

Conserving & Restoring Traditional Orchards, England

Orchard Produce – a feasibility study for National Trust, Parke, Devon



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Orchard Produce

a feasibility study for National Trust, Parke, Devon

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2010



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The contents of this report were correct at the time of printing and Hilltop Partners cannot accept responsibility for business development decisions based purely on the contents of this study. It is up to each individual property to make business decisions based on their own research.

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Executive Summary

Parke Estate is situated just outside the town of Bovey Tracey and consists of 160 trees of traditional apple varieties on 2 acres. There is a desire to operate the orchard as a going concern, generating revenue from apple products, with any profit being reinvested in the orchard. Pilot apple juice production has been successfully trialled using a local sub-contract producer through a local outlet and further work is now needed to determine the most effective route to develop this further.

A feasibility study has been commissioned through Hilltop Partners (www.hilltop-partners.com) to investigate:

- Options for pressing & pasteurizing apple juice.
- Cider production.
- Crop yield and projected volumes of juice.
- Options for collaboration/harvest sharing with other orchards.
- Issues associated with selling & distributing the product.

In order to quantify the benefits of any option, a financial model has been produced. The main conclusions are set out below.

Conclusions: Parke specific

- Potential yield of apples will vary from year to year, according to the season. Juice production will also vary according to the quality of equipment used and labour available. Calculations in the cost model for Parke were based on rootstock and the average taken from the expected yield in a bad year and good year.
- The 0.75 litre bottle of apple juice produced 'in house' generates the most net profit per bottle. It remains profitable even when the lowest apple yield figure is used.
- The 0.75 litre bottle of apple juice 'in house' option generally gives the best cash flow and net margin with good sales value. It is also least sensitive to changes in input conditions such as apple yield.
- Although the 0.25 litre bottle of apple juice produced 'in house' generates relatively good sales, it is low in profitability and particularly poor in cash flow because of the relatively

higher level of investment required and with a much longer time and labour requirement to complete the bottling operation.

- Outsourcing options score lower on probability of success mainly because they are unlikely to meet target costs, because of lower profitability and the generation of a lower net margin. Because the quoted costs of bottling per unit (bottle) are very high e.g. Labels, labour, use of equipment etc.
- The outsourced options require much lower investment. This means that their pay back is much shorter and the return on investment is much better. Consequently in house options require more investment (equipment, buildings, staffing etc) and will subsequently have a longer payback period.
- All project options would show improved results if the sales volume were higher (by processing more apples through, for example, collaboration with other orchards). In house options become relatively more attractive.
- The study recommends that processing is outsourced in 2010 but that experience in pasteurising/bottling is gained so that processing can happen in house in 2011 – providing the appropriate equipment can be purchased (by Parke or possibly in collaboration with other properties).

Conclusions: Trust wide

- Although the National Trust is in a unique position compared with other orchards owners, in that they have access to a large pool of volunteers, this does vary from property to property and labour capacity and its organisation is a big issue with regard to seasonal apple and cider production.
- Specific training for key staff involved with running an apple juice/cider operation is an absolute necessity, especially in Health and Safety, Food Hygiene, supervisory management e.g. Pommelier at the South Somerset Orchard Project. This training could be put together as a package by the relevant central NT staff.

- It is evident that there is inconsistency within the National Trust with regard to financial status of properties and whether they can use any profit from orchard produce to reinvest directly in the orchard. This causes an issue for some properties in being able to manage and further develop their orchard and orchard products.
- Orchard Products provide a niche marketing opportunity for National Trust (NT) properties that fit well with the National Trust Food Policy.
- The National Trust has very specific guidelines for the production of produce from NT properties and all properties are expected to follow these. There is a lack of awareness at property level of these procedures and guidelines and how to access the support available. NTE support varies according to property and shop management.
- Orchard products and activities can provide extra income and increased footfall through added interest and value to NT properties at the backend of the season.
- There is an opportunity for groups of properties in a region to collaborate with each other and share costs of equipment, marketing and specialist staff. This is why other producers are always happy to make maximum use of their equipment in providing a bottling service to other orchards.



Harvesting by hand at Barrington Court

Introduction

Background

Since 2007, Traditional Orchards have enjoyed 'priority' status under the UK Biodiversity Action Plan. In 2008, with funding from Natural England's Countdown 2010 fund, the National Trust began an Orchard Project that is now working with 33 National Trust properties, and with 19 external partners, to restore and conserve Traditional Orchards in England.

One such orchard is situated on the Parke Estate just outside the town of Bovey Tracey, on the western edge of Dartmoor, Devon. An orchard surrounding the walled garden at Parke is known to have been on this site since at least 1841, according to the tithe appointment. It is also known that apples from the orchard were used to produce cider between the wars. The orchard surrounds the walled garden on three sides and covers approximately 2 acres and 160 trees. The trees planted consist mainly of apple varieties and a few damsons; 150 were planted in 1999/2000 in addition to 10 remnant trees. The orchard is currently grazed by sheep and very easily accessible to the public, being on one of the most popular walking routes in the estate. A Biological Survey Report conducted in 1990 detailed notable species; corky-fruited water dropwort and mistletoe, and the potential roosting sites for bats in buildings close by.

Until recently, the walled garden was largely neglected. Recent work has taken place to renovate the walls and return it to being a productive garden.

The orchard work at Parke is very much ongoing and 2009 was the first year of the orchards reuse, with 200 0.75 litre bottles of apple juice produced, retailing at £3.50 a bottle. The apple harvesting was carried out with the help of volunteers, and the pressing, pasteurising and bottling was carried out by a local juice maker - Yarde. Labels were supplied by this contractor, which features a stamp stating the orchard at Parke as the origin of the apples. Juice is sold at the door of the Widecome NT shop – it was not possible to sell the juice officially through NT Enterprises.

The orchard at Parke has been awarded funding from the Orchard Project (Oct 2008 – March 2011) The funds are being spent on a mix of activities and equipment to include biological surveys, harvesting and juicing equipment, practical training and public events. The overall aim is to build upon the work already being carried out at Parke; to further develop use of the orchard produce; maintain the orchard in terms of its crop and its value as a wildlife habitat; and engage both visitors and volunteers with the project.

A feasibility study

The decline in economic viability of traditional management practices and loss of markets for traditional products has contributed to the fragmentation of Traditional Orchards. However there is a current re-emergence of high quality organic juice drinks and other orchard products and tourism. This provides an opportunity for the long term survival of Traditional Orchards linked to economic and social value. See Appendix 1 for information on orchard produce.

Currently NT orchard products are produced on a small scale and are generally sold through local outlets, in or close to NT properties e.g. NT shops and restaurants, farm shops and farmers markets. See Appendix 2 for case studies.

This feasibility study has primarily looked at apple juice production with regard to Parke Estate and the business case for deciding whether to produce in house or to contract out. It will also help to explore different options for orchard produce (see Appendices 1 & 3).

Branding and marketing orchard produce, health and safety implications, learning activities and events are also discussed.

Marketing

There are a number of links between food, tourism and the environment which have fostered the growth in local foods and which National Trust properties like Parke are in an ideal position to link into.

Marketing takes a longer term view and encourages you to focus on consumer needs when deciding what orchard products to produce, ensuring that your product satisfies customer requirements and thereby ensuring repeat purchases. Marketing ensures that your products satisfy customer wants over time.

Orchard product success factors for Parke will include:

- Product quality – make sure your product has authenticity.
- Local.
- Wildlife friendly.
- Natural ingredients.
- Traditional methods.
- Good appearance.
- Good taste.
- Freshness.
- Raw Materials – make sure you have reliability of supply, good quality and assurance of that quality.
- Contact and communication with customers and consumers – knowing the market and two way relationships.
- Drive and enthusiasm – multitasking and support of the property and staff/volunteers.
- Local demand and community support – don't overprice.

- Financial management and business planning – essential for sustained growth.
- Make sure you have sufficient capacity – to enable other National Trust property and business activities to be undertaken.
- Institutional support – seek out sources of funding and networking, information, training etc.
- Ensure you have effective marketing channels and USE them e.g. Fine Farm Produce Awards, Regional Food Awards like Taste of the West or National like Made in Britain.

Branding

One of the most important things to think about is brand identity. The National Trust is one of the most recognized brands in the country and as such this is at risk whenever an individual property is considering a 'home produced / estate product'.

At Parke you need to think about what lies behind your brand? What are its personality and values? This is important, as you are more likely to attract customers if it has a clear brand personality they can relate to. Explore your brand personality and then work out your brand vocabulary. Are there any key words or adjectives and phrases, which are particularly relevant to your product and property?

These may then come in useful when writing words for your advertising, labelling or other promotional material. Try to come up with just a few words that describe the 'essence' of your brand personality e.g. for apple juice it could be: traditional, quality, wildlife friendly, flavour

Who are you targeting? Who is going to be interested in your product? What are they like? What is important to them? Where will you find them? How will you convince them to buy your product?

Labels should reflect the property brand, be clear so the consumer immediately knows it is apple juice, be modern and be simple.

Keep asking questions and stay focused from the outset. If your customer is likely to frequent farmers markets' test out your product there – don't try to diversify too quickly. Be honest with yourself, do you have a market and the staff capacity or would it simply be better to sell your produce to another producer? Test, learn and build as you go.

Identify your market – you are likely to have limited resources so clearly identifying and targeting customers who you think will respond to your brand is important to ensure you don't spread yourself too thinly.

Labelling

As the National Trust is one of the most recognised brands in the UK, the reputation of the NT is at risk every time the brand is used or an event is held. Great care has to be taken to avoid problems, especially when dealing with food and drink products where food safety and human health is a particular concern. The procedures that are required to comply with the law regarding food and drink are not optional. Reputational damage caused as a result of inadequate attention to detail can be enduring both to the product concerned as well as the Trust itself.

Some individual properties are in a good position to directly produce and market their own food and drink products. Assuming that such home production is sufficiently cost effective and environmentally and socially sound, these products can contribute towards the local relevance of a property in line with the NT Food Policy (2006) – Appendix 4. However, even if the product appears appropriate and can be accommodated by existing property staff and volunteers, it is essential that adequate checks are satisfied before it is either branded by NT or sold through its outlets, no matter at what scale. This is a necessary means of complying with the law and demonstrating due diligence if (and when) problems arise. Such production checks may be carried out by the regional catering operations manager. Additional advice will be available via the national buying team (NTE). See Appendix 5 Guidance on NT Labelling of Food and Drink Products Feb 09.

Trading standards labelling requirement for food and drinks

The legal requirements for packaged food and drinks are complex and subject to change. Labels that are commissioned through the centre will be prepared to the latest specifications. Any labels produced must meet trading standards requirements.

Requirements for labels depend on the product but typically include:

- Best before, Food name, and quantities must be presented in the same field of vision.
- Ingredients listed in descending order by weight, [including % quantity for ingredients that appear in the product name].
- Known allergenic ingredients must be declared.
- Typeface for weight details must be at least 4 mm high.

- Unique batch numbers may be legally required for some products. This is important for apple juice, especially if batches are to be patulin (see Appendix 13) tested.
- Name and address of manufacturer.
- Storage instructions must be shown.
- Any organic ingredients must be described correctly with reference to certification body such as the Soil Association or Organic Farmers and Growers.

Until very recently, there has been a strong presumption against the use of the NT logo alongside 'estate / home produce' from properties. However, due to the following clarifications, it is now possible to incorporate the NT oak leaf alongside the property name as long as the:

- Product is exclusively and directly managed from a NT property
- Proposed product is acceptable to the NTE retail buying team
- Produce meets minimum production standards (for example certified organic, Freedom Food monitored, LEAF Marque logo or Conservation Grade).
- Final label design is approved by the Corporate Identity and Design Manager (Craig Robson at time of writing).



Examples of approved labels recently produced by properties.

Packaging and label design for 'estate / home produce'

Due to a lack of clear communication in the past, there have been a number of cases of locally produced labels which failed to meet required legislative or NT brand guidelines. In order to help overcome this, the central Agriculture section holds a small budget to contribute to design & packaging for home produce to the correct design and legal

standards. Help may be made available to develop new packaging or assess existing products and improve them where necessary.

Checklist for NT 'estate / home' produce

Whenever a property decides to produce food or drink items for distribution, it is advisable to check against the following points:

- All products should be consistent with the principles from the NT Food Policy (2006) (Appendix 1).
- Properties should contact their local authority to check environmental health requirements on site and ensure any recommendations are implemented.
- A simple business plan (see Appendix 3) should be used to identify total production costs versus predicted income. It will be acceptable to set out a pilot stage within a budget, but ongoing food and drink projects must be affordable even if they are not designed to achieve financial profit as a main objective.
- Agricultural and horticultural production methods should be checked e.g. with Farm & Countryside Advisers or Agriculture Advisers. Minimum production standards include certified organic, Freedom Food, LEAF Marque, and Conservation Grade.
- Product ingredients should be authentic, fully traceable and locally relevant. It would be expected that at least 50% of ingredients would be directly sourced from the property.
- Use of artificial ingredients should be minimised and industrial additives such as hydrogenated vegetable (trans) fat and monosodium glutamate should be completely avoided.
- For processed foods (this includes apple juice and cider), all food handlers should be trained in food safety governed by the Chartered Institute of Environmental Health.
- Where third parties are responsible for processing, a written agreement should confirm the exact ingredients and process used.
- For certain products, a sample from each production batch must be retained.
- Proposals for new or yet to be approved products should be submitted to the NTE regional buying team – Sales codes for new products will be provided by the NTE retail buying team in due course – if they have decided to go down the NTE route...
- Labels need to be finally authorised by Craig Robson, the Design & Corporate Identity Manager, for design content and must be checked for legal compliance. See National Trust labelling of Food and Drink Products (Appendix 5).

Corporate product responsibility

Procurement for all food and drink products to be sold by the National Trust for consumption on or away from the property is ultimately managed by NTE retail and catering (this includes directly to the public through events). It may sound strange to include all products including vegetables from estate gardens as well as 'home made' jams and chutneys, but it is essential that all products marketed and sold by the NT should be assessed for quality and compliance with the law. Products that do not meet necessary standards may have to be improved or withdrawn.

The development of existing and potential product ranges should be authorised by the NTE regional buying team. Proposals for NT specific products can be made using a standard proforma as found at: http://intranet/intranet/i-cus-feature/i-ent-feature/i-ent-retail/i-ent-retail-sourcing_policy_retail_gifts_postcard_and_publication_products.htm.

See Appendix 6 for Guidance on NT Food and Drink Supply Nov 08.

National Trust Fine Farm Produce Award



An award scheme has been created to recognise the best food and drink from National Trust properties, based on methods of production, provenance and taste. The award is open to all producers based on National Trust land, including property staff and farm tenants. Use of the award logo is governed by legal agreement. Products must satisfy strict criteria for production and processing.

In addition, food and drink products are subject to a blind comparison where winning products must be judged as comparable to known high quality alternatives. Many assurance schemes already exist. The advantage of a NT Fine Farm Produce Award Scheme is the inherent reputation of the National Trust itself. It follows that rigorous checks and balances will be essential to avoid damage to this hard won reputation.

The scheme is managed by the NT Head of Agriculture, Rob Macklin. Applicants will be required to send samples to the NT for taste testing as directed on the application form. Products should be presented as they appear for sale, with packaging and any accompanying point of sale material included. It is possible that some products may fall short of the award expectations. The award will be judged for individual products in turn, but as a guide it will not be available to:

- Blended products with less than 50% proportion of local/regional ingredients.

- Products including inappropriate ingredients or additives e.g. hydrogenated vegetable oil, monosodium glutamate.
- Products with no point of difference.
- Products that fail to pass taste testing – see above.
- Poorly presented products or inappropriate packaging materials.

Benefits of Fine Farm Produce Marketing

The Trust will be in a good position to promote the award scheme as part of an ongoing commitment to Food Policy. This should be mutually beneficial to all awarded produce.

Examples of high profile marketing would include:

- National Trust Magazine.
- NT Press releases.
- Supply to NT shops.
- NT restaurant and catering promotions of award winning produce.
- Printed directory of award winning produce.

See Appendix 7 for Fine Farm Produce Guidance and Application; Appendix 8 for Fine Farm Produce Application Form and Appendix 9 for Fine Farm Produce Draft Agreement.

Key Contacts (prior to re-organisation changes)

Retail

Head of Buying and Merchandising, Jane Temperley 01793 817537
jane.temperley@nationaltrust.org.uk

Catering

Catering Development Manager, Lynda Brewer 01793 817514
lynda.brewer@nationaltrust.org.uk

Labelling

Design and Corporate Identity Manager, Craig Robson 01793 817588
craig.robson@nationaltrust.org.uk

Corporate Sponsorship

Corporate Sponsorship Manager, Elin Horgan 01793 817507
elin.horgan@nationaltrust.org.uk

Licensing

Licensing Manager, Marie Shingfield 01793 817509
marie.shingfield@nationaltrust.org.uk

Production standards and assurance

Events and Activities

An orchard provides the ideal location for a wide range of seasonal events and activities for all ages and audiences: from schoolchildren to volunteers and staff to visitors. They provide a safe, natural and exciting place for people to learn and explore. Activities may include seasonal events such as apple days or technical workshops for the keen amateur grower, new orchard owners or staff and educational sessions for schools.

Open Days:

- Heritage tours.
- Management workshops – pruning, grafting, management for wildlife.
- Exhibitions.
- Plant/Produce sales.

Seasonal Events:

- Wassailing: Wassailing refers to the practice of blessing trees in apple orchards in cider-producing regions of England to promote a good harvest for the coming year.
- Tree Dressing: Tree Dressing Day was initiated by Common Ground in 1990. It aims to encourage the celebration of trees in city and country, in the street, village green - anywhere in the public domain. It highlights our responsibility for looking after trees and reminds us of their enormous cultural and environmental importance.
- Full Bloom Festival: A good time to focus on orchard wildlife – the spring brings nesting birds, wildflowers, insect activity etc. Could include picnics, wildlife stands and activities, poetry workshops. Information is available at www.orchardnetwork.org.uk/fullbloomfestival.
- Apple Day: On October the 21st every year, a celebration of apples, orchards and local distinctiveness. Initiated by Common Ground in 1990 it has since been celebrated each year by people organising hundreds of local events. Suggestions for games and activities can be found in 'Apple Games and Customs' Common Ground ISBN 1-870364-12-0. See Appendix 10 for a list of resources and good websites.

Education

Orchards provide a real opportunity to produce resources for schools to visit and link with the curriculum. Properties could produce their own Orchard 'Tracker Packs'.

'Fruitful Schools' is a new Learning through Landscapes project that encourages schools to plant and use orchards¹.

Schools in Sussex have used their local fruit varieties to inspire cookery lessons as well as learn about sustainability, planting and growth.

Children who took part in the Somerset Apple Project 2004-2005 used their local Orchards as an inspiration for art and poetry, local history and cider making processes.



Learning about honey bees and pollination in the orchard

¹ www.fruitfulschools.org.uk

Trust Wide Conclusions

- Although the National Trust is in a unique position compared with other orchards owners, in that they have access to a large pool of volunteers, this does vary from property to property and labour capacity and its organisation is a big issue with regard to seasonal apple and cider production.
- Specific training for key staff involved with running an apple juice/cider operation is an absolute necessity, especially in Health and Safety, Food Hygiene, supervisory management e.g. Pommelier at the South Somerset Orchard Project.
- It is evident that there is inconsistency within the National Trust with regard to financial status of properties and whether they can use any profit from orchard produce to reinvest directly in the orchard. This causes an issue for some properties in being able to manage and further develop their orchard and orchard products.
- Orchard Products provide a niche marketing opportunity for National Trust properties that fit well with the National Trust Food Policy.
- The National Trust has very specific guidelines for the production of produce from NT properties and all properties are expected to follow these. There is a lack of awareness at property level of these procedures and guidelines and how to access the support available. NTE support varies according to property and shop management.
- Orchard products and activities can provide extra income and increased footfall through added interest and value to NT properties at the backend of the season.
- There is an opportunity for groups of properties in a region to collaborate with each other and share costs of equipment, marketing and specialist staff. This is why other producers are always happy to make maximum use of their equipment in providing a bottling service to other orchards.

Financial Analysis for Parke Estate

Cost modeling

Two financial models have been produced. The first is a mini Profit and Loss (P&L) which indicates the likely on going profitability of the venture based on the information provided and indicative data derived from various sources. Versions have been produced for minimum, maximum and average apple yield, 0.25 and 0.75 litre bottle sizes both in house and third party pressed and bottled.

The second model is a project cost model based on our standard template and is designed to indicate the attractiveness of different options in terms of profit, sales, cash flow, likelihood of success and resource required.

The emphasis in both models has been on providing workable comparisons of different options rather than absolute forecasts as this is not possible at this stage without further development of the model and understanding of the cost structure of the NT. Both models are capable however of providing good absolute forecasts with further clarification of costs and supply chain information.

Assumptions relating to the cost model

A fully inclusive cost model and P&L cannot be completed without further information regarding the cost structure, rate of return and route to market required by the National Trust. In particular, assumptions have been made as follows:

- It is not clear as yet whether juice would be sold direct to customers, via third parties or through NT Enterprises. We have focussed therefore on cost, not sell out price although some indicative market prices have been used in cash flow analysis for comparative purposes.
- Although an indicative best quality farm gate apple price is given, this is not used in the calculations and it is assumed that apples are free from the orchard. This figure would be needed in extending the model to include fruit from other sources (e.g. other NT properties).
- Similarly, no cost has been included for the cost of the land or buildings that may be required. It is assumed that these are available free of charge.

- A cost for labour has been included. If this is available free of charge or through volunteers then costs could be lower and are more likely to be reflected by gross unit cost than net unit cost.

Additional assumptions in the model are:

- The bottling capacity is assumed to be the same regardless of bottle size. This is approximately correct although it is likely that capacity increases a little for larger bottles.
- Capital cost are fully recorded for the purposes of accurately reflecting depreciation in the P&L.
- Outsourcing P&L is derived on the basis that apples are free to a third party for the pressing and bottling of juice. The price for this is indicative and based on a typical sub-contractor. Exact prices would need to be established through negotiation with suitable suppliers.
- Transport costs for out-sourced production have been estimated. No transport costs for bottled product have been included at this stage.
- It is assumed that 100% of yield is converted to juice and whatever is produced is sold.

Summary of unit costs

	Max yield	Min yield	Ave yield	Outsource comparison	Indicative retail price
0.75litre Gross cost	£0.97	£0.97	£0.97	£1.94	
0.75litre Net cost	£1.47	£1.96	£1.72	£2.31	£2.50
0.25litre Gross cost	£0.78	£0.78	£0.78	£0.99	
0.25litre Net cost	£0.97	£1.15	1.03	£1.11	£1.20

Project Attractiveness Summary

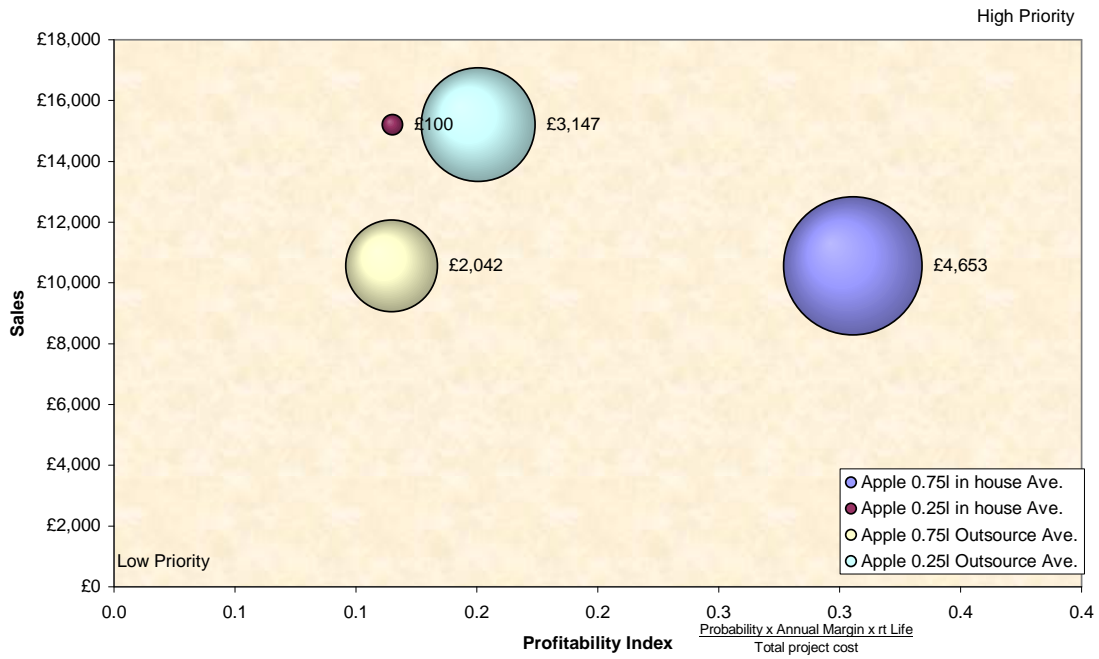
4 cases have been considered and the results are summarised in the table below.

- Profitability index is calculated as follows (probability of success x annual net margin / project cost). It therefore includes the amount of risk and cost required to achieve the profit.
- Twice the resource is assumed to set up for 'in house' bottling (12 man months) compared to out sourcing (6 man months)

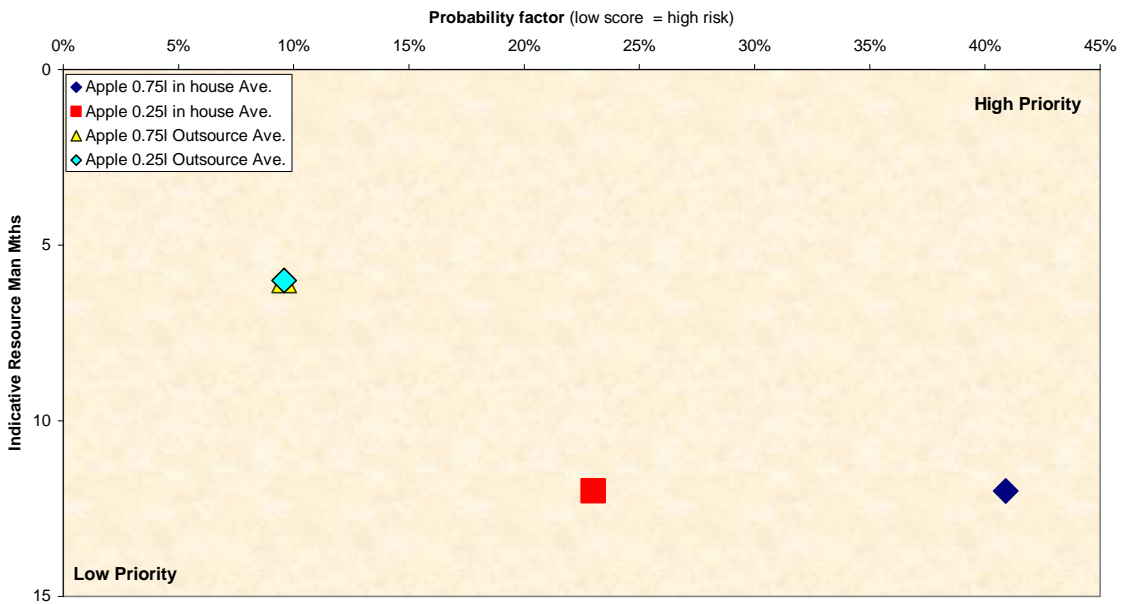
Project Name	Profitability Index	Annual Sales	Nett Cash	Probability	Resource
Apple 0.75l in house Ave.	0.31	£10,563	£4,653	41%	12
Apple 0.25l in house Ave.	0.12	£15,210	£100	23%	12
Apple 0.75l outsource Ave.	0.11	£10,563	£2,042	10%	6
Apple 0.25l outsource Ave.	0.15	£15,210	£3,147	10%	6

Project Prioritisation

(Size of circle = Cash flow)



Resource v Probability of Success



Input data for Apple Juice production at Parke Estate

Profit and Loss Data for 0.75l Bottle Using Average Yield Data for 'In House'

Ideal Yield	Figure/Unit	Additional Info
Apple yield per tree	37.5 kg	
Trees per acre	245	
Apple yield per acre	5,500 kg	
Juice per tonne	650 litres	
Actual Yield		
Trees per acre	65	
Acres available	2	
Total Trees	130	
Apple Yield	4,875 kg	
Total juice available	3,169 litres	
No. of 0.75l bottles	4,225 bottles	
Picking hours	160	
Consumable costs		
Bottles	£0.32	
Lids	£0.05	
Labels	£0.05	
Per bottle	£0.42	
Apples	£731.25	(£0.15 per kg at farm gate)
Labour rates		
Operative	£6.50	
Picking	£5.92	
Staff	£10.50	
Capacity		
Bottles per day	300	Based on choice of equipment
Continuous Bottling Period	18 days	

Capital Costs		
Trees @ £4.50 each	£720.00	
Stakes @ £0.60 each	£78.00	
Rabbit guards @ £0.5 each	£65.00	
Maintenance to point of yield	£3,000.00	
Mill	£745.00	Vigo Electric Centrifugal
Pres	£950.00	Vigo 901 hydro press
Pasteuriser	£3,500.00	Vigo in bottle pasteuriser
Bottling Plant	£145.00	Vigo bottle manual station
Building Refurbishment	£2,000.00	Estimate
Label Design	£500.00	Estimate
TOTAL	£11,000.703	

Outline Profit and Loss for 0.75Litre Apple Juice Production at Parke Estate

Income	Figure/Unit	Additional Info
Sales Volume	4225 units	
Unit Price	£2.50	
Sales Value	£10,562.50	
Direct Labour		
Picking	£243.65	
Pressing and bottling	£1,716.41	2 operators
Supervision	£369.69	
Direct materials	£1,774.50	
Total Direct Costs	£4,104.34	
Gross margin	£6,458.16	
Gross margin %	61%	
Unit gross margin	£1.53	
Gross unit cost	£0.97	
Overheads		
Training	£250.00	
Energy	£300.00	Estimate
Depreciation equipment	£784.00	
Depreciation orchard	£193.15	
Annual orchard maintenance	£479.16	Assumes 100 hrs per hectares per year
Storage	-	
Sales and marketing	£1,165.50	Assumes 3 weeks total per year at staff rate
Total overhead	£3,171.81	
Total cost	£7,276.15	
Net unit cost	£1.72	
Net profit	£3,286.35	

Profit and Loss Data for 0.25l Bottle Using Average Yield Data for 'In House' Production

Ideal Yield	Figure/Unit	Additional Info
Apple yield per tree	37.5 kg	
Trees per acre	245	
Apple yield per acre	5,500 kg	
Juice per tonne	650 litres	
Actual Yield		
Trees per acre	65	
Acres available	2	
Total Trees	130	
Apple Yield	4,875 kg	
Total juice available	3,169 litres	
No. of 0.25 litre bottles	12,675	
Picking hours	160	
Consumable costs		
Bottles	£0.17	
Lids	£0.05	
Labels	£0.05	
Per bottle	£0.27	
Apples	£731.25	(£0.15 per kg at farm gate)
Labour rates		
Operative	£6.50	
Picking	£5.92	
Staff	£10.50	
Capacity		
Bottles per day	300	Based on choice of equipment
Continuous Bottling Period	53	days

Capital Costs		
Trees @ £4.50 each	£720.00	
Stakes @ £0.60 each	£78.00	
Rabbit guards @ £0.5 each	£65.00	
Maintenance to point of yield	£3,000.00	
Mill	£745.00	Vigo Electric Centrifugal
Pres	£950.00	Vigo 901 hydro press
Pasteuriser	£3,500.00	Vigo in bottle pasteuriser
Bottling Plant	£145.00	Vigo bottle manual station
Building Refurbishment	£2,000.00	Estimate
Label Design	£500.00	Estimate
TOTAL	£11,000.703	

Outline Profit and Loss for 0.25Litre Apple Juice Production at Parke Estate

Income	Figure/Unit	
Sales Volume	12,675 units	
Unit Price	£1.20	
Sales Value	£15,210.00	
Direct Labour		
Picking	£243.75	
Pressing and bottling	£5,159.22	2 operators
Supervision	£1,109.06	
Direct materials	£3,422.25	
Total Direct Costs	£9,924.28	
Gross margin	£5,285.72	
Gross margin %	35%	
Unit gross margin	£0.42	
Gross unit cost	£0.78	
Overheads		
Training	£250.00	
Energy	£600.00	Estimate
Depreciation equipment	£784.00	
Depreciation orchard	£193.15	
Annual orchard maintenance	£479.16	Assumes 100 hrs per hectares per year
Storage	-	
Sales and marketing	£777.00	Assumes 3 weeks total per year at staff rate
Total overhead	£3,083.31	
Total cost	£13,007.59	
Net unit cost	£1.03	
Net profit	£2,202.41	

Profit and Loss Data for 0.75l Bottle Using Average Yield Data for Outsourcing

Ideal Yield	Figure/Unit	Additional Info
Apple yield per tree	37.5 kg	
Trees per acre	245	
Apple yield per acre	5,500 kg	
Juice per tonne	650 litres	
Actual Yield		
Trees per acre	65	
Acres available	2	
Total Trees	130	
Apple Yield	4,875 kg	
Total juice available	3,169 litres	
No. of 0.75l bottles	4,225	
Picking hours	160	
Consumable costs		
Labels	£0.05	
Per bottle	£0.05	
Apples	£731.25	(£0.15 per kg at farm gate)
Labour rates		
Operative	£6.50	
Picking	£5.92	
Staff	£10.50	
Capacity		
Bottles per day	300	Based on choice of equipment
Continuous Bottling Period	18	days

Capital Costs	Figure/Unit	Additional Info
Trees @ £4.50 each	£720.00	
Stakes @ £0.60 each	£78.00	
Rabbit guards @ £0.5 each	£65.00	
Maintenance to point of yield	£3,000.00	
Label Design	£500.00	Estimate
TOTAL	£4,363.00	

Outline Profit and Loss for 0.75Litre Apple Juice Outsourcing Production for Parke Estate

Income	Figure/Unit	Additional Info
Sales Volume	4225 units	
Unit Price	£2.50	
Sales Value	£10,562.50	
Direct Labour		
Picking	£243.65	
Pressing and bottling	£7,605.00	By third party @ £1.80 per bottle
Transport	£150.00	Estimate
Direct materials	£211.25	
Total Direct Costs	£8,210.00	
Gross margin	£2,352.50	
Gross margin %	22%	
Unit gross margin	£0.56	
Gross unit cost	£1.94	
Overheads		
Depreciation orchard	£193.15	
Annual orchard maintenance	£479.16	Assumes 100 hrs per hectares per year
Storage	-	
Sales and marketing	£777.00	Assumes 2 weeks total per year at staff rate
Total overhead	£1,549.31	
Total cost	£9,759.31	
Net unit cost	£2.31	
Net profit	£803.19	

Profit and Loss Data for 0.25l Bottle Using Average Yield Data for Outsourcing

Ideal Yield	Figure/Unit	Additional Info
Apple yield per tree	37.5 kg	
Trees per acre	245	
Apple yield per acre	5,500 kg	
Juice per tonne	650 litres	
Actual Yield		
Trees per acre	65	
Acres available	2 acres	
Total Trees	130	
Apple Yield	4,875 kg	
Total juice available	3,169 litres	
No. of 0.25l bottles	12,675	
Picking hours	160	
Consumable costs		
Labels	£0.05	
Per bottle	£0.05	
Apples	£731.25	(£0.15 per kg at farm gate)
Labour rates		
Operative	£6.50	
Picking	£5.92	
Staff	£10.50	
Capacity		
Bottles per day	300	Based on choice of equipment
Continuous Bottling Period		Depends on bottling capacity and loading

Capital Costs	Figure/Unit	Additional Info
Trees @ £4.50 each	£720.00	
Stakes @ £0.60 each	£78.00	
Rabbit guards @ £0.5 each	£65.00	
Maintenance to point of yield	£3,000.00	
Label Design	£500.00	Estimate
TOTAL	£4,363.00	

Outline Profit and Loss for 0.25 Litre Apple Juice Outsourcing Production for Parke Estate

Income	Figure/Unit	Additional Info
Sales Volume	12,675 units	
Unit Price	£1.20	
Sales Value	£15,210.00	
Direct Labour		
Picking	£243.75	
Pressing and bottling	£11,407.50	By third party @ £0.90 per bottle
Transport	£250.00	Estimate
Direct materials	£633.75	
Total Direct Costs	£12,535.00	
Gross margin	£2,675.00	
Gross margin %	18%	
Unit gross margin	£0.21	
Gross unit cost	£0.99	
Overheads		
Depreciation orchard	£218.15	
Annual orchard maintenance	£526.10	Assumes 100 hrs per hectares per year
Storage	£100.00	
Sales and marketing	£777.00	Assumes 2 weeks total per year at staff rate
Total overhead	£1,621.25	
Total cost	£14,156.25	
Net unit cost	£1.12	
Net profit	£1,053.75	



Conclusions: Specific to Parke

- Potential yield of apples will vary from year to year, according to the season. Juice production will also vary according to the quality of equipment used and labour available. Calculations in the cost model for Parke were based on rootstock and the average taken from the expected yield in a bad year and good year.
- The 0.75 litre bottle of apple juice produced 'in house' will generate the most net profit per bottle. It remains profitable even when the lowest apple yield figure is used.
- The 0.75l bottle of apple juice 'in house' option generally gives the best cash flow and net margin with good sales value. It is also least sensitive to changes in input conditions such as apple yield.
- Although the 0.25 litre bottle of apple juice produced 'in house' generates relatively good sales, it is low in profitability and particularly poor in cash flow because of the relatively higher level of investment required and with a much longer time and labour requirement to complete the bottling operation.
- Outsourcing options score lower on probability of success mainly because they are unlikely to meet target costs, because of lower profitability and the generation of a lower net margin. Because the quoted costs of bottling per unit (bottle) are very high e.g. Labels, labour, use of equipment etc.
- The outsourced options require much lower investment. This means that their pay back is much shorter and the return on investment is much better. Consequently in house options require more investment (equipment, buildings, staffing etc) and will subsequently have a longer payback period.
- All project options would show improved results if the sales volume were higher (by processing more apples through, for example, collaboration with other orchards). In house options become relatively more attractive.
- The study recommends that processing is outsourced in 2010 but that experience in pasteurising/bottling is gained so that processing can happen in house in 2011 – providing the appropriate equipment can be purchased (by Parke or possibly in collaboration with other properties).
- Potential yield of apples will vary from year to year, according to the season. Juice production will also vary according to the quality of equipment used and labour available. Calculations in the cost model for Parke were based on rootstock and the average taken from the expected yield in a bad year and good year.
- Once apple juice production is operational, sales stable, marketing in place (possibly once a Fine Farm Produce Award has been gained), staff trained and capacity identified then Cider Production could be considered.

Appendices

Appendix 1	Orchard products
Appendix 2	NT Property Case Studies
Appendix 3	Operations (technical information on orchard produce production)
Appendix 3.1	Apple Juice & Cider Equipment Suppliers & Advice
Appendix 3.2	British Beekeepers Association Selling Honey Leaflet
Appendix 3.3	Example of a Risk Assessment
Appendix 3.4	Sherwood Council Patulin Guidance
Appendix 3.5	CIEH Training
Appendix 4	National Trust Food Policy 2006
Appendix 5	Guidance NT Labelling of Food and Drinks Products Feb 2009
Appendix 6	Guidance NT Food and Drink Supply Nov 2008
Appendix 7	Fine Farm Produce Award Guidance and Application
Appendix 8	Fine Farm Produce Award Application Form
Appendix 9	Fine Farm Produce Award Draft Agreement
Appendix 10	Useful Resources