Why did these lambs die?

Stanley M. Dennis

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WHY DID THESE LAMBS DIE?

By S. M. DENNIS, B.V.Sc., Ph.D., Senior Veterinary Pathologist, Animal Health Laboratory

INVESTIGATIONS over the past two years have shown that most lamb deaths in Western Australia occur during the first three days of life, that is, in the critical neonatal period. Most of the lambs died between 24 and 72 hours after birth.

The major causes of lamb losses in Western Australia were found to be, in order of importance:

- Starvation/mismothering.
- Difficult or prolonged births.
- Neonatal weakness.

These three conditions accounted for almost 90 per cent. of all the lambs studied in detailed post-mortem examinations at the Animal Health Laboratory, associated with a survey of lamb deaths in Western Australia during 1963 and 1964.

Starvation/Mismothering

The term “starvation/mismothering” is somewhat misleading as it describes a complex and refers to starvation of lambs which is mainly the result of mismothering. The mismothered or starved lamb is active, walks around seeking food and dies in one to three days upon depletion of its body fat or energy reserves.

Birth Weight

Low birth weight is a contributing cause of loss and may be indicative of undernutrition of ewes during the last six to eight weeks of pregnancy. The average weight range for viability of Merino lambs in Western Australia lies between 5 lb. and 9 lb.

Predators

Many farmers are firmly convinced that a number of lambs are lost each year through predator activity. Our results over the past two years have not confirmed this. Most of the “predator deaths” examined were nothing more than scavenging damage after death. Some of these deaths were attacks on lambs dying from other causes such as starvation or disease. However, predator attacks on some individual farms may be a problem.

CAUSE OF DEATH

A great many farmers have asked how to determine whether or not a lamb—

- was stillborn
- or whether it died from—
  - starvation
  - exposure
  - disease
  - predator attack.

In an endeavour to answer these questions collectively a pictorial guide to the common post-mortem signs in dead lambs has been compiled from our findings over the past two years. It is reproduced in this article.

The information presented is intended to serve only as a guide and is not meant to be complete. It has been prepared to help farmers pinpoint the possible cause
SOME COMMON POST-MORTEM FINDINGS IN LAMBS

PLATE 1
DYSTOCIA
This lamb died at the end of a birth of long duration. Note the swelling of the head (opened between the jaws to reveal the oedema or dropsical fluid), the bluish-red non-inflated lungs that look similar to liver tissue and the abundant fat that is visible.

PLATE 2
STARVATION/MISMOTHERING
This lamb died on the third day of life after all the fat (energy reserves) had been depleted. Observe the inflated pinkish red lungs, the empty stomach and lack of normal appearing fat.

PLATE 3
PREDATOR DEATH
This well-nourished lamb was killed towards the end of the first week of life. Note the general pallor of the whole carcass due to haemorrhage; the enlarged stomach filled with milk curds and the abundant fat reserve.

or causes of their problem. Only by recognising and identifying the “enemy” can you hope to do something to control and reduce these lamb losses. In this latter aspect farmers are recommended to consult competent help from the nearest office of the Department of Agriculture or seek the advice of their nearest veterinary surgeon.

Because of their complexity, infectious diseases are only briefly mentioned; if they are suspected, seek professional veterinary assistance promptly.

EXAMINATION OF DEAD LAMBS
The following should be checked:
- Due date of lambing.
- Whether the lamb walked or did not walk.
- Weight.
- Signs of predator damage—haemorrhage around eyes, tongue, navel, anus.
- Head—signs of swelling.
- Lungs—collapsed, firm, plum red in colour, portion will not float in water (stillborn) — inflated, spongy, pink colour, floats in water (breathed).
- Visible fat around heart and kidneys: Normally abundant, firm and whitish in colour (stillborn and non-starved lambs). Reduced in amount, soft and gelatinous, and red in colour (starvation).
- Stomach—milk curds (sucked), or small and empty (starvation).

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TYPICAL POST-MORTEM FINDINGS IN CASES OF STARVATION/MISMOOTHERING

PLATE 4
Many would call this a predator death but in fact this three-day-old lamb died from starvation/mismoothering. The bleeding around the mouth and eye was caused by a predator attack at or around the point of death—in other words the lamb was already dead or dying before the attack.

PLATE 5
Examination of the feet will show whether or not a lamb walked. The foot on the left shows clear evidence of walking and is similar to an adult foot; there are no soft tips on the hooves. This is likely to have been a victim of starvation/mismoothering. The foot on the right is from a lamb that never walked as the walking surfaces are soft and the hooves have soft tips. Feet like this are seen with stillborn lambs or weak full-term lambs that died soon after birth.

PLATE 6
The navel cord is another indication of the time of death. The navel cord on the left is from a stillborn lamb or one that died soon after birth. It is prominent, reddish in colour and moist. The cord on the right is typical of lambs two to three days old. It is dark in colour, dry and shrivelled up.

PLATE 7
Typical victim of starvation/mismoothering, opened up to show the following conditions. Note—
- Inflated pink lungs (the lamb breathed).
- Depleted fat reserves around the heart and kidneys; this fat is plum red in colour (energy reserves have been depleted).
- Empty stomach.

Another case of starvation/mismoothering. The lack of fat is shown by the dark red areas between the ribs (top centre of the picture). This lamb has been partially opened up by almost removing a foreleg. This is a quick and simple method for confirming a diagnosis of starvation as it shows fat depletion and dehydration at a glance.

PLATE 9
Closer view of ribs showing lack of normal fat over the ribs near the sternum, as shown in Plate 8. The rib specimen in the centre is typical of ribs seen in starved lambs; the fat is reduced in amount and soft and dark red in colour. These ribs also show lack of lustre due to dehydration. The rib specimens on either side are normal, showing abundant whitish, firm fat, and normal moisture.

PLATE 10
Fat changes are clearly seen around the heart and kidneys. The two lower hearts in this picture show abundant firm, whitish fat on the sac surrounding the heart. The upper two hearts present a dark appearance because of the lack of fat, which has been replaced by a soft, gelatinous plum red tissue.

PLATE 11
Kidneys are the best site to check for the presence of fat. The two lower kidneys were taken from stillborn lambs. The visible fat here is abundant, firm and whitish in colour. The upper kidneys, taken from cases of starvation/mismoothering, are strikingly different. The fatty tissue present is greatly reduced in amount, soft and gelatinous, and dark plum red in colour.
### DIAGNOSTIC CHART

<table>
<thead>
<tr>
<th>Condition</th>
<th>Post-Mortem Findings</th>
<th>Consult Colour Plate No.</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Abortion</td>
<td>Aborted half-formed lambs. Premature lambs. Increased deaths in first day of life. Liver “spots”—may or may not be present.</td>
<td>1, 5, 6</td>
</tr>
<tr>
<td>2. Stillbirth</td>
<td>Did not walk. Lungs plum red in colour—will not float. Fat—abundant, white and firm.</td>
<td>1, 5, 6, 10, 11</td>
</tr>
<tr>
<td>3. Difficult or prolonged birth</td>
<td>Did not walk. Head may be swollen. Size—may be larger than normal—over 9 lb. Decomposition—nil to poor. Lungs plum red and collapsed. Liver—may or may not be ruptured.</td>
<td>1, 5, 6</td>
</tr>
<tr>
<td>5. Starvation/Mismothering</td>
<td>Walked. Fat—reduced in amount, soft, gelatinous and red. Stomach empty.</td>
<td>2, 4, 5, 6, 7, 8, 9, 10, 11</td>
</tr>
</tbody>
</table>

**Note:** Lambs in categories 1 to 5 may show varying degrees of predator damage AFTER death, that is, scavenging.

### HOW CAN LOSSES BE REDUCED?

For the current lambing, there is usually little that can be done to reduce the mortalities, apart from ensuring that the ewes are lambing in the best sheltered paddock that can be provided and that there is adequate feed available. The important thing is to take steps to minimise these losses in subsequent seasons. The steps recommended are:

- Provide adequate nutrition during the last six to eight weeks of pregnancy.
- Lamb in short wool.
Lamb in paddocks with adequate shelter belts.
- Keep lambing ewes under observation.

In conclusion...

Reduction of the high incidence of lamb deaths each year in Western Australia will require concerted and continuing efforts by sheep breeders. The first step in this direction must be the realisation by each farmer that he has a problem of lamb losses, either minor or major, and the second is to determine the cause or causes of his lamb losses.

Remember always to consult help by contacting the nearest office of the Department of Agriculture or your nearest veterinary surgeon. Alternatively, bring or send lambs to the Animal Health Laboratory in South Perth.

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