

DEPARTMENT for ENVIRONMENT, FOOD and RURAL AFFAIRS

Research and Development

Final Project Report

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CSG 15

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Project title

Provision of information on organic soft fruit production

DEFRA project code

OFO306Contractor organisation
and location

HDRA
 Ryton Organic Gardens
 Ryton on Dunsmore
 Coventry CV8 3LG

Total DEFRA project costs

£ 13,926

Project start date

01/02/02

Project end date

01/02/03

Executive summary (maximum 2 sides A4)

Although there is a strong demand for organic soft fruit in the UK, especially from processors, at present these crops are only grown on a very small scale in the UK and supply is met largely through imports. Lack of technical knowledge, information and advice for growers, together with uncertainties over the economics of production have been identified as important barriers preventing growers from diversifying into organic soft fruit production. The purpose of this project was to address this problem, by collating the knowledge gained on this topic in a previous project (OF0150 – ‘Organic fruit production – a review of current practice and knowledge’), updating the information with new developments, and to produce a technical guide on organic soft fruit production for UK growers. Organic production of strawberries was not included in this study as a technical guide on this topic had previously been produced within project OF0311 (‘Organic strawberry production – a grower’s guide’).

The main objectives of the project were:

- To update, collect and review information on existing knowledge of current and best practice techniques for the organic production of soft fruit crops (excluding strawberries), building on the findings of project OF0150 (‘Organic fruit production – a review of current practice and knowledge’).
- To produce a published technical booklet for growers
- To disseminate the information to growers and other stakeholders in the organic fruit industry.

The main findings from the project have been:

- In the review of the existing literature, it became apparent that although a large amount of published information exists on the production of cane and bush fruits, most of this is very old text and relates primarily to conventional production systems. There is clearly a lack of up-to-date information for organic growers on aspects such as selection of suitable varieties, site preparation, soil fertility management, pest and disease control and appropriate husbandry methods in general (e.g. with regard to pruning and training). Although some of the existing literature

on conventional soft fruit production would be of use also for organic producers another problem is that much of the text not very accessible to UK organic growers.

- Contact was made with a number of registered organic cane and bush fruit producers; this revealed that considerable knowledge and experience exists amongst the producers, and attempts were made to capture and consider this knowledge as part of this information gathering.
- Most organic soft fruit growers in the UK (other than strawberry producers) operate on a very small scale. Typically, cropping areas of less than 0.5ha are devoted to cane and bush fruits, with several different varieties of each type grown, i.e. only one or two rows of raspberries, currants and gooseberries grown in the small area. Many growers have diversified into small-scale fruit production to supplement the production of vegetables, salads, and livestock enterprises, such as organic egg/poultry production, in order to supply local markets.
- Raspberries (aside from strawberries) are the main soft fruit crops grown on the holdings, although there also appears to be a relatively high level of interest in growing a wide range of crops including the more unusual hybrid berry crops such as tummelberry.
- Most existing organic soft fruit growers use farmers' markets, box schemes or direct sales as market outlets for their crops. Only very few existing large-scale producers supply their fruit to supermarkets.
- From consultation with organic soft fruit growers, it is clear that the main technical difficulty encountered is weed control, both within and around the crop rows. Most, if not all growers, cited weed control as the main demand on labour at a time when other important operations such as harvesting were also necessary. Due to the perennial nature of soft fruit crops, it is difficult to rotate weeds out of the system and many growers use organic mulches of woven plastic (e.g. Mypex) or straw / compost mulch in the crop rows to reduce weed competition.
- Surprisingly, most of the growers reported relatively few problems with pests and diseases, although problems with raspberry beetle, reversion disease and gall mite in blackcurrants, and gooseberry sawfly are most common.
- The information gathered was evaluated, and collated into two technical guides for organic growers: 'Organic Cane Fruit Production – a grower's guide' (76 pp) and 'Organic Bush Fruit Production – a grower's guide' (60pp). A limited number of both guides will be published by HDRA in 2006. It will also become possible to download copies from the HDRA website (www.hdra.org.uk) and from organic e-prints under the subject area fruit and berries (www.orgprints.org).

Due to the relatively small size of the soft fruit industry (which consists mostly of strawberries) it is recognised that research into organic cane and bush fruit crops is likely to remain limited for some time to come. However, many of the problems with weed management in organic soft fruit production are similar to those experienced by growers who produce other perennial crops such as organic top fruit and vines, where control through rotation is not an option. Research aiming to develop effective weed management strategies for these types of horticultural systems would be extremely beneficial.

Most of the research related to development of appropriate cropping systems and husbandry methods (e.g. pruning and training) for 'difficult' soft fruit crops such as cane fruits (raspberries, hybrid berries, blackberries etc.) was carried out in the 1970's. Since then, it appears that little work has been undertaken to modify and develop new strategies for minimising pest and disease incidence and non-chemical control of spawn in the crop alleyway. Cropping techniques such as the 'biennial system' offer some advantages for pest reduction and crop regulation, but this system is not suited to some of the popular modern raspberry varieties and more research needs to be carried out in this area to identify effective management strategies. There is also little information on the use of organic amendments (compost / manures / green manures etc.) or other strategies for improving and maintaining soil fertility in perennial cropping systems. Consequently, growers often struggle to maintain adequate soil fertility to meet crop demands in organic systems. New research aimed at improving strategies for soil fertility management in organic soft and top fruit production would be beneficial and would help organic growers to achieve better results.

Scientific report (maximum 20 sides A4)

Introduction

In 1999, HDRA produced a review of current practice and knowledge of the organic fruit industry (DEFRA project OF0150). This project sought to highlight current growing methods and to identify the key constraints to production for the main top and soft fruit crops grown in the UK. The review identified a serious lack of up-to-date technical information and guidance for growers considering organic fruit production and highlighted this problem as one of the main constraints to increased production of organic fruit in the UK. HDRA has since sought to address this lack of technical information by producing two grower guides through project OF0311 ('Organic apple production – pest and disease management') and (Organic strawberry production – a grower's guide) for the two major organic fruit crops (apples and strawberries). The project discussed here (OF0306) concerned the production of a booklet for the organic production of cane and bush fruits. The project sought to draw together existing and up-to-date recommendations (from existing published information and from organic growers - both in the UK and overseas) concerning choice of suitable varieties, methods of weed control, maintenance of soil fertility and the management pests and diseases in organic cane and bush fruit systems.

Objectives and milestones

The objectives of the project were:

- 1) To update, collect and review information on existing knowledge of current and best practice techniques for the organic production of soft fruit crops (excluding strawberries), building on the findings of project OF0150 ('Organic fruit production – a review of current practice and knowledge').
- 2) To produce a published technical booklet for growers on organic cane and bush fruit production.
- 3) To disseminate the information to growers and other stakeholders in the organic fruit industry.

Approach and results

The project involved researching and collecting relevant information on all aspects of organic cane and bush fruit production, i.e. information on site selection, soil preparation, varieties, pruning and training, cropping systems, habitat management and pest and disease problems and their control. This was achieved for all the major cane and bush fruit crops, including, to a certain extent, hybrid berries and blueberries. During the initial stages of the project in April 2002, a meeting was held with the Organic Soft Fruit Working Group, and members expressed their support for the production of the booklet and confirmed their wish to contribute to its content through provision of information and peer review of draft publications.

The main source of collected information was from existing texts and information available from relevant conventional and organic literature. This included peer reviewed and anecdotal literature. Previous fruit-related projects conducted by HDRA (OFO150 and OF0311) also supported the work and information on cane and bush cultivation practise in Europe was also gathered (mostly from FiBL, Switzerland). An up-dated version of the Swiss guide '*Biologischer Anbau von Strauchbeeren*' produced by the Swiss Institute of Organic Agriculture (FiBL) provided a great deal of information for the basis of the draft booklet (with agreement from FiBL). Most of the relevant research on organic cane and bush ('shrub-berry') production in Europe is currently being undertaken or co-ordinated at FiBL and a visit to Switzerland in November 2002 was undertaken when the biennial meeting of the European Group of Organic Fruit Researchers (EUGROF) was held. This afforded the opportunity to meet staff at the research institute to review some of the activities and research on soft fruit currently undertaken at FiBL (and also from other Institutes in Europe). This was helpful in identifying recent relevant technical updates in organic soft fruit production in Europe.

Contact was also made with a number of registered organic cane and bush fruit growers in the UK through written correspondence and follow-up visits. This consultation was carried out to identify current market trends, current production methods, main technical problems and their solutions and also to seek views from the growers on the information gathered from Europe, its relevance and potential adaptation for UK conditions. Since most of the organic growers of cane and bush fruits operate on a very small scale, it was felt necessary to establish contact with as many growers as possible in order to provide sufficient information and to cover the broad range of soft fruit crops. All growers who had soft fruit plantings registered with the Soil Association were contacted during the early stages of the project and were asked to supply information about the crops and production methods. Many growers were helpful in supplying information and several were selected for follow-up visits during the summer months in order to look at current methods of production. These visits also afforded an opportunity to gather relevant photographs to illustrate the booklet. Eight

growers were visited in total (three in Norfolk, two in Wiltshire, one in Bedfordshire, one in Gloucestershire and one in Wales), covering the range of soft fruit crops.

In the consultation with the existing soft fruit producers it was made clear that the main technical difficulty encountered with organic cane and bush fruit production was that of weed management, controlling weeds both within and around the crop rows. Most, if not all growers cited weed control as the main demand on labour at times when other important operations such as harvesting are also necessary. Most growers appeared to use whatever materials were at their disposal for weed control, including old potato sacks, carpet and turkey feathers to mulch around crop rows. Many growers used mypex mulch or black plastic, though the results were mixed. Surprisingly, most growers report relatively few problems with pests and diseases, although problems with raspberry beetle, reversion disease and gall mite on blackcurrants, and gooseberry sawfly were most common. There was considerable demand by growers for up-to-date information on varieties suitable for organic production and also for clear guidance regarding crop nutrition and soil fertility, as well as guidance on appropriate pruning and training techniques for ease of management. In addition to cultural advice and information supplied by growers, some limited information was also collected relating to economics and marketing of soft fruit crops for inclusion in a brief section on this topic in the booklet.

Most of the UK soft fruit growers operate on a very small scale, typically on mixed holdings with less than half of a hectare devoted to the production of cane or bush fruit crops. The producers often grow several varieties of each type. Not surprisingly, raspberries (aside from strawberries) are the main crop grown, but there also appears to be a relatively high level of interest in growing a wide range of soft fruits including some of the more unusual hybrid berry crops such as tummelberry. It appears that there are only a handful of larger-scale growers supplying organic fruit to supermarkets. These growers are mostly large-scale conventional growers who are also running a smaller area for organic production. They are able to capitalise on their existing knowledge of production and gain the benefits of technical advice and information from large marketing co-operatives, research organisations and levy-funded bodies such as the HDC. Most of the growers who participated in this study use farmers' markets, box schemes or direct sales as market outlets for their crops.

The information collated together to produce drafts of the booklet was gathered from a number of sources including existing published literature (see bibliography), from the previous study (OF0150), from contact with European research establishments and grower groups and from the contact with organic soft fruit producers in the UK. It was then reviewed and incorporated into two draft publications *Organic Cane Fruit Production – a grower's guide* and *Organic Bush Fruit Production – a grower's guide*. Due to the vast amount of information collected, the decision was taken to produce two booklets (one for each cropping group) rather than produce a single large guide. The draft booklets were distributed for peer review to UK researchers, advisors and a number of growers, including members of the Organic Soft Fruit Working Group. The drafts were also peer reviewed by staff at the Soil Association, including staff from Producer Services department as well as a certification officers of Soil Association Certification who were able to check issues relating to organic standards.

Conclusion

Two booklets on organic cane and bush fruit production have now been produced under the titles 'Organic cane fruit production – a grower's guide' and 'Organic bush fruit production – a grower's guide.' The bush fruit guide (60 pages) covers the main bush crops; gooseberries, blackcurrants, redcurrants, whitecurrants and also relatively novel crops such as jostaberries, worcesterberries and blueberries. (Cranberries are not included as there is little interest in their cultivation in the UK). The cane fruit booklet (76 pages) covers the cultivation of raspberries, blackberries and hybrid berries. Each booklet contains detailed sections on site selection, soil fertility management, varieties, pruning and training, weed control and crop management, and pest and disease control. A section on marketing and economics is included in each booklet and a list of useful contacts is provided for growers seeking further information on particular issues. A limited number of both guides will be published by HDRA in 2006. It will also become possible to download copies from the HDRA website (www.hdra.org.uk) and from organic e-prints under the subject area fruit and berries (www.orgprints.org).

Further research and recommendations arising from this work

Due to the relatively small size of the soft fruit industry (most of which is production of strawberries) it is recognised that research into organic cane and bush fruit crops is likely to remain limited for some time to come. However, many of the problems with weed management in organic soft fruit production are similar to those experienced by growers who produce other perennial crops such as organic top fruit and vine, where control through rotation is not an option. Research aiming to develop effective weed management strategies for types of horticultural systems would be beneficial.

Most of the research related to development of appropriate cropping systems and husbandry methods (e.g. pruning and training) for 'difficult' soft fruit crops such as cane fruits (raspberries, hybrid berries, blackberries etc) was carried out in

the 1970's. Since then, it appears that little work has been undertaken to modify and develop new strategies for minimising pest and disease incidence and non-chemical control of spawn in the crop alleyway. Cropping techniques such as the 'biennial system' offer some advantages for pest reduction and crop regulation, but this system is not suited to some popular raspberry varieties and more research needs to be carried out in this area to identify effective management strategies. There is also little information on the use of organic amendments (compost / manures / green manures etc) or other strategies for improving and maintaining soil fertility in perennial cropping systems. Consequently, growers often struggle to maintain adequate soil fertility to meet crop demands in organic systems. New research aiming to develop improved strategies for soil fertility management in organic soft and top fruit production would be beneficial and would help organic growers to achieve better results.

Publications

The two publications arising from this project will be:

'Organic cane fruit production – a grower's guide.'

'Organic bush fruit production – a grower's guide.'

Author: Cubison, S.V. (2006), Published by HDRA.

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65 (1963): 'Magpie moth.'

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176 (1961): 'Currant and gooseberry aphids.'

204 (1960): 'Die-back disease of gooseberry.'

215 (1979): 'Gooseberries.'

273 (1975): 'Powdery mildews of gooseberry and blackcurrant.'

277 (1967): 'Reversion disease and gall mite of blackcurrant.'

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