B usiness planning workbook

for local provenance tree nurseries

January 2008

wild resources limited

glasu adding value to local products ychwanegu gwerth at gynnyrch lleol

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Abbreviations

BWW	Better Woodlands for Wales
CCW	Countryside Council for Wales
FC	Forestry Commission
FTE	Full time equivalent
HMRC	Her Majesty's Revenue and Customs
IT	information technology
LP	Local provenance
NI	National Insurance
PAYE	Pay as you earn
USP	unique selling point
VAT	value added tax

Why local provenance tree nurseries?

The *provenance* of a tree is its geographical origin or source in other words the place its parents belong. Provenance is important as trees which belong to a particular location are *adapted* to conditions there. Matching the provenance of trees with local conditions is an important concern if planting is going to be successful and applies to exotic as well as native species. However, for native species (e.g. oak ash, birch, willow, alder, hawthorn, blackthorn etc.) there are additional dimensions related to the conservation of local genetic diversity in the species themselves as well as associated wildlife. Trees and shrubs which belong to a particular location in the sense that they grow up in the shade of their parents are genetically adapted to local conditions. This means that they are better able to withstand the rigours of exposure, local weather and soil conditions and sometimes also have features such as longer thorns which make them better suited to particular uses. There are numerous environmental, economic and social benefits to planting trees of native species of local provenance:

- The genetic makeup of local provenance native trees and shrubs ensures that they are **better adapted** to local conditions found in Wales.
- Planting better adapted trees ensures **better survival rates**, avoiding the costs of replanting.
- Trees grown from imported seed may differ significantly in important genetic characteristics, such as the time they come into leaf, flower and fruit, upsetting the fine **balance between native trees and the wildlife they support**.
- Sourcing trees and seeds locally **reduces transport costs**, reduces pollution and helps to **safeguard local employment**.

Most agencies involved in tree planting in Wales including Coed Cymru, Forestry Commission, CCW, Woodland Trust, Highways Directorate and Unitary Authorities recommend using local provenance trees whenever possible. However, this is hardly possible if no-one is growing LP trees. The Tree Nurseries of Powys Project works to support the development of LP tree and shrub nurseries as a commercial enterprise opportunity.

Why a workbook?

This workbook is the output of a study commissioned by Glasu to examine the profitability of alternative LP tree production systems. The study was conducted in 2007 and involved visits to 15 tree nurseries in the UK and the information contained within the workbook is drawn from the findings of this survey. Thanks are due to all the nursery owners and workers who generously provided information to the survey.

The market assessment in Part 2 is likewise based on a review of the situation in 2007. This review indicated that markets for trees and shrubs are highly volatile with a wholesale market subject to the vagaries of government subsidies for tree planting and an emerging retail market which is as yet untested. The advice contained in the workbook is based on the authors assessment of trends in markets for LP trees pertaining in 2007 and should be checked against markets at the time of assessment as well as within the area local to any proposed new nursery.

Prices contained in the worksheets are current in 2007. Prices and technology change constantly so please either update the prices or treat those presented here as indicating the relative cost of various options rather than as the actual cost of starting up a new business.

Use of the workbook

One of the first steps in the planning of a new enterprise or the expansion of an existing one is a careful appraisal of the opportunity in terms of costs and potential benefits. Conventionally this is done in monetary terms – that is as a *financial* appraisal of cash costs and income generation. The great range of production systems, available resources and objectives means that it is not possible to develop generic appraisals and it is necessary to undertake an appraisal that is specific to you. The lack of skills or know-how to undertake a financial appraisal is a significant barrier to many people considering nurseries as a business opportunity. In particular, most would like a realistic evaluation of start-up costs and reassurance that their business will be ultimately profitable.

However, *costs* can also be evaluated in terms of time, the way in which it prevents other activities taking place and *benefits* can be to fulfil an ambition to contribute to woodland regeneration or to provide suitable employment for less-able workers. The workbook has been designed in recognition of a range of objectives other than income maximisation and leaves the final decision on whether a tree nursery is a viable opportunity to you. Nevertheless, it is important that you make your decision based on an appreciation of the financial implications of your venture to avoid unpleasant surprises!

The workbook is designed so you can work through it by yourself and provides sufficient background information to evaluate a tree nursery enterprise – however, it is NOT a nursery manual. Also, please be aware of the limitation of a self-help approach and the fact that prices and market conditions can change rapidly, so DO NOT make a decision based solely on the outcome of the workbook spreadsheets. DO seek follow-up professional advice such as that available from Glasu, Business Eye or a professional accountant before committing yourself to any course of action. Additional online resources that you can consult for advice on starting up a new business can also be found on the Business Link website (www.businesslink.gov.uk).

The workbook is divided into a number of parts. They are sequential but stand alone enough so you can use just those parts that are of most interest to you.

Part 1 is about you and what you want from your nursery enterprise.

Part 2 presents a brief outline of three different production systems and guides you through a series of questions which will build up a picture of the type of enterprise you wish to establish. Answering these will help to narrow down the type of production system which best suits your needs. This in turn leads to a worksheet where you can work out what you will need and how much it may cost to start a tree nursery given the resources available to you.

Part 3 presents an overview of market segmentation and pricing for trees. It then demonstrates the type of research you need to do to understand the marketing options available to you. However, marketing is where innovation is required and so it is difficult to be prescriptive about this. A worksheet is provided for estimating income for sales into the conventional markets for trees i.e. for forestry and hedging. A worksheet is also provided so you can consider the costs of adopting different marketing and sales strategies.

Part 4 demonstrates how to put the costs and estimated income together in a financial appraisal of your business plan. Worksheets are provided to take you through a first look at the profitability or otherwise of your ideas. However, you are advised to seek professional advice before going ahead.

Part 5 takes a look at a range of other economic activities which complement a tree nursery enterprise.

The Workbook revolves around a series of Worksheets. These can be completed manually as you go through the workbook and are designed to facilitate the calculation you will need to undertake to prepare simplified (not full) profit and loss accounts. If you have access to a computer and some familiarity with spreadsheets then you can obtain the Worksheets in the form of an Excel

spreadsheet where the calculations are done automatically as you fill in your costs and prices. For those of you who wish to do a more complete financial appraisal then there is also a spreadsheet which includes depreciation, interest etc. and space to do a monthly five year projection. The spreadsheets are available from Cliff Webb of the Tree Nurseries of Powys Project. Or they can be downloaded from the www.nativetrees.org.uk website.

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A neat new nursery producing LP trees in cells. This set up includes home-made cold frames for seed sown in trays, a polytunnel for growing on, outdoor staging for hardening off, a sales display and picnic table for visitors and lots of gravel. Buying all of this at once is probably prohibitively expensive to be privately funded – this nursery belongs to is a grant-supported conservation NGO. If you can't obtain a grant then it is best to start with whatever you can beg, borrow or re-cycle and develop better facilities once you are sure a nursery is going to work for you and you have a surplus to invest in your business.

Part 1. You and your aspirations

This section leads you through the process of setting some objectives for your nursery venture.

1.1. Motivations

Motivations are what prompt you do something. People have many reasons for starting a business and a review of small scale tree nursery proprietors suggests that 'making money' is not an overly important consideration. Indeed if you are looking for a means of getting rich quick you should probably give up the idea of a tree nursery now! There are many reasons why you may be attracted to the idea of growing trees and it is helpful to articulate these so you are better able to judge whether you are going to be able to get what you want from what is possible. Examples of the motivations of people who already operate small scale tree nurseries are:

- To provide a retirement income
- To fit with lifestyle choices (i.e. outdoor, 'green', ethical etc.)
- As an opportunity to create a company for VAT registration
- To provide an additional income
- As a social enterprise (for young offenders etc.)
- To provide work opportunities for less able people
- To provide trees for a community woodland project
- As a volunteer activity
- As an educational resource
- As a main income
- Because of an interest in gardening
- Because it is compatible with farming

Although it is impossible to second-guess the motives of anyone else it is possible to discern some patterns from a crude classification of the proprietors of 66 nurseries across the UK as shown in Table 1. It is obvious that nursery owners are a very mixed group with possibly very divergent views but whom all operate in the same marketplace and to at least some extent compete for customers. Understanding where you fit in will help to determine your options for marketing as well as production system and scale.

Table 1 Function of small scale nursery enterprises

Motivation	Wales	Scotland	England
Environmental / Social charity	2	1	6
Main business	4	4	8
Horticultural diversification	1		8
Life style choice (including crofting)	5	5	5
Farm diversification	3		1
Council	1		
Not known	6	1	5
Total	22	11	33

In the following space write down what attracts you to the idea of setting up a tree nursery and what you hope to get from it.

My reasons for wanting to set up a tree nursery are:

Home made potting table for filling cells – regardless of the system used, pricking out seedlings in the spring is a time-consuming task – perhaps made more bearable if it can be done indoors?

1.2. Profits

Now think about how important the financial aspects of growing trees is to you. Tick the row which is closest to the way you feel about making a profit from your enterprise. These are all equally valid approaches and many small scale tree nurseries are considered successful by those who run them but are not conventionally profitable.

Strength of profit motive		Tick
1	I need to make a decent return on the time spent on the enterprise (I need a salary from this)	
2	I'm happy as long as the enterprise provides £……. a year surplus over inputs (I need to make up for a shortfall in other income sources)[1]	
3	I'm happy as long as the enterprise breaks even on inputs (I don't need a salary)	
4	I'm happy as long as the trees survive – I count the benefit of doing this in non-financial terms and accept that this may mean I am effectively subsidising production	
5	Profit on the trees is immaterial because the main outputs are social benefits and the enterprise will be judged according to these	

Your choice here will have a major influence on the scale of operation as well as perhaps price and marketing strategy as shown in Table 2. The marketing strategies indicated are those that people tend towards by default in each category listed – they are not intended as a guide to what you should do. As will be shown later it is possible to greatly increase your income by switching to a different pricing/marketing strategy and this needs to be a decision which should be explicitly made rather than come to by default. However, all of these strategies are perfectly legitimate and there is no right or wrong way to do things, just choices to be made.

Table 2 Relationship between profit, scale, pricing and marketing strategy

Profit motive	Scale of production	Pricing policy	Marketing strategy / tags
1	Larger scale > 70k	Economic	Competitive and ideally innovative, probably including a web site and perhaps e-commerce
2	Scaled to provide required income ~ 40k	Economic	Local networks
3	Scaled to fit available resources	Cost-recovery	Local networks
4	Scaled to fit available time	Cost-recovery	Ethical – or even no marketing
5	Scaled to provide sufficient work for *x* people, enough trees for planting a community woodland etc.	Not for profit	Social benefits

[1] Note that some ostensible not-for-profit charities fall into this category and can have quite aggressive pricing and marketing policies as they are using nursery sales to generate income for the charity.

Part 2. T ree nursery costs

If the idea of starting a tree nursery appeals, the first step is to consider what particular growing system might be the most appropriate to you. If you do not already have some experience of tree nurseries or commercial scale horticulture then obtaining some first-hand practical experience of working on a tree nursery will be invaluable. It should be possible to visit a commercial nursery, perhaps to work there for a season or to volunteer to work at a BTCV nursery or failing this to attend a course at a horticultural college. Courses at a range of lengths and levels are available at the following colleges accessible from Powys:

- Coleg Powys – besides courses the Brecon site has a tree nursery
- Pershore College – part of Warwickshire College has courses in Production and Organic horticulture
- Welsh College of Horticulture (Northop) has courses in Horticulture and garden centre management as well as Organic production.

Or perhaps contact the Horticulture Network Wales[2] for ideas on where you might be able to gain experience in nursery production.

Before starting it is worth introducing the three classes of costs that figure in the Workbook. These are:

- Variable costs which are directly linked to the number of trees produced. These are of two types: the variable costs of production which includes compost, fertiliser and the labour required to cultivate the ground (colour coded green in the Worksheets) and the variable cost of sales (purple) which covers the labour and also bags, boxes and transport used to deliver the trees.
- Overheads which are the costs of infrastructure such as fencing and tools and the costs of running a business such as insurance. These are independent of production levels and are essentially fixed costs (yellow).
- Capital costs which is money expended on the purchase of capital items which can be resold (blue).

2.1. Production systems

There are probably as many different growing systems as there are individual nurseries, but a survey of tree nurseries in 2007 showed that broadly speaking it is possible to recognise three main types of production system:

- Field grown trees which are grown wholly outdoors
- Cell grown trees which are grown in root-trainers in polytunnels
- Cell-Field hybrid systems where trees are started off in root-trainers in a polytunnel and then transferred to outdoor beds to be grown on.

Each of these has advantages and disadvantages as shown in Table 3 and there is no ‘best’ system either in terms of the quality of the trees produced – you just need to decide which suits you best.

[2] www.horticulturenetworkwales.co.uk. South Wales office - Aberglasney Gardens 01558 668023, North Wales office Wales College of Horticulture, Northop 01352 841016

Table 3 Pros and cons of main tree production systems

System	Field	Cell-Field	Cell
Pros	Low cost for start-up	Intermediate start up costs	Minimal land required that can be of poor quality
	Low production costs	Lower costs for compost than cell and faster growth rates than field	Higher turnover as more material is ready for sale in one year
	Bare rooted stock preferred by some clients	Option of supplying either bare rooted or keep some stock in cells for sale as plugs	Cell grown material can be sold at any time of year
		Complimentary to other horticultural crops	Low labour requirements and indoor working conditions
Cons	Needs good quality land	Need a source of compost and good quality land	High annual costs of cells and compost
	Production subject to vagaries of the weather – losses can be substantial	High labour inputs as ground cultivation and cell handling and watering required	High water costs and dependency on automatic irrigation and pumps
	Bare rooted stock can only be sold in winter		High start-up costs

Brief descriptions of each system are provided below as an aide memoir and not as a substitute for close scrutiny of tree nursery manuals. The most readily accessible and useful manuals are listed below. If you have a computer then there are several which can be downloaded free of charge from the internet, others are available for purchase or can be ordered through your local library. It is recommended that you consult at least one of these as you work through the workbook.

Agate E. (2003) Chapter 5 Propagation. Tree planting and aftercare. BTCV Handbooks Online. Free download from http://handbooks.btcv.org.uk/handbooks/content/chapter/651

Aldhous JR (1994) Forest Nursery Practice. Bulletin 111. Forestry Commission. £25 from Forestry Commission, Publications, PO Box 25, Wetherby, West Yorkshire, LS23 7EW Tel: 0870 121 4180 Email: forestry@twoten.com

Cobweb Information for Business (2007) Plant Nursery sheet #159. £5.99 from http://www.cobwebinfo.com/index.php

Flora Locale (2000) Code of Practice for collectors, growers and suppliers of native flora. Free download from http://www.floralocale.org/content.asp?did=23990

Forestry Commission (2007) Forest Reproductive Material: Regulations controlling seed, cuttings and planting stock for forestry in Great Britain. Forestry Commission. Free download from http://www.forestry.gov.uk/PDF/fcfc003.pdf/$FILE/fcfc003.pdf

Glynllifon (2005) Growing trees from local seed. Welsh/English. Available free from Glynllifon Tree Nursery, Glynllifon Site, Clynnog Road, Caernarfon, Gwynedd LL54 5DY Tel: 01286 831 061 E-mail: meithrinfagoed@gwynedd.gov.uk

McCracken P. (undated) The successful small tree nursery. Taynuilt Trees, Keepers Cottage, Taynuilt, Argyll PA35 1HY.

Web sites

Forest Reproductive Material Regulations - http://www.forestry.gov.uk/forestry/infd-66sg25

Flora Locale http://www.floralocale.org/content.asp?did=24106

Tree Nurseries of Powys http://www.nativetrees.org.uk

2.1.1 Field grown production

In this system, the majority of growing is done outdoors, either in raised beds or open ground. If beds are used then these may need to be surrounded by planks or low walls to prevent loss of soil. Beds can be any size, but easy access is important. If worked by hand, then they are generally around 1 metre wide, but if tractors are to be used then they could be wider and would not have fixed edges.

Seeds can be germinated directly into rolled, fine-tilthed seed beds, or seed trays from which mice and other pests can be excluded. The seedlings are pricked out of the seed beds and lined out where they are to be grown on in the spring. In the autumn, they are lifted and graded and either sold or replanted for growing on. This method is labour intensive from October to June when trees are being transplanted and sold. However, weed control is extremely important throughout the growing season.

Ensuring all the plants are watered is essential, but unlike other systems where seedlings are grown inside polytunnels, providing that soil conditions are good, rainfall should be sufficient, except during periods of drought.

This system requires the least initial input of capital and in many ways is the most straightforward way of growing trees commercially. However, in the long term it may be more difficult to scale up as the business grows though it is possible to mechanise operations (undercutting machinery) if you intend to set up very large scale production.

The quality of the soil will determine the quality of the trees and it is important your site has fertile and workable soil which is not too acid, shallow or stony. It is essential to maintain soil fertility, and a cheap source of manure or other fertilizer needs to be identified. If growing organically, then green manures can be used to boost fertility, but this will entail more labour for sowing and harvesting or turning in. Another factor that needs to be considered is the gradual loss of soil that occurs when trees sold as bare-rooted have soil clinging to their roots.

Climate is also very important, so sites where frost might be a problem should be avoided, and in very windy sites some form of shelter may be required. Ideally the land should be level, slightly sloping to allow drainage, but not too steep so that access or soil-creep becomes a problem.

Whilst the field-only system can be used on even quite small sites, areas for loading and storing equipment as well as the growing beds themselves should be taken into account. Also, whilst trees can be grown as a continuous crop, a rotation system of around 3 years is often used. In this method, green manures are grown on a proportion of the beds at any one time, so more space may be required to allow this.

Raised beds enclosed with planks, mulch made of recycled shredded paper

Nursery producing 60,000 trees in neat open beds

The production of trees from a wholly field based system takes longer than from ones where trees can be started indoors and the trees are more likely to be variable in size and form. However, they

are cheap to produce and are considered hardier and are considered to have higher post-planting survival. A disadvantage is that they can only be handled and sold in the winter when the trees are dormant.

2.1.2 Cell based production

In this system, plants are grown entirely in compost in individual plastic root-trainers. The cells are conventionally housed in a large polytunnel, greenhouse or shade tunnel except for a final few weeks outside hardening off before sale. However, the cells can also be placed outdoors for all or part of the growing period. Wherever they are grown there are a few constants which need to be provided:

- staging of some description to keep the cells off the ground to encourage air-pruning of roots to create a dense, fibrous root system within the cell,
- a cheap source of reliable high quality compost as tree quality and growth rates is directly determined by the quality of the growing medium and
- a watering system as the small quantity of compost and exposure on staging means that the cells have a low water holding capacity and need frequent irrigation to prevent drying out.

Cells are most often grown in polytunnels as this provides a controlled environment and with an early start in the spring can produce a larger proportion than outdoor systems of material for sale in one season. Having the trees in cells also confers the ability to sell trees all year round though the peak sales will still be in the winter as this is the optimum time for planting.

Large scale greenhouse, stone chip mulch floor, metal staging and automated overhead irrigation

Outdoor cells, with stands for overhead irrigation and shade netting

If you don't already have a suitably equipped polytunnel start-up costs which need to cover the purchase of polytunnels, irrigation equipment and cells are high. Once established, the major expense and risk with cell grown systems is the sourcing of high quality compost. Many growers attempt to make up their own growing medium to reduce costs. The size of cells used is important as this will determine the volume of compost and subsequently the size of the material produced. Larger cells may be better, but are more expensive, require more compost and will take up more space. Perhaps the biggest problem with growing trees in this way is sourcing a cheap and reliable source of good quality compost.

The trees produced from such a system are necessarily smaller than those allowed to grow uninhibited in a field situation and are sold as plugs either in the cell or removed from a re-useable cell and wrapped in something like stretch film to prevent the plugs drying out. Some species respond better to being grown in cells than others. Generally, growth rates are fastest in cells and it is possible to produce a higher proportion of material of larger size for sale in one growing season than the other systems. It is also possible to sell plants throughout the year (though they are difficult to transport when in leaf).

2.1.3 Cell-Field – a hybrid production system

This system combines aspects of both cell-grown and field-grown methods and allows the grower to sell stock either bare-rooted or in cells. This system has apparently originated as a diversification option for small scale vegetable producers (often organic in intent, if not formally certified). In this scenario, the proprietor already has a polytunnel and outdoor beds in which they grow vegetables and sell in the summer. Trees are grown in the winter in polytunnel and moved out in the spring into outdoor beds and their place taken by vegetables. Trees are lifted in the Autumn and sold through the winter thus providing year-round income, maximises the use of polytunnel, and provides for full-time employment.

This is an extremely flexible system that maximises survival and growth of seedlings by starting them in a polytunnel, reduces the level of inputs over the summer compared to cell-only systems by moving the plants outside into beds, and provides the opportunity to produce both cell and field grown stock for sale. However, there are some disadvantages it shares with either system – the high start up costs for a polytunnel, cells and seed compost as well as the need to work outside in the winter of the field system. It would not be economically efficient on its own as it would incur the expense of ground preparation and leaves the polytunnel empty and unproductive over the summer. Nevertheless it is an attractive system if you are thinking of combining trees with growing other crops – vegetables or perhaps wildflowers or other plants.

Polytunnel, wooden staging with cells. Note vegetables taking the place of the trees which are leaving the polytunnel to be planted in the beds below.

Outdoor beds protected by rabbit and wind break

2.2. Choosing a production system

Work through the following questions and mark your response in the 'Tick' column. Work through all the questions as this will give you an initial idea about the pros and cons of each production system.

Question	Response	√	Recommendation
(1) Are you prepared to work outdoors?	No		Polytunnel – dry and light but not warm
	Not all the time		Hybrid – indoor work in winter & spring, outdoor transplanting in summer and lifting in winter
	Yes		Field
(2) Can you be flexible about work times	No		Polytunnel - so you can get everything done when you need to, regardless of the weather
	Yes - to fit around other work		Hybrid – gives some flexibility especially in early part of the year
	Yes		Field - because you need to be able to work when the weather permits
(3) Area of land available (ha)	< 0.25		Polytunnel
	0.25-0.5		Hybrid - with part of stock outdoors an option
	> 0.5		Land not a limitation to choice
(4) Space available in polytunnel or greenhouse	None		Goto (5)
	Small		Hybrid
	Large		Polytunnel
(5) Do you wish to minimise your start-up costs	Yes		Field
	No		Cost not a limitation to choice
(6) Previous experience of growing plants	Farming		Field
	Vegetables		Hybrid
	Ornamentals		Polytunnel
	None		Arrange to get some work experience at a nursery before committing yourself to a nursery enterprise

Open beds with hoops and plastic covering to suppress weeds and encourage early germination.

Try out ideas from other branches of horticulture – here vegetable / strawberry production to discover what works for you. No two nurseries will do exactly the same thing.

There are three fundamental constraints to the type of production system you can employ: the time you can make available (Questions 1 & 2), the type of extent of land you have access to (Question 3) and the capital you are prepared to invest in the enterprise (Question 5). There is a good chance that you will find that you have a conflict between the direction in which your answers to the questions are taking you. You will need to carefully consider what is involved with each production system and which aspect is most important to you. To assist you with this Table 3 gives an overview of the main pros and cons of each system and Table 4 gives an indication of the comparative costs of starting up each production system from a bare field assuming that you would want to keep equity (cash inputs) to a minimum, and 2007 prices – these figures are based on the scenarios given in the Appendices and used as the basis of the financial projections presented in Part 4 of the workbook.

Table 4 Comparative costs for standardised tree production methods

	Production system		
	Field-grown	Cell-grown	Cell-Field
Equity required (£)	9,400	15,800	13,500
Average overheads (£)	2,180	2,160	2,250
Cost of production - 70k trees (£)	1,924	4,795	3,193
Staff time (days per year)	155	121	177
FTE (220 working days per year)	0.70	0.55	0.80
Salary @ minimum wage (£5.52 per hour x 7.5 hours in day) (£)	6,420	5,010	7,330

Before continuing you should be aware, as indicated in Table 4, that the biggest investment is of time and the commitment to 2-3 years of hard work and learning with no income while your first crop of trees grow to saleable size. The learning curve is also relatively steep so it is best to start out with modest production targets and to scale up as you learn the ropes and as you accumulate income to afford the equipment and additional labour required for larger scale production.

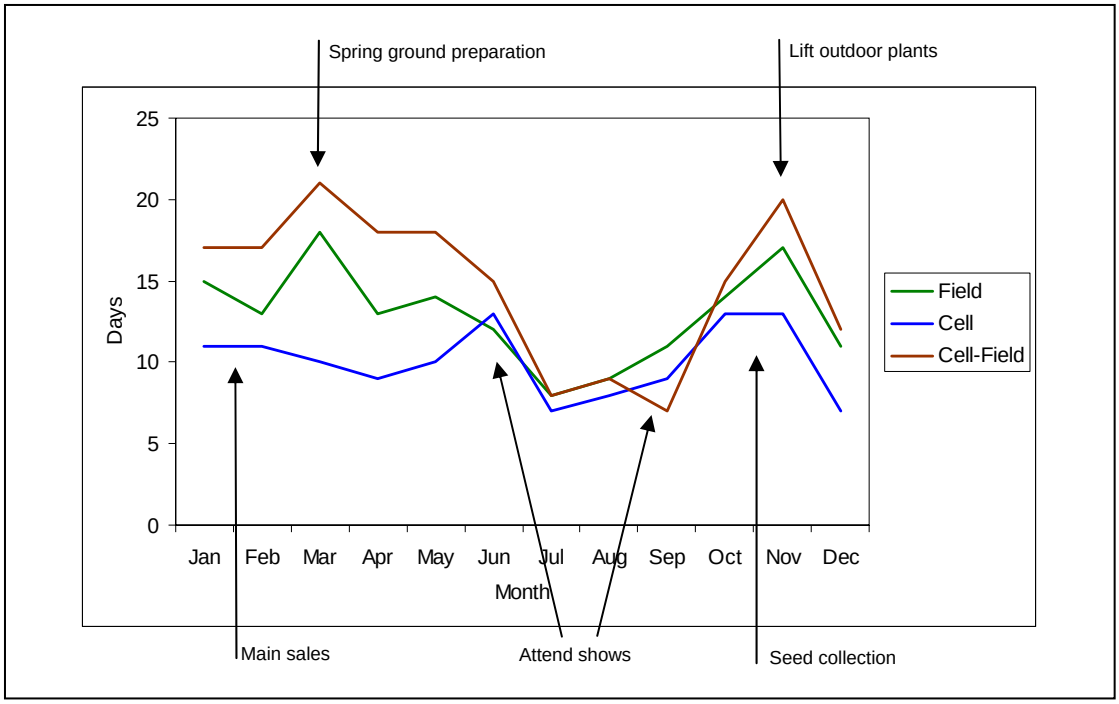
Remember that the costs of production are scale-dependant and there will be substantial economies of scale so you should not simply assume that production of 100,000 is ten times the cost of 10,000. Remember also that these are the cost of producing trees and that running a business also incurs office expenses, insurance, publicity materials, printing of price lists, website etc.. Such costs are not dependant on the production system but on sales policy and are dealt with in Part 2.4.

It is clear from Table 4 that the cheapest option is field-grown and this also has the lowest costs of production though higher time inputs. The most expensive in terms of financial inputs is the cell-grown system with the highest capital and production costs but requires the least time. However, when labour is required and the conditions in which you need to work are an important consideration. As shown in
Figure 1 most inputs are needed in the winter – so the most pertinent question may be do you want to be inside or outside? A tree nursery enterprise could suit people who have spare time in the winter months and something else to do in the summer. This is perhaps the main reason for the emergence of the cell-field hybrid which has developed as a diversification option for people already engaged in vegetable or perhaps wildflower production. The hybrid cell-field system also has intermediate production costs though closer to a cell-grown than a field-grown system.

Weeding is a constant chore through the growing season regardless of the production system chosen – here it is outdoor cells.

Photo: Glasu 2007

Figure 1 Estimated man-days required to operate a 70 k production nursery



Lean-to dry work area for volunteers potting up cell-grown material. If you are thinking of using volunteers or providing employment for less able people you will need to provide a suitable work space that is at least dry, but it helps to keep volunteers if it is also attractive and provides an opportunity for social interaction.

2.3. Production costs and nursery overheads

The figures in Table 4 give a quick indication of the probably costs of each system but what is important is the *actual* cost to you of starting to grow trees. Every tree nursery is different and hardly two use exactly the same equipment or techniques. To be successful you will need to master some basic techniques and set up a system which works for *you*, where you are and to give you what you want from the business. Most new nurseries cannot afford large amounts of capital investment and make do, buy second-hand, mend or borrow basic equipment. For this reason you will need to work through the worksheets to work out what you need in terms of equipment and capital to start up a tree nursery. Worksheet 1a is for Field production, Worksheet 1b for Cell production and Worksheet 1c for Cell-Field systems. Each contains a list of necessary equipment and materials along with some advice on what is needed and low cost options. Use these to cost up your chosen production system using the most appropriate Worksheet. Worked examples of all worksheets using 2007 prices are included in the Appendices – it is these figures that form the basis for the scenarios presented in Table 4 and throughout this workbook.

Quad bike used to transport trays of cells.

Pallets of cells. Mesh cover for protecting seed and seedlings against mice.

Second hand concrete mixer – here used to prepare compost but also useful for scarifying seed

Collection of boxes used for sowing tree seed

Worksheet 1a: Costs for field-grown production

Enter appropriate values in coloured cells - ignore any items you will do without. Prices should include VAT.

Heading	Item	Description	Enter what you propose	Estimated costs for proposals				
				Year 1	Year 2	Year 3	Year 4	Year 5
Production	Seedlings produced	Target production figures. Start low and increase slowly to allow time to learn and to build up stock.						
Land	Purchase	>0.25 ha level ground with good quality soil. Enter 0 if you already own suitable land. Enter purchase price in Year 1 if you intend to buy (if attached to house then this should be just the price of the nursery site).						
	Rental	Annual rental (and rates if applicable) on land used for nursery.						
Nursery premises	Fencing	External stock or security fencing + gates. Fencing may be needed to prevent intruders and animal pests (deer, sheep, rabbits, voles etc. entering the site. On exposed sites, windbreak mesh may also be needed						
	Beds	Seed bed will need to be protected from mice and birds - fine mesh cloche is ideal						
		This can be either raised beds in which case you will need to enter a cost for timber and construction or you could simply use a corner of a field (which may need to be drained). Overhead mesh can also be good to protect plants from birds and the weather.						
		Soil conditioner - if your soil is poor or newly broken from a field you should add a soil conditioner in the form of lime, topsoil, compost, manure, leaf mould etc.						
	Mulch	On paths & possibly between seedlings. Bark chip, wood chip, stone chippings. Can use recycled materials eg carpets, paper shreddings etc.						
Vehicles	Van OR Car + trailer	Either a van or car+trailer to deliver plants etc.. Enter the cost of what you have to buy. If this is not wholly for the business then split the cost according to the amount of time you use it for the nursery.						
		MOT and repairs						
		Fuel and oil - inflate costs in line with current rates (18% in 2007)						

Heading	Item	Description	Enter what you propose	Estimated costs for proposals				
				Year 1	Year 2	Year 3	Year 4	Year 5
Plant and machinery	Private water supply	Not essential but if your area is prone to dry summers or soil is dry then you may need to irrigate during the summer. If this is the case then you could collect water in butts (i.e. 2x 1520 litre Rototanks), install a borehole (~£5-10k in 2007) or use a local stream or spring (cheapest option). Tap water will need to be metered.						
	Pumps	Optional (see Private water supply). Whether you need pumps will depend on your site - get professional advice from a water engineer.						
	Piping	May need outdoor irrigation if weather dry or soils droughty. If you are going to use piping then this will need to be good quality rigid piping. You can spread costs by extending pipe network in line with increased production.						
	Fridge / Cold store	For seed storage - ideally a walk-in cold store but you can make do with a large second-hand fridge.						
	Industrial mixer	For seed treatment - can be done in a bucket by hand but larger nurseries tend to use mechanical aids for seed scarification such as heavy duty kitchen mixers or cement / plaster mixers. If you can't manage any of this then buy your seed in pre-treated. Also useful for making up soil conditioner, compost etc..						
	Rotovator	Should be at least 4 horsepower. Second hand is acceptable. Whether one is needed depends on whether you can use a tractor & plough. Can reduce costs by hiring a rotovator or from a machinery ring.						
	Quad bike	Not essential but if you don't have your own tractor useful for transporting trays of cells to field for transplanting. Trailer useful but trays can be rack mounted.						
	Tractor	May not be essential for smaller sites and you can probably manage with contractor for initial heavy work. For larger sites you should also think about tractor-mounted cultivator, harrow, fertiliser spreader etc.. Second hand mini-tractor would be ideal. Alternatively, a local agricultural contractor could be paid to do work for you, but timing may not always be suitable. May be able to source from machinery ring.						
	Wheelbarrows & carts	At least one wheel barrow will be needed for moving materials around the site. Replacement						

Heading	Item	Description	Enter what you propose	Estimated costs for proposals				
				Year 1	Year 2	Year 3	Year 4	Year 5
		in Yr 5.						
	Knapsack sprayer	Not essential, but may be needed for pest control or foliar feed application						
	Repairs	For plant and machinery. Allow ~ 10% of purchase price per year.						
Tools	Handtools	Rakes, spades, trowels, sieves etc. Replace in Yr 5						
	Other	Buckets, watering cans etc.. Replace every 2 yrs						
Production costs	Hire / contractor fees	Use of agricultural contractor to do any tractor work required.						
	Power	Fuel and oil - inflate costs in line with current rates (18% in 2007)						
		Electricity (for plant). Estimate the proportion of electricity bill that varies in line with production level i.e. you will run your cement mixer for longer if you have more seed to process. At small scale this can be ignored.						
	Seed	Cost of collecting seed from local woods. Include fuel, bags, ladders any payment to landowners etc.. Remember you can expect losses after sowing - these vary by species so you need to check survival rates by species and collect enough to cover losses.						
		Bought in pre-treated seed. Could buy in all seed or just those species with difficult pre-treatment or to make up quantities or species lacking in local area. Most nurseries buy in some seed. May be best to buy in at first as you learn about seed treatment and the care of seedlings. Assume you need to buy in some seed - say 30% of what you need @ prices (check Forestart catalogue). Remember you can expect losses after sowing - these vary by species so you need to check survival rates by species and buy enough to cover losses.						
	Soil conditioner	Lime, compost, seaweed etc. you should be able to make/collect what you need from local sources of manure or green waste. Otherwise buy in.						
	Slow-release fertiliser	Top dressing before sowing/planting. The amount will depend on the speed of growth required. Home-made liquid manures can also be used.						
	Foliar feed	May not be needed, depending on soil fertility and speed of growth required. Feeding through						

Heading	Item	Description	Enter what you propose	Estimated costs for proposals				
				Year 1	Year 2	Year 3	Year 4	Year 5
		summer - Phosphogen or similar applied fortnightly through summer. Could make your own from seaweed, sheep dung, comfrey etc.						
	Pesticides	Rust, mildew, aphids, vine-weevil - Amounts needed will depend on particular problems encountered.						
	Water	Ideally from private supply so cost is just for abstraction licence = £135 application fee + annual fee of £25. Rainwater capture and use of grey water free. Otherwise metered tap water @ £1 per m^3 + annual inflation 4% above base rate. Use increases in proportion to number of trees.						
Capital costs		Sum all numbers in blue cells						
Overheads		Sum all numbers in yellow cells						
Costs of production		Sum all numbers in green cells						
Total								

Worksheet 1b: Costs for cell-grown production

Enter appropriate values in coloured cells - ignore any items you will do without. Prices should include VAT.

Heading	Item	Notes	Enter what you propose	COSTS				
				Year 1	Year 2	Year 3	Year 4	Year 5
Production	Seedlings produced	Target production level						
Land	Purchase	0.25 ha level ground for polytunnels plus hardstanding and space to harden off seedlings in cells (usually under mesh and fenced). Larger sites give more flexibility and allow expansion later. Enter 0 if you already own suitable land. Enter purchase price in Year 1 if you intend to buy (if attached to house then this should be just the price of the nursery site).						
	Rental	Annual rental (and rates if applicable) on land used for nursery.						
Nursery premises	Polytunnels	Structure + plastic + shade netting etc. Will need to replace plastic when it becomes fogged - probably every 4-5 years depending on site exposure. Suggest something along the lines of basic specification 2 x 16' x 72' polytunnel.						
	Staging	Can be expensive, but possible to make up something from netting and second-hand timber						
	Seed trays	Sufficient seed trays to keep species and provenance separate - many nurseries used recycled fish-boxes or similar. They will need to be mice proof so provide mesh covers etc.						
	Fencing	External stock or security fencing + gates. Fencing may be needed to prevent intruders and animal pests (deer, sheep, rabbits, voles etc.) entering the site. On exposed sites, windbreak mesh may also be needed.						
	Outdoor stock holding area	Screening and rabbit/mice-proof fencing for hardening off area. Holdings areas may also need to be separately fenced						
	Mulch	For floor of polytunnel and under hardening off area etc. Can use recycled materials, wood chip, stone chippings, plastic sheets etc.						
Vehicles	Van OR Car + trailer	Either a van or car+trailer to deliver plants etc.. Enter the cost of what you have to buy. If this is not wholly for the business then split the cost according to the amount of time you use it for the nursery.						
		MOT and repairs						
		Fuel and oil - inflate costs in line with current rates (18% in 2007)						

Heading	Item	Notes	Enter what you propose	COSTS				
				Year 1	Year 2	Year 3	Year 4	Year 5
Plant and machinery	Private water supply	Essential for watering in polytunnels. Mains supply is easiest, but as it is for commercial use the water will be metered and is very expensive for irrigation (cost 99p per m^3 in 2007 with inflation at 4% above base rate). May be able to collect sufficient rainwater in waterbutts (e.g. 1520 litre Rototanks). Alternatively, install a borehole (~£5-10k in 2007) or get an abstraction licence abstraction licence (from Environment Agency) for a local stream (cheapest option).						
	Piping	Will be needed in polytunnels. Automatic irrigation systems more practical, but can be home-made rather than bought.						
	Pumps	Optional (see Private water supply) May be needed on certain sites						
	Fridge / Cold store	Ideally a walk-in cold store but you can make do with a large second-hand fridge.						
	Industrial mixer	For seed treatment - can be done in a bucket by hand but larger nurseries tend to use mechanical aids for seed scarification such as heavy duty kitchen mixers or cement / plaster mixers. If you can't manage any of this then buy your seed in pre-treated. Also used for making up soil conditioner, compost etc..						
	Wheelbarrows & carts	At least one wheel barrow will be needed for moving materials around the site						
	Knapsack sprayer	Not essential, but may be needed for pest control or foliar feed application						
	Repairs	For plant and machinery. Allow ~ 10% of purchase price per year.						
Tools	Handtools	Trowels, sieves etc. Replace in Yr 5						
	Other	Buckets, watering cans etc. Replace every 2 yrs						
Production costs	Hire / contractor fees	Use of agricultural contractor to do any tractor work required.						
	Power	Fuel and oil - inflate costs in line with current rates (18% in 2007)						
		Electricity (for plant). Estimate the proportion of electricity bill that varies in line with production level i.e. you will run your cement mixer for longer if you have more seed to process. At small scale this can be ignored.						
	Seed	Cost of collecting seed from local woods. Include fuel, bags, ladders any payment to landowners etc.. Remember you can expect losses after sowing - these vary by species so you need to check survival rates						

Heading	Item	Notes	Enter what you propose	COSTS				
				Year 1	Year 2	Year 3	Year 4	Year 5
		by species and collect enough to cover losses.						
		Bought in pre-treated seed. Could buy in all seed or just those species with difficult pre-treatment or to make up quantities or species lacking in local area. Most nurseries buy in some seed. May be best to buy in at first as you learn about seed treatment and the care of seedlings. Assume you need to buy in some seed - say 30% of what you need @ prices (check Forestart catalogue). Remember you can expect losses after sowing - these vary by species so you need to check survival rates by species and buy enough to cover losses.						
	Root-trainers	Robust multiple use cells. Cells & racks to hold them can be sold at cost, or re-used, but sufficient quantity will need to bought at outset. Assume losses of around 5% after pricking out into cells so buy 5% more than your production target. Even though cells are reusable you will need to replace about 20% per year.						
	Compost	Need high quality for good growth. Estimate volume required as number of seedlings x volume of cell (divide by thousand to get litres if cell volume in cc).						
	Foliar feed	Feeding through summer - reckon on fortnightly feeds with Phosphogen or similar. Home made is possible from dung, seaweed, comfrey etc. but safest to buy in while you perfect your recipe.						
	Pesticides	Rust, mildew, aphids, vine-weevil - Amounts needed will depend on particular problems encountered.						
	Water	Ideally from private supply so cost is just for abstraction licence = £135 application fee + annual fee of £25. Rainwater capture and use of grey water free. Otherwise metered tap water @ £1 per m^3 + annual inflation 4% above base rate. Use increases in proportion to number of trees.						
Capital costs		Sum all numbers in blue cells						
Overheads		Sum all numbers in yellow cells						
Costs of production		Sum all numbers in green cells						
Total nursery costs								

Worksheet 1c: Costs for cell-field production

Enter appropriate values in coloured cells - ignore any items you will do without. Prices should include VAT.

Heading	Item	Notes	Enter what you propose	COSTS				
				Year 1	Year 2	Year 3	Year 4	Year 5
Production	Seedlings produced	Target production level						
Land	Purchase	>0.2 ha level ground for polytunnel plus field or outdoor beds for transplants. Large sites give more flexibility and allow expansion later. Enter 0 if you already own suitable land. Enter purchase price in Year 1 if you intend to buy (if attached to house then this should be just the price of the nursery site).						
	Rental	Annual rental (and rates if applicable) on land used for nursery.						
Nursery premises	Polytunnel	Structure + plastic + shade netting etc. Will need to replace plastic when it becomes fogged - probably every 4-5 years depending on site exposure. Suggest something along the lines of basic specification 18' x 78' polytunnel.						
	Staging	Can be expensive, but possible to make up something from netting and second-hand timber						
	Seed trays	Many nurseries used recycled fish-boxes or similar. They will need to be mice proof so provide mesh covers etc.. You will need something along the lines of 30 large seed trays.						
	Fencing	External stock or security fencing + gates. Fencing may be needed to prevent intruders and animal pests (deer, sheep, rabbits, voles etc. entering the site. On exposed sites, windbreak mesh is a good investment and will save damage to young seedlings.						
	Beds	This can be either raised beds in which case you will need to enter a cost for timber and construction or you could simply use a corner of a field (which may need to be drained). Overhead mesh can also be good to protect plants from birds and the weather.						
		Soil conditioner - if your soil is poor or newly broken from a field you should add a soil conditioner in the form of lime, topsoil, compost, manure, leaf mould etc.						

Heading	Item	Notes	Enter what you propose	COSTS				
				Year 1	Year 2	Year 3	Year 4	Year 5
Vehicles	Van OR Car + trailer	Either a van or car+trailer to deliver plants etc.. Enter the cost of what you have to buy. If this is not wholly for the business then split the cost according to the amount of time you use it for the nursery.						
		MOT and repairs						
		Fuel and oil - inflate costs in line with current rates (18% in 2007)						
Plant and machinery	Private water supply	Needed for period plants are in polytunnel, needed outdoors if your area is prone to dry summers or soil is dry. You could collect water in butts (i.e. 2x 1520 litre Rototanks), install a borehole (~£5-10k in 2007) or use a local stream or spring (cheapest option). Tap water will need to be metered.						
	Pumps	Optional (see Private water supply). Whether you need pumps will depend on your site - get professional advice from a water engineer.						
	Piping	Optional in polytunnel as cells are only in during cooler weather when watering is less critical and can be done by hand. May need outdoor irrigation if weather dry or soils droughty. If you are going to use piping then this will need to be good quality rigid piping.						
	Fridge / Cold store	Ideally a walk-in cold store but you can make do with a large second-hand fridge.						
	Industrial mixer	For seed treatment - can be done in a bucket by hand but larger nurseries tend to use mechanical aids for seed scarification such as heavy duty kitchen mixers or cement / plaster mixers. If you can't manage any of this then buy your seed in pre-treated. Also used for making up soil conditioner, compost etc..						
	Rotovator	Should be at least 4 Horsepower. Second hand is acceptable. Whether one is needed depends on whether you can use a tractor & plough. Can reduce costs by hiring a rotovator or from a machinery ring.						
	Quad bike	Not essential but useful for transporting trays of cells to field for transplanting. Purchase + maintenance.						
	Tractor	May not be essential for smaller sites and you can probably manage with contractor for initial						

Heading	Item	Notes	Enter what you propose	COSTS				
				Year 1	Year 2	Year 3	Year 4	Year 5
		heavy work. For larger sites you should also think about tractor-mounted cultivator, harrow, fertiliser spreader etc.. Second hand mini-tractor would be ideal. Alternatively, a local agricultural contractor could be paid to do work for you, but timing may not always be suitable. May be able to source from machinery ring.						
	Wheelbarrows & carts	At least one wheel barrow will be needed for moving materials around the site						
	Knapsack sprayer	Not essential, but may be needed for pest control or foliar feed application						
	Repairs	For plant and machinery. Allow ~ 10% of purchase price per year.						
Tools	Handtools	Rakes, spades, trowels, sieves etc. Replace in Yr 5						
	Other	Buckets, watering cans etc.. Replace every 2 yrs						
Production costs	Hire / contractor fees	Use of agricultural contractor to do any tractor work required.						
	Power	Fuel and oil - inflate costs in line with current rates (18% in 2007)						
		Electricity (for plant). Estimate the proportion of electricity bill that varies in line with production level i.e. you will run your cement mixer for longer if you have more seed to process. At small scale this can be ignored.						
	Seed	Cost of collecting seed from local woods. Include fuel, bags, ladders any payment to landowners etc.. Remember you can expect losses after sowing - these vary by species so you need to check survival rates by species and collect enough to cover losses.						
		Bought in pre-treated seed. Could buy in all seed or just those species with difficult pre-treatment or to make up quantities or species lacking in local area. Most nurseries buy in some seed. May be best to buy in at first as you learn about seed treatment and the care of seedlings. Assume you need to buy in some seed - say 30% of what you need @ prices (check Forestart catalogue). Remember you can expect losses after sowing - these vary by species so you need to check survival rates by species and buy enough to cover losses.						

Heading	Item	Notes	Enter what you propose	COSTS				
				Year 1	Year 2	Year 3	Year 4	Year 5
	Root-trainers	Robust multiple use cells (smaller ones - e.g. 115 cc will do as plants will only be in for a short period). Cells & racks re-used, but sufficient quantity will need to bought at outset. Assume you will need 20% replacement per year.						
	Compost	Need good quality for good growth, buy in initially and then perhaps make your own. Estimate volume required as number of seedlings x volume of cell (divide by thousand to get litres if cell volume in cc)						
	Soil conditioner	You should be able to make what you need from local sources of manure or green waste. If not, then will need to buy in.						
	Slow-release fertiliser	Top dressing for outdoor beds. The amount will depend on the speed of growth required.						
	Foliar feed	May not be needed, depending on soil fertility and speed of growth required. Feeding through summer - Phosphogen or similar applied fortnightly through summer. Could make your own from seaweed, sheep dung, comfrey etc.						
	Pesticides	Rust, mildew, aphids, vine-weevil - Amounts needed will depend on particular problems encountered.						
	Water	Ideally from private supply so cost is just for abstraction licence = £135 application fee + annual fee of £25. Rainwater capture and use of grey water free. Otherwise metered tap water @ £1 per m^3 + annual inflation 4% above base rate. Use increases in proportion to number of trees.						
Capital costs		Sum all numbers in blue cells						
Overheads		Sum all numbers in yellow cells						
Costs of production		Sum all numbers in green cells						
Total nursery costs								

2.4. O ffice and business administration costs

The preceding section deals with costs associated with the nursery premises and production costs – we now turn to the costs of operating a business. These comprise office accommodation and infrastructure such as telephone bills and also administrative costs such as insurance, bank charges and loan repayments. These costs are independent of the production system being used and Worksheet 2 provides a template for working through what applies to your situation. A worked example based on refurbishment of an outbuilding as an office which includes the purchase of a computer and broadband access is included in the Appendices. This suggests that on top of the nursery costs indicated in Table 4 you may need to add around £2,500 for setting everything up and around £1,500 to run the office on an annual basis.

In terms of what you require for an office the absolute minimum would be a shoebox for receipts, an account book and a telephone which would cost next to nothing. However, accounts are easier on a computer, printed invoices are more professional in appearance and broadband connection is increasingly useful for businesses in remoter rural areas as a source of information, market intelligence and to advertise your new business.

In terms of business expenses the minimum is insurance to give you some cover for essential equipment and to give you third party cover for visitors to your site and to cover any damage you may inadvertently do to your customers or suppliers property. The easiest option is to take out small business insurance which gives you all you need.

Money no object office and store – this has enough roof area to capture sufficient rainwater for a field based nursery if you install a 10 m³ storage tank and pumps

The scenarios used in the workbook assume that you will probably be operating on a self-employed basis, with no formal employees and will not be registering your business for VAT or as a company with Companies House. This means that the financial model presented in the workbook does not deal overtly with tax issues. However, for the sake of completeness Table 5 briefly outlines the taxes that apply to more formal companies. If you need to consider these then you should seek advice from Business Eye and engage a professional accountant. Ignoring these issues if they apply is not an option as the penalties for evading these taxes are severe.

Table 5 Business taxation

Companies House	Company registration	If you wish to establish a limited company you need to first register the company name with Companies House.
	Annual Returns	Fees for filing company annual return and accounts
	Corporation tax	Small companies rate is 19% of annual profit. You only need to pay this on profits if you are operating a company registered with Companies House.
HM Revenue & Customs	VAT	You need to register for VAT if you have an annual sales or purchaes in excess of £64,000. Current rates are 17.5%. If you are not registered for VAT you have to pay it on purchases and do not add it to prices. If you are registered for VAT you can claim it back on purchases and add it to prices. The balance is either paid or reclaimed from Inland Revenue & Customs.
	PAYE	National insurance (NI) and income tax collected from paypacket of employees. Employers on-costs (NI contribution) ~ 12% of gross salary. If you use casual labour and they can be considered self-employed then you pay gross and they take care of their own tax and NI.

Sheds and second-hand portacabin as a site office for large scale field grown nursery

Worksheet 2: O ffice and business administrative costs

Enter appropriate values in coloured cells - ignore any items you will do without. Prices should include VAT.

Heading	Item	Notes	Enter what you propose	COSTS				
				Year 1	Year 2	Year 3	Year 4	Year 5
Buildings	Office space & tool storage	Ideally you need a small office space and somewhere to store tools and seed with space for a fridge. Can work off a kitchen table and use garage for storage if necessary. Better if you can convert or use an existing outbuilding. If there are no suitable buildings then cost in for a small garden office on site or something mobile such as a portacabin, caravan etc..						
		Rent and rates						
	Fittings	Costs of converting outbuilding, fitting out portacabin etc.						
	Furniture	Office furniture desk, chairs, filing cabinet etc.						
Equipment	Computer	Useful for doing accounts and keeping stock lists etc. but not essential unless you wish to have a webste or do internet sales. Portables more expensive for the same processing power than desk computers. There are sometimes grants available for purchase of computers available - seek advice from Glasu or Business Eye. May need replacement in Yr 5						
	Printer	Colour printer useful if you wish to include photographs in brochure but more expensive than black & white.						
	Telephone	Line installation and equipment						
	Broadband	Installation and equipment. Useful for obtaining information, keeping up with current prices, email contact etc..						
Insurance	Vehicles	Insurance premium pro rata with time vehicle is used on nursery business.						
	Buildings & contents	Insurance premium for property and tools. Easiest to get this as a Small Business Policy which includes Public and Third party liability.						
	Public liability	Required to cover you off and your employees on and off site and for liability for anyone visiting your premises with regard to your business. A statutory obligation if you register as a company.						
Office	Electricity	Actual bill or pro rata for office on home bill						

Heading	Item	Notes	Enter what you propose	COSTS				
				Year 1	Year 2	Year 3	Year 4	Year 5
premises	Heating	Actual bill or pro rata for office on home bill						
	Telephone	Land-line - proportion of bill including line rental pro rata with use for nursery business						
		Mobile - proportion of bill including line rental pro rata with use for nursery business						
	Internet	Broadband charges						
	Stationary	Printer paper and printed letterhead						
	Printer supplies	Ink/toner cartridges						
	Postage	Posting brochures, quotes, invoices, orders etc.						
	Business stationary	Doesn't need to be anything fancy but it is practical to have have something with your contact details on it to give to prospective customers. There are many places you can get small numbers of cards but it is often a better deal to go for a deal on 500+ with a local print shop.						
Marketing	Price list	Could be a photocopied list or full colour brochure						
	Advisory leaflets	Useful especially if your customers are not foresters. Write your own and photocopy or purchase suitable leaflets for re-sale						
	Show visits	Promotion at shows van be useful advertising						
	Web-site design	Not necessary, but increasingly the way in which small business advertise their existence. Grants are available to help cover initial design costs - ask Business Eye. Think about web site once you are up to full production - say Yr 3						
	Web site hosting	Annual charge for maintaining web site including registration of domain name						
Internet sales	Secure web pages	Set up internet sales on secure site ~£50 per year. Can use Bureau payment services (e.g. NetBanx - also available from some high street banks e.g. HSBC) or systems such as PayPal through eBay. Seek advice from Opportunity Wales or similar scheme.						
Merchant services (card payments)	Set up	Set up charge ranges between £50 and £250, if applicable £120 is the average. Shop around http://www.electronic-payments.co.uk/pricing.jsp is a useful place to start.						
	Annual cost	Normally around £150 but often not applicable.						

Heading	Item	Notes	Enter what you propose	COSTS				
				Year 1	Year 2	Year 3	Year 4	Year 5
	Monthly charge	The most standard charge especially from acquiring banks, around £10-25.						
	PSP	Can be a commission of as little as 1% but often about £10 per month or 3-4%.						
	Transaction charges	Charge per transaction. This varies a lot depending on your e-payment provider and the type of card being used e.g. flat rate of 45p for Switch, 1.5-9% of transaction for credit cards. Shop around for the best deal.						
	Bond	Dependant on exposure level but is often negotiated down.						
Other financial costs	Accountancy	Preparation of business accounts by professional accountant. Advisable if you are a company and need to file Company Accounts. Useful in any case but can be expensive						
	Cost of finance	Interest on loans. Grants or low rate loans may be available for start-ups - seek advice from Glasu and/or Business Eye.						
	Bank charges	Banks usually give free business banking for first 18 months. Usually free if using personal account and in the black.						
	Overdraft fees	Cheaper to arrange for an overdraft than a loan.						
Capital costs		Sum all numbers in blue cells						
Overheads		Sum all numbers in yellow cells						
Total office and business administration costs								

Part 3. Selling your trees

This section takes you through an examination of your options for selling your trees. Of course you may not wish to sell your trees at all - you may be growing them to be planted on your own land – in which case you do not need to continue with this workbook. However, even if you do not wish to make a *profit* from your trees you may still like to cover your costs from sale of your trees in which case you can use these worksheets to work out how many you may need to sell to do this – or the price you need to charge to break even. You may also wish to make your trees available to a particular set of people for reasons of your own – in which case you should work through the next section which deals with marketing trees.

3.1. Who will buy your trees?

In business terminology the people out there who buy trees are called your *market*. How many of them buy from you is your market share which in your case is going to be very small. This means you are not in the position to dictate prices but need to woo people to buy from you rather than the other nurseries – termed your *competitors*. What distinguishes you from other sellers of trees is your *unique selling point* (USP) – if you don't really have one then your customers will have little reason to choose to buy your trees in preference to someone else's. The more distinct your USP is the more you can capture for yourself a share of the market and this will help secure your customers and may even enable you to sell trees for a little more for the extra services or satisfaction they obtain from buying from you. Your USP does not have to be a cynical marketing tool but is what makes you special and can be 'we are friendly people who will go out of our way to help you' or 'we use organic methods to grow our trees', 'our profits support conservation' etc.. The fact that you are a small scale operation in Powys growing LP trees is a part of your USP but you may wish to consider what else distinguishes you from everyone else. In the space below write down what you think your USP is or what you would like it to be.

My unique selling point is:

The people who are particularly attracted by your USP are your *target market* and this will be a portion of all those buying trees. What you need to know is whether your target market is large enough to support your business, who they are, where they are and how to let them know you have trees for sale. In its simplest form this is what market research is for. You need to at least think through who you want to sell to and how you might reach them before getting to the point you have trees to sell. You may have put all your effort into producing thousands of beautiful trees but if no-one knows who you are and that you have trees for sale it is unlikely you will sell them and no sales means no income, a failed business and your trees won't get planted. Your target market could be just one customer for whom you grow large numbers of trees on contract for or it could be many thousands of people all buying a few trees each.

Before starting on a definition of your specific target market it is worth first quickly considering *market segmentation* for sales of live trees. Market segmentation is the division of the market into distinct segments i.e. easily recognisable groups of people looking for the same type of product

(say a particular size or species of tree) or who have similar characteristics (e.g. looking for trees for conservation projects). A *niche market* is one which a limited and clearly defined range of products (which are often not provided by mainstream suppliers) are sold to a specific group of customers.

By choosing to grow LP trees you are providing a niche product which is of most of interest to a portion of that already limited segment of the total market for trees which buys native species. On top of this the LP niche market segment is also geographically restricted – although the size of the area depends on what we mean by 'local' but certainly it is not beyond Wales and the eastern Midlands. We can further characterise this market segment into two groups; farmers (often with funding by Tir Gofal) and conservation woodland owners (often with assistance of funding provided by the Forestry Commission through the Better Woodlands for Wales scheme). Since both of these to some extent depend on government funding you should familiarise yourself with the objectives and programmes of Tir Gofal and BWW so that you can make some projections of future demand. The significance of changes in grant delivery in Scotland can have major impacts on competition within even the LP tree market segment in Powys as shown in Box 1. Nevertheless, it is likely that at least for the foreseeable future that grant support for forestry and particularly the native tree, conservation sector will be secure despite occasional blips.

Box 1 Grants and nursery business viability

A survey of Scottish LP nurseries in spring 2007 revealed that they were all complaining of a sharp downturn in sales and considerable financial hardship as a result of changes in the Scottish forestry grants.

On the 31st August 2006 the Scottish Forestry Grant Scheme (the equivalent of the Woodland Grant Scheme in Wales) closed. However, unlike in Wales, the Scottish Government decided that forestry grants would be integrated into the Scottish Rural Development Plan (every EU region is required to prepare and implement one of these by 2008). This rather more complex arrangement with forestry grants being part of more general Rural Development Contracts means that there has been a hiatus in grants for forestry. The Rural Development Plan programme for 2007-2013 is due to be launched in early 2008 and this should signal the recommencement of grants for planting trees though it is likely that it will still take some time for people to understand the new Land Management Contracts and have their applications accepted. So it is probably not until 2009 that the new demand profile originating from the new grant scheme will become apparent. It is this information which will provide the market security needed to underpin the traditional forest nursery sector.

This sudden collapse of their hitherto secure market has had a catastrophic impact on the Scottish nurseries. Some smaller ones have closed for business, some have had to sell assets to survive and others have been looking elsewhere for business. Even Christie-Elite the oldest and largest private nursery in the UK has had to sell off half their business to remain economically viable and Alba one of the larger cell-only nurseries has also had to lay off half their staff.

Since several of the larger nurseries based in Scotland grow Welsh provenances one knock-on effect was that Welsh nurseries found themselves experiencing stiffer than normal competition from Scotland and margins have been eroded back to the bare minimum.

Although the established LP markets will probably always be your bread-and-butter it is also worth stepping back a little and considering the wider tree market as there may be potential for sales in other market segments. Besides being LP your stock are also 'native species', 'broadleaved trees' and 'trees' all of which are bought by a wider range of people than those in the specialist LP niche market

Table 6. The 'traditional' segments for small scale LP nurseries are highlighted in yellow – as you can see this is only a small portion of the market. Furthermore, interviews with nursery owners suggest that the current market for LP are those in receipt of a grant for native tree planting which generally encourage or specify LP. Although several (smaller) nurseries deal only with customers who require and request LP many sell their stock as 'native' without reference to LP. Larger nurseries tend not to make a selling point out of LP (they provide detailed provenance information if asked but don't make the information generally otherwise) as it is too complex an issue for people who are not already informed about LP. This suggests that the LP market is only a specialised small corner of the native tree market.

Each market segment has its own peculiarities and competitors. If you are thinking of exploiting one of these other niches then you need to do some very careful market research especially to determine if there is excess demand or whether you think you can successfully compete with whoever if currently supplying this segment. Don't be put off by a market not having any demand for LP – it may be that LP is a useful USP that advertised in the right way could create an LP niche were one does not already exist. This is what has rapidly happened with fruit trees recently, as shown in Box 2.

Box 2 Welsh native fruit trees

Ian Sturrock is an orchard enthusiast who over a period of years has identified a number of Welsh fruit trees (damsons, apples and pears) reduced to single individuals in overgrown gardens or hanging on in a churchyard. Many of these make excellent eating and are extremely hardy (one surviving on Bardsey Island and dubbed the 'rarest apple in the world') and Ian and his sons have established a nursery where they propagate these old varieties by grafting onto commercial rootstocks. After a number of years building up stock and a reputation the trees are now sold in garden centres in North Wales and through the internet (www.ConwyTrees.co.uk). They are also gaining an international reputation. In January 2008 Ian's enterprise was picked up by the Fresh Plaza web site (http://www.freshplaza.com/news_detail.asp?id=13739) (an independant news source for companies operating in the global fruit and vegetable sector), Ian has his own wikipedia entry (http://en.wikipedia.org/wiki/Ian_Sturrock), and the Bardsey Apple he rescued now has its own website (http://www.bardseyapple.co.uk/).

The trees are marketed on the basis of taste, hardiness, rarity and Welshness. This then represents the ultimate in Welsh LP. This example presents some intriguing possibilities for other native trees. Perhaps these could also be marketed as a piece of Wales? Perhaps there are special examples of other species which would attract interest from horticulturalists? Something like a special leaf colour (copper, purple-leaved sports), leaf shape (like cut-leaf beech) or form (like the contorted hazels which are so popular at the moment).

All of this speculation aside, for now let us assume that you will be starting with a conventional small scale LP tree nursery and will be selling *wholesale*[3] (in bundles of 100 or more) to foresters and farmers. Nevertheless the *retail* (less than 10) tree market is developing rapidly and presents a real opportunity so this will also be examined in further detail in this section. However, rather than lose any ideas that may have been sparked by this section make a note of them in the space below.

Ideas for market development

The main topic for this part of the workbook is the estimation of income from your project production. Income is a function of the volume, quantity and size of trees you have for sale, the price attached to each grade and the number of trees you manage to sell. All of these will vary from year to year and will change as you gain experience and a customer base (buyers who are loyal to you).

[3] Strictly speaking *retail* means the sale of trees to the final consumer necessarily in small quantities while *wholesale* means the selling of large quantities of product to retailers. For tree nurseries this distinction is not so apparent and nurseries usually sell direct to the consumer in large quantities. These sales are therefore termed 'wholesale' to distinguish them from direct sales to the emerging small-scale market which is here termed 'retail'. However, the retail market is more conventionally structured and does contain market intermediaries who would buy wholesale from the nurseries in a more conventional manner.

Table 6 Market segmentation for trees

Tree market segment	Sub-division	Examples	Current demand for trees	Current demand for LP	Potential demand for LP
Forestry	Commercial	FC, private estate forests	High – major re-stock of estate underway but main species are conifer	Low	Could increase if policy to re-stock with native species is implemented
	Social	Community forests (e.g. Forest of Mercia)	Variable though most planting is of native species	Low?	Could be higher?
Conservation	Management of existing woodland	Woodland Trust	Low as management encourages natural regeneration	Low but very strict on provenance	Likely to be stable
	Woodland creation	National Trust National Parks	Moderate	?	?
Farmers	Tir Gofal hedge restoration	High demand for hedge species such as hawthorn	High but extremely price sensitive	High and not fully satisfied	Should remain at current levels
	Farm woodland rehabilitation under Tir Gofal Native Woodland Scheme	Coed Cymru offers advice to these schemes	Moderate	Strong preference for LP	Should remain at current levels
Landscape industry	Public schemes	Urban parks, regeneration & street trees	Low but trees needed are large i.e. standards	None	EU regulations require LP is native species are planted if available – so it should be possible to create a small niche for LP native species especially for high prestige landscaping schemes
	Private schemes	Golf courses, corporate development	Low but larger trees are required	None	As above – may also be possible to target those looking to increase green credentials or to create carbon-neutral schemes by planting trees
General public	Gardens	Sales through garden centres	Very low	None existent	Current gardening media are promoting the planting of native trees and this may stimulate a fashion for natives – whether this in turn can be encouraged to encompass LP or becomes more than a passing fashion remains to be seen
	Eco-gifts / Commemorative trees	Internet sales – touted as a green alternative to cut flowers	Very low?	None existent though most trees are of native species	Market scale or longevity as yet un-determined. Potential for promoting LP as species offered are native and the 'sense of place' associated with LP may be attractive to this market
	Carbon-offset	Internet sales of trees for planting or for trees planted on customers behalf to offset flights etc.	Very low	None existent	This is probably not a long-term proposition in its current form as the market for carbon-offsets is maturing rapidly and direct sales for home planting are not likely to be allowed in what will probably become a regulated market.

3.2. Wholesale pricing

Pricing of the output of a nursery is a complex issue and there are a number of ways in which the price for a tree varies. In order to be able to set realistic and competitive prices for your output you need to first know something of;

(1) price structuring in the tree nursery market,

(2) current prices and trends,

(3) the breakeven price for your production system.

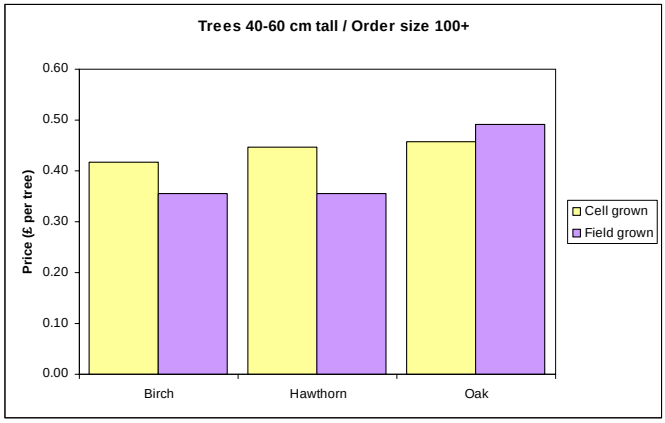
The first of these is presented in this section using data derived from analyses of over 500 prices for the 2006-7 season taken from the catalogues of 23 nurseries for birch, oak and hawthorn from across the UK representing both large and small scale operations. The second you will need to do yourself and the third is covered in the financial appraisal.

As explained above, the traditional customer for tree nurseries was the forestry sector with stock going in large volumes to establish commercial woodlands. More recently there has been a growth in demand for trees from farmers for hedging which also demands large volumes and a different range of species. For these wholesale markets pricing is based on: species, size class and order volume and customers are extremely price sensitive which means they will go somewhere else for the sake of a 1p different in price. Price setting in such markets is highly competitive and prices are often forced so low that margins (the profit you make on each tree) may be unviable for smaller scale producers. In such cases you need to be extremely aware of your breakeven to ensure you do not undersell your stock and ruin your business. This may sound very gloomy but remember that there are successful small nurseries out there and the market is not yet saturated (there is still unmet demand for LP trees) but operating in this market is not going to make you a fortune.

3.2.1 Production system

As shown in Part 2.3 the different production systems have different costs and produce different products; bare rooted or plugs. Are these differences reflected in prices so that you can recoup the costs of the more expensive cell grown trees? As shown in Figure 2, prices for bare rooted and plug stock do vary though which comes out on top appears to depend on species. Prices are 6-9 p (17-25%) higher for cell grown birch and hawthorn respectively but 3 p less for oak. This could be for many reasons, some to do with the way the tree responds to the growing system and the preferences of customers. Birch does not like to be transplanted, so plugs will have a higher chance of surviving, whereas oaks benefit from root disturbance so bare rooted stock will establish better than those with roots restricted by cells. So it appears that any price differences are not proportional to the relative costs of production. However, despite this, cell systems do often have better financial performance than field systems simply because the trees grow faster so that a greater proportion can be sold in their first year and of these more will be in taller size classes.

Figure 2 Price by production system



3.2.2 Species

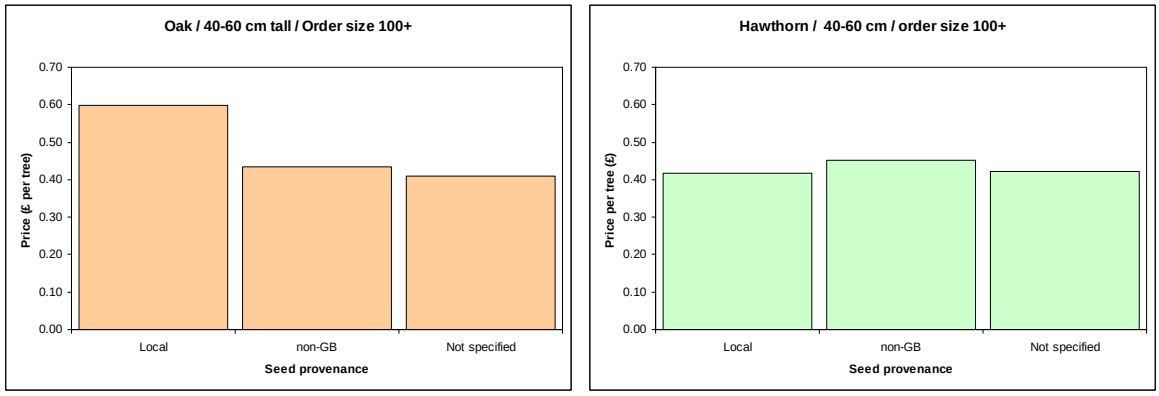
The price of a tree varies by species for two reasons. The first is a function of the basic ecology of the species and reflects differences in seed size, germination rate and supply factors such as masting, seed predation and storage. So an oak may cost more than a birch because it only produces good crops of heavy acorns every five years or so and is difficult to store, while birch produces vast quantities of light, dry seed which stores well. However, success rates (proportion of seed sown which becomes a saleable tree) for oak are much better than for birch. Prices by species may also vary somewhat according to demand, so that oaks may fetch more than less popular or iconic species but this is difficult to separate from the other more obvious differences between species. Figure 3 illustrates the differences between species and clearly shows that oak fetches higher prices than birch and hawthorn.

Figure 3 Price by species

3.2.3 Provenance

Growing LP trees requires seed collection from a 'local' area. You can either collect the seed yourself or buy it in but in either case it will probably cost you more to source local seed than simply shopping for the cheapest bulk seed which will probably be imported and may come from as far as Eastern Europe. Although we would like all planting to be local provenance it is likely that LP native trees will remain a niche market. What we would like to know is whether the customers for this niche product appreciate that it costs more to produce and are prepared to pay a margin for LP. Figure 4 illustrates that there is a significant margin for oak trees sourced from named areas within the UK but the opposite for hawthorn where EU provenance fetch higher prices. This suggests that it is possible to recoup higher costs for oak (LP seed is about twice the cost of imported seed) but not for hawthorn. This is perhaps because most oak goes into conservation planting where LP is an issue and planters are prepared to pay for it. Hawthorn on the other hand is for hedging where although LP is still an issue, the farmers are apparently not prepared to pay for it. If anything there is a slightly higher price for non-GB sources for hawthorn perhaps because it can have faster growth rates? You should therefore make sure to check whether it may be possible to charge a little extra for your LP material. However to make the most of this you should probably also sign up to the FC Voluntary Source Identification Scheme and the Flora Locale code of practice.

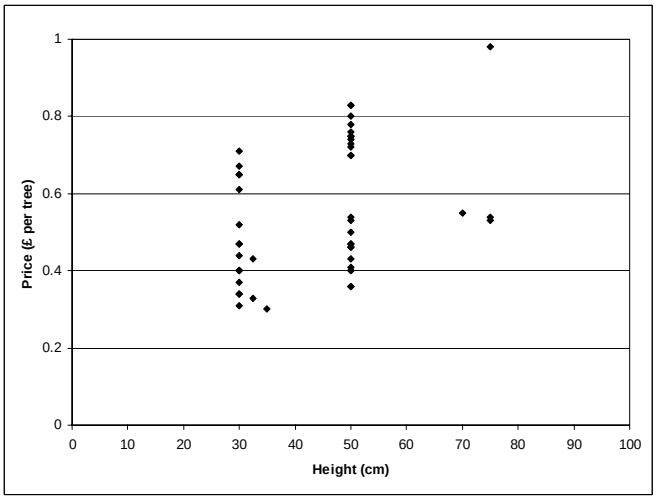
Figure 4 Price differential for Local Provenance



3.2.4 Price-size curve for forestry / hedging transplants

Trees of various sizes are required in different planting situations. Hedging and forestry plantings use the smallest sized trees ('transplants') usually less than 1 m tall. Transplants are graded into height size classes at 10, 20 or 30 cm intervals hence 20-40s, 60-90s etc.. Nurseries usually charge a couple of pennies more for larger size classes. However, the range of prices is large and as shown in Figure 5 (a) there is a lot of competition between prices offered by different nurseries with prices varying by pennies (though some of this will reflect some of the other ways in which prices vary such as cell vs field grown etc.). This fits with comments from nursery owners that buyers are extremely price sensitive and will forgo an order for the sake of a penny difference in price. Many small nurseries simply price match with whoever they perceive as their most important competitor – growers in Wales matching Alba Trees even though they are in Scotland and are a large cell-only enterprise and so have quite different costs of production to a small operation in Wales. Again this emphases the importance of calculating your breakeven price and making sure you are actually getting a useful margin from your prices however you decide to set them.

Figure 5 Prices by height class for oak transplants



The intense price competition shown in Figure 5 is behind the fine scale size grading of transplants. Although a greater proportion of larger sized plants will be older, size classes are so narrow (typically 20 cm) that a single sowing (a cohort) can be graded into three or four classes. Price differentials between trees sold as 20-40's and 40-60's range from 2 p to 14 p (with a mean of ~ 7 p) for the same order volume. Even an additional 1 p on the price of a tree is a useful contribution to profits while 14 p represents an additional 45% over the 20-40 price. It is therefore possible to increase your margins by judicious size grading your material. Grading takes time and

customers will be very exacting (it goes without saying that you need to *very* carefully quality grade) so you need to compromise on the effort needed to separate out different sizes, the need to have sufficient quantity in each class to make up saleable amounts and the return you can hope to get on larger sized stock. Most trees of these sizes are sold in large consignments often 10s of thousands and many nurseries do not sell quantities below 100 and few will accept orders below 10. This is because smaller consignments are costly to handle and the nurseries are not set up for them.

3.2.5 Volume discounts

A common feature of nursery catalogues is the discounting for larger size orders. The bracketing of order quantities varies by nursery but generally falls into four classes, below 10, 10-100, 100-1000 and greater than 1000. Something notable is starting to happen for sales of single trees and this is dealt with below rather than here. For larger, wholesale, orders pricing is well behaved as shown in Figure 6 with prices falling by 25-45% per tree on larger orders. The advantage to the buyer for discounts is obvious but what is in it for you? The first thing is that you need to be competitive so need to match conventions in your marketplace, but also selling in a few large orders is a lot less work than dealing with many small orders and means you are more likely to shift your stock. However, do watch that you don't end up discounting away your profit margin completely, so keep an eye on your breakeven when you are discounting. It is a common complaint from nurseries that there is little to no margin in bulk wholesale orders.

Figure 6 Volume discounts

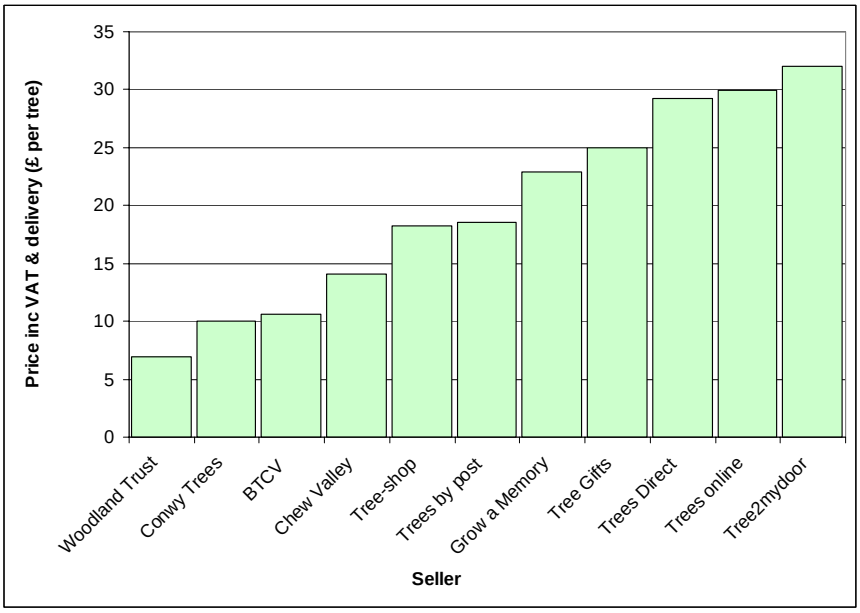
3.3. Retail pricing

In recent years a new opportunity has emerged of retail sales of single trees into the garden and gift markets. The gift market has 'silly' pricing from the perspective of a traditional nursery who sell a hawthorn wholesale for 39 p (see Figure 3) to find someone else is selling the identical tree for £24.50 – apparently a 6,300% markup for a bit of gift wrapping and personalised delivery! Selling your stock at these prices *would* make you a fortune.

What is going on here? This is actually a very good example of 'value addition' obtained by selling a traditional product into a new marketplace. Here the tree is being priced according to a totally new premise – in effect the customers' willingness to pay not just for the tree but for a whole range of additional values such as an unusual and 'green' wedding present, or as a commemorative tree to mark family events such as a funeral or birth – the tag line for sellers is that native trees are an 'eco-friendly' alternative to cut flowers. The price is set according to what people perceive as the value of a gift – i.e. they want to give a gift worth ~£30 and a tree is quirky, green and has lasting value – the customer is not really shopping for a tree and so is as unaware of the wholesale price of a tree as they are of an apple. Tree2mydoor is the market

leader for gift-trees and won business start up awards in 2004 – since then they have been joined by a number of others (see Figure 7) and the market is obviously expanding though it is unclear how many gift trees they are selling, the scale of demand (how many gift trees do people want to buy?) or whether this is just something ephemeral driven by the latest TV gardening craze. All of this will become apparent over the next few years but in the meantime this has at least served to highlight that there is demand from the general public for small numbers of trees. This is being exploited by online sellers who are direct selling to the garden market at intermediate prices (e.g. Conwy Trees) as well as a small number of nurseries who have spotted this emerging market trend. Others in this market are not-for-profit organisations such as BTCV and the Woodland Trust who use this to generate income for their causes and probably also as a service to their interest group.

Figure 7 On-line prices for single tree of less than 60 cm



The prices given in Figure 7 include delivery because there are apparently two pricing policies. You can either price the tree and associated gift wrapping services (most of which is for handling) high and then charge delivery at cost, OR you can charge the tree at cost and add handling charges and your overhead to the delivery charge. So one seller will offer a tree for 59 p and charge £17.63 while another will charge £7.75 for a tree and add £2.50 for delivery at cost. Either way you are looking at a very significant increase in margins though there are also costs involved which will erode this somewhat. This new retail market for trees necessitates the running of a full e-commerce enabled website which is not cheap (particularly if you include the cost of full credit card merchant services) as well as staff who can process orders with alacrity and an attention to detail and customer service. Nevertheless, this may yet represent a significant opportunity for a nursery to secure useful income as well as, for those who are primarily concerned with awareness raising, of reaching a new audience.

Hazel 20-40 cm tall in jute bag priced at £24.50 inc. VAT but not postal delivery of £7.50 from Tree2mydoor

Another way of increasing the value of a single tree and accessing the garden market is to put the tree in a pot. A 60-90 hawthorn in a pot retails as between £2.55 to £ 4.70 which is comparable with garden centre prices for potted shrubs but offered for direct sale from the nursery through a website – there is at least one seller who does this through an e-bay page.

At present these markets are being developed by a mix of not-for-profit, tree nurseries or third party retailers operating internet sales sites into at least two distinct markets.

3.4. Devising a sales strategy

A very important decision you need to make early on is your target market (the one you wish to sell to) and how you are going to let them know you exist – in other words you need to develop a sales strategy.

Of course you may prefer to sell to people who know you personally and plant trees in your local area and this itself is a valid sales strategy.

Nevertheless - whatever else you decide to do you will probably be selling the majority of your trees as transplants. The strategy for doing this is relatively straightforward – you will be selling to farmers and woodland owners who will probably be grant aided by the Welsh Assembly Government under Tir Gofal, BWW. You would contact them by having a stand at local agricultural shows and other woodland events (e.g. the Powis Wood Fair) and by sending notices or calling your local woodland agents. You may also wish to sign up to the Flora Locale Code of Practice for collectors, growers and suppliers of native flora. This acts as a voluntary form of quality assurance for your LP trees and also means you will be listed on the suppliers list maintained on the Flora Locale website (http://www.floralocale.org/content.asp?did=23794) which is a good place to advertise to the committed LP niche market – and incidentally also to find out about trends in woodland issues. Other LP suppliers lists that you should consider joining are www.CoetirClwyd.co.uk or www.TreeTrader.co.uk. An entry on these e-mail lists is worthwhile even if you do not have email or a web site as they at least give you a mention on the web so someone searching on the web for your name will find your contact details and also associates you closely with a credible group of suppliers of LP trees.

For wholesale trees an alternative to growing the trees and then looking for buyers is to grow on contract. This is where you make an arrangement with a customer to grow a certain number of trees (usually in the thousands) of a specific species, provenance and size. This provides you with the most security as you know you will sell the trees but there are also some risks, as for some reason the trees may not grow, or you may not be able to get the seed you need etc.. The ideal would perhaps be to try and secure some contracts and to sell the surplus. A compromise position might be to try and secure advance orders for stock presently growing rather than waiting until the trees have been lifted before looking for buyers.

You may also wish to sell a portion of your stock in the emerging retail market. This is less straightforward and there are at least three ways in which you could do this:

1) You could sell direct or you could sell wholesale to a third party retailer. Since retail seem to be taking off as internet based sales to do the former you would need to see up an e-commerce web site which would incur significant expense and technical expertise you would either have to acquire or buy in. You would also need to invest in the design of product packaging and advertising to compete with more established competitors in internet tree sales. This is all possible and if you wish to pursue this then you are strongly advised to seek advice from Business Eye who will be able to direct you to professional IT and e-commerce advice.

2) You could sell your trees wholesale to one of the third party retailers. At least Tree2mydoor claim to be an ethical company which supports the rural economy and deal with native trees and may perhaps be persuaded to also provide LP as an additional service to their customers. Conwy Trees already sell Welsh trees and may be interested in sourcing LP materials with links to specific areas of Wales. If you were to negotiate such a contract then the prices you charge would be higher than for farmers in recognition of the greater handling you will have to do as well as high grading (picking out the best form

trees) and also because you should expect some of the value-addition to be passed on to you.

3) You could join together with other small LP nurseries to fund or support the development of a mutual retail outlet. This could be through Glasu or independently as a co-operative or business opportunity in its own right. Doing things together will spread the costs, risks and of course also the benefits. There may be scope for learning some tricks from established enterprises and looking for a different angle (LP?) or playing on the Welsh angle (take home a memory of your holiday?).

Each of these options has pros and cons and all have risks – this market may already be saturated, you may not be able to establish a niche for LP though this may hardly matter as there are already significant gains from the planting of native species in the urban/sub-urban setting of most of the retail customers. Mentioning this option at this stage of the workbook is NOT an endorsement of this option as a viable opportunity – take it as a pointer towards some new marketing ideas that seem to be gaining ground.

Make a record of what you think would be suitable sales strategy for your nursery in the box below:

I will sell my trees to…..
and reach them by…..

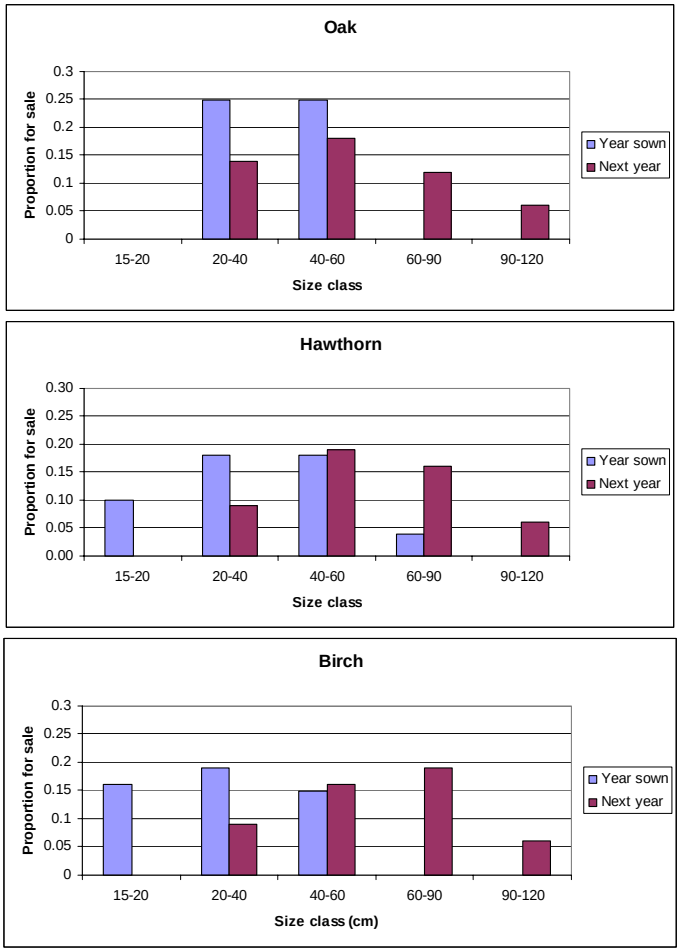
3.5. Estimating wholesale income

Having decided on a sale strategy the next step is to estimate the volume and grades of your projected production.

For wholesale trees you need to estimate the numbers by size grading in very narrow classes by species from each production system in order to estimate income. Worksheet 3 has been developed to help you do this and to calculate projected income from the prices for each class. In Worksheet 3 you need to enter the proportional distribution by size and age of trees sown at the same time. If you measure the heights of trees from one sowing after a year and plot their frequency by size you normally obtain a 'bell-shaped' curve centred on the mean height for a one year old seeding. Some species grow faster than others and some will spread out over a wide size range and others will be much more uniform in growth. You should also assume that part of your stock will be too small, misshapen or left over at the end of the year. This stock is usually grown on and sold the next year when they will be generally taller than the year before. Using experience or first principles and some guess-work you should be able to come up with a usable 'model' for

the numbers of trees by year and size that you will have to sell arising from a single planting. Worksheet 3 uses your model to estimate the numbers and sizes of trees you will have to sell in each year. In the worked example it was also assumed that field and cell-field had the same growth rates and with half of the trees sold in first year and half the year after as shown in Figure 8. Cell grown stock was assumed to have faster growth rates and a higher proportion (80%) sold in the first year. These figures are an indication of what you might expect to happen and are based on common sense and ARE NOT intended as figures you should use in your projection which should be based on as much real data as you can find.

Figure 8 Example size class projections used in worked example



Once you have some estimate of your sale stock the next step is to fix or estimate your price for each species and size class. In the worked example in the Appendix the price used for oak is the average of the prices for 2007 represented in Figure 5. You may wish to use the same tactic, price match a competitor or calculate your own price based on a sensible margin over your breakeven price. However, any pricing will be inexact unless you also wish to try and project how much of your stock will be sold at the different volume discount rates indicated in Figure 6. The figures in the worked example are prices for orders between 100-999.

Your projected sales stock figures are then your stock figures multiplied by the cost per tree to give the estimated income.

REMEMBER that this is a projection and it is highly unlikely that this will be your actual income in any year. There are a number of important assumptions in this method: it assumes that you will be able to sell ALL your trees – on average nurseries sell around 95% of their stock and only in good years or with good planning is all stock sold. It also ignores discounting which is common practice.

Estimating income from retail sales is a much easier proposition as for all but one on-line retailer prices are constant regardless of species and stock is all the same size. Since you cannot expect to sell all your 10,000's as individual trees the problem then becomes estimating the number of trees the market will buy rather than the number you can produce. It has not proved possible to obtain any estimates of the number of trees being sold one-by-one so it is difficult to estimate possible sales volumes. However, it is probably a safe assumption to think that this is not likely to be more than a few hundred for you, at least for the first few years. If you decided to go ahead with retail sales then a better estimate of potential sale volumes is something for which you may need to obtain specialist market research. Prices in this niche market are likewise difficult to judge as they range wildly (see Figure 7). Again the worked example uses the lower prices as these have relatively straightforward sales pitches (a straight web site rather than the gift sites which include a lot of ancillary services). Again this is something which would ideally be informed by further market research.

3.6. Costing sales

The last piece of the puzzle is the estimation of the costs incurred from the lifting and grading of your stock to delivery of the trees to the customer. These costs are dealt with separately as even though they are a variable cost (i.e. they increase in proportion to sales) they are not a cost of production as they relate to your sales strategy rather than production method. Being variable they are also not an overhead. Costs of sales are also rather odd as they are often passed onto the customer, so they are recouped as 'other income'. For wholesale within your local area these costs are usually trivial even if you undertake to deliver. For retail, the packaging and postal charges are significant but probably only for a small proportion of your sales. For retail you will most likely incur additional marketing and internet costs but these should be entered as part of your business overheads. Worksheet 4 is provided for you to use to estimate costs of sales.

Graded bare rooted stock heeled in and awaiting collection

Photo Glasu © 2007 – is better quality image available?

Worksheet 3: Wholesale income

Enter appropriate values in coloured cells - ignore any items you will do without. Prices should include VAT.

Species	**Grade**	**Price**	**Proportions in size class**		**Year 1**	**Year 2**		**Year 3**		**Year 4**		**Year 5**	
Enter species name F1 = Number of this species produced as a fraction of total production (e.g. 0.3 if 30%)	Size class for sale (cm)	Average price (£ per tree) from survey of other nurseries, or price you have decided to charge - should not be less than breakeven.			T1	T2		T3		T4		T5	
			1 year old	**2 year old**	**Trees for sale**	**Trees for sale**	**Value (£)**	**Trees for sale**	**Value (£)**	**Trees for sale**	**Value (£)**	**Trees for sale**	**Value (£)**
			Fraction of trees sown in one year sold in this size class and age. Should sum to 1.0 for each species.		You probably won't have anything to sell the first year.	N2 = T1xF1xF2	£ = N2xP	N3 = (T1xF1xF3) + (T2xF1xF2)	£ = N3xP	N4 = (T2xF1xF3) + (T3xF1xF2)	£ = N4xP	N5 = (T3xF1xF3) + (T4xF1xF2)	£ = N5xP
		P	F2	F3		N2		N3		N4		N5	
	15-20												
F1	20-40												
	40-60												
	60-90												
	90-120												
	Total												
	15-20												
F1	20-40												
	40-60												
	60-90												
	90-120												
	Total												
	15-20												
F1	20-40												
	40-60												
	60-90												
	90-120												
	Total												

Species	Grade (cm)	Price	Proportions in size class		Year 1	Year 2	T2	Year 3	T3	Year 4	T4	Year 5	T5
			1 year old	2 year old	T1	Trees for sale	Value (£)	Trees for sale	Value (£)	Trees for sale	Value (£)	Trees for sale	Value (£)
		P	F2	F3		N2		N3		N4		N5	
	15-20												
F1	20-40												
	40-60												
	60-90												
	90-120												
	Total												
	15-20												
F1	20-40												
	40-60												
	60-90												
	90-120												
	Total												
Sales	Sum green cells												
Wholesale income	Sum beige cells												

Worksheet 4: Packing and delivery

Enter appropriate values in coloured cells - ignore any items you will do without. Prices should include VAT.

Heading	Item	Notes	Enter what you propose	COSTS				
				Year 1	Year 2	Year 3	Year 4	Year 5
Make up orders	Seedlings	It is common practice to buy in trees to make up orders either for species you don't stock or in emergencies. Assume you buy in at wholesale prices. You can reduce costs by swopping trees with other nurseries.						
Wholesale	Bags	Bags for packing seedlings. Ideal is black-lined plastic sacks but can also use recycled feedsacks etc..						
	Cells	For cell grown you need to decide whether you will sell in the cell or as a plug of compost around roots out of the cell. Cell is expensive so you will need to add this to sale price. Some nurseries provide option and charge extra for cell.						
	Wrapping	If you sell out of the cell the plug needs to be protected from drying out - often plugs are wrapped in cling film in blocks or put into bags or boxes.						
	Local delivery	Van mileage - can be charged to customer in which case add to Other income but usually free within local area - estimate how much you will need to deliver locally (easier once you've started trading). Probably covered by car usage costed in Worksheet 1.						
	Non-local delivery	Estimate how much you will need to send out - estimate cost of additional packaging and courier/postal charges. Can be passed onto customer so if it is proving difficult to estimate you can ignore it.						
Retail	Packaging	Cell						
		Bag						
		Cardboard tube						
	Postage	Estimate from number of sales x average postal charge						
	Transport	Trips to the Post Office / Courier drop off						
Other costs of sales		Sum all numbers in purple cells						

Part 4. Assessment of nursery as a business

You should now have everything you need to make a formal assessment of whether you will be able to get what you want from a tree nursery business. However, before embarking on the accounts, the next section introduces some basic accounting principles. This will then be followed by the assessment worksheet and a breakdown of four example business scenarios based on the figures given in the worked examples in the Appendices.

4.1. Some business accounting principles

Regardless of whether you want to make a profit or not, to get the most out of this workbook you should familiarise yourself with some basic business accounting concepts. Doing this will help you to understand the financial implications of the decisions you make so you can get what you want from your venture.

The first thing to realise is that from the perspective of an accountant a 'business' is a closed financial unit which is entirely separate from everything else that you do. All the resources you use for the business such as a time, space, materials and equipment are counted as *costs* to the business. Even if your business is only a part-time occupation and you are using the kitchen table as an 'office' and the corner of a field you own as 'nursery premises' an accountant would want to put some value on them. The way in which this is done is to estimate the proportion of space you use as an office and then to enter this proportion of your home electricity and heating bill to the business. So one side of a room in a 5 room home is 10% of your home so the business office heating and electricity bill is 0.1 x home bill. This may seem strange as it is not a 'real' input in that you would be paying the house bill whether you run the business or not. Nevertheless if you don't put this in you will be underestimating costs – think of it this way: if you didn't use your house you would need to rent office space or buy a portacabin which would be a more tangible cost – you could also use the space in your house for something else. So the kitchen table is a cheap option but as far as the business is concerned is not free. Perhaps a more convincing reason for taking such invisible costs seriously is that when you come to present your accounts to HM Customs and Revenue at the end of the year you can offset income with costs and reduce the amount on which you have to pay tax. This saves you (literally if you are operating on a self-employed basis) a real expense which can make doing these calculations a worthwhile exercise!

Costs are broken down into three classes in the workbook. These are production costs which are directly related to the number of trees produced and are termed *variable* costs, and *overheads* which are the *fixed* costs for operating the business such as insurance. As production levels increase so do the variable costs but the fixed costs become easier and easier to meet – this is one way in which you generate *economies of scale*. In the Worksheets the different types of costs are colour coded to make it easier for you to keep track of where the numbers are coming from.

One perhaps seemingly odd thing about business accounts is that it does not include cash that you spend on *assets* such as a car or polytunnel as a cost, but as a transfer of cash into a *capital asset*. In other words the money is still there as you could sell it again if you needed cash. However, the value of your assets is eroded as you use them – wear and tear which is more properly termed *depreciation*. This depreciation is a cost to the business – it is calculated at different rates depending on the item i.e. commonly 25% for office fittings and 12.5% for machinery. If you use any equipment you already own in the business then strictly speaking you should transfer some of its capital value to the business in proportion to the time you use it on nursery business so that you can properly account for *depreciation* – this is especially true for equipment you will probably wear out such as a rotovator. However, capital transfers and depreciation are niceties that have been ignored in the workbook to simplify the accounts.

Likewise all *income* (cash coming in) to the business should be counted whether or not it is simply paid straight back out again. In a nursery such expenses include delivery charges which are added to the customer's bill at whatever they cost you. The reason for doing is so you can keep track of

money coming into and out of the business but also because there may be a delay between buying the petrol for your van and your customer paying your invoice. This means you may be effectively out of pocket. The movement of money into and out of the business is termed *cash flow* and is of great importance to operations such as nursery where costs and income are in different times of the year. You need to be able to survive lean times – a concept which will be explored in more depth in Part 3.

In this workbook it is assumed that the nursery output will be small (~70,000 year production) and that the *proprietors* (i.e. you) will be operating on a *self-employed* basis[4]. This means you do not need to pay PAYE. This is the pay as you earn payment of income tax and National Insurance contributions by employers from their employees' pay packet to which you need to add the employers' NI contribution (the *on-cost* of labour which comes to 12% of *gross* salary i.e. salary before any costs are subtracted) and pass the whole lot onto HMRC and the *net* salary (what is left) to your employee. Being self-employed has a couple of advantages – you save the business your on-costs and you can pay yourself whatever the business can afford, when it can afford it, and declare the whole lot once a year in your *self-assessment* (personal income declaration to HMRC). This flexibility is useful for dealing with cash flow as well as being a better fit with the way in which small businesses operate. In this workbook we term these payments in lieu of a salary from the business to the proprietor, *renumerations* and are made gross (i.e. with no deductions). You may also contract self-employed help in the nursery rather than employ them which will means you do not have to pay on-costs on a salary. But you should be aware that there are quite strict rules about whether your help can be counted as self-employed or an employee[5].

Starting up a nursery will require cash for necessary purchases. There are a number of ways in which you can obtain cash – listed in order of preference and cost these are:

- putting in your own money as *equity* representing a stake in the business – if you put in all the cash required then you own 100% of the *net worth* (= capital assets + stock + cash in bank) of the business; if you put in 50% then you own half the business etc.,
- take advantage of a *grant* (which may or may not have strings attached – DO look the gift horse in the mouth!),
- arrange an *overdraft* facility with your bank (on which set up fees and interest are payable though at a lower rate than a commercial loan) or
- take out a *loan* (on which interest is payable and may require that you release some equity i.e. give the loaner a percentage of the value of the business).

If you need assistance with funding the nursery then you will need to prepare a convincing *business plan* for what you intend to, do showing how the money will be used and what returns you anticipate and when. Working through the workbook and the worksheets will provide you with what you need to prepare the guts of your business plan – the cash flow and *profit and loss* projections.

The profit and loss account sheet is the bottom line for your business it shows whether you have made a profit from your income. A *loss* is when costs are greater than income, *breakeven* is when income equals costs and a *profit* is when income exceeds costs.

At the present time the Welsh Assembly is making a range of resources available to promote and support business development in Wales and for diversification of the rural economy. There are consequently a range of institutions you can approach for assistance with business planning, financing advice, soft loans and grants for some types of capital items and for IT (information technology) and e-commerce consultancy. The following are a range of useful web sites for contact details for institutions you can approach for up to date advice:

[4] The implications of this are laid out in http://www.hmrc.gov.uk/leaflets/se1.pdf
[5] See the HMRC IR56 information leaflet (http://www.hmrc.gov.uk/pdfs/ir56.pdf) for advice on this

www.businesseye.org.uk
http://new.wales.gov.uk/topics/businessandeconomy/start
www.bigwales.com
www.glasu.org.uk
www.powys.gov.uk

4.2. Cash flow

Cash flow is a critical issue for tree nurseries because many of the costs come at a different time of year to income. Costs also prefigure income by long periods of time, - for larger trees many years before income. You need to keep a very careful eye on your cash flow so you don't end up out of pocket, with an unscheduled overdraft with the bank (very expensive and risky for your future credit rating) or running out of cash because all your money is held up in stock you can't sell. Cash flow projections are therefore a central and essential element of your business plan and any financier will want to see them. Since it is the flow of cash that is the issue here, the projections have to be monthly and effectively represent the disposal cash you have at your disposal at any one time. Worksheet 5 is a blank sheet on which you can make a monthly projection of your cash flow. What you need to do is enter the total for the year in the coloured cells and then distribute this amount to the month in which the payment, either in or out of the business, takes place. You will need to complete at least 2 sheets to be able to see how things work out up to your first income which should be the most difficult period. Figure 9 illustrates the kind of cash flow situations you can expect to encounter for field grown systems. At the start you have to put in all the equity you need to make all purchases for the first year of operations – this appears as a big input in month 1 which here is taken as October (blue line) which is then run down (brown line) – of course you will probably put the money in as it is needed, but the effect is the same at the end of year one- the business has no cash. The start of year 2 invokes a lot of bills for overheads (car tax, insurance) which need to be paid before cash comes in from sales starting in November, so you need to put in another block of equity. Then the cash comes in as a big lump and you have to pay for seed, buy soil conditioner and think about paying yourself something (red line from Mar-10) and so the cash runs down again. This will happen every year and you will need to try and put off purchases as long as you can and if at all possible until after you have filled your order book for the year. The significance of doing this is more dramatic in Figure 10 for cell grown systems where the purchase of cells and compost are large payments. Note that leaving these purchases until Mar-10 means that you keep your cash flow positive – if you made these payments before Dec-10 you would go into the red. Mindful of these results Worksheet 6 suggests that you need to think about adding in some equity at the beginning of year 2 to tide you over for year-start overheads you will probably need to pay before money starts coming in.

Figure 9 Cash flow projections for field grown production

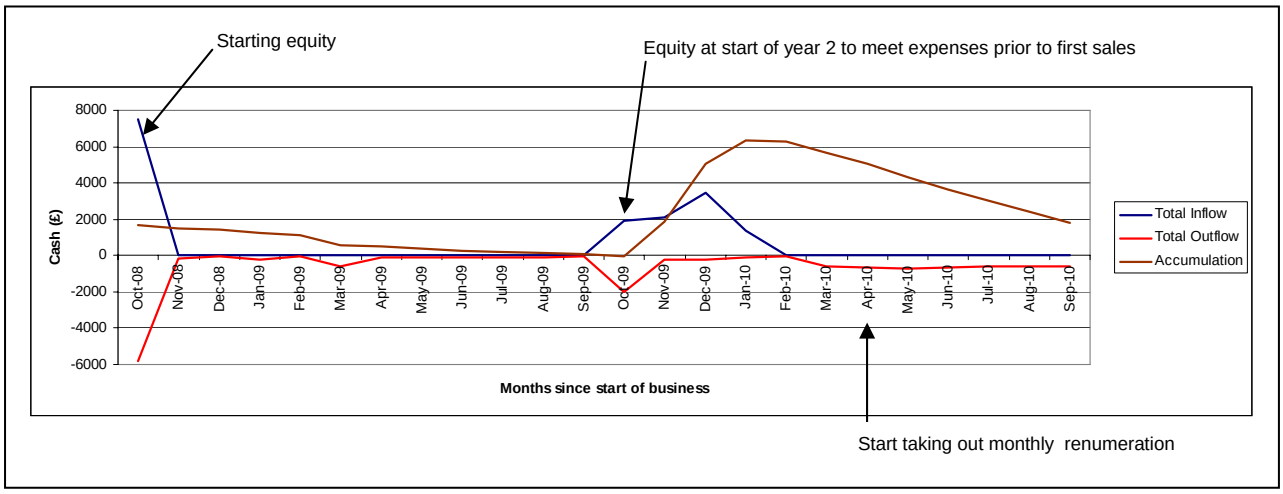
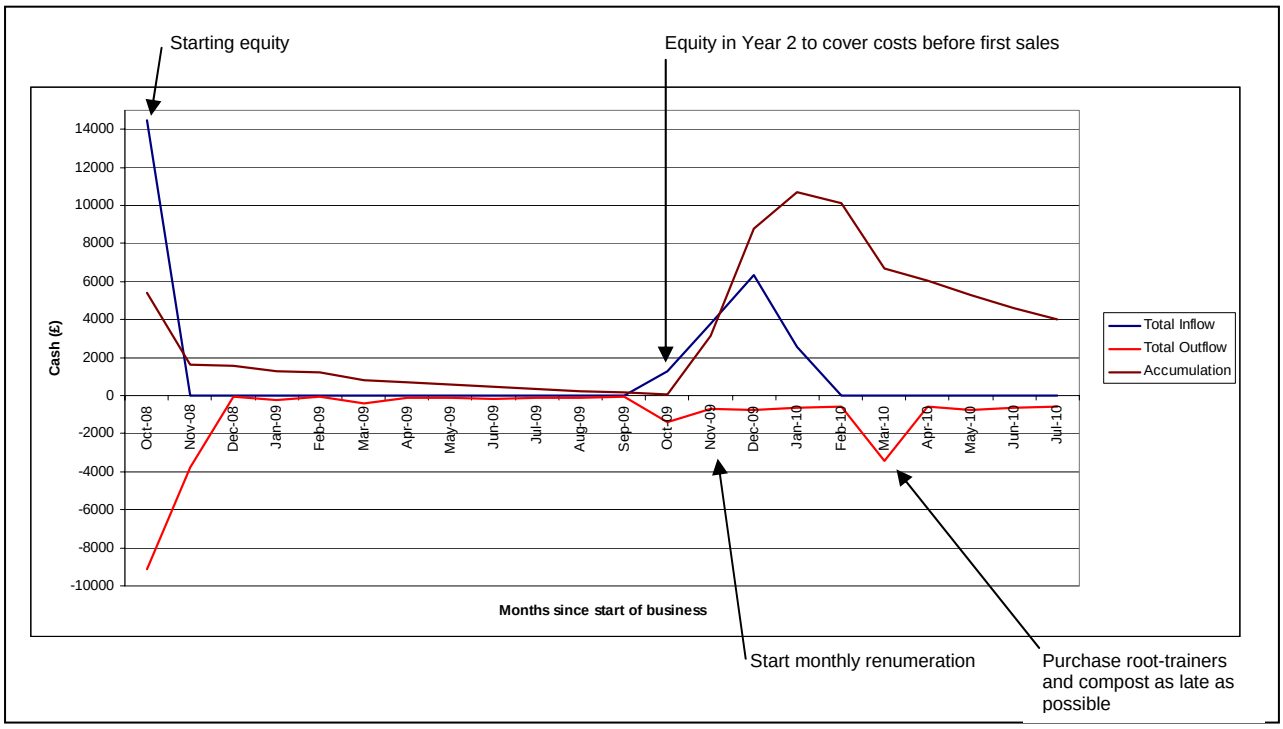


Figure 10 Cash flow projections for cell grown production



Worksheet 5: Monthly cash flow projection

Item	Estimate for year from previous worksheets	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Sales													
Equity (cash you bring into business)													
Loans													
Total Inflow	**Sum of above 3 rows**												
Production costs													
Overheads													
Packing and Delivery													
Capital purchases													
Working Capital													
Debtors (money owing to you)													
Prepayments													
Creditors (money you owe to others enter as negative numbers)													
Interest on capital (in bank)													
Loan repayments													
Interest on loans 8%													
Interest on overdraft 7%													
Total Outflow	**Sum of above 12 rows**												
This period	**Inflow-Outflow**												
Carried forward	**This month + previous month**												

4.3. Profit and loss

Your profit and loss account sheet represents your bottom line – is your business worth more than you have spent on it? This is not the same as the cash flow as the capital items you have bought are part of the valuation of your business. Conventionally, profit and loss accounts are prepared on a monthly basis as for cash flow, but in order to keep things simple Worksheet 6 only calculates the summary profit and loss for each year. The main simplifications other than the calculation of annual rather than monthly figures is the omission of:

- corporation and income tax – on the grounds you will be taking out a remuneration rather than a salary and so will pay income tax and NI through your self-employed self-assessment return,
- VAT as you are not likely to have enough turnover to qualify for VAT in the first five years
- depreciation because this is a little complex and is not 'real' money and your capital items are likely to be second-hand anyway and
- bank interest on overdrafts as it is assumed that you will keep the business in the black by supplying equity or obtaining grants or loans as needed.

Once you have completed Worksheet 6 you are done! You should now at least be well enough informed be able to make a judgement of whether you can make any money, breakeven or grow enough trees to meet your objectives for a nursery. Work though the following decision support questions and repeat Worksheets as directed. This then completes the initial appraisal of your business ideas. If you want to look at the relative merits of different production systems then look through the example Worksheets in the Appendices and Part 4.4.

Question	Check	Response	Action
1) Does your nursery make a profit within the 5 years of the projections?	Worksheet 6	Yes	Goto question 2
		No	This is probably a non-starter. Try reducing costs or increase income with a different sales strategy but keep it realistic. Re-run Worksheet 6 with alternative figures.
2) Do you have the equity required?	Worksheet 6	Yes	Goto question 5
		No	Goto question 3
3) Can you reduce costs?	Worksheet 1	Yes	Repeat Worksheet 6 for new costings from Worksheet 1 Goto question 2
		No	Goto question 4
4) Can I obtain funds from elsewhere?	Overdraft from bank? Grant aid? Loan?	Yes	Repeat Worksheet 6 with new inputs – don't forget to include any additional cost of finance i.e. repayments and interest Goto question 5
		No	Looks like a nursery is a non-starter. Think of something else!
5) Can you afford to wait as long as indicated before getting an income from the nursery?	Worksheet 5 Worksheet 6	Yes	Goto question 6
		No	Nursery is probably not for you but if would still like to try growing trees try reducing costs further (Worksheet 1) or consider an alternative sales strategy to generate a larger income earlier (Worksheet 3) and rerun Worksheet 5 & 6 Goto question 5
5) Will the nursery provide enough profit to fulfil my aspirations for it?	Worksheet 6	Yes	Goto question 6
		No	Probably not for you but you could try an alternative sales strategy and go through Part 6 for ideas on generating more income
6) Can you afford the time inputs?	Figure 1, your own assessments, nursery manuals	Yes	Goto question 7
		No	Probably not for you but check if you can overcome this by hiring labour.
7) How secure are the markets?	Market research, talk to local woodland agents, other nurseries	Secure	Goto question 8
		Not sure	Is there anything you could do to improve your USP? A tree nursery is probably not for you if you are not happy managing risks.
8) How confident are you in your prices?	Worksheet 3	Very	Goto question 9
		Unsure	Re-run Worksheet 3 and 6 with the lowest current prices (called a sensitivity analysis). If you still have enough profits for your needs goto question 9
9) Will you get what you want from this venture?	Part 1	Yes	Great – go see a business advisor with your completed Worksheets and put together a business plan. Good luck!
		No	This is not really for you. Perhaps consider something in Part 6 if you are still interested in doing something with trees.

Worksheet 6: Financial appraisal

Item	Notes	Calculation	Year 1	Year 2	Year 3	Year 4	Year 5
Income							
Wholesale	Beige totals from worksheet 3		-				
Retail			-				
Other			-				
Sum of income		A	-				

Direct costs	Variable costs of growing trees						
Production	Green totals from Worksheet 1	B					
Labour	Enter any payments you will make for help in the nursery. No worksheet for this as assumed you will be operating business on self-employed basis. If you do take on someone formally then on-costs (NI contribution) is 12% of gross salary. Minimum wage in 2007 is £5.52 per hour.						
Total direct costs		C					

Production profit	Profit on materials used to grow trees. This has to support the overheads, renumerations etc..	D = A-C					
	Profit expressed as a % of income	=D*100/A					

Other cost of sales	Variable cost of sales						
Packaging	Total of purple cells in Worksheet 4	E	-				
Sales staff time	Estimate of days x 7.5 x minimum wage (£5.52)	F	-				
Sum other costs of sales		G					

Gross profit	Profit after accounting for variable cost of sales	H = D-E					

Overheads							
Nursery	Yellow cells from Worksheet 1	I					
Office & business administration	Yellow cells from Worksheet 2	J					
Staff time	Estimate of days x 7.5 x minimum wage (£5.52)						

Item	Notes	Calculation	Year 1	Year 2	Year 3	Year 4	Year 5
Depreciation	Ignored to simplify calculations						
Sum overheads		K					
Interest	Ignored to simplify calculations						
Profit before renumeration		L = H-K					
Renumeration	Enter what you want to take out of business for yourself. You may wish to reimburse yourself for time invested without pay in first few years.	M					
Profit after renumeration	Money available for investment in business, dividend, reimbursement of equity etc..	=L-M					
Cash outlay on capital items							
Land & buildings	Land row from Worksheet 1 + Buildings row from Worksheet 2	N					
Depreciable assets	Blue total from Worksheet 1 + total Worksheet 2 – N						
Sum cash outlay on capital items		O					
Cash inputs							
Grants	Enter any grants you may be able to obtain	P					
Equity Year 1	Money that you need to put into business at start-up to pay for necessary purchases until the first sales.	=B+K+O-P		-	-	-	-
Equity Year 2	Maximum additional equity that may be needed at beginning of Year 2 to cover expenditure until first sales.	=I+J	-		-	-	-
Sales volume	Green cells from Worksheet 3	Q	-				
Average breakeven price	Ensure all prices are at or above this price by Year 5	=(C+D+K+M)/Q					

4.4. Example appraisal of nursery business scenarios

Annual profit and loss accounts are presented in the Appendices for four scenarios, each production system assuming conventional wholesale of trees and for cell grown with a small proportion taken out for retail sales including minimum costs for setting up an e-sales enabled web site. A summary of the pertinent features of each is given in Table 7. These figures reveal some interesting features.

Table 7 Summary financial appraisal of costed nursery business scenarios (2007 prices)

Production system	Field	Cell-Field	Cell	Cell
Sales strategy	Wholesale	Wholesale	Wholesale	Wholesale + Retail
Start-up equity	7,500	11,600	14,000	14,000
Time inputs (days)	155	177	121	136
Months before salary payments	19	23	14	14
Breakeven price per tree in Yr 5	0.15	0.20	0.19	0.21
Profit in Yr 5	16,800	13,700	14,700	17,000

Unsurprisingly if we count in the cost of buying all the necessary equipment then a field system is the cheapest to establish, the lowest breakeven prices, provides an income (albeit at minimum wage levels) from towards the end of year 2 and at year 5 provides sufficient profit to employ someone or invest in mechanisation, marketing or to take out of the business for other use.

Also unsurprising is the high establishment cost of a full cell grown system, though these are somewhat offset by increased growth rates and this together with the lower labour inputs provides an income from early in year 2.

The cell-field system has intermediate costs of establishment because the polytunnel is smaller and cheaper and less compost etc is required but it has the highest labour inputs. This is because you will need to water through the winter/early spring as in the cell system as well as cultivate the ground and lift seedlings. These additional costs carry through so this system has a high breakeven price and the lowest profits. Nevertheless these are still sufficient to provide an income from about the beginning of year 3 and enough to reinvest in year 5.

The surprise is with the mixed sales scenario – this has been based on the cell system as it is supposed that this is easier for postal sales though there are nurseries who post out single, bare-rooted trees. Here the initial outlay is the same as for the cell system in year 1 though more equity to set up the e-sales web site is required in year 2 (a minimum of ~ £500 and more like £1,500 more) though this could be postponed until year 3 to utilise the income from the first year wholesale. The costs are higher in terms of labour and internet and bank charges and this is reflected in the higher breakeven prices. However, this is immaterial as profits have increased by 15%. This is a very significant increase from the sale of just 400 trees a year at £7.75 which is a low-end retail price.

Part 5. Income diversification

If the appraisal in Part 4.3 indicates your nursery venture will not make sufficient profit for your needs or you already have a nursery and are looking for complementary investment opportunities then this part of the Workbook is for you.

The diversification of outputs or income-generating activities by a business is a common occurrence. It arises for a whole variety of reasons, some to do with provision of services requested by the customers, to a need to increase income to keep a failing business viable. A useful starting point for this Part is therefore the consideration of the types and numbers of different activities that are carried out by existing nurseries. A selection of these that are most closely linked with the growing of trees or LP native plants are then explored in more detail for your consideration. However, your best chance is to be innovative or a leader rather than a follower of someone else's ideas so a section dealing with innovation in business development is also included in this part of the Workbook.

5.1. T rends in tree nursery diversification

A survey of 66 nurseries of a range of sizes in 2007 showed that only a minority (25%) of tree nurseries are simple businesses – the majority combine the growing of trees with other income-generating activity. However, there are interesting regional differences in the extent of diversification (Figure 11) and the type of additional activities (Table 8). Consideration of these patterns helps to put the Welsh nurseries into a wider context and also indicates whether you are doing something innovative or following an established trend.

Figure 11 Extent of diversification in tree nursery enterprises in GB

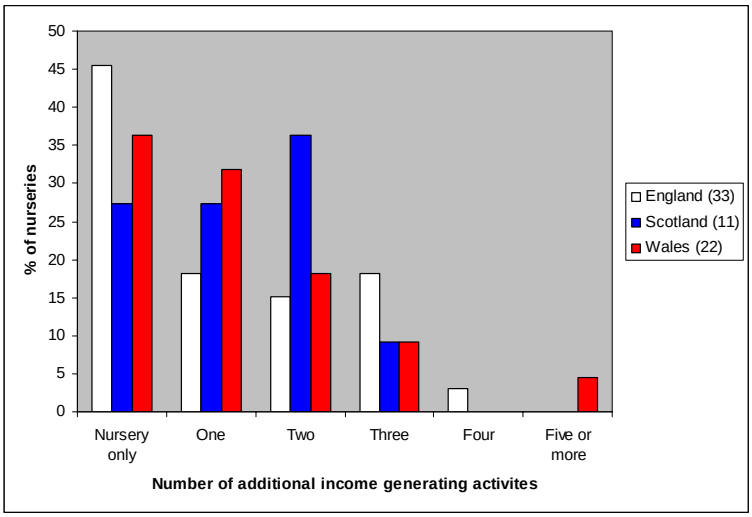


Table 8 Enterprise diversification activities

Type of activity		England	Scotland	Wales	GB total
Tree nursery only		14	2	8	25
Specialisation	Hedging	6		2	8
	Fruit trees	1	2	3	6
Horticulture	Wildflowers	8	1		9
	Specialist plants	3	2	1	6
	Bedding plants	1	1		2
	Vegetables		1	1	2
Retail	Accessories	5	1	2	8
	Gift products	3		2	5
Services	Consultancy/Training	4	3	5	12
	Landscaping	4	2	1	7
	Woodland management	3		1	4
	Research		1	1	2
Agriculture	Farm			3	3
Wood products	Crafts			2	2
	Sawmill		1	1	1
	Charcoal			1	1
Number of nurseries surveyed		33	11	22	66
Proportion with diversified incomes		73%	82%	76%	76%

There is apparently less diversification in English nurseries than elsewhere (though many of them are attached to not-for-profit conservation bodies and so should probably be classed as diversified). Where nurseries have diversified they have tended towards developing retail sales – in other words they are moving in the direction of becoming a shop, or they are also providing tree planting services. Indeed there is some evidence of a trend for the emerging 'countryside services' sector (like agricultural contractors but do woodland, footpath, walling etc.) to also source trees for their clients and some to start to offer tree sales generally from a small group of associated nurseries. One even makes a selling point out of their ability to high grade (select the best quality of) the material delivered from the nurseries. Does this imply that the nurseries are not applying strict enough quality control, or is this simply an easy by-line at the nurseries expense? The other area of diversification is into (or from?) horticulture, by growing complementary plants such as wildflowers, ferns etc., or other trees (especially fruit trees), or food crops such as organic vegetable production.

In Scotland diversification opportunities appear to be more limited – probably a function of the extreme isolation of some of the nurseries visited. Most diversified enterprises appear to be linked to other horticultural activities (hence the use of the cell-field system) or to woodland services. Discussions with nursery owners also suggests that small scale nurseries in Scotland have arisen from conservation planting schemes such as those promoted by Reforesting Scotland in the 1990's. Since the schemes have closed some of the nurseries have been able to continue while others have closed.

Diversification in Wales is somewhat different to either England or Scotland. Here, apparently uniquely, tree nurseries are being used as a diversification *out* of farming and wood processing. So the nursery sits alongside other activities which need not be related to trees or woodlands. So diversification options are broad as is apparent in Table 8.

This Workbook cannot cover all potential diversification options and will focus just on those which are most compatible with a tree nursery. Nevertheless, based on Table 8 it is possible to match up some of the tested (in the sense that someone else is doing it) options with particular motives for diversification of you nursery operation as shown in Table 9.

Table 9 Selecting diversification options

Reason	Consider
My customers are looking for additional services and I feel I am losing custom by not providing them with what they want...	Research which services are in demand and if you have the necessary skills or are prepared to attend training consider providing service though make sure you have all the necessary certificates if it involves machinery e.g. chainsaw. Otherwise build a relationship with a suitable service provider to provide the services between you. Arrangements of this type are most often being initiated by the woodland services sector who are moving into selling or procurement of trees for their clients. So there should be scope for mutually beneficial partnerships here.
I need to find an easy way of increasing income that is quick and easy...	Retail of tree-related products such as planting supplies. Buy in wholesale and sell on at a price set to be competitive with those in local garden centres etc.. Or offer a better quality or specialist product than available locally.
I would like to increase the range of plants we grow and am wondering if this is a good idea...	The easiest plants to add are (1) woodland perennials which can be sold along with the trees as a 'woodland in a box' – see Part 5.3 or (2) special trees such as fruit trees or maybe even scions of 'remarkable' trees or 'sports'. The more unique your plants are the better chance you have of creating a market for them.
I can see that some of my stock is in higher demand than the rest – is it worth specialising in the production of just these species and sizes?	This is essentially focusing your nursery on an even more refined niche product than LP trees. This can work as long as the niche you have identified is likely to be long-lived and you can establish a reputation for excellence for the specialised plants. Several nurseries specialise in the production of hedging plants (and then often also provide the hedging planting and after-care services). Specialisation can also be for a particular species (there is already a Welsh nursery specialising in holly), size (e.g. standards – see Part 5.2) or form of tree. The trick here is to do some careful market research and to do something different to what is already available.
I want to diversify into new markets and encourage more people to appreciate and plant native species – what do I need to do?	Diversify your sales strategy rather than your products – consider retail sales (see Part 3.3 and 3.4). Advice on advertising and some market research would be useful but you could just as well get some friends together for a brain storming session and try out the best ideas. You may well know your target market better than a market researcher though maybe not if you want to expand into distant markets.
I am struggling to find good supplies of tree seed, would it be possible to develop tree seed supply as an income opportunity?	Probably not if you are thinking of competing directly with large commercial tree seed retailers. Though you could perhaps collect for sale *to* larger nurseries or seed retailers. There may be potential with development of orchards or seed stands of species in demand with poor seed supply e.g. hazel. Otherwise maybe it would be possible to sell be-spoke small scale tree seed collection. Specialising in vegetative propagation of difficult LP species may also be a possibility. See Part 5.4.

5.2. Creating a LP niche in other tree markets

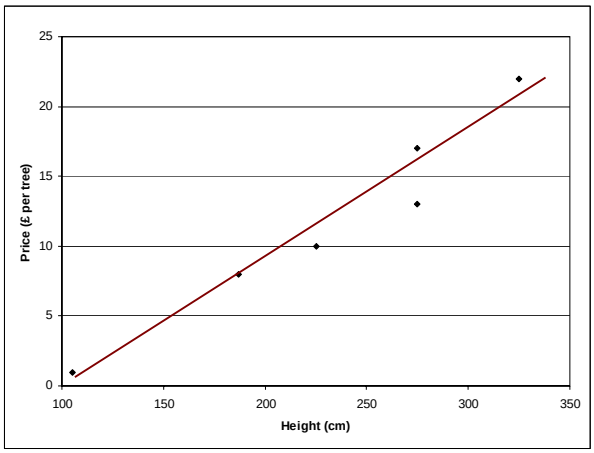
As is clearly shown in Table 6 there are many markets for trees and it may be possible to develop a niche within these markets for native species and perhaps also for LP. Many public bodies have policies which mirror those contained in the EU Habitats Directive which states that whenever possible preference should be given to LP native species. However, outside the world of grant-aided forestry and farm plantings there is hardly any availability of native species let alone LP. The emergence of a retail market for native species is beginning to make them more readily available for planting in private gardens but this still leaves a large market within which it is just about impossible to source suitable planting material. With a judicious advertising and awareness-raising programme it should be possible to create a niche for native species and perhaps for LP though this may need to come along once the first message has been accepted. The new retail markets at least prove there is latent demand for native trees.

5.2.1 Larger-sized amenity trees

The most notable areas where there are few native species are larger trees sold for amenity plantings and in private gardens. These are usually retailed through garden centres who are tied into large scale supply chains which are difficult to enter. However, it may be possible to offer material directly to the public, through a local garden centre or perhaps by internet sales though delivery by post is perhaps problematic for a 3.5 m tall tree.

The same pricing policy as for transplants applies to larger trees ('whips' and semi-standards) as shown in Figure 12 though the prices appear better behaved but this is partially because fewer nurseries offer trees at these sizes. Such stock will be either field grown and undercut to cause the roots to form fibrous root-balls to keep them in a form suitable for transplanting or grown, probably outdoors in large containers. In either case the main cost is space in the nursery and time. Some unsold material in any nursery can end up these sizes but growing any quantity of them requires careful planning. Most trees of these sizes are used in conservation or amenity planting where price sensitivity is not as extreme as for forestry transplants. Trees of these heights in containers are also sold by garden centres where prices are referenced more by the size of the container as for other horticultural stock though there are price differentials for the age, form and species. Many traditional forestry-transplant nurseries do not produce material of these sizes which perhaps provides an opportunity for smaller scale growers? But it may also place you up against competition from the combined horticultural enterprise cum garden centres who may grow this sort of material themselves.

Figure 12 Prices by height for oak between 1 and 3.5 m height



5.2.2 Standards

Above 3.5 m height trees are no longer sold by height but rather by girth (circumference of the tree at the base of the stem). These are monster trees called standards which can be up to 12+ m in height, 100 cm girth (~30 cm diameter) at 1 m height and come in 100 litre capacity containers. They are delivered on a flatbed lorry, handled with a fork-lift and planted with a JCB. Such trees take a long time to grow, require specialist pruning and root management and represent a considerable investment.

Growing very large oaks for sale requires lots of space, patience and specialist pruning

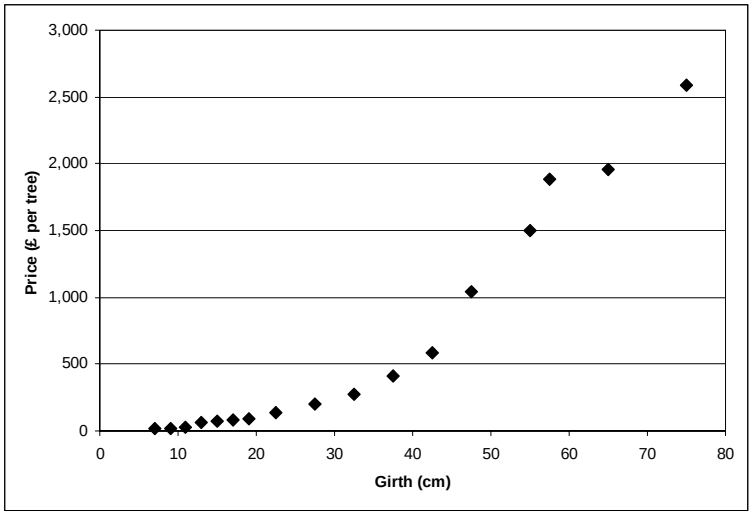
As well as heavy equipment to lift, transport and plant them

Pictures from StandardTrees.co.uk website Should we seek permission to use these?

Trees of these sizes have an immediate presence and are mainly used in the corporate landscaping sector. Customers are local authorities for urban planting (parks and avenues) and landscape contractors in the creation and development of instant woodland, golf courses, urban regeneration areas and other leisure amenities. Large sized trees are used in such schemes to give an instant visual impact and also to withstand vandalism.

Because of their size growing, handling, planting and aftercare of standard trees is a specialist occupation - arboriculture rather than forestry. The costs of such trees reflects their age and size and as shown in Figure 13 where the largest trees go for over £2,500 each. A survey of the stock lists of the main suppliers of standards in the UK shows that only a very small proportion of trees sold are grown in the UK – most are exotic species imported from specialist growers in Europe. There may therefore be scope to supply semi-standards (say up to 30 cm girth) of LP native species for use in high prestige landscaping schemes. If the Millennium Centre used Welsh slate and the Assembly building Welsh oak timbers then the surrounding area should be planted with Welsh LP trees.

Figure 13 Pricing of standards by girth



One of the main issues to acknowledge before entering into selling standards is the large amount of land needed to grow a stock of several thousand trees of these sizes. The land used to grow standards has an opportunity cost (i.e. could be more profitable if used for something else). Like depreciation this should be treated as a real cost in your business accounts as over long periods of time you may get a better economic return from small, annual returns, say from grazing than a lump sum off into the future. However, if you have land to spare and can continue to make some use of the land –say by running free range chickens or growing woodland perennials under the trees then the opportunity cost would probably be insignificant as you will be maximising return on the land.

In the context of Powys, accessibility is an important factor. Most of the nurseries are located in rural areas and as such need to develop strategies that acknowledge transport infrastructure as a key challenge. Transportation and haulage would need to be carefully examined, as many of these standards must be moved using a forklift trucks and hiabs and are transported using low loaders, which require good road access and space for manoeuvrability. Whilst it is accepted that some capital investment will be required to move and transport standard trees, equipment sharing should be considered as an alternative to reduce costs and improve co-operation between nursery enterprises. Businesses, which are located in East Powys however are fairly central to England and Wales and if collaborative alliance could be established with transport companies servicing the timber industry, this would offer backloading opportunities to further reduce costs.

The main difficulty of attempting to increase your income from the sale of larger trees is of course the time it takes to grow them! However, this does not mean that it should not be considered.

5.3. Woodland perennials

The general market for plants and horticultural goods is large, with annual sales of £3.2bn in 2004/05, a 14.5% increase on 2000 (Source; Mintel, June 2006). However, only a minute fraction of this market comprises native species and LP is almost unknown outside a few specialist growers. Nevertheless, there is growing interest in native woodland perennials (see Table 10) for markets ranging from conservation projects, industrial land reclamation, private gardens and as gifts.

Woodland perennials are often sold as bulbs or corms of species such as bluebell, wood anemone, Tenby daffodil, fritillary and ramsons or as plants in pots of 1-4 L capacity. Typically, nurseries selling such material sell out quickly and some even advise pre-ordering of larger quantities. This suggests that there is scope for more suppliers of such plants. Growing and supplying woodland perennials complements the sale of LP trees especially if they can be packaged together as a woodland-in-a-box perhaps even tailored to create specific woodland types.

This opportunity has already been exploited by several nurseries and it is becoming increasingly common for wildflower seed, perennial plants and trees to be offered by one grower. This is behind much of the horticultural diversification given in Table 8.

Most suppliers appear to have at least a web site and many do internet sales (on the basis that all the known growers in Wales have a website). There are two main types of native perennial suppliers:

- those that are mainly horticultural enterprises that carry a small selection of wildflowers;
- those that specialise in providing planting material for conservation schemes who are much more focussed on local provenance, some may also offer consultancy and site works.

The latter is perhaps most appropriate for the Powys tree nurseries as they are probably unlikely to wish to grow to the scale of the former and this is a fairly competitive market.

Locations of existing suppliers: Carmarthen, Norfolk, Worcestershire, Lincolnshire, Nottinghamshire, Gwynedd, Cumbria, Dorset, Scottish Borders. Note that the wild flower nursery in Carmarthen has grown considerably in scale and range of species since 2002. There is no current grower of native perennials in mid Wales (Powys or Ceredigion).

Table 10 Prices for selected woodland wildflower bulbs

Species	Price (£)	Suppliers
Bluebell	5.99 per 20 160.00 per 1000	http://www.tgswildflowers.co.uk
Wood anemone		
Snake's head fritillary		
Bluebell	16.45 per 100	http://shop.gee-tee.co.uk/Bulbs-in-the-Green.htm
Snake's head fritillary	25.85 per 100	
Wood anemone	19.97 per 100	
Bluebell	16.45 per 100	http://www.eurobulbs.co.uk/
Bluebell	15.50 per 100	http://www.bluebellbulbs.co.uk/
Tenby daffodil	12.50 per 100	
Ramsons	12.50 per 100	
Pignut	8.50 per 10	
Wood sorrel	8.50 per 20	
Great woodrush	7.50 per 5	
Bluebell	20.00 per 100	http://www.naturescape.co.uk/
Celandine	15.00 per 100	
Cuckoo pint	17.00 per 10	
Ramsons	30.00 per 50	
Bluebell	29.00 per 100	http://www.wildlifeservices.co.uk/
Bluebell	14.00 per 50	http://www.scottswildflowers.co.uk/
Bluebell	2.45 per 10	http://www.reallywildflowers.co.uk/

5.3.1 Ferns

Similar to wildflowers and several of the growers mentioned above also supply ferns. However, ferns are a specialist product in their own right e.g. Rickard's Ferns in Gwynedd (http://www.rickardsferns.co.uk/). There are apparently no fern nurseries in Powys but the growing conditions are not as favourable as further west in Gwynedd so this may be a limitation. Prices appear good and are set according to pot size as is the norm in the garden plant trade. Ferns are becoming more fashionable and are have been featured in recent TV garden programmes. There is also a market for ferns for conservation planting e.g. site rehabilitation.

Prices for native species (Male fern, Hart's tongue etc) range from £2.50 – £4.00 each and are often grown and sold by plant nurseries specialising in plants for conservation projects. Whether there is demand in Powys or Wales for material of this type would have to be the subject of some specific market research. It may also be that existing English suppliers are already meeting demand in Powys which would bring you into competition with them which may just make life harder for you and them and it would be best to identify a gap in the market to exploit.

5.4. Sale of LP seed

There are markets for LP trees and wildflower seed. Is this something that might provide an income diversification opportunity for a tree nursery owner who already collects seed?

5.4.1 Trees

All flowering plants start out as a seed and so the first link in the supply of LP is the sourcing of 'local' seed. Many nurseries collect their own seed from the local area by arrangement with woodland owners and swap or sell seed between themselves. At the same time there are large commercial seed houses who specialise in the collection of a wide range of provenances both UK and non-UK for wholesale to plant growers. However, it is not always possible to get hold of seed of particular species, all provenances or in non-mast years for species like oak. Is there then a potential market for collected tree seed which is surplus to requirements or collected specifically for sale? As shown in Table 11 there is a price differential between local and non-GB seed (figures from Forestart catalogue) which suggests that it may be profitable to sell LP seed. However, there are some considerable barriers to doing this. Perhaps the most relevant in Powys is the proximity to Forestart and Maelor both of whom employ seasonal collectors to harvest tree seed in the

locality. It may be that Powys is already well enough collected and there is a risk that there is no scope for further development.

Table 11 Price of prepared tree seed 2007

	Price per seed by source	
Species	Local	non-GB
Birch (Downy)	0.08 p Scotland 0.05 p England, Wales	None available
Hawthorn	0.41 p England, Scotland, Wales	0.25 p Italy 0.15 p Hungary
Oak (*Q. petraea*)	4.17 p UK403	None available
Oak (*Q. robur*)	3.33 p UK403	1.69 p Holland

Another barrier are the statutory obligations for registration of the collector and origin of seed of the 46 species covered by the Forest Reproductive Material Regulations (2002). If you wished to source identify species (including most shrubs) not covered by the Regulations you would still be expected to sign up to the Voluntary Scheme for the Certification of Native Trees and Shrubs. The registration itself is simply something which has to be done but the dearth of registered seed stands and access to them is more of a problem.

Rather than compete further with larger operators for access to seed sources, a more secure option may be to establish seed orchards for species which are difficult to source. Hazel is a case in point - it is in demand for hedge planting, as an occasional species in oak woodland plantings and also for establishment of hazel coppice for hurdles, walking sticks etc.. However, the seed does not always ripen and when it does it is highly predated by grey squirrels and seed supply is a problem. There are a couple of ways this constraint could be an income opportunity:

(a) by establishment of a provenance seed orchard (a collection of trees from a range of locations) – this would need to be protected from squirrels and other predators, fertilisation may also help to increase seed production,

(b) by supplying plants raised from tissue culture of mother plants from known provenances – this not so difficult to do and there are a range of technologies that could be used from traditional cuttings to cell culture. It would require some experience and investment in appropriate equipment.

Another possibility might be to borrow a leaf from the fruit tree retailers and trade on the sense of place that can be associated with a 'remarkable' tree or the uniqueness of a rare variety (the tree equivalent of the Bardsey apple). A successful hunt for such a tree, it's multiplication and careful marketing could generate substantial rewards.

Finally the gift tree retailers are increasingly offering personalised services – might it be possible to extend this to a personalised tree propagation service? People often associate trees with particular places – the tree in the garden of the house you grew up in, a tree from your home village, the graveyard of your ancestors etc.. Some may like to have a scion of such a tree but do not have the necessary skills to do this. It is possible that a few people would be prepared to pay for young trees taken from such trees perhaps as gifts or to take away when they move.

5.4.2 Wildflower seed

Supply of wildflower seed, again for conservation projects is a small growth area. The retail of wildflower seed for use in private gardens was initially promoted as a niche market by plant conservation NGOs such as Landlife (http://www.wildflower.org.uk/). This was then taken up by the large seed houses and wildflower seeds are now easily available. Much of the available wildflower seed is grown in large commercial nurseries with little concern for fine scale differences in provenance. Plantlife (http://www.plantlife.org.uk/) the largest UK plant NGO is apparently not

overly concerned with provenance at least for commoner wildflowers. However, Flora Locale (http://www.floralocale.org/) is more concerned with local sourcing and has developed a Code of practice for sourcing wildflower seed. There are a small number of nurseries who apply this Code and specialise in provision of local seed e.g. http://www.tgswildflowers.co.uk/index.htm, Chiltern seeds, http://www.scotiaseeds.co.uk/ etc.. It may be possible to grow or collect (from meadows or verges) LP wildflower seed for sale though you would need to do some careful research to determine which species are in demand and whether the market for them would be interested in LP. You may also find that you may come into competition with local conservation NGOs (at least one has a license to harvest wildflowers from roadside verges in South Wales).

Typical prices for a Wildflower meadow seed mix are £7.15 - £9.49 per 100 gms and £50.99 - £64.49 per kilo.

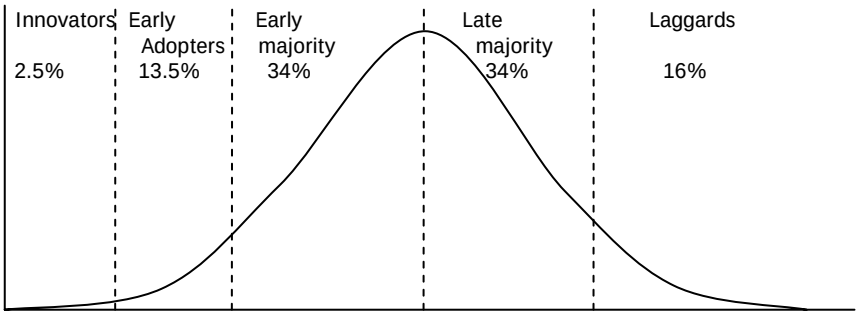
Western Seeds (http://www.westernseeds.com/index.php3) based on Pembroke also specialise in supply of organic seed and local provenances of grass seed and have a small line of be-spoke wild flora. Western Seeds buy in from contract growers and so it may be possible to grow seeds for wholesale to a seed merchant rather than attempting direct sales.

Growing of wildflower seed would require additional land that would need to be treated to make it suitable for wildflowers – or agricultural land this usually this means scraping off the topsoil to reduce fertility and control 'weeds' the wild plants you don't want. You can also collect wildflowers from ancient meadows. Both Landlife and Flora Locale produce advisory leaflets on cultivation and harvesting techniques.

5.5. Understanding innovation

A key issue in business development is innovation – put simply the generation of new ideas. The innovation could be a new way of marketing something traditional or an entirely original invention. Successful innovations are ones that attract a market, sell well, increase your standing as a business and make you a profit. However, once an idea is out there in the public domain you cannot hang onto it and other people will start to copy you. The more adventurous of the followers are termed early adopters and they are followed by the bulk of the population with a few laggards who will resist ideas until they are no longer new – the theoretical pattern of adoption of an innovation is given in Figure 14.

Figure 14 Innovation adoption curve



The market for an innovation is finite so as more and more adopters start to compete for a share of the market prices start to fall and margins become squeezed (called *market saturation*) until the point that it is no longer possible to support all the sellers. Some then leave the market and only a few of the more aggressive or tenacious suppliers are left ruling over a hopefully, stable mature market. Each innovation therefore has a limited period of time when margins are high and competition is low and the conventional business advice is to continually innovate to keep the business dynamic and profitable.

What does all this mean for an LP tree nursery? Certainly if you want to maximise the potential of any diversification what you choose to do would ideally be innovative you should also not rest on your laurels but keep looking for new ideas and trying them out. However, selling trees isn't really like developing a new flavour of ice-cream and traditionally things move rather sedately. However, having attracted the interest of the eco-gift market which is highly dynamic, things are speeding up somewhat (the market leaders are adding new lines to their web site at the rate of one or two per month). If nurseries want a piece of this action they will also have to move quickly with the knowledge that at some stage the market will become saturated. Given the rate at which things are happening in this market any new entrants now would still be classified as early adopters but this won't last much longer.

If you wish to operate ethically then you should consider who else is in the market place and whether you want to compete with them and capture a part of their profits. Market saturation for some products can be reached very quickly and the current suppliers may be NGOs or someone who has worked very hard for their position – do you really want to push them out? Might it be better to do something a bit different?

If it is you who have found the goose that lays golden eggs then be aware there will be people who will be attracted to do the same thing. You can go some way to protecting your market position (as the leader) by developing an eye-catching brand and relentlessly associate the brand with your product to develop a link between the two in your customers minds. Think of Hoover which was the company who invented vacuum cleaners who ended up lending their name to all vacuum cleaners.

Appendices: Completed worksheets

These worksheets contain estimates of costs and prices for setting up a tree nursery to create four scenarios:

1. Field production – Wholesale of trees
2. Cell production – Wholesale of trees
3. Cell-Field production – Wholesale of trees
4. Cell production – Wholesale and retail of trees using internet sales

These are provided for illustrative purposes only – a projection for a real site is likely to be quite different to these figures even for the same scenario as you will probably already have at least some of the equipment you need to hand.

The assumptions used in these scenarios are:

- At start the nursery site is a bare field so everything has to be purchased (so costs include polytunnel etc.)
- Everything is to be done as cheaply as possible so equipment is all second hand
- Mechanisation is kept to a minimum (so everything done by hand)
- Rainwater is harvested and supplemented with a metered mains supply
- Labour is not a constraint
- Office will be at home
- Computer and internet will be provided
- Production will start at 20 k per year in year 1, 50 k in year 2 and stabilise at 70 k
- Variable costs are scaled in line with increasing production
- That each scenario produces only one type of product; field and cell-field both producing bare-rooted stock and cell trees as plugs
- Cells are re-cycled
- Compost and soil conditioner can be home-made
- Cell grown stock is faster growing and more expensive than field grown
- Stock will be 50% hawthorn, 30% oak and 20% birch
- Seed volumes sown will account for all losses up to grading for sale
- All stock will be sold
- All cash inputs on start-up take the form of equity so there are no grants, loan repayments or interest
- Salaries will not be taken until the nursery is in profit over production costs and overheads

Costings and prices between scenarios are held constant wherever possible (so office expenses the same for each) so the differences between them are a direct reflection of the production system used and the type of stock produced.

Worksheet 1a: Costs for field-grown production - 2007

Heading	Item	Minimum input illustration	Year 1	Year 2	Year 3	Year 4	Year 5
Production	Seedlings produced	Target production level	40,000	50,000	70,000	70,000	70,000
Land	Purchase	Already own suitable piece of land					
	Rental	Not applicable					
Nursery premises	Fencing	Upgrading of existing fencing against sheep.	150				
	Beds	Fine mesh cloche for seed bed	100				
		Construction of lining out beds (recycled timber etc.)	400				
	Mulch	Bought in bark chip for paths. Assume renewal every year	100	60	60	60	60
Vehicles	Van OR Car + trailer	Second-hand van used 25% of the time.	1,000				
		MOT, tax & repairs increasing as van ages	100	100	100	150	200
		Fuel and oil (inflated at 10%) Assume 2500 miles	372	408	444	492	540
Plant and machinery	Private water supply	Rainwater butts (1* 1520 l Rototanks+ fittings & delivery)	200				
	Pumps	Do without					
	Piping	Piping to strategic standpipes - not a full irrigation system.	350				
	Fridge / Cold store	Large second hand fridge (estimated as 50% of new cost)	200				
	Industrial mixer	Second hand cement mixer	80				
	Rotovator	Second hand 5 horsepower rotovator	400				
	Quad bike	Do without					
	Tractor	Do without					
	Wheelbarrows & carts	Basic wheelbarrow, replace in year 5	60				100
	Knapsack sprayer	Do without					
	Repairs	10% of purchase price per year as an average.		129	129	129	129
Tools	Handtools	Basic tools: trowels, spade, hoe and rake	60				100
	Other	Basic quality buckets, watering cans etc.	30		30		30
Production costs	Hire / Contractor	Do without					
	Power	Fuel and oil for rotovator (inflated at 10%)	40	44	48	54	58
		Electricity assumed to be insignificant					
	Oak seed 0.3 x production + 22% for losses	Seed collection 3 out of 5 years	210	240	330	330	330
		Buy in poor years 2 out of 5 years (average out at 40% per year)	256	320	448	448	448
	Hawthorn seed 0.5 x production + 85% for losses	Seed collection	210	240	330	330	330
		Buy in half because it is difficult to scarify and to cover poor years	256	320	448	448	448
	Birch seed 0.2 x production + 70% for losses	Buy in seed	12	15	21	21	21
	Soil conditioner	Lime, top dressing of compost etc - buy in soil conditioner for now	100	50	50	50	50
	Slow-release fertiliser	Buy in some fertiliser	60	75	105	105	105
	Foliar feed	Buy in some foliar feed (liquid)	10	12	17	17	17
	Pesticides	Average costs from survey (£10 per 10 k trees)	40	50	70	70	70
	Water	Metered water to supplement rototank - 20 m³ in Yr 1, increasing in proportion to number of seedlings @ £1 per m³ + 6% inflation	20	27	42	44	47
Sub-totals		Capital costs	2,290				100
		Overheads	1,312	697	763	831	1,059
		Costs of production	1,214	1,393	1,909	1,918	1,924
Total nursery costs			4,816	2,090	2,672	2,749	3,083

Worksheet 1b: Costs for cell-grown production – 2007

Heading	Item	Notes	Costs				
			Year 1	Year 2	Year 3	Year 4	Year 5
Production	Seedlings produced	Target production level	40,000	50,000	70,000	70,000	70,000
Land	Land	Already own suitable piece of land					
	Rental	Not applicable					
Nursery premises	Polytunnels	Two 16' x 72' basic plastic covered polytunnels. Plastic renewed at Yr 5	2,200				400
	Staging	Home made from re-cycled materials	600				
	Seed trays	30 boxes at £5 per box (£3 to buy + pest control (mesh cover) at £2). Renewals in Yr 5	150				100
	Fencing	Upgrade existing fence against sheep.	70				
	Outdoor stock holding area	Screening and rabbit/mice-proof fencing for hardening off area	100				
	Mulch	Weed suppressant fabric	70				70
		Bought in bark chip for outdoor areas. Assume renewal every year	30	30	30	30	30
Vehicles	Van OR Car + trailer	Second-hand van used 25% of the time.	1,000				
		MOT, tax & repairs increasing as van ages	100	100	100	150	200
		Fuel and oil (inflated at 10%) Assume 2500 miles	372	408	444	492	540
Plant and machinery	Private water supply	Rainwater butts (4* 1520 litre Rototank + fittings & delivery)	800				
	Pumps	Do without					
	Piping	Good quality irrigation piping for polytunnel including maintenance	600				
	Fridge / Cold store	Large second hand fridge (estimated as 50% of new cost)	200				
	Industrial mixer	Second hand concrete mixer	80				
	Wheelbarrows & carts	Basic wheelbarrow (probably need replacing after 5 years)	60				100
	Knapsack sprayer	Do without					
	Repairs	Assume 10% of purchase price per year		174	174	174	174
Tools	Handtools	Basic tools: trowels, sieves, shovels etc	60				100
	Other	Basic quality watering cans, buckets etc	30		30		30
Production costs	Hire / Contractors fees	Do without					
	Power	Fuel and oil for rotovator (inflated at 10%)	40	44	48	53	59
		Electricity assumed to be insignificant					
	Oak seed 0.3 x target + 22% for losses	Seed collection 3 out of 5 years	210	240	330	330	330
		Buy in poor years 2 out of 5 years (average out at 40% per year)	256	320	448	448	448
	Hawthorn seed 0.5 x target + 85% for losses	Seed collection	210	240	330	330	330
		Buy in half because it is difficult to scarify and to cover poor years	256	320	448	448	448
	Birch seed 0.2 x target + 70% for losses	Buy in seed	12	15	21	21	21
	Root-trainers	Re-useable 175cc root trainers. Estimated at £63 per 1000 and average 20% replacement assuming cell lasts 5 years.	2,520	1,134	1,890	882	882
	Compost	High quality compost required to fill 175cc root-trainers (litres)	7,000	8,750	12,250	12,250	12,250
		Cost @ £15 per 100 litres	1,050	1,313	1,838	1,838	1,838
	Foliar feed	Fortnightly feeds of Phosphogen or similar	20	25	35	35	35
	Pesticides	Average costs from survey (£10 per 10 k trees)	40	50	70	70	70
	Water	Metered water to supplement rotoranks - 200 m^3 in year 1, increasing in proportion to number of seedlings @ £1 per m^3 + 6% inflation	200	247	298	316	335
Sub-totals		Capital costs	5,540				500
		Overheads	982	712	778	846	1,244
		Costs of production	4,814	3,948	5,757	4,771	4,795
Total nursery costs			11,336	4,660	6,535	5,617	6,539

Worksheet 1c: Costs for cell-field production – 2007

Heading	Item	Notes	Costs				
			Year 1	Year 2	Year 3	Year 4	Year 5
Production	Seedlings	Target production figures	40,000	50,000	70,000	70,000	70,000
Land	Land	Already own suitable piece of land					
	Rental	Not applicable					
Nursery premises	Polytunnel	18' * 78' basic plastic covered polytunnel. Plastic renewed at Yr 3	1,320				220
	Staging	Home made from re-cycled materials	200				
	Seed trays	30 boxes at £5 per box (£3 to buy + pest control (mesh cover) at £2)	150				100
	Fencing	Upgrade existing fencing against sheep	150				
	Beds	Construction / preparation of beds (drains, timber, wind break etc.)	400				
	Mulch	Weed suppressant fabric	70				70
		Bought in bark chip for paths. Assume renewal every year	60	60	60	60	60
Vehicles	Van OR Car + trailer	Second-hand van used 25% of the time.	1,000				
		MOT, tax & repairs increasing as van ages	100	100	100	150	200
		Fuel and oil (inflated at 10%) 2500 miles	372	408	444	492	540
Plant and machinery	Private water supply	Rainwater butts (2* 1520 lire Roto tank + fittings & delivery)	400				
	Pumps	Do without					
	Piping	Piping to strategic standpipes	350				
	Fridge / Cold store	Large second hand fridge (50% of new cost)	200				
	Industrial mixer	Second hand cement mixer	80				
	Rotovator	Second hand 5 horsepower rotovator	400				
	Quad bike	Do without					
	Tractor	Do without					
	Wheelbarrows & carts	Basic wheelbarrow	60				100
	Knapsack sprayer	Do without					
	Repairs	Assume 10% of purchase price per year		149	149	149	149
Tools	Handtools	Basic tools: trowels, spade, hoe and rake	60				100
	Other	Basic quality watering cans, buckets etc	30		30		30
Production costs	Hire / Contractors	Do without					
	Power	Fuel and oil for rotovator (inflated at 10%)	40	44	48	53	59
		Electricity assumed to be insignificant					
	Oak seed 0.3 x target + 22% for losses	Seed collection 3 out of 5 years	210	240	330	330	330
		Buy in poor years 2 out of 5 years (average out at 40% per year)	256	320	448	448	448
	Hawthorn seed 0.5 x target + 85% for losses	Seed collection	210	240	330	330	330
		Buy in half because it is difficult to scarify and to cover poor years	256	320	448	448	448
	Birch seed 0.2 x target + 70% for losses	Buy in seed	12	15	21	21	21
	Root-trainers	115cc cells. Estimated at £56 per 1000 with 20% annual replacement.	2,240	1,008	1,680	336	336
	Compost	Compost to fill 115 cc root-trainers (litres)	4,600	5,750	8,050	8,050	8,050
		Cost @ £11 per 100 litres	506	633	886	886	886
	Soil conditioner	Lime, top dressing of compost etc	100	50	50	50	50
	Slow-release fertiliser	Buy in some fertiliser	60	75	105	105	105
	Foliar feed	Buy in some foliar feed (liquid)	10	12	17	17	17
	Pesticides	Average costs from survey (£10 per 10 k trees)	40	50	70	70	70
	Water	Metered water to supplement rototank - 40 m³ in year 1, increasing in proportion to number of seedlings @ £1 per m³ + 6% inflation	40	56	83	88	94
Sub-totals		Capital costs	3,610				320
		Overheads	1,792	717	783	851	1,249
		Costs of production	3,980	3,063	4,517	3,183	3,194
Total cost of nursery			9,382	3,780	5,300	4,034	4,763

Worksheet 2: Office and administrative costs – 2007

Heading	Item	Notes	Costs				
			Year 1	Year 2	Year 3	Year 4	Year 5
Heading	**Item**						
Buildings	Purchase	Already own suitable outbuilding					
	Fittings						
	Furniture	Office furniture	100				
Equipment	Computer	Entry-level desk computer. Useful for doing accounts and correspondence and for accessing internet. Replace in Yr 5	400				600
	Printer	Colour printer	200				
	Telephone	Already connected					
	Broadband	Basic new connection	50				
Insurance	Vehicles	25% of normal fully comprehensive car insurance	75	75	75	75	75
	Buildings & contents	Small business insurance	300	300	300	300	300
	Public liability						
Office premises	Electricity	10% of average home bill	30	30	30	30	30
	Heating	Gas + bought in firewood 5% of home use	30	30	30	30	30
	Telephone	Land-line @ 30% of average home bill	84	84	84	84	84
		Mobile phone @ £10 per month (half of monthly contract)	120	120	120	120	120
	Internet	Basic level connection @ £18 per month	216	216	216	216	216
	Stationary	Paper, envelopes etc.	18	18	20	20	20
	Printer supplies	Ink/toner cartridges	50	50	50	50	50
	Postage	Posting brochures, quotes, invoices, orders etc.	18	36	36	48	48
	Business stationary	Basic quality, business card	75				
Marketing	Printed price list	Photocopy ~50 x 2 sides @ 10 p per side and increase pro rata		10	12	17	17
	Advisory leaflets	Try out Yr 1, print quantity in Yr 2		5	100		
	Show visits	3 shows @ £50 for a stand + £100 for leaflets, display materials etc	200	250	250	250	250
	Web-site design	Not needed					
	Web site hosting	Not needed					
Internet sales	Secure web pages	Not needed					
Merchant services (card payments)	Set up	Not needed					
	Annual cost	Not needed					
	Monthly charge	Not needed					
	PSP	Not needed					
	Transaction charges	Not needed					
	Bond	Not needed					
Other financial costs	Accountancy	Not done professionally					
	Cost of finance	Assume no loan on start-up					
	Bank charges	Free					
	Overdraft fees	Not needed					
Sub-totals		Capital costs	1,450	0	0	0	600
		Overheads	1,216	1,224	1,323	1,240	1,240
Total office and business administration costs			2,666	1,224	1,323	1,240	1,840

Worksheet 3: Wholesale income – Field grown - 2007

Species	Size class (cm)	Price £	Proportions in size class		Year 2		Year 3		Year 4		Year 5	
					T1 40,000 T2 50,000		T3 70,000		T4 70,000		T5 70,000	
			1 yr old	2 yr old	Trees	Value (£)	Trees	Value (£)	Trees	Value (£)	Trees	Value (£)
		P	F2	F3	N2		N3		N4		N5	
Oak	15-20											
F1 0.3	20-40	0.40	0.25	0.14	3,000	1,200	5,430	2,172	7,350	2,940	8,190	3,276
	40-60	0.48	0.25	0.18	3,000	1,440	5,910	2,837	7,950	3,816	9,030	4,334
	60-90	0.56		0.12			1,440	806	1,800	1,008	2,520	1,411
	90-120	0.96		0.06			720	691	900	864	1,260	1,210
	Total		0.5	0.5	6,000	2,640	13,500	6,506	18,000	8,628	21,000	10,231
Hawthorn	15-20	0.20	0.10		2,000	400	2,500	500	3,500	700	3,500	700
F1 0.5	20-40	0.33	0.18	0.09	3,600	1,188	6,300	2,079	8,550	2,822	9,450	3,119
	40-60	0.34	0.18	0.19	3,600	1,224	8,300	2,822	11,050	3,757	12,950	4,403
	60-90	0.43	0.04	0.16	800	344	4,200	1,806	5,400	2,322	7,000	3,010
	90-120	0.44		0.06			1,200	528	1,500	660	2,100	924
	Total		0.5	0.5	10,000	3,156	22,500	7,735	30,000	10,261	35,000	12,156
Birch	15-20	0.18	0.16		1,280	230	1,600	288	2,240	403	2,240	403
F1 0.2	20-40	0.33	0.19	0.09	1,520	502	2,620	865	3,560	1,175	3,920	1,294
	40-60	0.35	0.15	0.16	1,200	420	2,780	973	3,700	1,295	4,340	1,519
	60-90	0.46		0.19			1,520	699	1,900	874	2,660	1,224
	90-120	0.89		0.06			480	427	600	534	840	748
	Total		0.5	0.5	4,000	1,152	9,000	3,252	12,000	4,281	14,000	5,187
Sales	Sum green cells				20,000		45,000		60,000		70,000	
Whole sale income	Sum beige cells					6,948		17,493		23,170		27,574

Worksheet 3: Wholesale income – Cell grown - 2007

Species	Size class (cm)	Price £	Proportions in size class		Year 2		Year 3		Year 4		Year 5	
					T1 40,000 T2 50,000		T3 70,000		T4 70,000		T5 70,000	
			1 yr old	2 yr old	Trees	Value (£)	Trees	Value (£)	Trees	Value (£)	Trees	Value (£)
		P	F2	F3	N2		N3		N4		N5	
Oak	15-20											
F1 0.3	20-40	0.43	0.25	0.14	4,800	2,064	7,200	3,096	9,900	4,257	10,500	4,515
	40-60	0.46	0.25	0.18	4,800	2,208	7,200	3,312	9,900	4,554	10,500	4,830
	60-90											
	90-120											
	Total		0.80	0.20	9,600	4,272	14,400	6,408	19,800	8,811	21,000	9,345
Hawthorn	15-20	0.20	0.16		3,200	640	4,000	800	5,600	1,120	5,600	1,120
F1 0.5	20-40	0.40	0.29	0.03	5,800	2,552	7,850	3,454	10,900	4,796	11,200	4,928
	40-60	0.45	0.27	0.10	5,400	2,430	8,750	3,938	11,950	5,378	12,950	5,828
	60-90	0.41	0.08	0.07	1,600	2,430	8,750	3,938	11,950	5,378	12,950	5,828
	90-120											
	Total		0.80	0.20	16,000	6,278	24,000	9,586	33,000	13,159	35,000	14,028
Birch	15-20	0.18	0.27		2,160	389	2,700	486	3,780	680	3,780	680
F1 0.2	20-40	0.41	0.31	0.05	2,480	1,017	3,500	1,435	4,840	1,984	5,040	2,066
	40-60	0.42	0.22	0.08	1,760	739	2,840	1,193	3,880	1,630	4,200	1,764
	60-90	0.41		0.07			560	230	700	287	980	402
	90-120											
	Total		0.80	0.20	6,400	2,145	9,600	3,343	13,200	4,581	14,000	4,913
Sales	Sum green cells				32,000		48,000		66,000		70,000	
Wholesale income	Sum beige cells					12,695		19,337		26,551		28,286

Worksheet 4a: Packing & delivery – Field, wholesale only – 2007

Heading	Item	Notes	COSTS				
			Year 1	Year 2	Year 3	Year 4	Year 5
Make up orders	Seedlings	Average cost from nursery survey.		63	63	63	63
Wholesale	Bags	Bags for packing seedlings. Ideal is black-lined plastic sacks but can also use recycled feedsacks etc..		20	42	55	55
	Cells	Not required					
	Wrapping	Not required					
	Local delivery	Free to customer - included in normal car usage					
	Non-local delivery	Recoup costs from customer (not included in accounts)					
Retail	Packaging	Not required					
	Postage	Not required					
	Transport	Not required					
Other costs of sales		Sum all numbers in purple cells		83	105	118	118

Worksheet 4b: Packing & delivery – Cell, wholesale + retail - 2007

Heading	Item	Notes	COSTS				
			Year 1	Year 2	Year 3	Year 4	Year 5
Make up orders	Seedlings	Average cost from nursery survey.		63	63	63	63
Wholesale	Bags	Bags for packing seedlings. Ideal is black-lined plastic sacks but can also use recycled feedsacks etc..		20	42	55	55
	Cells	Sell as plugs					
	Wrapping	Cling film 40 cm x 300 m		9	9	9	9
	Local delivery	Free to customer - included in normal car usage					
	Non-local delivery	Recoup costs from customer (not included in accounts)					
Retail	Number of trees sold singly			250	300	430	430
	Packaging	Black cling film - 1 roll 50 cm x 20 m @ £13		31	13	26	26
		Tube packing - corrugated recycled paper 50 cm x 75 m rolls @ £20		35	42	60	60
		Cardboard tube 4 packs of 50 x 56 cm long x 5 cm diameter @ £38		190	228	266	266
	Postage	Assume all trees posted singly First class @ £1.84		460	552	791	791
		Posting labels 2 per A4 sheet 100 in box @ £20		20	40	40	40
	Transport	Assume Post Office within a few miles so part of normal car usage					
Other costs of sales		Sum all numbers in purple cells		828	989	1,310	1,310

Worksheet 5a: Financial appraisal – Field, wholesale – 2007

Item	Notes	Year 1	Year 2	Year 3	Year 4	Year 5
Income						
Wholesale	Income from sales of trees sold by the 100	-	6,948	17,493	23,170	27,574
Retail	No retail income	-				
Other	No other income	-				
Total		-	6,948	17,493	23,170	27,574
Direct costs	Costs that are linked to the volume of production					
Production	Inputs e.g. soil conditioner	1,214	1,393	1,909	1,917	1,924
Labour	Minimum wage for estimated 93 days per year- no on-cost because on self-employed basis	5,300	5,300	5,300	5,300	5,300
Total		6,514	6,693	7,209	7,217	7,224
Production profit	Profit on materials used to grow trees. This has to support the overheads, remunerations etc..	-6,514	255	10,284	15,952	20,350
	Profit expressed as a % of income	-	4%	59%	69%	74%
Other cost of sales	Variable cost of sales					
Packaging	Materials e.g. bags	-	83	105	118	118
Staff time	Minimum wage for estimated 10 days		400	400	400	400
Total			483	505	518	518
Gross profit	Profit after accounting for variable cost of sales	-6,514	-228	9,779	15,434	19,832
Overheads	Costs to support business infrastructure					
Nursery	Costs of running and maintaining nursery infrastructure	1,312	697	763	831	1,059
Office & business administration	Costs of running and maintaining office and essential business expenses	1,216	1,224	1,323	1,240	1,240
Staff time	Minimum wage for estimated staff time of 18 days	750	750	750	750	750
Depreciation	Ignored to simplify calculations	-	-	-	-	-
Total		3,278	2,671	2,836	2,821	3,049
Interest	Ignored to simplify calculations	-	-	-	-	-
Profit before remuneration		-9,792	-2,899	6,943	12,613	16,783
Remuneration	Assume no income over minimum wage taken out					
Profit after remuneration	Money available for investment, to hire labour etc. from Year 3	-9,792	-2,899	6,943	12,613	16,783
Cash outlay on capital items						
Land & buildings	Would be difficult to justify buying land solely for nursery so assume already available	0	0	0	0	0
Depreciable assets	Items which depreciate in value such as a car or computer which count as assets of the business but are worth less each year so depreciation is counted as a loss in value of the business.	3,740	0	0	0	700
Total		3,740	0	0	0	700
Cash inputs						
Grants	Enter any grants you may be able to obtain					
Equity Year 1	Cash required to pay Year 1 bills (not counting salaries)	7,482	-	-	-	-
Equity Year 2	Maximum required to meet bills incurred in Year 2 before income starts to come in	-	1,921	-	-	-
Breakeven						
Sales volume		-	20,000	45,000	60,000	70,000
Breakeven price per tree	All costs divided by production		0.47	0.23	0.17	0.15
Salary	155 days ~ 0.7 FTE	-	3,551	6,450	6,450	6,450

Worksheet 5b: Financial appraisal – Cell, wholesale – 2007

Item	Notes	Year 1	Year 2	Year 3	Year 4	Year 5
Income						
Wholesale	Income from sales of trees sold by the 100	-	12,695	19,337	26,551	28,286
Retail	No retail income	-				
Other	No other income	-				
Total		-	12,695	19,337	26,551	28,286
Direct costs	Costs that are linked to the volume of production					
Production	Inputs e.g. compost	4,814	3,948	5,757	4,771	4,795
Labour	Minimum wage for estimated 93 days per year- no on-cost because on self-employed basis	5,000	5,000	5,000	5,000	5,000
Total		9,814	8,948	10,757	9,771	9,795
Production profit	Profit on materials used to grow trees. This has to support the overheads, remunerations etc..	-9,814	3,746	8,580	16,780	18,490
	Profit expressed as a % of income	-	30%	44%	63%	65%
Other cost of sales	Variable cost of sales					
Packaging	Materials e.g. bags	-	83	105	118	118
Staff time	Minimum wage for estimated 10 days		400	400	400	400
Total			483	505	518	518
Gross profit	Profit after accounting for variable cost of sales	-9,814	3,263	8,075	16,262	17,972
Overheads	Costs to support business infrastructure					
Nursery	Costs of running and maintaining nursery infrastructure	982	712	778	846	1,244
Office & business administration	Costs of running and maintaining office and essential business expenses	1,216	1,224	1,323	1,240	1,240
Staff time	Minimum wage for estimated staff time of 18 days	750	750	750	750	750
Depreciation	Ignored to simplify calculations					
Total		2,948	2,686	2,851	2,836	3,234
Interest	Ignored to simplify calculations					
Profit before remuneration		-12,762	577	5,224	13,426	14,738
Remuneration	Assume no income over minimum wage taken out					
Profit after remuneration	Money available for investment, to hire labour etc. from Year 3	-12,762	577	5,224	13,426	14,738
Cash outlay on capital items						
Land & buildings	Would be difficult to justify buying land solely for nursery so assume already available	0	0	0	0	0
Depreciable assets	Items which depreciate in value such as a car or computer which count as assets of the business but are worth less each year so depreciation is counted as a loss in value of the business.	6,990	0	0	0	1,100
Total		6,990	0	0	0	1,100
Cash inputs						
Grants	No grants	-	-	-	-	-
Equity Year 1	Cash required to pay Year 1 bills (not counting salaries)	14,002	-	-	-	-
Equity Year 2	Maximum required to meet bills incurred in Year 2 before income starts to come in	-	1,936	-	-	-
Breakeven						
Sales volume		-	32,000	48,000	66,000	70,000
Average breakeven price (£ per tree)	All costs divided by production		0.37	0.29	0.19	0.19
Salary	121 days ~ 0.55 FTE	-	6,150	6,150	6,150	6,150

Worksheet 5c: Financial appraisal – Cell-Field, wholesale – 2007

Item	Notes	Year 1	Year 2	Year 3	Year 4	Year 5
Income						
Wholesale	Income from sales of trees sold by the 100	-	6,948	17,493	23,170	27,574
Retail	No retail income	-				
Other	No other income	-				
Total		-	6,948	17,493	23,170	27,574
Direct costs	Costs that are linked to volume of production					
Production	Inputs e.g. compost	3,980	3,063	4,517	3,183	3,194
Labour	Minimum wage for estimated 149 days per year- no on-cost because on self-employed basis (taken as remuneration)	7,300	7,300	7,300	7,300	7,300
Total		11,280	10,363	11,817	10,483	10,494
Production profit	Profit on materials used to grow trees. This has to support the overheads, remunerations etc..	-11,280	-3,415	5,676	12,687	17,080
	Profit expressed as a % of income	-	-49%	32%	55%	62%
Other cost of sales	Variable cost of sales					
Packaging	Materials e.g. bags	-	83	105	118	118
Sales staff time	Minimum wage for estimated 10 days	-	400	400	400	400
Total		-	483	505	518	518
Gross profit	Profit after accounting for variable cost of sales	11,280	-3,498	5,571	12,569	16,962
Overheads	Costs to support business infrastructure					
Nursery	Costs of running and maintaining nursery infrastructure	1,392	717	783	851	1,249
Office & business administration	Costs of running and maintaining office and essential business expenses	1,216	1,224	1,323	1,240	1,240
Staff time	Minimum wage for est. staff time of 18 days	750	750	750	750	750
Depreciation	Ignored to simplify calculations					
Total		3,358	2,691	2,856	2,841	3,239
Interest	Ignored to simplify calculations					
Profit before remuneration		-14,638	-6,189	2,715	9,728	13,723
Remuneration	Assume no income over min. wage taken out					
Profit after remuneration	Money available for investment, to hire labour etc. from Year 3	-14,638	-6,189	2,715	9,728	13,723
Cash outlay on capital items						
Land & buildings	Would be difficult to justify buying land solely for nursery so assume already available	0	0	0	0	0
Depreciable assets	Items which depreciate in value such as a car or computer which count as assets of the business but are worth less each year so depreciation is counted as a loss in value of the business.	5,060	0	0	0	920
Total		5,060	0	0	0	920
Cash inputs						
Grants	No grants					
Equity Year 1	Cash required to pay Yr. 1 bills (not including salaries)	11,648	-	-	-	-
Equity Year 2	Maximum required to meet bills incurred in Year 2 before income starts to come in	-	1,941	-	-	-
Breakeven						
Sales volume		-	20,000	45,000	60,000	70,000
Breakeven £ per tree	All costs divided by production	-	0.66	0.33	0.22	0.20
Salary	177 days ~ 0.80 FTE	-	2,261	8,450	8,450	8,450

Worksheet 5d: Financial appraisal – Cell, wholesale + retail – 2007

Item	Notes	Year 1	Year 2	Year 3	Year 4	Year 5
Income						
Wholesale		-	12,621	19,223	26,394	28,119
Retail		-	1,860	2,325	3,255	3,255
Other		-	720	816	1,236	1,236
Total		-	15,201	22,364	30,885	32,610
Direct costs	Costs that are linked to the volume of production					
Production	Inputs e.g. compost	4,814	3,948	5,757	4,771	4,795
Labour	Minimum wage for estimated 93 days per year - no on-cost because on self-employed basis	5,000	5,000	5,000	5,000	5,000
Total		9,814	8,948	10,757	9,771	9,795
Production profit	Profit on materials used to grow trees. This has to support the overheads, remunerations etc..	-9,814	6,253	11,607	21,114	22,815
	Profit expressed as a % of income	-	41%	52%	68%	70%
Other cost of sales	Variable cost of sales					
Packaging	Materials e.g. bags	-	812	930	1,360	1,372
Sales staff time	Minimum wage for estimated 25 days	-	1,035	1,035	1,035	1,035
Total			1,847	1,965	2,395	2,407
Gross profit	Profit after accounting for variable cost of sales	-9,814	4,406	9,642	18,719	20,408
Overheads	Costs to support business infrastructure					
Nursery	Costs of running and maintaining nursery infrastructure	982	712	778	846	1,244
Office & business administration	Costs of running and maintaining office and essential business expenses	1,216	1,324	1,423	1,340	1,440
Staff time	Minimum wage for est. staff time of 18 days	750	750	750	750	750
Depreciation	Ignored to simplify calculations					
Total		2,948	2,786	2,951	2,936	3,434
Interest	Ignored to simplify calculations					
Profit before remuneration		-12,762	1,620	6,691	15,783	16,974
Remuneration	Assume no income over min. wage taken out					
Profit after remuneration	Money available for investment, to hire labour etc. from Year 3	-12,762	1,620	6,691	15,783	16,974
Cash outlay on capital items						
Land & buildings	Would be difficult to justify buying land solely for nursery so assume already available	0	0	0	0	0
Depreciable assets	Items which depreciate in value such as a car or computer which count as assets of the business but are worth less each year so depreciation is counted as a loss in value of the business.	6,990	0	0	0	1,100
Total		6,990	0	0	0	1,100
Cash inputs						
Grants	No grants					
Equity Year 1	Cash required to pay Year 1 bills (not counting salaries)	14,002	-	-	-	-
Equity Year 2	Maximum required to meet bills incurred in Year 2 before income starts to come in	-	2,036	-	-	-
Breakeven						
Wholesale volumes		-	31,760	47,700	65,580	69,580
Retail volumes		-	240	300	420	420
Average breakeven price (£ per tree)	All costs divided by production		0.39	0.30	0.21	0.21
Salary	136 days ~ 0.62 FTE	-	6,785	6,785	6,785	6,785