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Edition 2

LAMBING OUTDOORS

A practical guide for organic flocks and grass based systems

SHEEP MANAGEMENT MATTERS

A series on Sheep Management Topics from the Meat and Livestock Commission

MLC

In line with the key objectives of the MLC this revised booklet in the Sheep Management Matters series summarises two methods of managing an outdoor lambing flock with an emphasis on productivity, efficiency and high levels of welfare.

Invited author

John Vipond
Animal Biology Division
Scottish Agricultural College
Bush Estate
Penicuik, Midlothian
EH26 0PH

John is the Senior Sheep Specialist with SAC at Edinburgh and has been active for many years in research and consultancy to the UK sheep industry.

Editor

Dr Jenny Anderson
Meat and Livestock Commission

Jenny Anderson is the MLC's sheep scientist. Jenny started work as a shepherd and has an extensive knowledge of practical sheep production and husbandry, as well as scientific knowledge. She has an ANCA in sheep production from Kirkley Hall, a BSc from Edinburgh University, a MSc from the University of Wales and undertook her PhD on "An evaluation of entire males for lamb production" at the University of Newcastle. After completing her PhD Jenny worked for SAC as a Research Scientist working on the Booroola gene in sheep.

Front cover photograph supplied by Farmers Weekly

Introduction

Larger flocks are turning to lambing outdoors on grass to save labour costs associated with housing and because lamb mortality can actually be reduced if the weather is good. Lambing outdoors is also beneficial to organic producers as it reduces the risk of watery mouth and thus reduces antibiotic use. New thinking and results from research on behaviour have been incorporated into outdoor lambing systems.

Management of an outdoor lambing flock aims to encourage the survival of lambs by working with nature, not by completely dominating nature as occurs with indoor lambing.

Reducing lamb mortality

More lambs die through poor ewe to lamb bonding than lambing difficulty. More attention paid to improving maternal bonding will pay off better than time spent attending to lambing ewes. Ewes with good maternal behaviour lick lambs vigorously and make rumbling noises. Good lamb behaviour is vigorous udder seeking activity. Much of the ewe's maternal responses are triggered by release of oxytocin in the brain which may be reduced by under nutrition or a prolonged labour. When fostering lambs cervical dilation with a gloved hand encourages release of oxytocin in the brain and triggers maternal behaviour.

Where ewes have twin lambs recent Australian work shows that the longer a ewe remains on the birth site the better the chances she has of rearing them. Natural topographical features such as shelter belts and areas where ewes can seek isolation improve lamb survival.

The establishment of strong mother/offspring bonding, adequate shelter and good supervision

Ewe and lamb bonding

ensures high lamb survival rates in flocks lambing outdoors and will minimise the work load and stress levels at this busy time of year. This booklet describes two well established methods of managing an outdoor lambing flock by drift lambing and set stocked lambing. Their relative advantages and disadvantages are discussed in relation to the lambing site and general practical advice on subjects such as exposure and starvation are provided.

Information in this booklet is relevant to both spring and May lambing flocks.

Ewe and lamb behaviour before and after parturition.

A majority of ewes actively seek isolation for lambing. The proportion within a flock doing this varies according to breed, the tendency being stronger in hill breeds (which traditionally lamb outside) than crossbreds or lowland/terminal sire breeds. The advantages of isolation to the ewe include less interference from other ewes which, if close to lambing themselves, will try to steal lambs or, if they have lambed, may attack 'foreign' lambs. The advantage to the lamb is that it is less likely to bond to a foreign ewe since, after birth, it will seek the nearest moving object.

Isolation aids bonding in that the chosen birth site gets soaked in amniotic fluid and helps the ewe identify its lamb/s by smell, although this effect is transient as the ewe and offspring soon learn to recognise each other's bleats. Leaving ewes to choose a birth site and not moving them from it helps bonding. Ewes lambing outside are less confused by scent contamination due to handling, disinfectants etc. and may therefore bond better to lambs. This may improve lamb performance and, where ewes have triplets, may improve the chances of her rearing them to weaning.

Ewes seek shelter before lambing, particularly if wind speed is over 11 km/hour; hill ewes are more likely to show this behaviour. Maternal behaviour is affected by the vigour of lambs at birth and, to be maintained, requires the lamb to suck; the stronger the lamb sucks the better the bonding. This should have become well developed by 12 hours of age by which time most ewes will not abandon lambs. This makes tasks such as movement of ewes and lambs much easier. Sites with natural isolation provided by rushes and other perennial weeds or trees are preferred by ewes and often are more sheltered.

Ewe and twins bonding

Choosing a management system

Choice of site

The lambing field(s) chosen should offer shelter as well as being well drained and in the case of hill flocks be rested from grazing since January. Close proximity to buildings or handling pens is an advantage for dealing with problem ewes. Alternatively the use of strategically placed field pens is recommended. If possible, choose a new site for lambing pens each year, or where this is not practical keep the field clear from sheep for as long as possible before lambing and consider dividing the field into two, using one half for the first three weeks of lambing and the other half for later lambing ewes. This will minimise the risk of infecting later born lambs with all the bugs that have been rapidly building up over the lambing period.

Except in good weather ewes with twins and triplets are best penned up for their first night, to aid ewe/offspring bonding. Use pens measuring 1.5m x 1.5m (5ft x 5ft) and allow one pen per eight to ten ewes and provide clean water and full protection from the weather. Outside pens with top, back and side protection from the weather may be warmer than pens erected indoors, which are often drafty and poorly drained. Avoid the re-use of pens where lambs have died or scoured, at least until the pen has been thoroughly cleaned and disinfected.

Light sheep hurdles can be kept in the lambing field or on an ATV trailer. Ewes observed lambing or starting to lamb close to darkness can be captured and penned on their chosen birth site temporarily overnight. This will reduce mismothering and aid management in the morning.

Choice of lambing systems

The choice of lambing system most suitable to an individual sheep producer will depend on farm circumstances such as field layout, expected rainfall, availability of shelter/housing, mothering ability of ewes, personal preferences of the shepherd, quality of the dogs and degree of mechanisation.

Drift lambing vs set stocking

Drift lambing is suitable when the farm does not lend itself to easy access to all fields or only a couple of fields are good for lambing in. As all lambs are moved out of the lambing paddocks shortly after birth this system allows castration with rubber rings. Set stocked systems by comparison rely on a post lambing gather when lambs are around four weeks old for castration and tailing and by law the Burdizzo technique of castration is recommended.

Ritchey Nipper Burdizzo in use for castrating lambs

Drift lambing

Farmers have not generally found the Burdizzo easy to use. However, recent MLC funded research work at SAC has resulted in new operator friendly equipment (Ritchey Nipper). Also, better working practices have been developed using effective handling equipment such as the Poldenvale Dinkum Docker. The chore of castration is thus less onerous and it can be combined with other essential husbandry tasks, eg vaccination/dosing to make effective use of labour.

The Drift Method of ewe management at lambing

The method described here was developed in New Zealand and first described by David Sullivan (Nuffield scholar) who adapted it for UK conditions and May lambing flocks. Drift lambing is a moderately interventionist system involving the movement of bonded ewes and lambs from the lambing paddock to individual pens for castration/tailing, then on to grazing fields the next day.

The objective of drifting unlambed ewes out of the way is to reduce interference of lambed ewes by unlambed ewes and interference of unlambed ewes by personnel involved in attending to lambed ewes. It normally relies on access to the paddock with a tractor and transport box that can carry up to 4 ewes and their lambs separately to the individual pens, although this may be achieved alternatively by walking out ewes and lambs in small flocks. A larger transport trailer (eg one carrying up to 24 ewes) is used for transfer to the grazing fields. The main features of the system are that it allows castration with rubber rings and offers shelter for young lambs in individual pens if the weather turns bad for a day or two. Drift lambing therefore combines the advantages of allowing ewes to choose the birth site and lamb naturally with minimum interference with individual attention for all lambs.

Essential requirements for this system are high maternal instincts of the ewe and familiarity with being handled. In practice it has worked well with mule type flocks, less so with purebred hill breeds in an upland situation.

Description

Ewes are stocked initially high with actual rates dependent upon quality of grazing and time of year. In late lambing flocks on good grazing this can be as high as 75 ewes/ha falling to 25/ha.

A day paddock and a night paddock are employed. The typical sequence of events is shown and described on page 7 (times may vary a bit between days due to circumstances).

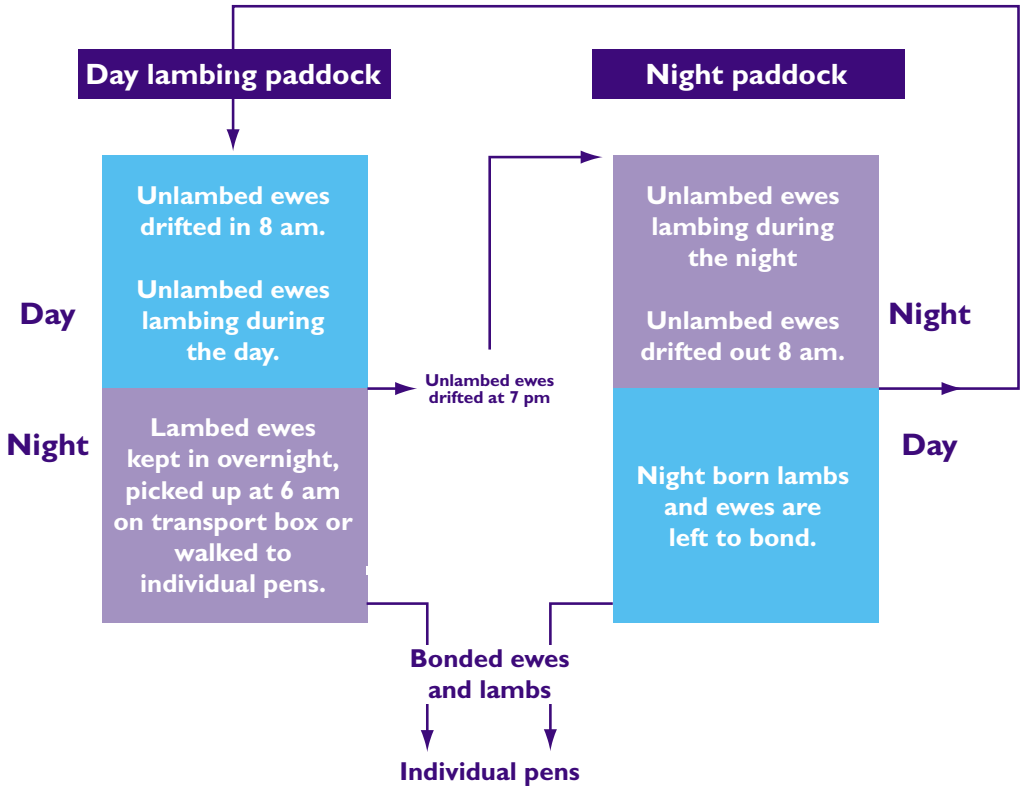
Day lambing paddock

Ewes enter the day lambing paddock from the night paddock at 7 to 8 am. During the day ewes lamb with minimum disturbance only attending to those having difficulty. Experience suggests the incidence of lambing difficulty is reduced owing to slightly smaller lambs and better muscle tone in grazing versus housed ewes.

Unlambed ewes are drifted out at 7 pm (once used to the system, which can be started pre lambing, they move readily with minimal dogging). Any ewe that is close to lambing can stay behind.

Lambed ewes are left overnight until 6 am; by then lambs are over 12 hours old and have bonded well to ewes. Ewes follow lambs easily

Drift lambing



into a transport box and are moved to individual pens. Difficult ewes can be chased into a strategically placed catching pen situated next to the gate into the night paddock.

Night lambing paddock

Unlambed ewes enter the paddock at 8 pm. At 8 am the next morning unlambed ewes are drifted out into the day paddock. Lambed ewes remain with their lambs in the night lambing paddock during the day to bond. At 6 pm the lambed ewes are transported to the individual pens and the field cleared by 8 pm when the ewes come back in. During the day lambs are colour marked using a system of dots to identify twin or triplet members of the same family.

Individual pens

Lambed ewes with lambs 12 hours old are brought in by transport box at 6 am from the day lambing paddock and 6 pm from the night lambing paddock. Ewes are put in the pens as a holding area to ensure any problems are sorted out prior to being removed to remote

fields. Lambs are rubber ringed and tailed (rings). Navels are dipped with strong iodine on entry to the pen. Ewes' udders/teats are checked and any weakly lambs given supplementary colostrum. Strong triplet lambs are removed for cross fostering. Any problem ewes, eg large teats, pendulous udders, are assisted to suckle.

Alternatives to individual pens and catching all ewes

Not all farmers are prepared to make up individual pens and some just move ewes plus lambs on to a sheltered area fenced off from the main summer grazing area or walk ewes into handy adjacent fields next to the day/night paddocks. Generally Mule ewes can be lifted mechanically but purebred hill ewes may be less easy to catch and for such ewes they are better walked out to adjacent paddocks.

Cross fostering

This can be attempted in the individual pen by normal techniques (head restraint) or ewes in the field can be penned where they have lambed and a wet foster attempted - this apparently is more successful than when the ewe has been moved from its 'chosen' patch which has the odours from the amniotic fluids that she uses to identify her lambs and which she recognises as 'her' territory containing 'her' lambs. Wet fostering is aided by dilation of the ewe's cervix using a gloved hand. This stimulates oxytocin release and encourages the ewe to lick the foster lamb.

Drift lambing

Advantages and disadvantages of drift lambing

Advantages

1. Less time spent travelling allowing one man, with part time assistance in the lambing pens, to look after up to 600 ewes. It is most relevant where only a few sheltered paddocks are available or the farm layout of fields is spread over a large area.
2. Allows ewes to seek and achieve isolation and to lamb on the chosen birth site. This results in less risk of interference and enables the lamb to bond to the right ewe.
3. Allows castration/tailing to be carried out using rubber rings and all ewes to be fully checked before going to grazing field. If clean grass is being used ewes can be wormed.
4. Enforced contact with a foster lamb, **on birth site**, less likely to result in the ewe injuring lamb and more likely to ensure successful adoption.
5. Weakly lambs can be housed (or individual pen roofed) and given supplementary feed in bad weather.
6. Allows very high stocking rate of lambing fields. If using saved pasture, eg. May lambing, the reducing stocking rate maintains grass supply.
7. Suits farmers wanting closer control of lambed ewes. More relevant for gimmers with first lambs and high prolificacy flocks.
8. Allows greater care of lambs. Routine occupation of individual pens is 3-4 hours for ewes penned in the morning and 15 hours for ewes penned at night.
9. Allows identification of ewes that are barren or abort for future culling.

Disadvantages

1. More handling of ewes than lambing without moving.
2. Needs individual pens (one/10 ewes), transport box (carries 4 ewes and lambs) and transport trailer.
3. Could get pasture damage and soiled grass in very bad weather due to high stocking rate.
4. Dependent on ewes being relatively tame and willing to follow lambs into transport box, less suitable for hill ewes or flighty types.

Set stocked lambing

Ewes are set stocked on the fields set aside in January for lambing. Stocking rates of about 12/ha are typical where sward height is over 6 cm but at higher stocking rates than this mismothering is more likely. Ewes should not be separated on basis of raddle marks. However if ewes are scanned they can be separated on the basis of expected litter size and potential management problems.

Ewes are visited every 3-4 hours by ATV for observation during daylight hours. Ewes having difficulty are caught using a stick and lambed. If cross fostering or other attention is needed and the weather is good, ewes are temporarily tethered until 4 hurdles can be put round them, or transported back to individual pens inside if weather is bad.

Lambs from the same litter are given a common number to help avoid mix ups. Numbering the ewe is not essential. If things are not too busy, and weather is good, lambs can then be caught, castrated and tailed. However in busy times and if everything is going well not all lambs may be handled. At busy times and in bad weather no castration or tailing should be attempted. Management is restricted to dipping navels, checking udders and teats, suckling weakly lambs, birth site cross fostering or removal of ewes to individual pens indoors for other problems, eg ewes with prolapse/milk fever/staggers or pregnancy toxaemia.

Extra contract shepherds may be brought in for peak lambing periods (3 weeks). When 70-80% of ewes have lambed, the unlambed ewes are drifted out into a single field for attention by permanent staff. Set stocked lambing of ewes may be restricted to those ewes scanned as carrying twins only. Troublesome ewes such as maiden gimmers, ewe hoggets, broken mouthed ewes, triplet bearing ewes and single bearing ewes may be either housed (particularly hoggets/single bearing ewes needing cross fostering) or run outside (particularly broken mouthed ewes/ewes carrying triplets). In both cases they should receive the best pasture/most shelter but concentrate feeding is not usually needed for May lambing flocks. Cross fostering may be done in this system in the traditional manner by head restraint indoors.

Set stocked lambing

Advantages and disadvantages of set stocked lambing

Advantages

1. In good weather with fit young ewes and low lambing percentage, set stocking allows maximum numbers of ewes to be maintained per shepherd.
2. Lower requirement for pens and transport of ewes and lambs but a transport box still required.
3. Suitable for ground, too steep/rough for tractors and for shepherds not confident on ATV'S.
4. More suitable where lambing percentage below 175% with ewes having easy care attributes.

Disadvantages

1. All ewes and lambs have to be handled later (4-6 weeks) for tailing and castration of lambs using the Burdizzo method (see SAC Technical Note T355: Castration of lambs - the law and methods).
2. Requires either highly skilled personnel able to catch ewe with dog and stick or fit younger person able to catch ewes with a stick.
3. More time spent travelling looking at sheep. Typically one man can look after 350 ewes in a lowland situation (150-160% lambing).
4. Possibility of disturbance of lambing ewes by activities.
5. Needs sheltered paddocks.
6. Grass can get out of control unless other stock brought in, eg hoggets, or lambing ewes drifted out to other paddocks.
7. Since all ewes are not handled at lambing time more difficulty in identifying eild ewes from aborted ewes at shearing, thus less precise culling.

Problems with lambing difficulty

More experience has been gained with outdoor lambing since the first booklet was written in 1997. The major problem with outdoor lambing apart from severe weather (when ewes should be housed overnight without feeding if possible) has been hung lambs. These occur because the lamb has grown too big to be lambed naturally. Most farmers practising May lambing with turnout in early/mid April, which allows most ewes about four weeks on grass before lambing, have observed ewes appear to put on condition pre-lambing. If they start at Condition Score 2½ they end up as 3 or more and this leads to hung lambs. Ewes are better turned out in Condition Score 2-2½ when they have four weeks grass before lambing.

Hot weather

Lambs born in hot weather are lethargic and elicit poorer mothering responses, lambs may not be well licked and navel ill may be a problem. Flies can be troublesome also. Dip navels in strong iodine solution if possible.

Exposure and starvation

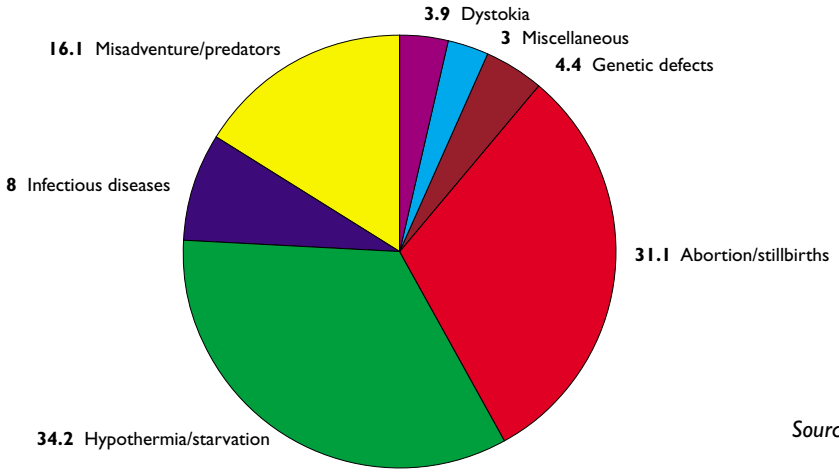
Exposure and starvation are the biggest causes of loss in outdoor lambing flocks. Hypothermia (chilling due to exposure) occurs when the new born lamb loses heat more quickly than it can produce it, even though energy reserves are present. The unlicked lamb in a blizzard is the extreme example.

Hypothermia due to starvation (hypoglycaemia - shortage of blood glucose) occurs in lambs over 12 hours of age where reserves have been used up and have not been renewed from colostrum. This happens after mismothering even in good weather, although bad weather conditions will hasten the lamb's death. It is vital that the lamb receives colostrum within the first two hours of birth if starvation is to be prevented. It is both a rich source of food, in particular energy, and a source of antibodies protecting the lamb from disease.

In most cases the lamb finds or is helped to find the teat and sucks naturally. Where there is doubt about whether a lamb has sucked or how much it has taken, colostrum should be given by stomach tube. A bottle should not be used with weak lambs as there is a serious risk of causing pneumonia by the inhalation of milk. Lambs showing signs of diarrhoea or watery mouth can not digest milk or colostrum and should be fed electrolyte replacement solution containing 10% glucose by stomach tube.

A stomach tube is less useful with older severely chilled (hypothermic and hypoglycaemic) lambs. These lambs are often weak or semi-conscious and can not raise their heads. Unless used with care and experience the tube can be passed into the windpipe and the animal drowned. Even if the feed is successfully placed in the stomach, absorption of the milk is very slow (glucose is faster) and there is a risk of regurgitation and inhalation of the feed into the lungs. Such lambs with a temperature below 37°C can be revived by use of intraperitoneal glucose as outlined on page 15.

Relative importance of different causes of lamb deaths in hill sheep



Source: ADAS

Yogurt - health food for lambs

Adequate colustrum intake is vital for the health and survival of new-born lambs. As a general rule lambs born inside require 230-240 ml/kg body weight, and lambs born outside require 280 ml/kg (divided between several feeds) during the first 24 hours of life. Colostrum intake boosts the lamb's ability to generate heat by 40%, provides antibody protection both locally within the gut and systemically within the blood, and acts as a laxative helping to expel meconium (the first dark brown dung), the retention of which has been associated with watery mouth.

The bacterium which causes watery mouth *(E.coli)* is a common inhabitant of the sheep's environment and numbers build up over the lambing period. New-born lambs inevitably ingest *E.coli* but adequate colostrum intake can help prevent their establishment by acidifying the stomach contents. The risk of enteric disease is increased where colostrum intake is inadequate and lambs ingesting large numbers of bacteria may appear depressed and/or bloated at 2-3 days of age. Around 30ml of natural yogurt, given by stomach tube at 24hrs of age, is beneficial in helping to acidify the lamb's stomach contents and thereby preventing/treating these symptoms.

Colostrum requirements of lambs

Size of lamb	Example rearing type	Colostrum requirement
Large lamb	Average single (5 kg)	250 ml/feed 3 x daily
Medium lamb	Average twin (4 kg)	200 ml/feed 3 x daily
Small lamb	Average triplet (3 kg)	100 ml/feed 4 x daily

Keeping lambs alive

Procedure for reviving chilled lambs		
Temperature	**Age of animal**	**Treatment**
37-39°C (99-102°F)	Any age	Dry the lamb Feed by stomach tube Give shelter with ewe and other lambs Check temperature again soon
Below 37°C (99°F)	0-5 hours	Dry the lamb Warm lamb in a warmer until temperature returns to 37°C Feed by stomach tube Return to ewe or transfer to 'weak lamb unit'
Below 37°C (99°F)	More than 5 hours and able to hold up its head	Dry lamb Feed by stomach tube Warm lamb in a warmer until temperature returns to 37°C Feed by stomach tube Return to the ewe or transfer to 'weak lamb unit'
Below 37°C (99°F)	More than 5 hours and not able to hold up its head	Dry lamb Give intraperitoneal injection of glucose Warm lamb in a warmer until temperature returns to 37°C Feed by stomach tube Return to the ewe or transfer to 'weak lamb unit'

Notes on table:

1. Transport: If treatment of the lamb has to be delayed, eg for reasons of distance, it may be wrapped in tinfoil to reduce heat loss.

2. Drying: Drying speeds up warming by reducing heat loss. It also ensures that the lamb will come to no harm in the warmer.

3. Feeding: Ensure that the lamb gets a feed of ewe's or cow's colostrum at least three times a day if it cannot be returned to the ewe, in quantities as described earlier. This should be given by stomach tube attached to a 50ml hypodermic syringe. Ewe milk replacer may be used if necessary for lambs over 2 days of age. Lambs being tube fed for an extended period are more susceptible to gastro-intestinal infections, especially if colostrum has been given too late or in insufficient quantity. Administration of oral antibiotics to the lamb may help to reduce the risk - ask your veterinary surgeon's advice.

4. Mothering: If the lamb is one of twins or triplets, remove the other lamb or lambs from the ewe at the same time. The pair or trio should then be mixed thoroughly for a time to re-establish smell before going back to the ewe.

5. Lamb warmer: Lambs are warmed in a chamber maintained at 35-40°C. The lamb should be left in the warmer until its temperature reaches 37°C. The warmer temperature must not exceed 40°C. Dry the lamb before placing in the warmer, otherwise evaporation of water will cause further chilling.

6. Glucose injection: Starved lambs over 5 hours of age can have very low blood glucose levels and may develop fit-like behaviour and die during warming. The most effective way of raising blood glucose is to inject glucose solution into the abdomen, ie an intraperitoneal injection. Your veterinary surgeon will show you how to do this simply and safely. Glucose solution is supplied at a strength of 40% and has to be diluted 50:50 with recently boiled water to obtain the required 20% solution. This procedure conveniently produces a solution for injection at approximately the correct temperature (blood heat – 39°C). As there is a risk of introducing infection when giving the glucose injection, the injection site should be pre-sterilised with strong iodine solution and an injection of long-acting antibiotic given at the same time - consult your veterinary surgeon on this matter. If a glucose injection is not possible, some benefit may be derived from feeding the lamb by stomach tube provided it is not too weak. However, it is more difficult for such lambs to recover.

Aftercare

Lambs should be returned to their dams as soon as possible after warming, but it is essential to ensure the link is strong before turning out. The lambs must be well fed - if in doubt about its welfare check its temperature.

If a lamb cannot be quickly returned to a ewe, perhaps because it is weak, it should be isolated in an individual cardboard box lined with newspaper and under an infra-red lamp suspended at a height of about 1-2m (4ft). After use, the box and newspapers should be burned. The lamb should be fed at regular intervals by stomach tube until returned to a ewe.

Feeding a lamb by stomach tube

Further information and training

To build up confidence in resuscitation techniques for lambs, onsite training is recommended, eg LANTRA organised courses. A useful video has also been produced by David Henderson and is available from the Farming Press on 01473 241122. The booklet “Keeping Lambs Alive”, No 2 in the Sheep Management Matters series, is available free from the MLC.

Further details of management services are available through SAC or Signet advisers.

99353 • 99147 • 8M • 12/99

MEAT AND LIVESTOCK COMMISSION
PO BOX 44
WINTERHILL HOUSE
SNOWDON DRIVE
MILTON KEYNES
MK6 1AX
TELEPHONE (01908) 677577 FAX (01908) 609221