

▶ Assessing Lamb Mortality Patterns is the First Step to Reducing Loss

A key part of reducing lamb mortality is to document loss patterns on an individual farm basis. These patterns may show some variation from year to year, but it is common that farm-specific patterns emerge. Once these patterns are identified, a producer can work with specialists (health, management, nutrition) to develop a prevention plan targeted at those categories of loss that have the greatest potential for impact. With this overall goal in mind, let us examine lamb mortality according to both time and category.

WHEN LAMBS DIE AND 'TYPICAL' LOSS RATES | The timing of lamb loss is remarkably consistent throughout the world with the majority of loss occurring during the first week of life. Within the first week of life, loss is clearly the highest during the first 24 hours and declines steadily each day thereafter (figure 1).

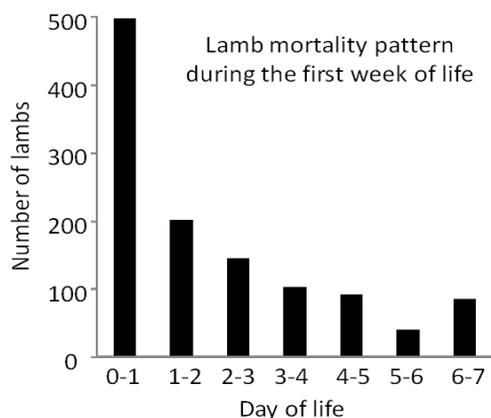


Figure 1. Pattern of lamb loss during the first week of life (Rook et al. 1990). These data were obtained from a field study looking at lamb loss in large commercial sheep farms in Michigan.

Loss in this discussion is defined as the number of lambs that die for any given reason divided by the total number of term lambs born either dead or alive. Loss estimates defined this way both worldwide and in the United States range from 5 percent to 25 percent. Overall loss is a very blunt measure; however, it needs to be considered within the context of lambing rate and production system. Therefore, benchmarks for success vary according to production level and management system, meaning that a loss rate of 15 percent for prolific sheep (>200 percent lambing rate) born on pasture may be acceptable whereas a 15 percent loss rate in ewes of modest productivity (140 percent lambing rate) born indoors would be high.

Selected References:

- Eales FA, Small J and Gilmore JS. 1983. Neonatal mortality and its causes. In: W. Haresign (Ed.) Sheep Production. 289-298. Butterworths, London.
- Hight GK and Jury KE. 1970. Hill country sheep production. II. Lamb mortality and birth weights in Romney and Border Leicester/Romney flocks. New Zealand Journal of Agricultural Research 13: 735-752.
- Hinch GN, Kelly RW, Owens JL and Crosby SF. 1983. Patterns of lamb survival in high fecundity Booroola flocks. Proceedings of the New Zealand Society of Animal Production 43:29.
- McCutcheon SN, Holmes CW, McDonald MF. 1981. The starvation-exposure syndrome and neonatal lamb mortality: A review. Proceedings of the New Zealand Society of Animal Production 41:209.
- Notter DR and Copenhaver JS. 1980. Performance of Finnish Landrace crossbred ewes under accelerated lambing. II. Lamb growth and survival. Journal of Animal Science 51:1043.
- Rook JS, Scholman G, Wing-Proctor S and Shea M. 1990. Diagnosis and control of neonatal losses in sheep. Veterinary Clinics of North America: Food Animal Practice 6: 531-652.
- Woolliams CG, Wiener G and McLeod NS. 1983. The effect of breed, breeding system and other factors on lamb mortality. 2. Factors influencing the incidence of delayed birth, dystocia, congenital defects and miscellaneous causes of early death. Journal Agricultural Science 100:553.

MAJOR LOSS CATEGORIES DURING THE FIRST WEEK OF LIFE |

Stillborn. Stillborn lambs are full-term lambs delivered dead. Stillborn lambs can be diagnosed by examining lung tissue and hooves. Stillborn lambs will have non-compliant lungs with the tissue hard to distinguish in color and consistency from liver. The soft, cartilaginous tissue that covers hooves at birth will also be intact. Major underlying causes of stillborn lambs are: 1) placental insufficiency and 2) dystocia. Placental insufficiency is hard to diagnose but common in prolific ewes during late pregnancy and is defined as the inability of the placenta to support fetal life. Dystocia is the term for "difficult birth" and is common in large lambs born to young ewes or in high-order multiple births (>2 lambs/ewe) as the odds of malpresentation in these "litters" is much higher than in single births. Other significant but typically lower incident causes of stillborn lambs include abortion diseases and mineral deficiencies (especially iodine and selenium).

Starvation/Exposure. This term is used to describe lambs that succumb to the often combined effects of cold and lack of body fuel. Starvation/exposure mortalities will have inflated lungs and partially or fully depleted reserves of fat that surround the kidney (called brown fat). This large energy reserve (noted as tan-colored tissue surrounding the kidney) will disappear leaving behind dark red tissue as it is used up to provide heat. The extent of brown fat depletion will depend on climatic conditions as severe cold may kill lambs within eight hours before all the tissue is depleted. In milder conditions, it may take two days for reserves to be depleted. Lambs born small with low reserves and depressed suckling drive to mothers with limited colostrum production are the most at risk. Starvation exposure is estimated to account for 50 percent of loss that occurs during the first week of life.

Respiratory disease. Lambs that die of respiratory disease are typically older than three days of age. These lambs typically have discolored lung tissue (dark, reddish purple) in its front and lower regions. Predisposing conditions include low immune status from insufficient colostrum intake, high humidity, crowding, large manure pack and rapidly changing climatic conditions. Respiratory disease losses can be impacted by changes in facility design (improved ventilation) and management (lower animal density, improved maternal nutrition during late pregnancy).

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