ADAS

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FINISHING STORE LAMBS FROM ORGANIC HILL AND UPLAND FARMS

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1.0 Executive summary

1. The aim of this study was to assess the economics and constraints associated with home finishing lambs on a range of organic hill and upland farms in England and Wales, and to evaluate the potential for further finishing on registered farms in the lowlands.

2. The current state of the organic sheep sector is briefly reviewed. This identifies problems of scale, limited premia and unevenness of supply as limiting factors to more rapid development of the market and associated production systems.

3. To quantify the effect of organic management on financial performance, hill and upland farms were classified under four typical systems, depending on the degree of intensification.

4. Without a sizeable area of improved ground, to which fertiliser and other inputs could have been applied conventionally, flocks based on high hill or marginal hill systems were least affected by switching to organic management. Flock Gross Margin on the high hill were virtually unchanged, while flock Gross Margin on the marginal hill declined by approximately 7%.

5. On more intensive farms, typified by Welsh hill or upland farming systems, there is greater potential to finish lambs at higher stocking rates under conventional management, and the consequences of changing to organic management are greatly increased. Assuming a 10% premium for finished organic lambs, deviating from conventional practice to produce store lambs or finish lambs at higher production cost, reduced flock Gross Margin by approximately 12-15%. Without a premium, this deficit increased to 15-20%.

6. The Organic Aid Scheme can make good the likely income loss during the first two years after conversion, when the highest rates are payable. However, in the long-term organic flocks must compete solely on the basis of a premium paid for finished, and ideally, for store lambs.

7. Physical and financial constraints were identified as to why systems had not developed linking potential production of store lambs in the hills/uplands with finishing on organic farms in the lowlands. These were mainly scale and infrastructure, availability of suitable feeds and the likely level of return to the lowland farmer from a store lamb finishing enterprise. Potential sources of feed for finishing organic lambs were assessed. These included permanent pasture, short-term leys, catch crops, grazed set-aside land and conserved fodder.

8. Integration with existing organic systems of all types was estimated to have the potential to finish an extra 10-15,000 lambs per annum, equivalent to the number of lambs currently receiving an organic premium.

9. Further opportunities to expand finishing capacity on lowland farms were examined. Mixed organic farms are likely to have little or no capacity to finish bought in store lambs, except where overall stocking rates are constrained by insufficient ewe/suckler cow quota, or where catch crops are added to the rotation.

10. The addition of a store lamb enterprise to lowland systems was calculated to increase farm Gross Margin by 2-3%, depending on the type of farm (dairy, stockless arable, or mixed). This represented a marginal return on capital invested in a store lamb finishing enterprise of 9-24%.

11. The financial risks involved, the availability of suitable labour and fixed equipment, and reluctance to vary arable rotations, make store lamb finishing enterprises less attractive to the lowland farmer.

12. Beyond the capacity to increase the number of certified lambs currently offered by up to 50%, greater opportunities are only likely to develop, when there is a significant increase in land (particularly on arable farms) entering conversion.

2.0 Introduction

In the UK, the production of organic lamb is not widely practiced. Supplies are limited, while of the lambs produced, only 40% achieve an organic premium. The volume currently available, the seasonality and quality of supply are cited as major limitations to market expansion.

Ten million hectares of Great Britain (about 53% of total land under agriculture) lie within Less Favoured Areas (LFA). Hill and upland sheep are the predominant farming activities - approximately 60% of all breeding ewes in the UK qualify for Hill Livestock Compensatory Amount (HLCA) payments. Organic farming is one option to exploit the relatively more extensive production systems typical of these areas, provide an alternative to conventional production and expand the supply of organic lamb to the marketplace.

Within LFA areas, the type of farming system varies considerably, differing in scale, intensity and enterprise mix. Many hill and upland farms may have potential to produce store lambs to organic production standards, without radical alterations to their present management. However, hill and upland farms generally have very limited capacity to home finish lambs. Before presentation to the consumer as organic lambs, these animals must be brought to a finished condition on registered land, using appropriate rations and systems of finishing.

Under conventional management, a proportion of hill lambs may be home finished, but often only through greater intensification on the limited areas of better grazing - the 'inbye' land. A decision to home finish lambs on hill/upland farms would have significant implications for overall stocking rates, lamb performance, animal health and economics, a large part of which is mediated through various EC support arrangements for hill producers. If organic hill/upland flocks were to produce solely store lambs, without the facility for further finishing, this would be a major constraint to further development of organic lamb production nationally.

Lowland farms purchasing store lambs use a range of finishing systems, their choice depending on the resources available and on marketing strategy. Because of the system of production organic farms will have to consider a range of additional factors, although any increased use of green manures/catch crops could provide fertility benefits. In addition, the imposition of a planned store period would help to extend the marketing pattern, improve continuity of supply and aid the development of a sustained market for organic lambs.

The overall objective of this study, commissioned by ARP Division, was to assess the economics and constraints associated with home finishing lambs on a range of organic hill and upland farms in England and Wales, and to evaluate the potential for further finishing of lambs on registered farms in the lowlands.

3.0 Specific objectives

The objectives of this study were: -

1. To review sheep farming in the hills and uplands, particularly in relation to lamb finishing policy and its effect on economic performance.

2. To assess potential effects of organic management on physical, financial and veterinary aspects of hill sheep performance.

3. To compare the physical and financial performance of organic and conventional store lamb finishing enterprises.

4. To evaluate the physical and financial implications of finishing organic store lambs on lowland farms, and the potential to link upland and lowland organic systems.

4.0 The organic sheep sector

4.1 Overall size

In 1989, Murphy reported sales of organic lamb to be worth over £1m, which at £40 per head represents approximately 25000 lambs.

In 1993, a survey by British Organic Farmers of all UKROFS registered organic producers, resulted in a 22% response rate, but covered 12557 ha, or some 50% of the registered area. All classes of livestock were included. The returns indicated 16400 breeding ewes on these holdings. A total of 17888 lambs were sold, of which 2573 (14%) were traded as stores. It was estimated that a 25% increase in output could rapidly be obtained if all the sheep on these holdings were managed to full organic standards. This survey has recently been repeated, and more up to date data will be available shortly.

4.2 Geographical distribution

Regional returns from the 1993 survey are given in Table 1.

Table 1 Distribution of sheep on organic farms (BOF, 1993)

Region	No. lambs	% of total
South West	3475	20
South central	5072	28
South East	118	1
East	310	2
Central	3658	20
North	610	3
Wales	1705	10
Scotland	2930	16
N Ireland	10	-
Total	17888	100

Discounting upland farms in the South West and Peak District, only 1700 lambs were returned for the whole of Wales, 610 for the North of England and 2930 for the whole of Scotland. On these figures, it is doubtful if 1500 organic lambs are being produced under hill conditions. However, the overall rate of response does indicate some omissions.

4.3 Marketing pattern

From the same survey, an approximate breakdown of the number of lambs sold each month is given in Table 2.

Table 2 Seasonal lamb marketing pattern (BOF, 1993)

Month	No. lambs sold
May	900
June	1200
July	1900
August	2100
September	2400
October	2300
November	2200
December	1600
January	1500
February	1200
March	350
April	350

The report classed sales as Spring 9%, Summer 29%, Autumn 38% and Winter 24%. This illustrates the current problem with supplies during the early part of the year, particularly the March to May period.

4.4 Organic premia

The market appears to be able to support a premium of 7-15%, depending on the level of conventional price. The reported premium (BOF, 1993) averaged 10% for finished animals. Lambs sold as store realised only a 1.4% premium, although up to 10% is currently being paid where market outlets are secure.

In spring, a time when conventional prices are traditionally at their highest, there appears to be a reluctance to pay an additional organic premium. Lower organic premia early in the year does not encourage producers to even out supplies, given the additional costs of production and associated inconvenience.

4.5 Organic outlets

The survey also recorded current outlets for organic meat (Table 3), although these were not broken down by livestock type.

Table 3 Outlets for organic livestock (BOF, 1993)

Outlet	Share of market (%)
Farm shop	40
Mail order	2
Independent butcher	17
Wholesale	17
Co-op	4
Market	7
Other	3
Multiple	29

At 29% market share, the multiples account for a smaller proportion of organic sales than is the case for conventionally produced meat. Quality, volume and consistency of supply are cited as limiting factors.

4.6 Carcass quality

Supermarkets pay a premium for top quality conventional carcasses. To the organic producer, this premium for the best quality stock can be more attractive than the organic premium. There is some suggestion that the poorer quality organic lamb is being put onto the organic market. An increase in the number of organic hill lambs may depress further the average quality of lamb offered.

5.0 Lamb production in the hills and uplands

A common perception is that hill/upland farms are already managed close to the standards for organic production. While 'hill' farms are predominantly made up of rough grazings, 'upland' farms have a higher proportion of sown grassland, and there is wide variation in the proportion of these land resources (and level of inputs made) across the range of hill/upland farms.

The distinction between 'hill' and 'upland' farms is not simply a function of altitude. Other factors such as location, climate, topography and soil type, also have a major influence on the nature and intensity of farming activity. In order to quantify the effects of altering the management system, it is necessary to establish reference farming systems. For the purposes of this study, the effect of management change is considered for four broad categories of farm, representing a cross-section of hill and upland sheep farms.

5.1 Hill and Upland farming systems

High Hill

These represent the higher and most extensive hill sheep farms, often found in the more remote areas, and usually in colder and wetter environments. They contribute a relatively small proportion of the sheep output of the hill and uplands, but utilise a large proportion of the land resources. Economic viability depends more on scale (and EC support) than intensity. In geographical terms these farms would be typical of the higher Pennine hills.

The farming system is generally based on pure-bred flocks of Swaledale, or Scottish Blackface ewes, although breeds such as the Herdwick or Lonk may be locally important. These farms usually have very little inbye land, if any, and graze extensive areas of indigenous grazing. Typical stocking rates are in the order of 1 ewe/ha. Climatic and nutritional stresses restrict reproductive performance, and a rearing rate of 85-90 lambs per 100 ewes mated is typical of these flocks. Given the late lambing date (April/May), and the quality of summer grazing, finished lamb production is not possible even for a proportion of the lamb crop. Lambs are generally sold as stores after weaning in September.

Overall stocking rate is governed by winter stock carrying capacity, and the level of inputs is low. Ewes are allowed feed blocks (typically 8-10 kg over the winter period), particularly during late pregnancy. Strategic siting of feed blocks at various locations on the hill is also seen as an aid to improving grazing management, and the utilisation of available forage.

Hay is generally only fed in storm conditions or when the ground is covered with snow. A limited amount of hay is purchased to provide an allowance of approximately 20 kg per ewe.

Veterinary inputs will depend on the particular farm. The requirement for anthelmintic treatment will be much reduced compared to more intensive systems. The Gross Margin data given for conventionally managed flocks (see below), assume a level of core veterinary treatments typical of a high hill farm - for example, clostridial vaccination, blowfly/headfly control, limited anthelmintic use etc. The requirement for more specific treatments, for example, to correct for trace element deficiencies, or for fluke and tick control, will depend on individual farm circumstances.

These flocks are self replacing, with approximately 33% of the flock replaced annually by home bred females. The majority of ewes sold out of the flock, will have produced three crops of lambs, and may be classified as draft ewes. These draft ewes will have further breeding potential, and are purchased by other farms where climatic conditions are less severe.

Ewes are first bred at approximately 18 months of age. Given the severity of winter conditions, efforts are made to provide better management for these animals ('hoggs') over their first winter, when they are still growing significantly. This has led to the practice of agistment, or away wintering, where hoggs are sent to graze on lowland farms over the winter months. This enables lambs to maintain condition and increase in frame over the winter period, and reduces pressure on the hill at a time of year where herbage is scarce and particularly sensitive to over-grazing.

Marginal Hill

This occupies some of the better and more accessible hill land. Intensification has occurred on the better areas, but the proportion of improved land is no more than 10 % of the total area, and typically around 5%. This small area of improved ground typifies a 'Two Pasture Approach' to hill land management, and is critical to overall performance. ADAS Redesdale provides an example of such a system.

The production system is based on pure-bred, self replacing flocks, and the sale of draft ewes for further breeding at lower altitudes. Away wintering of hoggs is frequently practised. The improved land is used strategically for grazing ewes around lambing time, for conserving winter fodder, and to graze lambs after weaning. Weaning percentages are typically in the order of 110 lambs per 100 ewes mated.

While the majority of lambs may be sold as stores, a small proportion may be sold finished. Aftermath grazing is limited, and may finish less than 20% of surplus lambs (i.e. male lambs and females not kept for breeding) over a 6-8 week period in September/October.

Typical stocking rates may be in the order of 2.5 ewes/ha. Increased levels of productivity require a higher level of inputs compared to the more extensive hill farm. Fertiliser is applied to the improved land, with nitrogen applied to levels of approximately 60kg/ha, together with maintenance dressings of phosphate, potash and lime. Infrequent reseeding may also take place where cultivation allows.

Concentrates are fed to ewes, allowing for the higher lambing rate, and hay requirements may increase to around 35kg/ewe for the winter period. Veterinary inputs will be increased slightly compared to the higher hill farms, mainly due to a modest increase in anthelmintic use.

As with the higher hill, cattle are generally not an important feature of these farms.

Welsh Hill

This farming system is representative of many Welsh hill farms, approximately 60% of the land area having been improved, with 40% remaining as semi natural rough grazing. This facilitates further increases in stock carrying capacity and in the weight of lamb weaned per hectare.

Flocks are typically made up pure-bred Welsh Mountain ewes, but a proportion of the flock may be put to a crossing sire to produce crossbred females for sale as breeding stock.

Overall stocking rates are in the order of 1.0 livestock units/ha, representing approximately 10 ewes/ha. Cattle are often an important component and may account for approximately 20% of the stock carried on a livestock unit basis i.e. 15-20 suckler cows and followers per 1000 breeding ewes.

Fertiliser inputs to the improved land would be 60kgN/ha, plus phosphate, potash and lime as required.

The number of lambs weaned is typically 115 - 120 per 100 ewes mated. Concentrate inputs are approximately 25 kg per ewe, plus an allowance for limited feed block use. Up to 75% of surplus lambs may be finished, requiring an input of 10-15kg of concentrates per lamb.

Upland

Upland farms contribute much more significantly to national output, occupying better quality land, frequently at altitudes less than 250 m above sea level. Smaller farm sizes has made some degree of intensification necessary in order to maintain economic viability.

Upland systems are often based mainly on sown pastures albeit on more marginal land. Frequently there are smaller areas of indigenous vegetation which may be used during the late summer and winter. Better conditions generally, allow halfbred flocks of Welsh Halfbred, Scottish Halfbred or Mule ewes to be managed for finished lamb production. Number of lambs weaned is approximately 140 per 100 ewes mated. Approximately 75% of lambs may be finished, for a mean concentrate input of around 10 kg/head.

Overall stocking rates are in the order of 1.5 livestock units (or 10 larger bodied halfbred ewes) per ha. Cattle combine more readily with an upland system, due to the greater availability of winter feed, and often represent 30% of livestock units carried.

Fertiliser inputs are typically 80 kg N/ha, plus maintenance inputs of phosphate, potash and lime. Upland farms have been better placed to take fuller advantage of technological advances in pasture production, animal husbandry and disease control. Greater reliance is place on round bale silage for winter feed, and there is an increased requirement for anthelmintic use.

5.2 Consequences of changing to organic management

For a given farm, the impact of organic management will mainly depend on the proportion of improved ground, and its production potential under an organic management regime. The level of productivity achieved will determine overall stock carrying capacity, as well as the potential to home finish lambs in the autumn. On most hill/upland farms where feed supplies are limited, the potential competition between enterprises for available resources can be acute. For example, grazing store lambs in the autumn in order to finish a proportion, reduces the quantity of feed available to breeding ewes around mating, with subsequent adverse effects on next year's lamb crop. Additionally, the decision to finish lambs and the stocking rates applied will have important implications for the build up of parasitic disease.

High Hill

Because of the very extensive nature of the grazing, many flocks on the higher hill farms may already be managed close to the guidelines set down by UKROFS for organic production.

For breeding ewes, the total quantity of purchased, mainly non-organic, feed will be well within the tolerance prescribed by UKROFS - 20% of total dry matter intake, calculated on an annual basis.

Veterinary inputs such as anthelmintics are very limited, and in the context of organic management their complete withdrawal may be possible. Vaccines may be used (particularly for clostridia), and some trace element supplementation carried out where there is a history of trace element deficiency. However, where a recognised need exists, neither treatment is precluded by the standards for organic management. As the majority of lambs are sold soon after weaning, there is little requirement for lambs to graze aftermaths, which further reduces the need for anthelmintic use.

Depending on the amount of inbye grazing available, any artificial fertiliser/herbicide inputs would have to be withdrawn. However, very few such inputs are made, if any.

The main implication of organic management would be in terms of virtually eliminating the facility to agist hoggs over their first winter, given the current difficulty in finding organically managed grassland in the lowlands. Where such grazing is available within reasonable distance of the home farm, it is probably best used strategically to provide grazing for finishing lambs, for whom allowances for non-organically produced feeds in the daily diet are much more restrictive.

The alternative to agistment is to rely on home wintering hoggs, with increased concentrate use and more purchased hay. In terms of overall cost, the cost of purchased feed for home consumption may be slightly less than the cost of agistment (£10-£12 per hogg). However, as the hoggs are less likely to do as well, and more likely to compete with the breeding flock for available grazing, a reduction in weaning percent from 90% to 85% could be expected.

Veterinary costs are very similar under organic management. Reduced anthelmintic use is largely offset by the increased cost of blowfly control because the preferred organic materials tend to be more expensive. Overall animal health and welfare is unlikely to be unduly affected, as all lambs continue to be sold store.

Comparing likely returns with performance under conventional management (Appendix 1), this category of flock will be least affected by adopting an organic management regime (Appendix 2).

Other hill/upland systems

For systems relying on varying proportions of improved pasture, the response to withdrawal of artificial fertiliser inputs (particularly nitrogen) under organic management could take a number of forms;

1. reduce overall stocking rate

2. apply a limited amount of nitrogen from approved, but expensive, sources

3. provide additional concentrate feed to ewes in early lactation (within the permissible daily allowance) to buffer slower spring grass growth

4. sell more (or all) lambs as stores

5. mate more ewes on the hill, reducing twinning rate and overall flock prolificacy

6. delay lambing date by a week to 10 days

7. a combination of the above

For the purposes of this study, and to assess the impact of a policy to home finish lambs on hill/upland farms, three options are presented for each of the remaining three categories of farm:

Option 1 Maintain stocking rates, and attempt to finish a similar proportion of lambs under organic management by strategic use of approved nitrogen sources. While permissible within UKROFS regulations, this approach is less compatible with the philosophy of organic farming, and in particular the concept of a closed system.

Option 2 Reduce stocking rates to achieve the same effect, without recourse to applied nitrogen.

Option 3 Produce only store lambs.

The likely effect of each of these options on physical performance for each category of farm is summarised in matrix form at Appendix 3. For the purposes of the analysis, these are extreme situations and in practice producers may combine elements of each option.

Gross Margin data is presented for each flock/option, based on theoretical flocks of 1000 breeding ewes. Gross Margin is considered to be the most appropriate measurement to assess the impact of management change, as effects on fixed costs are likely to be minimal.

Where lambs are sold finished, an average premium of 10% is assumed. No allowance is made for any premium on organically produced store lambs.

Marginal hill

Gross Margin/ewe for this category of flock under conventional management (Appendix 4) is estimated to be £41.82 (flock Gross Margin, £41,815).

Option 1 - strategic nitrogen

In order to maintain stocking rate, and to ensure sufficient output on the improved land, some input of approved nitrogen is assumed. This is limited to 30kgN/ha due to the relatively high cost of such material (circa £160/t, or £2.66 per kg N applied). A 50% increase in concentrate feeding, amounting to an extra 12.5kg per ewe, is allowed to accommodate an extension to the feeding period after lambing until adequate grazing becomes available. An additional concentrate allowance must also be made for home-wintered hoggs, plus additional purchased hay for these animals.

A similar level of hay production is assumed, as some nitrogen will be available from approved sources. The cutting interval may have to be extended by several weeks to allow the hay crop to bulk up sufficiently. This would delay the availability of aftermath grazing, increasing concentrate feeding requirements to finishing lambs and also to breeding ewes (due to lower quality of the material conserved).

Cost of concentrate feeding for finishing lambs will increase to approximately £200/t (including cost of haulage) as an expensive organically produced cereal is required.

Overall there is little difference in veterinary costs. Some limited, strategic drenching, is likely to be required, as the lack of significant cattle enterprise reduces the potential for mixed grazing and the dilution of parasitic populations.

Projected Gross Margin per ewe from an organic system finishing 20% of surplus lambs is £38.85 (Appendix 5) - or £38,852 on a flock basis. Under organic management, ewe Gross Margin is reduced by £2.97 compared to the conventional system, due to the significant increase in the cost of forage produced on the inbye land.

Option 2 - reduce stocking rate

The second option is to rely on a modest reduction (10%) in stocking rate to allow for reduced herbage yield in the absence of any form of applied nitrogen. Because the extra quota released from the breeding ewes (100 units) can be transferred to the hoggs, there is no loss of income from ewe premium. Additional concentrate inputs are still required in the spring (for lactating ewes) and autumn (for finishing lambs). However, forage costs are reduced substantially. The net result is a substantial increase in ewe Gross Margin to £43.53. However, because there are fewer ewes, flock Gross Margin at £39,177 is similar to Option 1.

Option 3 - produce store lambs

Under a system of organic store lamb production, output is slightly lower due to lower returns per lamb (Appendix 7). However, forage costs are also reduced as a result of savings in fertiliser inputs. Other variable costs are also down, as no concentrates are fed to finishing lambs and veterinary costs are also slightly less. At £38,952 flock Gross Margin is only marginally reduced compared to the two previous options.

Welsh Hill

Estimated Gross Margin for this category of flock under conventional management is £36.67 per ewe (Appendix 8), or £36.668 on a flock basis.

Option 1 - strategic nitrogen

The assumed policy is to continue to finish 75% of available lambs, by using a lower level (30kg/ha) of nitrogen input derived from approved sources. The requirement to home winter hoggs is again expected to reduce overall lamb rearing rates by approximately 5%.

Ewe concentrate feeding is expected to increase by 15kg per ewe. Additional costs are also incurred by the requirement to home winter hoggs. Concentrate feed inputs (@£200/t) for finishing lambs could increase from 15kg to 20kg per head.

Using this approach, substantially increased variable costs produce a projected Gross Margin of £31.04 per ewe (Appendix 9), or £31,039 on a flock basis.

Option 2 - reduce stocking rate

The option to reduce stocking rate by 20%, together with inputs of applied nitrogen from approved sources, could increase Gross Margin per ewe to £40.13, but flock Gross Margin at £32,100 increases by less than £1100 (Appendix 10). A direct transfer of quota from ewes to hoggs is assumed as before.

Option 3 - produce store lambs

A 10% reduction in stocking rate and the production of store lambs, reduced forage and lamb finishing costs, and increased flock Gross Margin to £31,979 (Appendix 11), or £35.55 per ewe.

Upland

Baseline data for an upland flock, managed conventionally, is given in Appendix 12. Gross Margin for a flock of 1000 ewes is calculated to be £37,290 or £37.29 per ewe.

Option 1 - strategic nitrogen

Under an organic system carrying a similar number of ewes, but aiming to finish the same proportion of lambs using approved nitrogen fertiliser and increased levels of feed, Gross Margin is projected to decline sharply to £32.54 per ewe.

Some better upland farms may be able to provide a better mix of enterprises, some clean grazing and even the option of some home-produced cereals for feeding to stock. With careful management, newer clover varieties may have the potential to fix considerable quantities of nitrogen reducing the need for applied nitrogen. In this more favourable situation, there is potential to reduce variable costs from the levels given in Appendix 13.

Option 2 - reduce stocking rate

In order to finish the same proportion of lambs without any additional nitrogen inputs, a 20% reduction in stocking rate may be necessary (Appendix 14). While flock Gross Margin shows only a slight increase to £32,263, in this instance Gross Margin per ewe increases significantly to £40.33.

Option 3 - produce (mainly) store lambs

If store lamb production is the aim, a 10% reduction in overall stocking rate may be sufficient. Under better upland conditions it is assumed that a proportion of lambs will be finished at weaning time, or shortly afterwards. It is therefore assumed that 25% of lambs will continue to be finished (Appendix 15), even under a system designed primarily to produce store lambs.

Substantial savings in fertiliser costs and reduced feed inputs to lambs, combine with a modest reduction in output, produces a Gross Margin per ewe of £36.50 (flock Gross Margin, £32,850.

Overview

Not surprisingly, the impact of changing to organic management increases from the least intensive (High hill) to the most intensive sheep system (Upland).

While Gross Margin per ewe fluctuates widely (Table 4) depending on the management option tested, flock Gross Margin (Table 5) is much less affected.

Table 4 Effect of organic management option on Gross Margin (£/ewe)

		High hill	Marg. hill	Welsh hill	Upland
Conventional	£	39.59	41.82	36.67	37.29
	% of con.	100	100	100	100
Organic: finish lambs/ maintain stocking rates	£	39.69	38.85	31.04	32.54
	% of con.	n/a	93	85	87
Organic: finish lambs/ reduce stocking rates	£	n/a	43.53	40.13	40.33
	% of con.	n/a	104	109	108
Organic: produce store lambs/ reduce stocking rates	£	n/a	43.29	35.55	36.50
	% of con	n/a	104	97	98

Having departed from a conventional production system, flock Gross Margin does not alter radically, according to the option chosen. For example, variable costs of production can be offset by a cut in stocking rate, but this in turn also reduces flock Gross Margin.

Table 5 Effect of organic management option on Gross Margin (£/flock)

		High hill	Marg. hill	Welsh hill	Upland
Conventional	£	39,590	41,815	36,668	37,290
	% of con.	100	100	100	100
Organic: finish lambs/ maintain stocking rates	£	39,695	38,852	31,039	32,540
	% of con.	100	93	85	87
Organic: finish lambs/ reduce stocking rates	£	n/a	39,177	32,100	32,263
	% of con.	n/a	94	88	87
Organic: produce store lambs/ reduce stocking rates	£	n/a	38,952	31,979	32,852
	% of con	n/a	93	87	88

The figures presented in Tables 5 and 6 take no account of the payments available under the Organic Aid Scheme. The higher rate of payment over the first two years of conversion (£14/ha on LFA land) does go some way towards offsetting the income loss from changing to organic management. However, once the conversion period has been completed organic enterprises will have to compete solely on the basis of market premia.

Reducing the amount of organic premium achieved for finished lambs, or the proportion of certified lambs receiving a premium, would further reduce profitability compared to the conventional system. This effect increases the more intensive the production system.

Comparable data to Tables 5 and 6, but with no organic premium for finished lambs, are given in Appendices 16 a and b.

6.0 FINISHING ORGANIC HILL LAMBS ON LOWLAND FARMS

6.1 Structural Limitations

Supply of store lambs
Transport
Organic standards and requirements
Markets for finished organic lamb
Organic farming enterprises

6.2 Potential sources of feed

Grazing permanant pasture
Grazing grass/clover leys
Grazing crop residues
Grazing autumn sown cereal crops
Grazing catch crops and green manures
Conserved forage
Concentrate feeds
Use of set aside

6.3 Integration with current organic systems

Specialist dairy farm
Specialist livestock farm
Mixed arable/livestock farms
Overview

6.4 Approaches to expand finishing capacity

Conversion of existing conventional livestock and mixed farms
Modified stockless systems

6.1 Structural limitations

The finishing of hill lambs on lowland farms has been a traditional feature of conventional systems. The reasons why this has rarely occurred for organic farms are worth considering, as this may help identify possible future constraints to this practice.

Supply of store lambs

The number of farms in the hills and uplands producing organic store lambs has been low. Nevertheless, limited numbers of stock have been available for a number of years, if a demand had existed. The current organic hill sector is too small to meet a significant increase in demand from lowland finishers. Current demand can largely be met from lowland flocks. If a market developed, supply of organic lambs from the hills need not be a limiting factor, although it is likely to be the case in the short term.

The small size of the majority of lowland organic farms means that only a small number of lambs can be kept on a particular holding. The necessary investment in time, as well as resources such as feeders and fencing, can make the option of store lamb finishing relatively unattractive.

Transport

On the grounds of welfare, a significant number of current organic livestock producers are opposed to, or totally against, long distance transport of their stock. Any future conversion of upland farms will be by farmers currently used to sending stock "off on a lorry". Future constraints are only likely to be caused by revised transport regulations, or alterations to organic production standards.

In addition, the organic sector is widely dispersed across the country so that the co-ordination of marketing necessary to generate a steady supply, and hence the required premium to pass back to the store producer, has been difficult. In the organic sector, marketing arrangements rely more on direct farmer to farmer, or individual, contact.

Organic standards and market requirements

To meet organic standards, bought-in organic stock must be traceable to their farm of origin. Stock going into auction marts are not usually, if ever advertised as organic because of possible prejudice concerning their health status. There are thus possible current and future obstacles which may require private dealing or contract arrangements to facilitate trading.

Market for finished organic lamb

Many organic lambs have been sold into the conventional market, or flock conversion has not been completed following land conversion. The relative economics of lamb finishing are such that it has not been an attractive enterprise. The market for organic lamb can be fairly readily supplied until just after the turn of the year. There is then a shortfall in supplies which has weakened the marketing structure, particularly to multiple retailers. This problem has been compounded by the quality of lambs on offer, particularly late in the season. The development of store lamb finishing systems will depend on being able to develop continuity of supply together with the required quality. This presents rather more problems for the organic farmer (see below).

Organic farming enterprises

The majority of organic farms are small mixed units, and are usually already stocked close to capacity already. Even where this is not the case, the number of lambs they could finish would be limited by size of unit. Even large mixed organic farms often have their own sheep with limited extra capacity. Arable dominated farms, similar to those finishing lambs conventionally, do not exist under organic standards, given that "stockless" rotations have not yet been taken up by organic farmers in this country. Specialist dairy farms rarely want sheep on pastures after Christmas.

6.2 Potential sources of feed

Theoretically a number of feed sources could be available for organic store lambs within current, or future, organic rotations.

Grazing permanent pasture

Late autumn and winter growth from old pastures tends to be less than from young leys, partly due to sward composition, but also soil conditions and topography. While stock bearing capacity of the sward may be greater than in young leys (allowing longer grazing with less soil/sward damage) permanent pasture generally has poor potential to finish lambs in the autumn.

Grazing grass/clover leys

Grass/clover leys continue growing late into the autumn, particularly in more westerly areas and in mild seasons. This growth needs to be utilised before winter for the overall benefit of the sward. Autumn management should aim to maintain clover content, minimise soil damage and reduce any potential loss in early season growth the following year. Seasonal weather factors can also affect carrying capacity and make planning difficult. For these reasons sheep are rarely grazed on leys after Christmas, where they have to support other farm enterprises later in the year.

Grazing crop residues

Conventional farmers utilise the residues left from sugar beet harvesting and field scale vegetable production. Organic farmers do not grow the former, while the latter is unusual and provides limited opportunities. There is little evidence to suggest any change will occur in the short term (despite moves by a major food processor to develop organic lines from contract grown vegetable crops).

Grazing autumn sown cereal crops

Traditionally, sheep were winter grazed on autumn sown cereal crops. The effect on final crop yield may be positive, neutral or negative according to the time and severity of grazing, and prevailing soil conditions. The practice is more suited to lighter soils where early growth is better and soil damage/soiling of the crop less likely. Treading may have a benefit on the crop similar to rolling.

Organic cereals are generally drilled relatively late in the autumn to aid weed control and to reduce pest and disease problems. This together with relatively low levels of fertility means that cereal crops make less autumn/winter growth than their conventional equivalents.

As the overall economic performance of an organic unit frequently depends on maximising returns from wheat and oats (which command substantial premiums) there is little incentive to risk future yield. It seems unlikely that organic farmers will be prepared to graze cereals except on an opportunity basis, and for mainly agronomic reasons e.g. a particularly forward crop showing signs of disease. This will not provide the basis for developing finishing systems.

Grazing catch crops and green manures

Although catch crops and green manures are encouraged under organic standards to conserve fertility, they have been relatively uncommon to date. This is mainly due to the rotation practised, and in particular, the dominance of autumn sown cereals. Spring sown cereals are frequently grown at the position of lowest fertility in the rotation. This implies that any catch crops such as stubble turnips, or green manures such as legumes, forage rape or rye, will make relatively little growth. However, anecdotal evidence supports the theory that if such crops can be established and grazed, the recycling of nitrogen via the grazing animal provides a significant boost to the following crop. This may be of such magnitude that it becomes the major benefit, and outweighs any profit (or loss) made from the livestock enterprise itself.

Pure legume stands and stubble turnips will die back in a hard winter and must therefore be used before Christmas except in mild areas. Crops which can be utilised in the New Year are especially valuable to extend the season. Lambs grazing pure stands of clover may also be more prone to 'Red Gut' - which may arise in animals grazing high legume swards, due to torsion and subsequent haemorrhage of the large intestine.

Conserved forage

Forage crops conserved as hay or silage during the growing season are usually required for the main enterprises on the farm. An all grass organic dairy farm will usually have adjusted quota and stocking levels to the maximum carrying capacity of the unit. Any surplus forage above that required for milk production and replacement stock is much more likely to be held in reserve, or fed to young stock than to be fed to specially imported store lambs. On most cattle and sheep farms it is unlikely that forage will be available for additional store lambs. The exception could be units short of quota for these main enterprises. In such cases a decision has to be made between a more extensive system, the option to lease or purchase quota, or to bring in store animals.

Concentrate feeds

In addition to the various sources of forage, lambs may be finished on a range of allowable feedstuffs subject to UKROFS Standards, e.g. cereals, pulses, root vegetables (fodder beet, potatoes, carrots etc.) proprietary compound feed etc. Such systems will be subject to rules concerning the proportion of forage in the diet, a maximum non-organic allowance and any processing of individual components in the diet.

Concentrate feeding systems are not common in conventional store lamb production. The extra cost of formulating organic diets, reduces the potential for wider application on organic farms. The potential advantage is the greater flexibility which the addition of concentrate feeds provides to meet targets for carcass quality and marketing pattern.

Use of set-aside

Under current rules, forage grown on set-aside land can be used after 1 September, provided that the sward is topped between 15 July and 15 August each year. In most years, and in many parts of lowland England and Wales significant dry matter production can be obtained in the autumn from grass/clover swards or pure legume stands. This production may be conserved and/or grazed before (i) planting an autumn crop; (ii) late ploughing before a crop of spring wheat; (iii) ploughing before a spring planted crop; (iv) utilising for forage production in the following year.

A review produced for MAFF in 1994 indicated that the area of set-aside on organic farms is small. Given that most are mixed units which have reduced their effective area by adopting set-aside, they are already likely to have sufficient livestock quota to utilise the forage from set aside land. Even where this is not the case, the total capacity to finish lambs on current organic farms will be small.

Mixed farms might be in a position to effectively utilise home produced pulses, as an alternative to sale, and to make use of cereals which did not meet premium standards. Both would allow a more intensive system to be adopted.

It is also possible that such a system could be developed on otherwise stockless organic units, to improve overall economic performance.

6.3 Integration with current organic enterprises

Specialist dairy farm

The specialist dairy farm is likely to maintain cow numbers at the maximum that can be supported following conversion. Milk production is more profitable than lamb finishing, so resources will not be diverted away from the dairy enterprise.

Cows will generally graze until late September. Young stock and followers may remain at grass for rather longer. A 60+ cow herd (72 livestock units) stocked at 1.8 LU/ha will have 40 ha of grassland. If 0.75 tonne/ha dry matter is available for autumn grazing, this gives approximately 900 grazing days/ha when supplemented with a minimum amount of concentrate feed. This is equivalent to 7.5 lambs/ha kept for 4 months, i.e. 300 lambs. If these were marketed regularly at varying weights over the 4 months the initial intake could be 480 lambs.

If it is still necessary to find acceptable grazing to agist flock replacements from hill areas on lowland farms, the capacity to carry finishing lambs is reduced accordingly.

There are very few specialist organic dairy farms at the present time. Given that for reasons of soil, labour etc. not all of these would be able to undertake the enterprise the current capacity is very small and probably little in excess of 1000 lambs. Those within reasonable distance of the uplands may find a strong demand for ewe lamb grazing, which is an easier and lower risk option.

Specialist livestock farms

Lowland beef (and/or sheep) farms are unlikely to have spare capacity for finishing lambs unless they have insufficient quota available in specific circumstances. Given that beef cattle tend to have a longer grazing season than dairy cows, the quantity of surplus grass available will be less than on a dairy farm. Neither is it likely that lamb finishing, based on grazing and silage, would be as profitable as a suckler beef system.

With the very weak market for organic beef, there are few specialist beef units and a proportion of these are small, part-time holdings. Any new entrants to organic farming in this sector are likely to have similar limitations. A few beef producers are known to have entered the Organic Aid Scheme, and may provide limited opportunities. While it may be possible for these all grass farms to take on more land, and in the absence of quota turn to lamb finishing, such a policy would not offer a sound business opportunity.

For all practical purposes, this sector is not considered to have significant opportunities to finish a greater number of imported store lambs.

Mixed arable/livestock farms

Grass

The mixed organic farm typically operates a 60:40 forage/cropping system. Often, more grass is present on many units because (i) part of the farm is suitable only for permanent pasture and the 60:40 split is necessary to maintain fertility on the rotational area; (ii) soil type and/or stock numbers dictate it.

The expansion of the lowland sheep flock in the 1980s, prior to the introduction of quota, means that most organic mixed farms already have a sheep enterprise. On such units the assumption is that aftermath grazing is already fully utilised to finish home produced lambs. However, some conserved forage may be available. Any expansion of total stocking capacity must therefore come by a decrease in arable area, or an increase in catch/forage crops.

Given the relative profitability of wheat, oats and potatoes, and an existing on-farm use for relatively low-yielding spring cereals, a change in the main crop rotation is unlikely. This leaves the possibility of growing more catch crops.

Catch cropping

It is unlikely that more than one opportunity will present itself in a 6 or 7 year rotation to grow a worthwhile catch crop even assuming that conditions are favourable. Thus for every 100 ha of organic land 15 ha might be available for finishing lambs.

For present purposes, stubble turnips and grazing rye can be taken as suitable crops to calculate increased stock capacity. In practice the total resources would be pooled with those for the on-farm stock to develop an integrated system. This would allow an extended marketing period.

In an organic system, utilisable dry matter yield of stubble turnips is unlikely to exceed 2-2.5 t DM/ha and that of the grazed rye 2.5-3.0 t DM/ha. Total extra dry matter from 7.5 ha of each crop provides between 40,000 and 48,000 grazing days at 0.85 kg DM/day. Taking the lower value for planning purposes would support 220 lambs for 6 months. If all the area was sown to stubble turnips and the extra lambs sold by the turn of the year the intake could be between 300-450 lambs according to the marketing pattern adopted.

A following cereal crop may show a yield benefit of 0.5-1.0 t/ha from this management.

To gauge the current scope for catch cropping we can consider the current area of spring sown cereals. This is around 400 ha. Even if half of these were suitable and made available for lamb finishing, a maximum of 3500 lambs could be produced after the turn of the year.

A second option would be to change from an autumn sown winter wheat to an early sown or a traditional (February) spring wheat, using stubble turnips as the catch crop. This would be more limited by soil type, but potentially could utilise part of the current 2500 ha. If 10% were suitable, a further 5000-7500 lambs could be finished before the turn of the year or the end of January at the latest.

These assessments of finishing capacity include catch crops on current 'non-sheep' mixed farms. These farms may also have additional forage as aftermath grazing. The quantity, and hence finishing capacity, will be similar to that calculated for the all-grass cattle farm above. If 5% of the near 12,000 ha of organic lowland grass was available, capacity to finish up to a further 4500 lambs would be generated, but largely before Christmas.

Overview

So far, it has been estimated that 'surplus' grass on organic farms might be available to finish up to 5,500 lambs in the period up to the end of the year (Dairy farms- 1000, Non-sheep farms - 4500). Catch crops were suggested to have the potential to raise 8500-11,000 lambs. Capacity for a maximum of 3500 lambs may be estimated for the period January-March/April from a forage based, minimum concentrate system. To meet organic standards a 60% minimum forage intake is required from conserved forage surplus to the requirements of other stock on the farm. This is not considered to be very practical option on most mixed farms. Within economic constraints and practical feeding difficulties, higher concentrate inputs could be used in certain circumstances to increase capacity.

Given relatively small farm size, the fragmented nature of the organic livestock sector and the novelty of some of the systems described, the overall capacity to finish 17500-20000 lambs is probably an overestimate. A capacity of 10-15000 is probably a more realistic figure. The BOF survey suggests that up to 25% of this is already being met, largely by lowland store lambs.

6.4 Approaches to expanding lamb finishing capacity

Given the importance of an even supply of lambs in order to encourage the development of a sustained market, finishing capacity during January-March effectively limits the numbers that are also likely to find a market in the old year, when there is potential for 3-4 times as many to be finished. This takes no account of the fact that up to the end of the year the market can also be supplied from normal on-farm finishing from lowland flocks.

Conversion of existing conventional livestock and mixed farms

Any new organic farms can be expected to increase finishing capacity at least pro-rata with the current organic area. To date the evidence from the Organic Aid Scheme is that it is all grass farms which are converting, which will do little to increase the January-March lamb finishing capacity. If conversion of relatively large mixed units, or enlargement of existing ones, can be encouraged then the likelihood of worthwhile enterprises will increase. The potential of the total available area is then more likely to be met.

The target of the Organic Aid Scheme is a trebling of organic area. Current evidence is that the increase in arable area will be small. This is what is required if the January-March capacity is to be increased, as this allows more catch cropping. Assuming that a quarter of any increased area in England and Wales is on mixed farms, this implies an increase in arable production of less than 6000 ha of arable crops, or approximately double the current area. If the proportion of spring cereals remains constant and the uptake of the technique remains at 50% then the January-March finishing capacity also doubles to a maximum of 7000 lambs.

We are forced to conclude that a market lead expansion of organic farming in general is required, particularly in the meat sector. This might then encourage either a greater conversion of mixed farms or of those with predominantly arable cropping.

Modified "stockless" systems

It is possible to envisage lamb finishing being introduced into a stockless rotation e.g. similar to the organic research project at ADAS Terrington. Forage from set-aside in later season could be used for conservation and grazing, while home-grown low quality cereals, pulses and/or out-grade potatoes may also be utilised.

If a 50 ha organic unit were set up on a 200 ha arable farm the total set-aside requirement could be preferentially allocated to the organic unit to allow either alternate years of fertility building and cropping, or a 1:2 rotation. A clover or grass/clover set-aside sward could be expected to provide at least 2 tonnes of dry matter (up to 3 would be expected under favourable conditions) part of which could be conserved.

This would allow grazing until November when spring wheat could be sown. Lambs could then be finished in the New Year on a diet of forage and/or concentrates.

A 1:1 rotation on the nominal 50 ha would provide 50 t dry matter or 57,000 lamb days, i.e. enough to support 375 lambs for 6 months. This would be increased if significant quantities of concentrates were fed, but profitability per head would decrease accordingly.

For a 1:2 rotation the set-aside will support two-thirds the number of lambs, i.e. 250, but this could be augmented with a catch crop of stubble turnips after the first cereal. On the earlier yield assumptions this might restore the carrying capacity to 375.

7.0 Organic lamb finishing enterprises

7.1 Physical performance

Nationally, it has been estimated that up to 90% of conventional hill lambs (50% of lowland lambs) are in store condition at weaning. Surveys of conventional store lamb finishing systems indicate great variation in performance and profitability. Forage crop yields are notoriously variable. ADAS surveys have shown utilisation rates varying form 10 - 90% depending on the crop grown and weather conditions at the time of use.

Furthermore, lamb performance is conditioned by breed and by previous management. Current (and past) health status may also affect growth rates. Severe gut damage earlier in life (through stomach worms or coccidiosis) could mean that potential growth rate is permanently impaired.

Finishing organic store lambs may differ from conventional lambs in a number of important respects.

Crops

The crops likely to be available within organic systems are discussed in some detail in the preceding sections. However, a number of points are worth re-iterating.

A reduction in overall crop yields is likely compared to conventional systems, especially for catch cropping where less nitrogen is generally available, either from applied sources or as a residue from the previous crop. The establishment and growth of cover crops/green manures is also particularly sensitive to adequate moisture. Under the levels of fertility likely to apply on organic farms, any checks to growth due to weather conditions are likely to be particularly significant.

The range of crops available within organic systems is likely to be more restricted. There are particular difficulties in finding suitable feeds for the February - April period. Winter hardy crops such as swedes and kale are generally not grown within organic rotations.

When planning finishing systems it is prudent to err on the side of caution, and accept that in some years surplus feed will be available. Greater flexibility will occur in systems that have a buffer of conserved forage or plan to feed concentrates. Failure to make such allowances may make it impossible to meet any contractual delivery targets without the expense of purchasing extra feed. Such supplies may not be available. The lower the demand for lambs in the autumn the lower the likelihood of any premiums for the organic store producer. Maintaining throughput of lambs, but having to market them at lighter weights early in the season because of lack of feed, will not improve the marketing profile.

Lambs

There will be differences in previous veterinary history between conventional and organically managed lambs. There *may* be differences in health status and in parasitic burden.

Current organic meat production is subject to UKROFS Standards. There are no EU rules on which these are based. Such rules are likely to be agreed within the time-scale of any significant increase in the volume of store lamb finishing. There are no indications that the relevant provisions of current standards will change significantly and these have therefore been assumed for this study.

While discouraging routine treatments, current standards allow for all *necessary* veterinary treatments to be given to stock to maintain their health and welfare. The recently revised UKROFS Standards allow for a veterinary conversion period longer than that required to convert the land. As the finishing of lambs entails a batch system of constantly changing stock, this last provision is arguably not relevant. On farms with no recent history of sheep management or those able to offer clean grazing to bought-in lambs it has been argued that it would be good practice to worm all lambs before turn-out on the receiving farm in order to maintain this "clean" status. Such a practice would run counter to the concept of non-routine treatment. The fall back position would be to observe the recommended quarantine period on a limited area of land and treat any individuals that require it. A greater onus is therefore put upon the store producer to offer clean lambs for finishing. To this extent stock "straight off the hill" may present a best option.

On arrival a limited number of routine treatments may be undertaken such as clostridial vaccination. Drenching for internal parasites will be on the basis of need. Hill lambs may also be more likely to suffer from trace element deficiencies such as copper, selenium and cobalt.

Previous absence of sheep should reduce foot problems, and it is unlikely that many receiving units will offer grazing which presents a high risk of fluke.

Other considerations

Other factors such as sourcing of stock, traceability, structural and transport difficulties have been referred to elsewhere in the report.

7.2 Financial performance

Much of the profit in store lamb finishing is determined on the day of purchase. The feeders margin (difference between buying and selling price) required to cover all variable costs, bank interest rates and lamb mortality will vary with the system of finishing. The abolition of the Variable Premium Scheme, which guaranteed finished lamb prices according to seasonal guide prices has made selling price much more dependent on short term market conditions.

Potential Gross Margin from three systems of organic finishing are given below. Unless costs (e.g. seed costs) are incurred directly as a result of the lamb finishing enterprise, forage production costs are assumed to be nil. The projected price (per kg liveweight) given in Appendices 17-19, for finished lambs sold in December, January, February and March are 100,110, 120 and 130p respectively

Grass finishing system

Grass is suitable for grazing up until Christmas, and therefore is best suited to short keep systems where 5-6kg total liveweight gain is required. Depending on stocking rate, weather and grass growing conditions, some concentrate input will be required towards the end of the finishing period.

Gross Margin per lamb is calculated to be £3.11 (Appendix 17). This represents a return on capital invested of 9%.

Stubble turnip finishing system

Lambs are be put onto grass immediately after purchase, and then onto a catch crop of stubble turnips in October/November. Some compound feed is introduced in mid January. Hay will be offered when the ground is frosted or covered with snow.

Projected Gross Margin (Appendix 18) is £7.78 per lamb - 24% return on capital.

Silage finishing system

Set aside grass or legume cover crop will be ensiled for feeding later in the season. Lamb performance is particularly sensitive to the digestibility and fermentation quality of the ensiled material. Some concentrates will be required within the permitted daily allowance.

Of the three systems, this is the longest keep system, with potential to finish lambs into March. However, use of some existing housing is required. Calculated Gross Margin is £5.47 per lamb, giving a 15% return on capital.

These sample Gross Margins have been used in estimating the effect of incorporating a store lamb finishing enterprise into existing organic farming systems (Section 8).

8.0 Effect of a store lamb finishing enterprise on Farm Gross margin (lowland systems).

8.1 Specialist diary
8.2 Stockless arable
8.3 Mixed stock/arable

Three farm types have been identified as having the potential to incorporate lamb finishing into the existing organic farm system:

1. Specialist Dairy Farms - utilising autumn grass
2. Stockless Arable Farms - utilising green manure crops
3. Mixed Stock/arable Farms - utilising catch cropping/set aside

Examples of modified rotations and stocking policies are set out below, costed to Farm Gross Margin level. As an ancillary enterprise, store lamb finishing is not expected to have any impact on fixed costs.

8.1 Specialist dairy farm

Theoretical farm size
40 ha

Cropping
All grass

Stocking

	Conventional	Organic	Organic + store lambs
Grassland (ha)	40	40	40
Dairy cows	70	60	60
Dairy replacements	35	30	30
Stocking rate (LU/ha)	2.1	1.8	1.95

Conventional Gross Margin is given in Appendix 20, with projected Gross Margin under an organic system given in Appendix 21. The effect on farm Gross Margin of incorporating a store lamb finishing enterprise is given in Appendix 22.

Organic store lambs are assumed to make use of autumn grass, which would otherwise be wasted. This increases the effective stocking rate, but puts little additional presure on the dairy stock as most of the nutrients are recycled.

An organic system is particularly useful for dairy farms which rely on leased-in milk quota, which makes marginal litres expensive. The example farm is assumed to own 300,000 litres of milk quota which can be produced by 60 cows at a stocking rate of 1.8 LU/ha but many units will be stocked at lower rates, offering greater scope for lamb finishing.

Where other stock are already kept to utilise autumn grass eg winter grazing of hoggs, store lamb finishing is unlikely to be more financially attractive, but may suit better in terms of period of grass utilisation.

8.2 Stockless Arable Farm

Theoretical farm size
200 ha

Cropping

It is assumed that 75% of the farm area will continue to be farmed conventionally. Under the original rotation a conventional cash root crop might be grown, followed by a spring cereal, then a winter cereal or set aside (regeneration), combinable break crop and another winter wheat cereal (see Appendix 23).

The remaining 25% of the farm could be managed organically under a simple two year rotation, with the green manure being used as set aside for the entire farm.

Organic rotation	Without store lambs	With store lambs
Year 1	red clover	grass/clover
Year 2	winter wheat	spring wheat

The red clover would be mulched during the year and sown to a crop of organic winter wheat at the end of the set-aside period. The clover could be replaced by a grass/clover ley, mown once and then cut to provide winter forage for store lambs, which would also utilise the autumn regrowth. This would require a spring sown cereal, but will retain nitrogen more efficiently, and no yield penalty has been assumed. By using a 2 year organic rotation, fertility levels should be retained, and a premium achieved consistently for milling wheat.

Store lambs would place an additional workload for arable staff at a time when sugar beet or potatoes are being harvested. Some skill/experience of sheep husbandry would be required. Temporary electric fencing would suffice.

Gross margin under conventional and stockless organic ststems are give in Appendices 23 and 24. Farm Gross Margin, following the introduction of a store lamb enterprise is given in Appendix 25.

8.3 Mixed Stock/arable Farm

Theoretical farm size
100 ha

Cropping

Grass leys would provide an integral part of the break in a combinable rotation before and after conversion to organic production. These would be used largely for conserved forage but also for late season grazing. In this example, a spring cereal and a catch crop would replace a winter cereal to accomodate a lamb finishing enterprise.

Stocking

The 36 ha of rotational grass and 4 ha of permanent pasture would typically carry a herd of 70 dairy cows & followers prior to conversion. Following conversion, the herd may may be reduced to 60 cows (owned quota). Set aside would be used to establish the second grass ley in the rotation.

Arable rotation

Year	Conventional	Organic	Organic + store lambs
1	grass ley	grass ley	grass ley
2	grass ley	grass ley	grass ley
3	grass ley	winter wheat	winter wheat
4	winter wheat	winter oats	stubble turnips/s wheat
5	winter barley	set-aside	set-aside
6	oilseed rape	grass ley	grass ley
7	winter wheat	winter wheat	winter wheat
8	set-aside	winter oats	winter oats

Store lambs would utilise autumn grass, forage from set-aside (grass) and a catch crop of stubble turnips grown after 1st wheat. A spring wheat could then be grown to capitalise on the fertility benefit of the grazed catch crop.

Gross Margin under conventional management is given in Appendix 26. Comparable data for an organic system, and with the addition of a store lamb enterprise are give in Appendices 27 and 28.

Overview

The additional benefit to Farm Gross Margin from the addition of an organic store lamb finishing enterprise varies from 2-3%. (Table 7).

Table 7 The effect on Farm Gross Margin of incorporating a store lamb finishing enterprise

Farm type	Management	Farm Gross Margin £	% of con.
Dairy	Conventional	68784	100
	Organic	67490	98
	Organic + store lambs	69391	101
Stockless/Arable	Conventional	150913	100
	Organic	156624	104
	Organic + store lambs	159891	106
Mixed/arable	Conventional	108834	100
	Organic	115559	106
	Organic + store lambs	118007	108

It is questionable to what extent producers would be willing to adjust rotations, invest capital, staff effort, and fixtures and fittings (where these do not already exist) in an enterprise which will at best confer a marginal benefit to the farm business as a whole.

Nevertheless, a store lamb enterprise could be a worthwhile alternative where slack exists within the current farming system. The marginal return on capital invested in a lamb finishing enterprise could be as high as 20% (see Section 7.2).

9.0 Conclusions and recommendations

1. The market for organic lambs may have to double before all the certified stock currently available receive a premium.

2. There are lambs available to even out the supply pattern if farmers were sufficiently convinced of the practicality and financial viability of doing so. A major constraint is the lack of suitable feeds, in the January - April period.

3. Given the shortfall in the supply of organic lambs in late winter/early spring, imports are one option to fill the gap. The industry has already made enquiries as to the availability of certified New Zealand stock.

4. Using realistic estimates, some 10-15000 extra lambs could be finished currently, on organic lowland farms, if the industry were prepared to modify rotations accordingly. This is approximately equal to the numbers attracting premium sales at present.

5. Hill farms generally have good potential to produce store lambs to organic standards.

6. Hill and upland farms have very limited resources. Under organic management, the requirement to home finish any significant proportion of lambs will either increase forage costs, or in the absence of applied nitrogen reduce flock output, because of the need to reduce stocking rate.

7. The availability of a conversion grant does go someway towards making good the short-term deficit following conversion, particularly for the more extensive systems where stocking rates are lowest (and support per head highest), and where less modifications are required to the existing system. However in the longer term, organic sheep enterprises will only be able to compete on the basis of a premium for the stock sold.

8. Carcasses from hill lambs are not of the highest quality, and ultimately may be less desirable if greater supplies of quality lowland lambs are made available at some time in the future.

9. Finishing store lambs on organic lowland farms is a viable alternative in certain circumstances. However, there is a need for a degree of infrastructure and suitable husbandry skills to be available, in order to keep fixed costs to a minimum. Within an organic farming system, the priority will be for sound arable rotations. But in certain circumstances, a store lamb finishing enterprise could yield a worthwhile return on capital invested.

10. Given the more volatile nature of the store lamb trade, problems of scale and the limited opportunities to finish store lambs within existing rotations, lowland producers will be wary of committing too many resources to an organic finishing enterprise - except perhaps on an opportunistic basis. The exception might be a producer operating a fully integrated system, with a year round outlet for finished organic lamb.

11. If expansion is to come it is most likely to arrive as a result of an increase in the arable area entering conversion (leading to greater availability of set-aside and better opportunities for catch cropping), as a consequence of the development of otherwise stockless systems, or on mixed holdings.