Lamb Survival: Coping with Adverse Spring Weather: Preparation is Key

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The purpose of this document is to briefly outline long- and short-term management practices which can help improve animal welfare during adverse weather events and minimise productive and economic losses.

It is also intended to be a document veterinarians can use when advising clients, and for communication to farmers.

In New Zealand, average lamb mortality rates are estimated to be in the region of 10 - 20%, with triplet-born lambs having the greatest risk of mortality, followed by twin- and then single-born lambs. The majority of these lamb losses occur during spring at, or within three days of birth, with losses naturally increasing during adverse weather events. Factors that cause poor lamb survival during adverse weather include;

- Light lamb birth weights; lambs with lighter birth weights have greater surface-area-to-body-weight ratios making them more susceptible to excessive heat loss and hypothermia when exposed to rain and wind.
- Placental insufficiency, resulting from ewe under-nutrition during early-mid pregnancy; lambs that are unable to receive nutrients successfully from the placenta during late pregnancy will have light weights at birth and a reduced ability to produce heat in the first 6-8 hours of life.
- Difficult or prolonged births; lambs that have been oxygen deprived at birth can have trouble maintaining their body temperatures directly after birth and have poor teat-searching and sucking behaviours.
- Lack of vigour and/or colostrum intake/availability at birth; failure to ingest colostrum and replace utilised energy reserves will result in failure to sustain heat production during adverse weather. In addition, colostrum intake helps establish a strong ewe-lamb bond, limiting the risk of separation, mis-mothering and starvation/exposure during this time. It also ensures antibodies are transferred from the ewe to the lamb decreasing the risk of infection after birth when conditions are wet and muddy.

There are actions that farmers can take to help mitigate the effects of adverse climatic conditions – short term or immediate actions, and actions that are longer term.

Long-term management practices

1. Adequate ewe nutrition and condition

"The best shelter for a lamb is a well fed ewe"

Providing adequate ewe nutrition during pregnancy and maintaining ewe condition is critical. Failure to provide an adequate amount of energy results in newborn lambs with light birth weights, low energy reserves and slow progressive behaviors, such as standing and suckling. It can also result in ewes mobilizing body reserves, resulting in poor colostrum

production, insufficient body reserves for lactation and poor behavior. Current grazing recommendations for pregnant ewes are;

Early pregnancy: requirements are relatively low. Ewes should be offered maintenance, which for a 70 kg ewe would be around 1-1.5 kg DM/ewe/day.

Mid-pregnancy: requirements begin to increase due to the growth of the placenta. Single-bearing ewes should be offered 1-1.5 kg DM/ewe/day and multiple-bearing ewes 1.5–2.0 kg DM/ewe/day. Covers should be no less than 1000-1200 kg DM/ha (2-4cm sward heights).

Late-pregnancy: requirements increase dramatically due to fetal growth. Single-bearing ewes should be offered 1.5-2.0 kg DM/ewe/day and multiple-bearing ewes should be offered 3-4 kg DM/ewe/day on covers greater than >1200 kg DM/ha (4-6cm sward heights).

While offering these nutritional levels can often be challenging, research has shown that grazing multiple-bearing ewes on a sward height of 4-6cm, compared to a sward height of 2cm, ensures that ewe intake is not limited, offering improvements in lamb birth weight, ewe and lamb bonding and lamb survival.

2. Body condition scoring (BCS)

A practical management tool allowing assessment of how well the ewes are being fed. In New Zealand it is recommended that ewes are monitored for BCS at the previous lamb weaning, at mating, at pregnancy scanning and at pre-lambing vaccination. The objective should be to ensure ewes have a BCS of 3-3.5 at mating and the score is maintained throughout pregnancy. New Zealand research shows that lambs born to ewes in better condition (>3.5) produce a lamb of a heavier birth weight and have plenty of colostrum/milk compared to a lighter condition ewe. Lambs born to ewes in medium condition have been shown to stand and feed sooner and the ewes are generally more settled. These factors all help the lamb dealing with adverse weather. A guide of how to body condition score your ewes can be found in *A Guide to Feed Planning for Sheep Farmers* on the Beef + Lamb website.

3. Feed budgeting

Balancing livestock feed requirements with pasture availability helps achieve high production. If feed deficits occur during lambing or 2 – 3 weeks post lambing it may be possible to delay the lambing date so that feed supply can match feed demand. Matching feed supply to feed demand helps ensure enough pasture is available during early lactation, enabling the ewes to milk better. If unfamiliar with feed budgeting, Beef + Lamb have an easily read introduction to the basics of feed planning called '*A Guide to Feed Planning for Sheep Farmers'.*

4. Pregnancy Scanning

Identifying single, twin and triplet-bearing ewes allows better allocation of feed, especially in the last 4 – 6 weeks of pregnancy. Scanning into 10 – 14 day lambing periods can be useful for allowing concentration on the most vulnerable new-born lamb mobs and utilising the best sheltered paddocks more efficiently, particularly if the weather turns bad. Good well sheltered paddocks can be used for lambing more than once. Mobs that have finished lambing can, within a day or so of the last one lambing be moved out for a new mob of ewes about to lamb to be moved in. Ewes lambing around the same time are not disturbed

by other ewes several weeks off lambing which tend to be less settled.

5. Planning the shearing date

Analysis of scanning and tailing data has shown that post tup shearing or early pregnancy shearing where ewes have 1" – 2" of wool at lambing results in better lamb survival than shearing later in pregnancy. this is because the lambs have a slightly higher birth weight, the ewes have less metabolic issues and cast ewes are less of a problem. Shearing too close to lambing date significantly increases the energy demand of shorn ewes at a time when they may have trouble consuming enough feed, especially if the feed is of poorer quality and the ewes are carrying multiples.

6. Delaying the lambing date

On some farms there may be the option of delaying the lambing date. Even a 5-7 day delay can make a difference to pasture covers and while storms can occur at any time, delaying lambing may enable better matching of feed supply and demand. Ewes milk better and lambs should reach weaning at the same or even better weights. Spreading the weather risk by staggering the mating of different mobs may suit some farms.

7. Set Stocking

Set stocking well in advance of lambing will allow ewes to settle down in an area and find the best areas for lambing. Providing they are not disturbed from the birth site they are more likely to bond and properly mother their lambs. While the jury is still out, mixing up triplet bearing ewes with twin bearing ewes at this stage seems to lessen mismothering problems.

8. Lamb Vigour

Any factor that improves vigour at birth will improve the chance of survival.

Ewe condition is the most important factor here, however there other important influences that can be controlled. These include:

- **Disease:** Toxoplasmosis, Campylobacteriosis and Hairy Shaker Disease don't always just cause obvious abortions. They can all result in the birth of live lambs which are weak (sometimes one of a twin may be smaller than the other) and succumb more easily. Toxoplasma and Campylobacter organisms are common on NZ farms and can cause abortion outbreaks or insidious loss. There are preventative vaccines available for these, but not Hairy Shaker Disease.
- **Iodine deficiency:** A lack of iodine means there is a lack of thyroid hormone which affects the lamb's metabolic rate and ability to respond to cold. Maternal iodine deficiency results in new born lambs with poor thyroid hormone production and the inability to regulate body temperature during adverse weather. New Zealand trials have shown that maternal iodine supplementation, especially for those ewes grazing brassicas, can improve lamb survival. Diagnosis of iodine deficiency can be tricky; obvious iodine deficiency will show up as goitre, but where goitre isn't apparent lambs may still be deficient. Local veterinary advice will be needed.

  Iodine deficiency can be prevented by either a long acting iodine injection (Flexidine) or oral dosing with Pot Iodide. Which option is best, and especially the timing varies

from farm to farm and region to region so again, local veterinary advice should be sought.

- **Selenium deficiency:** A lack of Se affects the heart muscle of newborn stock resulting in poorer survival at or within a few days of birth. Most farmers should have preventative strategies in place for this.
- **Vitamin E. deficiency:** Vit. E is deficient in conserved feeds of all types – silage, hay, grain etc. and also brassicas and winter pasture. Deficiency has similar effects to a Se deficiency and may also play a role in lamb vigour. A Welsh trial showed lambs born to Vit. E supplemented mothers stood and suckled sooner (an average of 17 minutes sooner) which is critical during inclement weather. NZ trials have been equivocal.

For further advice on the treatment and prevention of these conditions contact your local veterinary practice.

Other long-term actions:

9. Planting or providing long-term shelter and understanding paddock selection

Wind and wet weather causes hypothermia in lambs, particularly lambs of lighter birth weights or lambs that have endured a difficult birth. Provision of shelter is therefore important in mitigating the effects of the wind and rain. Careful consideration for shelter is needed for shelter to be effective.

Tussocks are one of the best forms of shelter for lambs, as are small shrubby areas, flaxes and scrub. This shelter is often well dispersed, allowing ewes to isolate themselves for lambing. They also reduce the risk of stocking-camping, mismothering and disease.

For shelterbelts a dense hedge on the windward side and taller more permeable trees on the leeward side are recommended. It should be noted however that shelter belts can sometimes add to problems during adverse weather by attracting ewes and lambs into a confined areas where mismothering and mud and disease can occur. This can be particularly bad if high densities of multiple-bearing ewes are present. Access to large quantities of sawdust has been noted by some farmers to have benefit in keeping lambs off the water/mud under trees.

In addition to providing shelter, knowing which paddocks are successful lambing paddocks and attempting to work out why is useful. This requires assessment of slope, hazards (bluffs, swamps, fences across slopes and narrow ridges), disturbances, wetness (soil drainage and rainfall) and shelter (vegetation and physical) and adequate record keeping. Improvements in lamb survival can be made by simply putting multiple bearing ewes into favourable paddocks and the single bearing ewes into the worst performing paddocks

10. Feed Supplements

Feed supplements are not a luxury, they are an insurance. Ensure feed supplements are available and accessible during snows. If using sheep nuts and grain a good practice is to expose sheep to these early, say as hoggets. When fed these later, they will then know what they are. A useful hint when feeding out nuts and grain is to drive a vehicle across a paddock then double back and feed in the wheel marks.

11. Ensuring adequate amounts of storm supplies

When a storm strikes it is quite common that supplies of certain products quickly become exhausted. Stockists simply cannot hold enough supplies for these situations. Plus for those farmers in snow prone areas there is the additional risk of being isolated by road conditions for a period and therefore being unable to source extra supplies. Farmers should hold suitable stocks of the following:

- **Metabolic treatments (e.g. *Glucalphos):*** Always have doses on hand equivalent to 1% of your ewe numbers. For example for a 2000 ewe flock have 20 x 120-150ml doses or about 5-6 500ml bottles on hand.
- **Sleepy sickness treatment *(Ketol or Ketovet):*** As a guide have 2L on hand/1000 ewes.
- **Woolovers:** For farmers that do intensive lambing beats, supplies on-hand should be equivalent to 10% of their expected lamb drop. For example if you expect 3000 lambs have 300 Woolovers stored away in rodent proof containers

Short-term management practices

12. Temporary shelter

Temporary shelter is probably of limited use on many farms, but in some instances could be useful.

Possible options here include:

- Artificial windbreaks along fence lines. These can be constructed from old corrugated iron, windbreak cloth, scrim, hay bales etc. There may be commercial covers available for this purpose as well. Deer fencing with its extra height offers a good framework or scaffold for this.
- Scattered shelters in paddocks. These are best constructed in the shape of a cross or an open rectangle from whatever materials are available – corrugated iron hay bales, left over baleage etc.
- Plastic and wool lamb covers: have been shown to improve lamb survival by 5%. Wool covers rate the highest amongst farmers as the ewe has better acceptance. While they do offer some benefit, lamb covers require a lot of labour and ewes must be supervised to ensure they accept the lamb.

13. Treatment of starved and hypothermic lambs

Lambs born during cold snaps will deplete their energy stores quickly, especially if receiving inadequate amount of colostrum. Once reserves are depleted, they will become hypoglycaemic and weak. The best treatment for this is an intra-abdominal (intra peritoneal) injection of 20% Dextrose. It is important remember to do this before you warm the lamb, if you warm the lamb before you "fuel" it you will hasten its death. This treatment is best for a lamb that is not fed, cold and weak as it works quicker than any form of oral treatment. A fact sheet is available from Beef + Lamb NZ on this technique '*Reviving Newborn Lambs'* and most rural veterinary clinics should also have information about this procedure.

14. Multiple orphan lamb rearing

Depending on economics and available labour, on some farms it could be an option to take the third lamb off a set of triplets and rear them artificially. Most rural veterinary clinics should have information on this. Although listed as a short term action it requires some forward planning. Beef + Lamb New Zealand have a fact sheet '*Rearing Orphan Lambs'* providing more details on this.

15. Disease treatment and prevention

When handling newborn lambs, spraying the navel with iodine may help prevent navel infections which can cause arthritis or liver and lung abscesses and eventual disability or death. This is especially important if the lamb is being taken into a lamb warmer or mothering up pen which can rapidly become badly contaminated. Watery mouth is another common problem in these conditions, and where lambs are on wet contaminated areas beneath shelter belts. Watery mouth is best treated with an oral antibiotic. Other conditions may need parenteral antibiotics. Veterinary advice may be needed in these situations.

Other Considerations

Invariably when there is an adverse climatic event the media are involved and how these situations are managed is very important. Remember images and comments can be flashed around the world in seconds and stories in the local rural press are capable of being taken up by the world wide media. Piles of dead lambs at the gate can give a misleading impression and this is best avoided. Understandably, customers in premium markets empathise with the dead lambs. If you are asked for comment on an adverse climatic event ensure it is made clear what is being done to alleviate the animal welfare problems, rather than dwelling upon financial aspects of the situation. Alternatively, direct media requests to Federated Farmers, Beef + Lamb New Zealand, or to the NZVA who have the experience and resources to help deal with the request for you.