Effective Fostering and Artificial Rearing of Lambs

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In memory of our late colleague
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Summary

- It is important that the farmer or shepherd can identify which lambs may need to be fostered or artificially reared and that they have the necessary training to do either technique successfully.

- There are four basic fostering techniques (1) rubbing-on at birth; (2) late rubbing-on; (3) lamb adopters; and (4) skinning. Irrespective of the fostering technique which you use, remember these following basic rules:
  - Do not use weak or sick lambs.
  - Do not use sick ewes or ewes that may have aborted their own lambs.
  - Do not use ewes with insufficient milk.
  - Do not use very old, very young or inexperienced ewes
  - Do not let the lamb(s) starve.
  - If at first you don't succeed, give up!

- If a lamb cannot be raised by its natural mother or fostered onto another ewe then it will have to be reared artificially. Rearing lambs in this way requires the very highest level of stockmanship and dedication if the lambs are to be reared successfully.

- Ewe colostrum is the best food for the newborn lamb. If possible accumulate a store of ewe colostrum by milking ewes with a plentiful supply, e.g. ewes with single lambs. This can be stored in the deep freeze and defrosted when required.

- The best substitute for ewe colostrum is cow colostrum. Milk replacer is an acceptable food for the lamb aged more than 24 hours but should not be regarded as a substitute for colostrum.

- Do not wean lambs too early; otherwise a serious check in growth and intestinal problems will result. Try not to wean before 30 days of age or at a body weight of less than 10 kg. Always ensure that lambs are taking solid food before weaning.

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Introduction

In most flocks there will always be spare lambs that cannot be reared by their natural mother which need to be fostered or reared artificially. It is important that the farmer or shepherd can identify these quickly and that they have the necessary training to carry out these techniques successfully.

Fostering Lambs

In most cases fostering is preferable to artificial rearing. It is, however, a far from foolproof technique and very high mortality rates are often recorded in fostered lambs. The following guidelines should help prevent some of these losses;

- Only strong, healthy lambs should be fostered. Inevitably lambs to be fostered will face problems and if attempts are made with either weak or sick lambs, failure can be expected.
- The lamb is likely to come from one of two sources: a ewe which has too many lambs, e.g. triplets, or a poor ewe with twins; or out of the initial stages of an artificial rearing system. If the lamb comes from a ewe with too many lambs, choose the strongest - not the weakest. If it comes from an artificial rearing system, take a lamb that has only been fed by stomach tube and has not become 'bottle orientated'.
- The lamb must have received plenty of colostrum. During the fostering process ensure that the lamb never goes hungry. Hungry lambs soon become too weak to suck and are likely to be injured by the ewe.
- Only use a ewe as a foster mother if she is in good condition, has plenty of milk, is not likely to have produced dead lambs as a result of infectious abortion, and is otherwise free from disease. Avoid using very old, very young or inexperienced ewes.

Fostering Techniques

Four techniques are outlined: (1) rubbing-on at birth; (2) late rubbing-on; (3) lamb adopters; and (4) skinning. In our experience the rubbing-on techniques are the simplest and most effective.

(1) Rubbing-on at birth

The success of this technique depends on speedy action after a ewe has had either a stillborn lamb or a single (check for the presence of another lamb by feeling the ewe's abdomen). The procedure is outlined below.

(a) Do not allow the ewe to rise to her feet after lambing.
(b) Rub the foster-lamb in the birth fluids, paying special attention to the anal region and the head.
(c) Tie the lamb's front legs gently together, so that it behaves like a newborn lamb and does not run around the pen.
(d) Place the foster-lamb plus the ewe's own lamb (if there is one) in front of the ewe and release her.
(e) Watch carefully from a distance but leave well alone.
(f) After an hour release the lamb’s tied legs.
(g) For the next few days keep the ewe and lambs in a small pen. Check that the lambs are feeding and that the ewe is accepting them.
(2) Late rubbing-on

Sometimes it may not be possible to follow the procedure outlined above. Within about six hours of lambing a variation of the rubbing-on technique can be effective, especially if the placenta (afterbirth) has been retrieved.

(a) Place the ewe's own lamb and the foster-lamb in a CLEAN plastic dustbin.
(b) Throw the placenta on top of the lambs. If you have managed to save any birth fluids add these as well.
(c) Leave the lambs for an hour to 'mix'.
(d) Cut the placenta into halves and tie one half round each lamb's neck.
(e) Place the dustbin in the ewe's pen but do NOT release the lambs.
(f) After 30 minutes release the lambs.
(g) Watch carefully for signs of rejection and ensure that neither of the lambs goes hungry.

(3) Lamb adopters

A variety of adopters can be purchased ready-made and plans for DIY models are also available. All these devices comprise a small pen, measuring about 4 feet square, fitted with a yoke in one side for restraining the ewe. The lambs have the freedom of the pen and can suck when the ewe stands. Rails are commonly fitted in the pen to enable the lambs to lie at the sides without danger of being crushed. The following procedure is followed.

(a) Place the ewe in the pen and secure her head.
(b) Put the lambs in the pen when they are due for their next feed, i.e. hungry but not starving.
(c) Leave for 48 hours. Check that the lambs are feeding. If they are not, encourage them to suck but if this fails, feed them by stomach tube. Do not let them starve.
(d) After 48 hours release the ewe from the yoke and watch carefully for signs of rejection, e.g. refusal to suckle, butting.
(e) If the ewe rejects the foster-lambs, give up. Further efforts are likely to be fruitless.
(f) If the lambs have been accepted release the ewe with her lambs into a small pen where you can watch them closely for the next few days.

This technique is most likely to be effective when the fostering process is commenced soon after lambing. It may be preferable to remove the ewe's own lamb (if she has one) and replace it with a pair of matched foster-lambs.

(4) Skinning

Some shepherds swear by this technique, others consider it a waste of time. It should not be used if you suspect that the ewe’s own lamb may have died from an infectious disease, such as enteritis. The procedure is as follows.

(a) Skin the dead lamb.
(b) Fit the skin to the foster-lamb.
(c) Put the ewe and foster-lamb in a small pen.
(d) Keep a close watch for signs of rejection and ensure that the lamb sucks. Remove the skin after 2 days.
(e) If all is well after 3 days move the ewe and lamb to a small yard.
(f) If the ewe rejects the lamb, give up.

**Artificial Rearing of Lambs**

If a lamb cannot be raised by its natural mother or fostered onto another ewe, then it will have to be reared artificially. Rearing lambs in this way requires the very highest level of stockmanship and dedication if it is to be successful. All too frequently artificially reared lambs are kept in a small, dark, damp shed and are fed at irregular intervals from a filthy washing-up liquid bottle fitted with a perished teat. Bacteria multiply in both the bedding and feeding equipment and the end result is a group of poor, sick lambs. This situation can be easily and profitably avoided by adhering to the following principles:

**Feeding the Newborn Lamb**

In general a stomach tube should always be used when feeding newborn lambs. A bottle and teat (a normal baby bottle is ideal but make the hole in the teat a bit bigger) is suitable for feeding the strong orphan lamb but can be lethal when feeding the weaker newborn lamb, because milk can enter the trachea (windpipe) and lead to inhalation pneumonia. However, it should be noted that it is dangerous to feed semiconscious or unconscious lambs (normally hypothermic) with a stomach tube. In these lambs the tube can be easily passed into the trachea and the lamb drowned. Even if the feed is correctly placed absorption of nutrients is very slow and the food may even be regurgitated and inhaled. If a lamb can lie in sternal recumbency (on its front), and hold up its head it is safe to feed it by stomach tube. If not it must be treated for hypothermia (see News sheet Vol. 1, No. 1 ‘Detection and Treatment of Hypothermia in Newborn Lambs’ & News sheet Vol. 2, No. 14 ‘Maximising Lamb Survival’).

**Feeding Routine for Newborn Lambs**

If a lamb is not sucking from a ewe it should be fed at least three times daily, e.g. 7am., 3pm. and 11pm at the following dose rates:

- **Large lamb (average single)** about 5 kg; 200 ml each feed.
- **Medium lamb (average twin)** about 3.5 kg; 150 ml each feed.
- **Small lamb (average triplet)** about 2.5 kg; 100 ml each feed.

If it is practical, feed lambs more often. The quantity per feed should be reduced proportionally. As a rule of thumb approximately 50ml per kg bodyweight should be fed three times daily.

**Ewe Colostrum**

This is the best food for the newborn lamb. When supplies are limited it should be restricted to the first one or two feeds. If possible accumulate a store of ewe colostrum by milking ewes with a plentiful supply, e.g. ewes with single lambs. For biosecurity reasons, colostrum should preferably be collected from ewes in the same flock. If possible choose one of two ewes to be donors, ones you know have always been prolific milkers in the past. You may wish to put these ewes to the ram earlier to ensure that colostrum can be collected in advance of the main lambing.
Colostrum can be stored in the deep freeze in small containers such as yoghurt pots or screw-topped plastic jars. These containers are ideal as they can be immersed in a bucket of warm water for fast defrosting. Whatever the container, do not defrost frozen colostrum by boiling in a saucepan or by using a microwave as any overheating will destroy the protective protein antibodies. Do not refreeze.

**Cow Colostrum**

The best substitute for ewe colostrum is cow colostrum. This can be obtained from a dairy farmer, for whom it is a waste product, and stored in the deep freeze as already described. Cow colostrum does not, however, contain the same protective antibodies found in ewe colostrum. From the point of view of clostridial disease this problem may be overcome by vaccinating a cow with clostridial vaccine before she calves. Consult your veterinary surgeon about this before lambing. Very occasionally, problems occur in newborn lambs that have been fed cow colostrum. A severe anaemia (shortage of red blood cells) develops, characterised by weakness, shortage of breath and pale gums. If this occurs consult your veterinary surgeon who may be able to save the lamb by transfusing blood from a ewe to the anaemic lamb. It is important that you do not feed the suspect cow colostrum to any more lambs.

**Milk Replacer**

This is an acceptable food for the lamb aged more than 24 hours but should not be regarded as a substitute for colostrum.

**Glucose/electrolyte Solution**

This solution is used for feeding lambs that have enteritis or watery mouth. In an emergency it can be used to feed any hungry lamb. Use one of the proprietary calf scour mixtures, but add powdered glucose to bring the concentration of glucose in the feeding solution to 10 per cent, i.e. 100 grams per litre. Glucose supplementation is not necessary in lambs aged three weeks or older.

**Colostrum Substitutes**

There are a number of colostrum 'substitutes' commercially available, some of cow and others of sheep origin. It would seem likely that those of sheep origin would be more efficacious, but currently we have no objective information upon which to base any judgment. It should be noted that even a half-feed, i.e. 25 ml/kg, of colostrum obtained from another ewe or ewe colostrum preserved in the deep freeze is likely to be more effective than any substitute. This half-feed should be complemented by a half-feed of some other food such as cow colostrum or milk substitute, to ensure adequate energy intake.

**Hygiene of Equipment**

It is vitally important that clean lamb stomach tubes and 60 ml feeding syringes are used to feed young lambs. Unlike normal syringes for hypodermic needles, feeding syringes have a special wide-bore conical-shaped (catheter) tip that attaches to a collar on the tube. Syringes and tubes should be rinsed after each lamb and sterilised at least once daily by immersion in a hypochlorite/detergent solution. This cleaning routine is most important and applies equally to all other feeding equipment. Dirty feeding equipment quickly becomes contaminated with bacteria, and disease will be passed from lamb to lamb.
Management of the Newborn Lamb

If you decide to artificially rear a lamb, it is still ideal to leave the lamb with the ewe for the first 24 hours, and supplement the whole litter by stomach tube. Ensure that all the lambs receive plenty of colostrum. At about 24 hours of age lift the lamb that you have selected to rear artificially - preferably the strongest - and transfer it to an individual cardboard box warmed by an infrared lamp. Feed the lamb milk replacer by bottle three times daily. Allow the lamb 50 ml/kg each feed. Give oral antibiotic twice daily (consult your veterinary surgeon about this).

At 72 hours of age transfer the lamb to the artificial rearing pen provided that it is strong, is sucking well and is showing no signs of disease. Never introduce a sick lamb - it will probably infect the others. All lambs, irrespective of source or age, which are destined for artificial rearing, should undergo this 48-hour 'quarantine' period before being introduced to the artificial rearing pen.

Management in the Rearing Pen

Lambs should be reared in groups of up to twelve. Ideally, site the rearing pen in a clean, draft-free building or covered yard. During the 'training' period (see below) the rearing pen should be restricted in size but once all the lambs are sucking well give them plenty of space - the more the better. Move the feeding equipment daily to prevent a build-up of dung in one area. In covered yards with open sides provide straw bales arranged to form a cross. This ensures that the lambs can always find shelter from draughts. Move these bales twice weekly. Try not to use infrared lamps, as they encourage the lambs to huddle in one spot on badlysoiled bedding.

Use a lamb feeder wherever possible. The lamb will then quickly become self-feeding, and the use of cold milk prevents short-term overfeeding.

Use a good quality ewe milk replacer. These are usually made up by mixing 200 grams of milk powder with water, hot or cold depending to the manufacturers instructions, to produce one litre of milk. Check that the measure used to dispense the powder gives the correct amount. If too little powder is used, the lambs may starve; if too much, the lambs may become dehydrated and may also scour.

When training lambs to use a lamb feeder it is best to introduce them to the lamb feeder when they are expecting their next feed, i.e. hungry but NOT starving. Ensure that there is milk in the teat before gently holding the lamb on the teat and encouraging it to suck. Squeezing the teat may help to give the lamb the right idea. The procedure should be repeated every few hours until you are sure that the lamb is sucking for itself. Whilst training, keep the milk warm. This will encourage sucking. Once training is complete feed the milk cold.

If a lamb refuses to suck much milk, feed it by stomach tube - do not let it starve.

Milk requirements

Individual lamb requirements vary considerably.

- 4-5 days old: 500-750 ml/day
- 6-12 days old: 750-1000 ml/day
- 13 days old plus: 1.5-2 litre/day

Adjust the amount of milk so that there is always a little left over at the end of feeding time. This will ensure that the slower feeders get their full requirements.
If the milk is restricted these weaker lambs will be in danger of starvation. After about one week in the rearing pen introduce fresh hay and lamb pellets. Replace these feeds daily even if they have not been touched and always provide clean, fresh water.

**Weaning**

If the cost of milk replacer were not a consideration, the determination of the best time for weaning would be a simple matter. One could safely suggest that lambs should not be weaned until they had reached a body weight of 15 kg. In the real world, where cost is a significant factor, it is inevitable that most lambs will be weaned at lower weights but care must be taken not to wean lambs too early, otherwise a serious check in growth and intestinal problems will result. The following guidelines should help to prevent most problems:

1. Do not wean before 30 days of age.
2. Do not wean at a body weight of less than 10 kg.
3. Ensure that lambs are taking solid food before weaning.
4. Wean abruptly. Do not progressively reduce the milk allocation to a group of lambs. If you do then the big, strong lambs that are ready for weaning will continue to get milk, but the smaller lambs that are not ready for weaning will be weaned at different times.
5. Assess readiness for weaning by relating present body weight to birth weight. A big single lamb, weighing 6 kg at birth, may need to be taken to 15 kg, whereas a small triplet, weighing only 2 kg at birth, could be safely weaned at 10 kg.

**Health of the Artificially Reared Lamb**

The relatively close confinement of lambs in an artificial rearing system inevitably increases the risk of infectious diseases such as enteritis and eye infections. The incidence of these problems can be reduced by following these guidelines:

1. Give oral antibiotic for the first three days of life (take advice from your veterinary surgeon and remember that this may not be possible under organic management).
2. All lambs must undergo 48 hours of quarantine before introduction into the system.
3. Never introduce a sick lamb.
4. Watch the lambs closely and isolate and treat any sick lamb.
5. Clean and sterilise the feeding equipment daily.
6. Give the lambs plenty of space and fresh air while preventing draughts.
7. Avoid the use of infrared lamps.

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