmer could afford to set up 2-3 acres of covered raspberry crops, it could be financially viable; the fruit should then fetch a good price, and that sort of acreage could be hand picked using family labour alone, avoiding the current problem of finding enough hand pickers. The success of the Scottish strawberry industry in pursuing a protected cultivation strategy is a case in point.)
- 4.59 With regards to fresh raspberry production, Scotland does already produce some fruit for the fresh trade, as Table 3.2 indicated. However, one argument, put forward by SSFG, is that it is logistically impossible to sell all Scottish raspberries as fresh fruit; the quantity is too high for the market to support. So, to achieve a sizeable raspberry industry, machine harvesting and processing of the fruit is needed. SSFG believes that the processed business can survive, that there is the market for it and because machines can be used, finding pickers is not a problem. The main problem it sees is the strong Pound e.g. Serbian fruit is much cheaper. Therefore, it thinks that Scotland needs to compete on quality and flavour, and believes that this can be achieved in conjunction with machine harvesting.
- 4.60 Clearly, the above raises a number of questions on what is the best way forward for Scottish raspberry growers, and any option presents both pros and cons.

ORGANISATIONAL LINKS

- 4.61 From the above discussion it is clear that there is a relatively large number of organisations playing a part in what is a small industry. The following table provides a brief summary of what connections exist between the main players (note: these represent the connections identified from our discussions – there may well be others).

**Table 4.2
Organisational Links Identified**

	SCRI	MRS	HRI	SAC	SNSA	HFS	NSA	MEIOSIS	SSFG	HDC
SCRI	-									
MRS	Commercial arm of SCRI	-								
HRI	Mutual exchange of information and material		-							
SAC	Provided with nuclear stock by SCRI			-						
SNSA				Receives foundation stock from SAC	-					
HFS		Pays MRS to maintain virus-free stock		Receives foundation stock from SAC	HFS is a member of SNSA	-				
NSA				Receives foundation stock from SAC	English equivalent of SNSA		-			
MEIOSIS		Collect royalties on MRS's behalf	Has a commercial partnership with HRI	Receives foundation stock from SAC	SNSA is a full member of MEIOSIS	HFS is a full member of MEIOSIS	Commercial arm of NSA	-		
SSFG	Contact on progress of breeding programme	Commissioned MRS to undertake breeding programme			Grower members use SNSA for propagation	HFS is a member of SSFG			-	
HDC		Part fund SSFG breeding programme at MRS	Fund a research student at HRI						SSFG director on HDC soft fruit panel	-

Note: Table 4.2 demonstrates linkages between key organisations

SUMMARY

- 4.62 One of the biggest natural problems facing propagators and growers in the raspberry industry at present is raspberry root rot. In addition, the number of chemicals which farmers are allowed to use on their crops is decreasing and, as far as raspberry stock is concerned, there are few alternatives available. Therefore, one of the key requisites for new raspberry varieties is an inbuilt resistance to pests and diseases, in particular root rot. It also increases the industry's need and sense of urgency for new varieties to be released.
- 4.63 However, there is a limited amount of raspberry breeding research being undertaken in the UK, the main programme being that at MRS. This programme began in 1992 and has not yet borne any results that can be made use of commercially; it is estimated that that will take at least another four years. But of more urgent concern is the fact that the European funding through which the research is largely financed ended in November 2000. Although the industry generally agrees that it would be a huge waste of both time and effort and public funding to scrap the breeding programme at this stage, at present it appears that nothing approaching an alternative funding source has been found.
- 4.64 There are many problems at the fruit-growing end of the chain as well. The Scottish raspberry industry continues to focus mainly on the cheap end of the market – machine harvested fruit going for processing, often to export markets. But this forces Scotland to compete on the world commodity market and it is struggling to do so, given the lower prices, allegedly higher yields of foreign countries, and the high value of the Pound. Those south of the border, where there is much more emphasis on supplying the quality end of the market, reckon that Scotland needs to do likewise if it is to survive, let alone prosper.
- 4.65 If more Scottish growers are to market their produce at the quality market, it appears that they will also have to be willing to invest in covering their crops. This would give them a longer growing season, remove the uncertainty in meeting deadlines caused by potential bad weather, and mean that the fruit would be more likely to reach its destination in better condition. However, this also requires a considerable capital investment and it is doubtful whether most growers would be prepared to, or be financially capable of, taking this step.

5 FUTURE OPTIONS AND RECOMMENDATIONS

5.1 The report concludes with a review of the findings presented in the previous sections, an analysis of the future options for raspberry breeding, and DTZ Pieda Consulting's recommendations on the way forward. It is structured under the following headings:

- Rationale for raspberry breeding;
- Evidence of market failure;
- Critique of raspberry propagation in Scotland;
- Critique of raspberry breeding in Scotland;
- Options for the future of raspberry breeding in Scotland;
- DTZ Pieda Consulting's recommendations on the way forward.

5.2 In addressing these headings, DTZ Pieda Consulting is fulfilling the study objectives outlined in the Terms of Reference: see Appendix A.

RATIONALE FOR RASPBERRY BREEDING

5.3 Perhaps more so than for other crops, varietal development is critically important for the raspberry industry. The development of new and superior varieties is the 'lifblood' of the sector due to the range of dynamics affecting industry performance. These include:

- Disease management – previously resistant varieties can succumb to 'new' diseases, such as root rot, which only started to ravage the Scottish industry during the late 1980s and 1990s;
- Aphid resistance – environmental legislation which bans the use of common pesticides has placed greater pressure on finding varieties which have a high level of natural resistance to aphids, etc.;
- Weather factors – weather patterns can change over time and resistance to frost, rain and variations in ripening times impose demands on varietal performance;
- Yield per hectare – to compete with the low cost European producers there is pressure to develop varieties which are both high yield and suitable for machine harvesting;
- Multiple market – their demands are for high quality raspberries with a sweet flavour, good colour and maximum shelf life. In terms of harvestability, the key factor is the variety's ability to be hand-picked and to remain in good condition (both for the fresh market and frozen punnets).

- 5.4 The raspberry industry cannot ‘stand still’ and base its future development on this year’s varieties. A good example is the performance of Glen Ample which was introduced in the 1990s and now dominates the market. It was clearly preferred to the existing dominant variety Glen Moy which was found to be highly susceptible to root rot. The environmental and commercial ‘goal posts’ are continually moving, and this requires the Scottish industry to be highly flexible and responsive to change. This flexibility must also embrace the issue of varietal development.

EVIDENCE OF MARKET FAILURE

- 5.5 Given the strong pressures encouraging varietal development one would expect the industry to take the lead. For many other crops this is the case, especially where the industry has critical mass and there are a sufficient number of industry players with the resources to fund such development. However, for the raspberry industry this is not the case. It suffers from classic market failure in terms of:
- Small scale industry – there are only some 170 – 190 raspberry growers in Scotland and the average area under cultivation is 6 ha.;
 - Low returns – like many other agricultural sectors, net farm income due to raspberry production is very low and falling due to the strong Pound, high imports and falling prices, lower yields due to disease and bad weather, etc.;
 - High risk activity – raspberry breeding is a long term and high risk activity. It requires a significant and sustained level of funding over a period of 12-15 years to see a return and even then there is no guarantee of success (as measured by one or more widely adopted new varieties).
- 5.6 Historically, it has been the norm for the public sector to provide financial support for breeding programmes in the UK and abroad. However, in 1989 the UK Government elected to withdraw from near-market research as a matter of policy and this affected its support for breeding programmes, including *Rubus*. The Scottish Executive Rural Affairs Department (SERAD) withdrew its financial support to SCRI for direct breeding work and, as a consequence, the Institute has transferred this responsibility to MRS.
- 5.7 It was the 65% European funding in the Raspberry Development Programme which facilitated the resurrection of the breeding programme in 1992.

5.8 Other evidence in support of market failure includes:

- The lack of private sector *Rubus* breeding in the UK (the only exception is Derek Jennings who set up in business after ‘retiring’ from SCRI, and produces new varieties on a small scale with some success);
- The lack of private sector *Rubus* breeding internationally – some raspberry growing countries don’t do any at all.

5.9 The implications of market failure for Scotland are:

- If public sector funding for *Rubus* breeding dries up then the private sector is very unlikely to provide this service to the industry;
- In the absence of a breeding programme at SCRI/MRS the private sector will be dependent on the existing *Rubus* varieties, the more limited breeding activity at HRI (targeted at the development of varieties suited to the climate in southern England) and imported species such as Tulameen;
- These varieties will not have been developed in a bespoke fashion to meet the needs of the Scottish industry, as a consequence of which Scotland is likely to under-perform against its competitor countries in future years.

CRITIQUE OF RASPBERRY PROPAGATION IN SCOTLAND

5.10 Prior to reviewing raspberry breeding, this sub-section examines the propagation infrastructure in Scotland. Section 4 examined each of the layers in the ‘propagation chain’:

- SCRI which holds the nuclear stock of *Rubus* mother plants for the whole of the UK;
- SAC which is the sole producer of foundation stock grade plants in the UK;
- SNSA, HFS and others which purchase foundation stock and sell on to other propagators /growers at super-elite and elite grade;
- Propagators which sell direct to the industry.

5.11 In total there are some 10 organisations involved in the propagation process. DTZ Piedad Consulting believes that this propagation infrastructure and system serves the needs of the Scottish industry very well. Its key attributes are:

- Organisational efficiency – each of the organisations consulted appeared professional and efficient in carrying out their responsibilities in the propagation chain. In particular, SAC was held in very high regard;
- Commitment to quality – each organisation is striving to maintain the highest health standards and quality. This is supported by their compliance with the Scottish Certification Scheme;
- Standard of facilities – although not every propagator was visited, we understand the quality of their propagation units and facilities to be of a high standard. With regards to SCRI and SAC this is essential for the protection of the nuclear stock and the production of high health foundation stock;
- Effective communication – notwithstanding the problems of matching supply to industry demand, due to the long lead times involved in propagation, the communication between the different stages in the chain appear to work as well as can be expected in terms of placing advance orders and discussing scheduling issues;
- Competitive pricing – the existence of a small number of propagators ensures that there is effective competition if one or other tries to inflate prices.

5.12 In conclusion, we have not identified any obvious areas for improvement in the propagation infrastructure. The system works well and we do not believe there is any merit in tinkering with what is a good model.

CRITIQUE OF RASPBERRY BREEDING IN SCOTLAND

5.13 There are two main issues to address with regard to raspberry breeding in Scotland:

- Technical efficiency; and
- Funding.

5.14 **Technical Efficiency.** SCRI/MRS has an international reputation as a leading research institute in crop research, including plant breeding. Its science base is exceptionally strong as evidenced through independent peer reviews. Soft fruit is a particular strength of the Institute and since the allocation of research/breeding responsibilities between Scotland and England, SCRI/MRS has had the lead responsibility for raspberries in the UK, with HCI concentrating on strawberries.

- 5.15 Although DTZ Pidea Consulting is not technically qualified to comment on the effectiveness of SCRI/MRS's raspberry expertise, all of the qualitative research evidence gathered from consultations during the course of this study indicates that it is of a very high order.
- 5.16 **Funding.** Scotland has been 100% dependent on the EU Raspberry Development Programme for the funding of its raspberry breeding activity since 1992. No organisation other than MRS is involved in breeding. As already mentioned, the current EU programme terminated in November 2000. This termination of EU funding has placed the raspberry breeding programme in real jeopardy: see Table 5.1. (At the time of DTZ Pidea's interview with SSFG there was uncertainty as to whether it would apply for a second programme.)

EU funding	£40k	34%
UK Treasury	£25k	22%
SSFG membership funding	£35k	30%
HDC	£16k	14%
Total	£116k	100%
Sources: MRS, SSFG, HDC		

- 5.17 The UK Treasury's funding was directly linked to the EU Programme, so when the EU funding stopped, so did the Treasury funding. The level of funding has thus decreased from £116k per annum to £51k. However, one cannot assume that the SSFG membership will be willing to continue its funding at current levels given the current state of the industry and the general uncertainties surrounding its future. In summary, the total funding package for the breeding programme is likely to collapse. This is **'the'** critical issue facing the raspberry breeding programme in Scotland. What are the options for the industry?

OPTIONS FOR RASPBERRY BREEDING IN SCOTLAND

- 5.18 Four basic options are open to the industry: see Table 5.2. The options are evaluated below in terms of terms of their fundability.

Option	Funding Requirements per annum (indicative costings)
1. Full cost option (status quo model)	£110 – 120k
2. Reduced cost option	£60k
3. Care & maintenance option*	£10 – 30k?
4. Exit option	Nil
Note: * the feasibility of this option needs to be further investigated	

- 5.19 **Full Cost Option.** Due to the existence of market failure, this option would require a significant level of public sector funding to be viable as the private sector is most unlikely to contribute up to £100k per annum. The three possible sources are:
- (i) EU – but the industry as represented by SSFG has not yet decided whether to apply for recognition as a ‘Specialist Producer Organisation’ to enable it to apply for European funding. Even if it did, there is no guarantee that it would secure the same level of funding as it achieved over the period 1994 – 2000;
 - (ii) SERAD – a financial contribution from SERAD would require a change in Government policy to enable it to fund near market research. Again this is very unlikely;
 - (iii) MAFF – like SERAD, MAFF does not fund near market research. Furthermore, the breeding research work which they do support through HRI is targeted at the needs of the English raspberry sector. It is therefore highly unlikely that funding would be available to support research work in Scotland.
- 5.20 The prospects of securing public sector funding are not encouraging. However, there is nothing to prevent the Scottish industry from developing a case and submitting it to the agriculture departments in the UK.
- 5.21 Scottish Enterprise Tayside, which is part-funding a non-executive advisor to work with SSFG three days per week for 12 months, stated that any future involvement it might have in funding SSFG would have to be because of market failure, or because it was additional to those activities that were currently happening. Realistically, it was felt that funding assistance could conceivably be provided for training but for little else.
- 5.22 **Reduced Cost Option.** MRS have indicated to us that a reduced budget of £60k per annum for 4 to 5 years would be sufficient to run a reduced cost programme capable of yielding one or more varieties from its current breeding programme. This is a ‘satisficing’ rather than maximising option. It should ensure some varietal output but not at the level achievable from the ‘full cost option’. This overcomes the risk that the breeding programme produces nothing of value after spending £928k over a period of 8 years. SCRI/MRS have applied their considerable expertise and expended significant effort with the result that there are some promising varieties in the ‘pipeline’ which should take no more than five years to be ready for commercial sale.
- 5.23 These new varieties could be realised if a reduced funding stream was secured. Possible funding sources include:
- (i) HDC – which currently commits £16k per annum (however, it is possible that this could decline/cease if there is a significant further contraction in the size

of the Scottish raspberry industry – the current payment is, in principle, a rebate for the Scottish levies raised from growers);

(ii) *Scottish Society of Crop Research (SSCR)* – our discussions with the Soft Fruit Committee within SSCR indicated that a funding contribution of £6k p.a. could be made available from SSCR funds for the next three years;

(iii) *Private Sector* – the membership of SSFG has already been committing £35k p.a. to the breeding programme and it is possible that a further annual contribution could be forthcoming to support the extension of the programme.

5.24 From this preliminary analysis of the funding opportunities it may be possible to secure funding of approximately £60k p.a. to finance the ‘reduced cost option’. However, there is still considerable uncertainty at this stage and further investigation of this option with potential funders is required.

5.25 **Care and Maintenance Option.** This option has not been discussed with MRS and therefore it is put forward tentatively for discussion – it requires validation. The idea is based on an even more limited funding environment which would enable the current breeding programme to be put onto a ‘care and maintenance’ basis only. No further development work would be undertaken – instead the current cultivars would be kept ‘on hold’ pending a future re-launch of the breeding programme.

5.26 The rationale is to protect the development work which has been achieved to date without having to incur further development expenditure. An indicative range of £10k – 30k per annum has been suggested. This sum should certainly be attainable.

5.27 **Exit Option.** Finally, there is the option for Scotland to exit from raspberry breeding altogether. This would involve SCRI/MRS withdrawing from the breeding programme altogether and releasing its land and assets, currently devoted to raspberry development, for alternative uses. Having discussed possible future scenarios with MRS, they made the point quite clearly that they are a commercial organisation and any future involvement in raspberry breeding would have to cover its costs. If no commercially viable alternative is put forward by the industry, it is conceivable that MRS would pursue the ‘exit option’.

DTZ PIEDA CONSULTING'S RECOMMENDATIONS

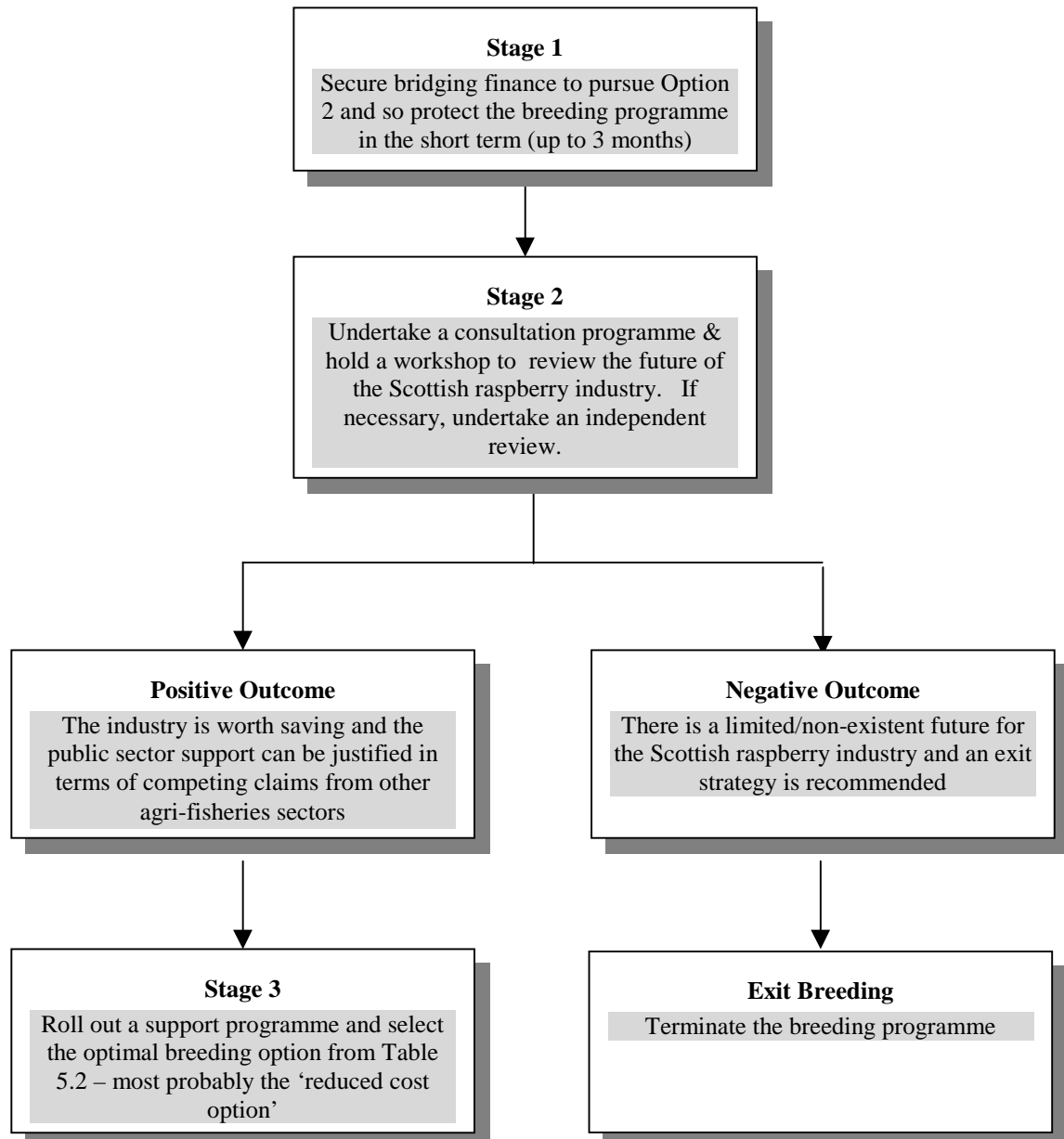
- 5.28 The above option analysis has been presented with the sole objective of maximising the future of Scotland's raspberry breeding programme – as per the Terms of Reference - hence the focus on the fundability of the different options. However, if one stands back and considers the wider commercial parameters it may be prudent to review the long term viability of the Scottish raspberry industry. There are important short term priorities which also need to be addressed – arguably in advance of further support to the raspberry breeding programme.
- 5.29 There are two key issues:
- **Market focus** – although not directly part of DTZ Pieda Consulting's remit, the study has raised important questions over the focus of Scotland's marketing strategy. It has elected to target the volume processed market which puts it in head-to-head competition with the low cost Eastern European producers. The strategy adopted by England has been to exploit the quality hand-picked market channelled through the multiple chains and they seem to be having some degree of success; and
 - **SSFG Future** – there are key challenges facing the future development of the main raspberry co-operative for Scotland given the termination of the EU Raspberry Development Programme in November 2000.
- 5.30 The Terms of Reference did not present a remit that specifically asked for the above issues to be investigated. However, DTZ Pieda Consulting agreed with SERAD to extend the scope of its work into this broader area. Within this area there was a significant degree of consensus concerning the problems facing the industry.
- 5.31 **Our recommendation would therefore be to address the wider commercial needs of the industry first, to determine:**
- **What the future is for the raspberry industry in Scotland;**
 - **Whether the industry is capable of helping itself; and**
 - **If so, what support is required and how it can be prioritised.**
- 5.32 This approach would have the following merits:
- (i) Firstly, any future commitment to the raspberry breeding programme would be based on a realistic assessment of the future prospects for the industry. At present it is very uncertain due to the significant and sustained contraction in output over the last 15 years; the problem of the strong Pound, foreign competition, root rot, etc. Everything appears to be going against the industry.

There is no point in investing heavily in a dying industry which has no future; vice-versa, if there is a viable future then support could be critical in turning the fortunes of the industry around;

- (ii) Secondly, it would determine whether the industry was capable of reversing its fortunes. SSFG has been the beneficiary of £7.8m of public sector funding over the last eight years, yet the decline in plantation area, yield and output tonnage has continued. At almost £1m p.a., this level of funding represents an exceptionally high proportion of the value of total industry output: 17% – 28% of industry output in 1999.
This is in contrast to the performance of the English raspberry industry which has been able to maintain its cultivated area and output over the same period with minimal public sector funding;
- (iii) Lastly, if appropriate, the required measures of support would be identified and then prioritised. This would assist in the assessment of the importance of the raspberry breeding programme within the wider commercial context and the level of support it should receive, if any.

5.33 DTZ Pieda Consulting's recommended action plan for the industry is summarised in Figure 5.1.

Figure 5.1
Recommended Action Plan



APPENDIX A:
TERMS OF REFERENCE

APPENDIX B:
LIST OF CONSULTEES

- **LIST OF CONSULTEES** -

Scottish Executive Rural Affairs Department

Scottish Crop Research Institute/Mylnefield Research Services Ltd

Horticultural Research International

Horticultural Development Council

Scottish Agricultural College

Scottish Nuclear Stock Association Ltd

Nuclear Stock Association Ltd

Highland Fruit Stocks Ltd

Scottish Soft Fruit Growers Ltd

MEIOSIS Ltd

MAFF

Michael Thomson, Trade Solutions (Scotland) Ltd

Peter Thomson, Thomas Thomson (Blairgowrie) Ltd

Andrew Logan, James Logan & Sons/Scot Fruit

Scottish Enterprise Tayside

Marks & Spencer