



BETTER

Business, Environment and Technology through Training, Extension and Research

Hill Sheep Breeding Event

September 28th 2016

Farm of Denis O'Riordan

Borlin, Bantry, Co. Cork.

This is a DAFM approved Knowledge Transfer Sheep Event



Introduction

Today's farm walk on the farm of Denis O'Riordan will provide an opportunity to discuss topics relevant to breeding hill ewes and finishing options for hill lambs as well as giving an overview of the farm itself. Denis operates a Blackface hill flock on a mixture of commonage and enclosed land and joined the BETTER Farm Programme in 2014. Denis is in the early stages of his BETTER farm plan which is focused on improving the performance of his hill flock through improved flock management and genetic improvement.

We would encourage you to actively engage with the speakers on all the stands which are aimed at preparing the flock for the breeding season and options for finishing lambs coming off the hills. This is a national qualifying event for the DAFM Knowledge Transfer Programme and we would urge participants to ensure they register at the start of the event with DAFM who are on site.

Finally, we would like to thank Denis and his family for opening up their farm to us today and for his continued participation in the BETTER farm program.

*Michael Gottstein,
Head of Sheep Programme.*

*Michael Connolly,
Teagasc B & T Drystock Adviser.*



Farm Details

Farm size

- Hill grazing (271 ha)
 - 60 ha fenced off
- Enclosed land 8 ha
- Out farm 8 ha enclosed land
- Sheep & Beef (Sucklers)

Ewe flock

- 285 Blackface ewes
- Ewe flock wintered on the commonage
- Brought down to enclosed land in mid-February
- Supplemented with oats and chopped beet
- Ewes lambed on enclosed land

Farm Plan

Breeding Policy

- Compare traditional Blackface rams used with Swaledale's & Lanark's
- Breed bottom 25% of ewes to Suffolk rams
- Try and breed ewe lambs at 18 months versus 30 months

Flock Management

- Start scanning ewes and separating twins for late pregnancy
- Introduce balanced ration to ewes for last month of pregnancy

Lambs

- Heavier lambs (30kg+ by end of August) sold as stores
- Looking at finishing lighter lambs on farm

Soil fertility being addressed across the farm

Flock Performance

| | 2015/16 |
|------------------------------------|---------|
| Ewes Joined | 285 |
| Ewes lambled (%) | 95 |
| Lambs reared per ewe joined | 1.09 |

- Focus on improving output per ewe and lamb performance
- Start pregnancy scanning
- Lambing from ~ 6th of April onwards
- Greater use of enclosed land
- Looking at best options for finishing/selling lambs
- Ewe lambs being retained had an average weight of 30 kg (range 27 to 32 kg) at beginning of September



Ewe Breeding Soundness Examination (NCT)

When selecting ewes for the breeding season there are a number of important factors to remember;

1. **Good records** from the season just past are essential
2. Selecting ewes for breeding should take place no later than **10 weeks prior to joining**, with thin ewes being separated for extra feeding from 8 weeks prior to joining
3. **Problem ewes** throughout the year should be identified i.e. ewes that prolapsed etc. These ewes may look fine now but problems such as prolapses and ring womb will most likely reoccur and cause problems at lambing time
4. Good **handling facilities** are required so that ewes can be correctly examined and marked out for breeding or culling. It may be necessary to identify ewes for re-examination again prior to breeding e.g. thin ewes which are going receiving extra feeding prior to joining.

Examination and culling of ewes should focus on 4 key areas:

1. Udder

- Mastitis
- Pendulous udders
- Blind teats
- Cording / tread like teat canal
- Lesions / sores on teats

2. Feet

- Footrot, scald, CODD, stiff joints or any issue reducing mobility
- Separate and treat problem ewes
- Cull those that don't respond to treatment

3. Teeth

- Under & Over shot mouths
- Missing teeth

- Worn/long teeth
- Uneven molars

4. Reproduction

- Ring womb - reoccur
- Prolapse - reoccur
- Barren from abortion
- Mothering ability

Ewe Productivity

Output from the flock will vary depending on hill type but across all flocks improvements in output can be achieved by increasing ewe BCS. **Joining BCS** has a major effect on pregnancy rate (Figure 1.) & litter size. A better joining BCS will also lead to a more compact lambing and target BCS for hill ewes at joining should be **3.0+**.

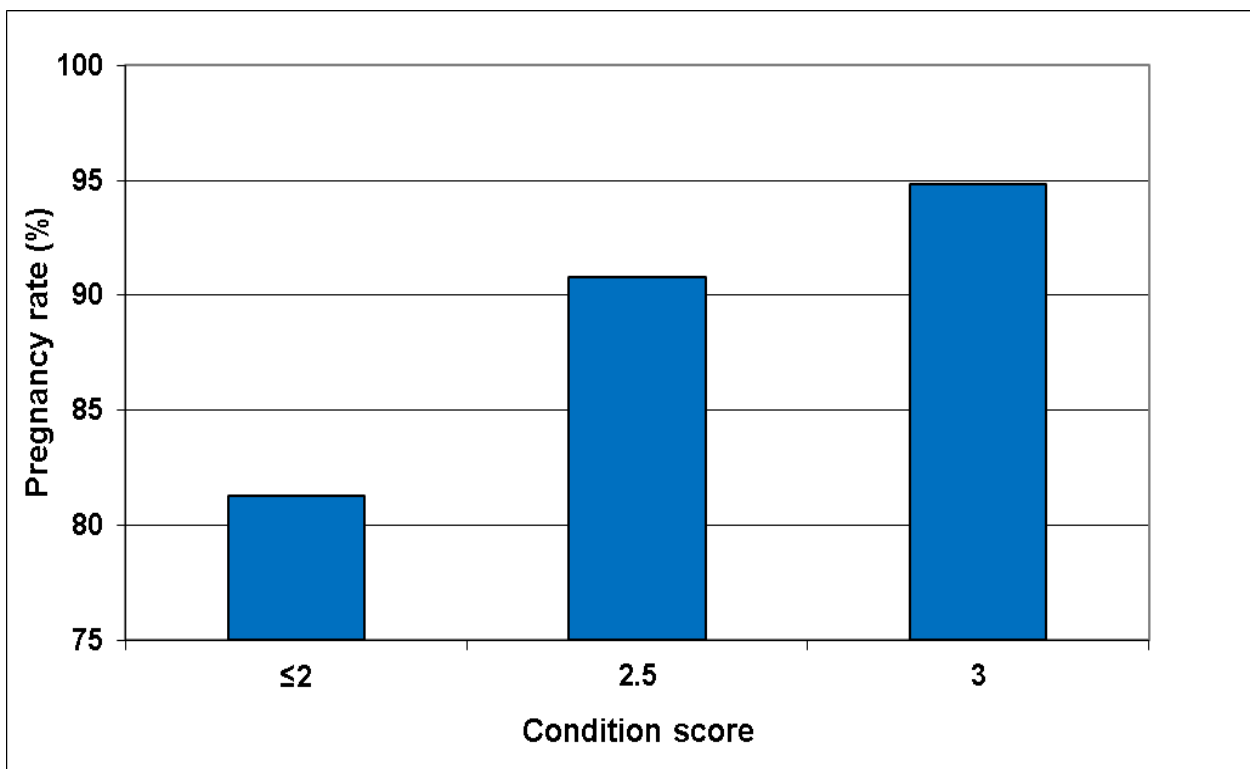
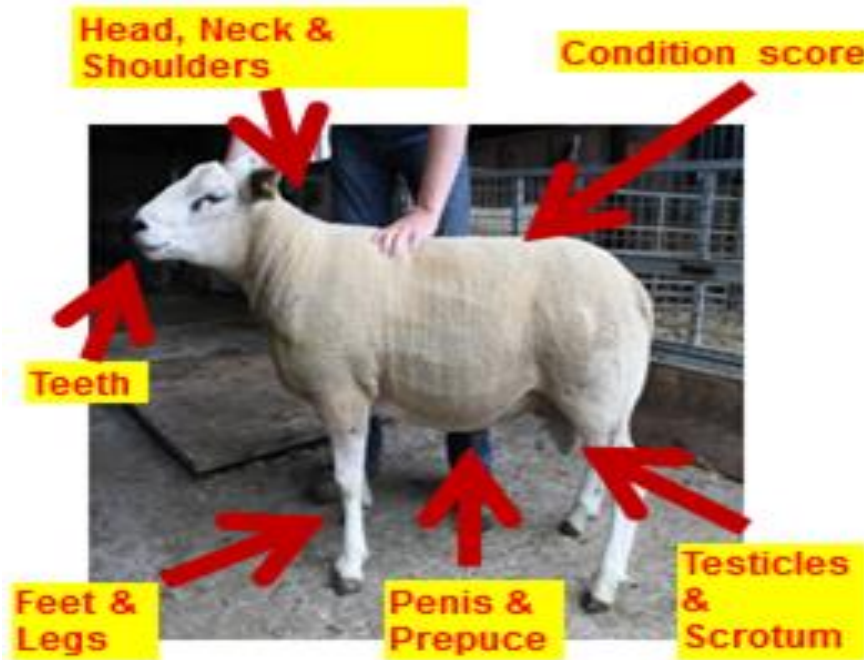


Figure 1. The effect of joining condition score on the pregnancy rate of hill ewes

Ram Breeding Soundness Examination (NCT)

Examining the ram prior to the breeding season is also essential and should take place at least **10 weeks prior to joining** to allow time to deal with any issues or to source replacement rams. The mating period is the only period of the year when the ram can contribute to the flock so it is essential that the ram is in good health and has a **BCS of 3.5 – 4.0**. The main areas for examination are shown in the picture below:



Some important points to remember when examining a ram:

1. Anything that effects the **negatively** effects the ram such as footrot etc. will reduce its ability to mate ewes
2. The better the rams **teeth and mouth** is the longer the ram will survive in the flock and the more likely it is to be in good BCS
3. Problems such as **Overshot/Undershot** mouths can be inherited by rams progeny
4. **BCS** is vitally important to ensure the ram has sufficient energy reserves to function throughout the breeding period
5. Size matters – **Testicle size** and sperm quality are related

Finishing Store Hill Lambs on Autumn Pastures and on an All Concentrate Diet

Take Home Message

- If good quality autumn grass is scarce or not available, it is advisable to sell the store lambs in August and prioritise available grass and feed supplies to improve the body condition of ewes and ewe replacements.
- If purchasing, quarantine procedures should be followed once lambs arrive on the farm
- Lambs should be vaccinated against clostridial diseases and pasturella, possibly orf (if purchased) and dosed for internal parasites including liver fluke.
- Maximise weight gain from autumn grass. Best liveweight gains are achieved in August to end of October but grass quality must be good and well managed at all times.
- If planning to put lambs on an all concentrate diet prepare a budget in advance.
- If finishing lambs on an all concentrate diet, ensure diet is formulated for this purpose, initially offer 300 g/lamb/day and increase by 200 g/lamb/days every 3 days until full feeding, and continue to offer a small quantity of long roughage (hay, silage, or straw). Ensure that lambs have water at all times
- When on a full concentrated feeding, regularly weigh lambs and market as they become fit.
- Differences between different strains of Scottish blackface lambs are small and almost all hill lambs are capable of meeting French market specification.

Introduction

The majority of these Blackface sheep are maintained on hills or marginal land that is not suited to other sheep breeds or other farm enterprises. The majority of the hill breeds are bred pure with an emphasis on producing flock replacements for retention or for sale. A proportion of the ewes, particularly in the better hill areas are crossed with either maternal breeds to produce quality replacements or crossed with terminal breed producing lambs for slaughter. Typically the cross bred lamb would be 3-4 kg heavier at weaning than the purebred hill lamb. Profits from these hill sheep enterprises is very much dependant on prices obtained for lambs sold. A large proportion of these lambs become available for sale annually from August onwards. Many hill lambs are sold to lowland finishers and reappear in the spring as hoggets. In recent years, prices for hill lambs and in particular light hill lambs in the autumn have been disappointing. Here we examine the options to improve the marketability and profitability of store hill land cross bred lambs.

Market

Traditionally, Ireland has been relying on the Mediterranean markets including Portugal, Spain and Italy to take the lambs from the hill flocks. In the past, these markets required carcasses from 10kg and upwards, with preferences for carcasses from 12 to 15kg. While hill lambs meet these weight requirements, demands from these markets have declined in recent years. In the past number of years purchasers of store hill lambs

in the autumn achieved good margins on these lambs because of good lamb and hogget prices in late winter early spring.

Performance of hill lambs on lowland pastures.

In the autumn of 2014 Teagasc purchased Scottish Blackface wether and ram lambs from 5 farms in Mayo, Galway and Sligo area. On arrival lambs were dosed for fluke and worms, and received an 8:1 clostridial and orf vaccinations. Lambs were placed on pasture and their performance measured until December 2015. Interestingly, the performance of the light lambs (<25kg) surpassed the performance of the heavier lambs. This might indicate that there was some compensatory growth in the lighter lambs. From Mid-October to mid-November the performance of all lambs declined to an average of 45g/day. After mid-November daily liveweight gain declined to 0g /day. During the autumn grazing period the performance of ram and wether lambs was similar (Table 2).

Table 2. Performance of Scottish Blackface male lambs on lowland Pastures Athenry 2014

| | Lamb Weight Category (kg) | | |
|---|----------------------------------|----------------|---------------|
| | <25 | 25.1-30 | >30 |
| Wt on 1 st August (kg) | 24.3 | 27.3 | 30.5 |
| ADG to 10 th October (g/day) | 145 | 110 | 104 |
| 10 week gain (kg) | 10.2 | 7.7 | 7.3 |
| Wt 10 th October (kg) | 34.9 | 35.30 | 38.10 |

Options for dealing with hill lambs

Because of the variability among hills and in the amount of green land available, there is no single option that best fits all hill farms.

Option 1: Sell at weaning

If good quality autumn grass is scarce or not available, it is advisable to sell the store lambs in August and prioritise available grass and feed supplies to improve the body condition of ewes and ewe replacements.

Advantages:

- Extra grass made available for ewe lambs and breeding ewes.
- Savings on flock health costs
- Improved cash flow

Disadvantages

- Poor prices for light lambs
- Limited markets.
- Lamb potential not exploited by primary producer

Option 2: Graze and sell mid-November

This requires excellent quality grass and grassland management. Usually lambs fail to perform for the first 2 weeks after going onto new pasture or are purchased in.

Advantages

- Heavier lambs
- Greater sale options
- Possibly higher prices

Disadvantages

- Less grass for ewe lambs and breeding ewes.
- Additional flock health costs
- Delayed cash flow

Expected Lamb performance

August – end Sept: 115g/day or 0.8kg/week

1st Oct – Mid Nov:: 60g/day or 0.4 kg/week

Total liveweight gain: After 12 weeks = 7.2 kg

This option would apply to purchasers of store hill lambs. Where lambs are being bought for autumn grazing it is important that they are purchased early in the autumn to maximise the gain from grazed grass.

Option 3: Graze + Supplementary meal feeding at pasture and sell mid-November

This also requires excellent quality grass and grassland management + meal feeding (300g/lamb/day) by trough

Advantages

- Heavier lambs
- Greater sale options
- Possibly higher prices

Disadvantages

- Less grass for ewe lambs and breeding ewes.
- Additional flock health costs
- Cost of concentrates (€6.30/lamb)
- Delayed cash flow and cash to purchase meal

Expected Lamb performance

August – End Sept: 155g/day or 1.1 kg/week

1st Oct – mid Nov: 100g/day or 0.7 kg/week

6-9kg concentrates required for 1 kg liveweight gain.

Total gain after 12 weeks = 11kg.

The direct cost of the meal consumed per lamb will vary from €6.30 per lamb (€250/ tonne) to €8.82 (€350/ tonne). The key question is will the extra liveweight gained (expected to be about 4 kg) by the lamb more than covered by price obtained for the lamb in November.

Option 4: Finish lambs on all-meal diet after weaning

This essentially requires housing the lambs and finishing them on an-all meal diet.

Advantages

- Extra grass for ewe lambs and breeding ewes.
- Heavier lambs
- French lamb prices

Disadvantages

- Cost of meal
- Large quantity of meal required particularly for light lambs
- A long finishing period for light lambs
- Additional flock health costs
- Facilities
- Delayed cash flow and cash to purchase meal.
- Lambs finished before price rise in spring.

Option 5. Graze for a period followed by finishing on all-meal diet

With this option the lambs are grazed until end of October or even longer when kept at a low stocking rate. During this period lambs would be expected to gain on average about 7-10 kg if grazed on very good quality grass. At the end of grazing period lambs would be housed and finished on an all meal diet. This is in fact the system that is followed by many lowland farmers. Store hill lambs are purchased in the autumn and grazed on grass until December.

Advantages

- Heavier lambs at start of meal feeding period
- Reduced meal requirement
- French lamb prices
- Higher prices in January-March.
- Reduced finishing period

Disadvantages

- Less grass for ewe lambs and Breeding Flock.

- Additional flock health costs
- Facilities
- Cash flow?

Performance of Scottish Blackface and Texel X Scottish Blackface lambs on an all concentrate diet (Study1).

In recent years, Teagasc at Athenry have conducted a number of studies on the finishing of wether and ram Scottish Blackface and Texel cross Scottish Blackface store lambs on an all concentrate diet. The ration fed was 70% cereal ration with 15% protein and a UFL =1. The diet was formulated for this purpose and contained 0.5% ammonium chloride to mitigate the risk of urinary calculi. The ration was initially offered at 300 g/lamb/day and increased by 200 g/lamb/days every 3 days until full feeding was achieved. This usually took 12-14 days. A small quality of silage (400g/day wet weight) was offered to lambs. The performance of light and medium Scottish Blackface and Texel cross lambs are summarised in Table 3.

Table 3. Performance of light and medium weight Scottish Blackface and Texel cross Scottish Blackface when finished on an all concentrate diet.

| | Scottish Blackface | | Texel x Scottish Blackface | |
|----------------------------|--------------------|--------|----------------------------|--------|
| | Light | Medium | Light | Medium |
| Starting weight (kg) | 24.8 | 29.1 | 24.9 | 29.9 |
| Days on full diet | 73 | 61 | 65 | 60 |
| Total meal intake (kg) | 89.4 | 72.6 | 82.2 | 77.6 |
| Daily intake (kg) | 1.24 | 1.19 | 1.26 | 1.3 |
| ADG (g/day) | 206 | 197 | 277 | 230 |
| FCE | 6.4 | 6.8 | 4.6 | 5.7 |
| Liveweight gain (kg) | 14.2 | 11.3 | 17.0 | 13.2 |
| Slaughter weight (kg) | 39.0 | 40.4 | 41.9 | 43.1 |
| Carcass weight (kg) | 17.1 | 17.6 | 17.4 | 19.3 |
| Carcass Conformation | | | | |
| % 'U' | 0% | | 20% | |
| % 'R' | 80% | | 80% | |
| % 'O' | 20% | | 0% | |
| KO% | 43.81 | 43.63 | 41.60 | 44.60 |
| % Carcass > 15 kg (French) | | 96 | | 100 |

The Texel cross lambs had higher performance than the Scottish Blackface lambs, had higher intake and were more efficient converters of ration to liveweight gain and had better carcass conformation. Almost all lambs reached French market specification. In a subsequent study (Study 2) lambs were purchased at the end

of July and grazed for period during the autumn and then housed and finished on an all concentrate diet. These lambs were heavier when placed on the all-concrete diet. Diet and feeding arrangements were similar to Study 1. Lamb mortality in this study was 1 lamb from 200 or 0.5%. Results are summarised in Table 4.

Table 4. Performance of heavy Scottish Blackface and Texel X Scottish Blackface lambs on an all concentrate diet.

| | Scottish Blackface | | Texel X | |
|-------------------------|--------------------|----------|---------|----------|
| | Ram | Castrate | Ram | Castrate |
| Start weight(kg) | 36.9 | 36.0 | 40.8 | 41.2 |
| Final live weight(kg) | 46.3 | 43.8 | 54.1 | 52.9 |
| Days on full diet | 36 | 36 | 36 | 36 |
| ADG (g/day) | 255 | 218 | 364 | 315 |
| Total Gain(kg) | 9.2 | 7.8 | 13.1 | 11.3 |
| Daily feed intake(kg) | 1.42 | 1.41 | 1.66 | 1.63 |
| FCE | 6.29 | 7.08 | 4.73 | 5.51 |
| Carcass weight (kg) | 20.65 | 20.47 | 25.60 | 25.82 |
| Kill out (%) | 45.0 | 47.1 | 47.0 | 48.1 |
| Carcass fat score (1-5) | 3.22 | 4.21 | 3.04 | 3.77 |
| Carcass grade (1-5) | 2.57 | 2.57 | 3.72 | 3.68 |

Rams lambs of both breed types had a higher daily gain and were more efficient converters of ration to liveweight gain than castrated wether lambs. As expected rams lambs had lower killing out rates, particularly Scottish Blackface ram lambs. Scottish Blackface lambs had significantly poorer conformation than Texel cross lambs with rams lambs. At carcass weights of 20.5 kg, the carcasses from Scottish Blackface lambs were becoming over fat. This would suggest that when finishing Scottish Blackface wether lambs on an all concentrate diet the target carcass weight should be not more 18.5-19 kg. Rams lambs can be brought to a heavier carcass weight without becoming over fat.

Comparative performance of Cheviot, Mayo-Connemara, Lanark and Perth type males lambs.

Teagasc have recently undertaken to examine the performance of Cheviot, Mayo-Connemara, Lanark and Perth type males lambs when finished on an all-concentrate diet. All lambs were castrated. Preliminary results are presented in Table 5. The performance of the Cheviot lambs, measures as average daily gain (ADG), was significantly higher than the 3 Scottish Blackface breed types which were all similar. The Mayo-Connemara Scottish Blackface had a similar kill out percentage (KO %) to the Cheviot lambs. However, both Cheviot and Mayo-Connemara Scottish Blackface lamb types had significantly higher KO% than the Lanark and the Perth types. Mayo-Connemara Scottish Blackface bred type tended to be fatter and have poor conformation than the other 3 breed types which were all similar. Data on feed conversion

efficiency are not yet available. All lambs were deemed suitable for the French market and achieved premium price.

Table 5. Comparative performance of Cheviot, Mayo-Connemara, Lanark and Perth type males lambs on an all-concentrate diet.

| | Breed type | | | |
|----------------------|------------|--------------------------------------|------------------------------|-----------------------------|
| | Cheviot | Mayo-Connemara Scottish Blackface | Lanark Scottish Blackface | Perth Scottish Blackface |
| Weight at Start (kg) | 29.5 | 29.9 | 29.0 | 28.9 |
| Days on diet | 62 | 62 | 62 | 62 |
| ADG (g/day) | 226 | 191 | 200 | 202 |
| Final weight (kg) | 42.6 | 40.9 | 41.4 | 41.5 |
| Carcass weight (kg) | 19.2 | 18.3 | 17.8 | 17.7 |
| Kill out (%) | 45.0 | 44.7 | 43.0 | 42.5 |
| Conformation score | 2.5 | 2.2 | 2.5 | 2.6 |
| Fat Score | 3.0 | 3.3 | 2.9 | 2.8 |

Shearing of lambs.

Results from a study just completed in Athenry recorded no effect of shearing of the lambs at the start of the indoor feeding period had no effect on average daily gain, feed intake feed conversion efficiency or final carcass weight. Not surprisingly kill out percentage was 1.2 percentage points higher in shorn lambs. Based on these results there is no benefit to shearing lambs at start of indoor feed period. If contemplating shearing of hill lambs it is probably best to do it in August.

Variation in lamb performance.

A significant feature of all of the recent studies at Athenry has been the observed significant variation in the liveweight performance of lambs on an all concentrate diet. Much of this variation in performance is directly related to the intake of concentrate feed by the lamb. Lambs with high intakes of 1.8-2.0 kg per day will perform at close to 450-500 g per day while lambs eating less than 1 kg per day will perform at about 100 g per day. Therefore, in any group of lambs there is going to be a mixture of low and high performing lambs. To avoid lambs becoming overweight and over fat it is vitally important to weigh lambs on a regular basis particularly as they approach slaughter weight.

Factors affecting margins per lamb.

The impact of varying meal prices, factory lamb price and mortality on margin per lamb is presented in Table 6. The impact of changes in meal prices is most significant when feeding lighter lambs and aiming to

bring them to “French” weights reflecting the fact that they require larger meal inputs. Increasing factory lamb price has a consistent effect across the different lamb weight ranges. The impact of increased lamb mortality is greatest with heavier lambs reflecting the increased value of a heavier lamb at the start of the feeding period.

Table 6. The impact of varying meal prices, factory lamb price and mortality on margin per lamb

| | Lamb starting Weight (kg) | | |
|---|---------------------------|------------|------------|
| | 25 | 30 | 35 |
| €20 increase in meal price | €-1.78 | €-1.24 | €-0.70 |
| 20 cent increase in lamb factory price | €3.80 | €3.80 | €3.80 |
| 1 Percentage point increase in lamb mortality | €0.56-0.59 | €0.63-0.70 | €0.69-0.75 |
| Impact of grass quality (August to Mid Oct) on margins | | | |
| Poor-Average | €4.11 | €4.11 | €4.09 |
| Average – Good | €3.18 | €3.18 | €4.41 |
| Total Poor-Good | €7.29 | €7.29 | €8.50 |

Lamb Health

If purchasing lambs, it is always preferable to purchase lambs from a known source and with a known flock health and vaccination records. Purchased lambs should, on arrival on the farm, be given a “quarantine” dose for gastrointestinal worms and liver fluke, foot bathed, housed for 48 hours, vaccinated against clostridial diseases and pasturella pneumonia and isolated from other sheep on the farm for 2 weeks.

Conclusions

A decline in demand for light hill lambs in recent years has led to poor prices being paid for these lambs. However, through careful management, value can be added to these lambs. Every effort should be made, through planned grassland management to maximise weaning weight. There are then a number of options open to deal with these weaned hill lambs. They can be sold directly for slaughter for the limited light carcass market, they can be sold as stores for further feeding or they can be successfully fattened by the producer on a high concentrate diet to achieve the French type carcass. Greater than 95+% of male Scottish Blackface lambs are capable of producing carcasses of > 16kg. Even light hill lambs can be finished on an all concentrate diet. To improve the economics of the system the objective should be to maximise the lamb gain from autumn pasture. The latter requires excellent sheep husbandry to minimise lamb loss and maximise lamb performance. It’s vital to be able to obtain a quality ration at a competitive price. The ration must be formulated for intensive feeding of lamb.

Introduction

- Increasing reports of pesticide contamination of drinking water supplies
- **MCPA** is the principal residue of concern, but 2, 4-D, triclopyr, mecoprop and glyphosate are also causing problems.



Drinking water standard for individual pesticides = 0.1 microgram/L

- Equivalent to one drop in an Olympic-sized swimming pool (= 1 stem in 111,000 hay bales, 1 baked bean in 21 million cans, 1 second in 317 years)

One foil seal contains enough pesticide to breach 0.1 microgram/L level along **30 km** of a typical stream (width = 1 m, depth = 0.3 m)



To note

- New revised maximum individual dose of **1350g active ingredient per ha** (straight MCPA products)
- Tractor mounted sprayer only (NOT approved for knapsack or weed licker)
- A **5m buffer zone** must be observed with all products
- Do not apply between the **end of September and the beginning of March**