

Effects of late flushing and ewe breed on lamb mortality at birth

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ABSTRACT: A total of 92 Zel and 92 Zel×Shal ewes, 3–5 years of age and body weight of between 35 and 45 kg were randomly allocated in to four groups in order to determine effects of late flushing and breed on lamb mortality at birth. A completely randomized design in factorial arrangement with two factors (Flushing & Breed) and two levels were used. Ewes were fed in two nutritional groups including none flushing diet (2 mcal/kg metabolizable energy, 11.5 percent crude protein and 1.7 kg/ewe/day dry matter intake) and flushing diet (2.2 mcal/kg metabolizable energy, 11.5 percent crude protein and 1.7 kg/ewe/day dry matter intake). The flushing continued for last six week of pregnancy. Animals were housed in pens (10 ewes/pen) and allowed free access to water. The results showed that late flushing had a significant effect on lamb mortality at birth ($P<0.05$). Zel breed had lower lamb mortality than Zel×Shal breed ($P<0.05$).

Key words: Late flushing; Ewe breed; Lamb mortality

INTRODUCTION

It is widely accepted practice in sheep production to provide ewes with extra energy for 2–3 weeks prior to and during breeding (flushing), for the purpose of increasing the number of lambs produced. Although, experiments investigating supplementation of the diet during mating have produced conflicting results (Bichard et al., 1974; Rhind et al., 1989) it is evident that failure to flush ewes may result in delayed estrus activity and ovulation (Gunn et al., 1979) fertilization failure (Restall et al., 1978) and embryonic mortality (Rhind et al., 1989). Crossbred lambs are more vigorous at birth and are heavier at weaning. Studies have shown that two-breed cross ewes mated to a ram of a third breed wean approximately 35% more pounds of lamb per ewe mated than the average of the purebred ewes producing purebred lambs (Scott et al., 2003).

One of the most obvious constraints to profitability in BC sheep flocks is lamb mortality. In some cases, up to 30% of the potential lamb crop is lost between late pregnancy and weaning. This is due to a number of causes ranging from, poor nutrition of the pregnant ewe, to predation of lambs on pasture. Since 80-85% of the costs of producing a lamb are incurred before birth, a major effort must be made to bring the lamb successfully to market in order to cover those costs. A lamb which dies at two days of age may not provide a return on an investment.

High mortality reduces the profitability of lamb production worldwide, and is an important welfare consideration. Studies from various countries report that 10–35% of lambs die by 6 months of age (Yapi et al., 1990; Chaarani et al. Green and Morgan, 1993; Nash et al., 1996). The important causes of lamb mortality are similar in all countries studied (Green and Morgan, 1993, 1994; Nash et al., 1996). Lambs <1 week old are at greatest risk, and tend to die of exposure hypothermia, starvation, septicaemia consequent upon inadequate colostrum intake (Gama et al., 1991; Green and Morgan, 1993), or ruptured livers as a result of birth trauma (Green and Morgan, 1993). From 1 to 3 weeks of age, deaths are caused by trauma, or by abscesses and meningitis secondary to omphalophlebitis (“navel ill”) (Green and Morgan, 1993). The objective of this experiment was to determine the effects of late flushing (last six weeks of pregnancy) and ewe breed on lamb mortality rate at birth.

MATERIALS AND METHODS

A total of 92 Zel and 92 Zel×Shal ewes, 3–5 years of age and a body weight of between 35 and 45 kg were used in the trial. The experiment was conducted at the research farm of Jihad-Agriculture Ministry in Golestan province, located 30 km from Gorgan in Iran. The yearly absolute minimum and maximum temperatures in the area are on average zero and forty degree centigrade respectively, whereas the mean annual rainfall is 560 mm. Animals were housed in pens (10 ewes/pen) and allowed free access to water.

Two Breed of ewes were fed in two nutritional groups including none flushing diet (2 mcal/kg metabolizable energy, 11.5 percent crude protein and 1.7 kg/ewe/day dry matter intake) and flushing diet (2.2 mcal/kg metabolizable energy, 11.5 percent crude protein and 1.7 kg/ewe/day dry matter intake). The flushing continued for last six week of pregnancy. The ewes lambled in a barn, and during lambing were checked daily. The lambs were caught, weighed and as soon after birth as possible and lamb Mortality for each group was then calculated.

A completely randomized design in factorial arrangement with two factors (Flushing & Breed) and two levels were used. The data were checked for errors and compared with written reports; outliers were rechecked to ensure that values were accurate. Statistical analyses were conducted using General Linear Models procedure of SAS (SAS Institute Inc., Cary, NC). The level of significance was established at $P \leq 0.05$.

RESULT AND DISCUSSIONS

The results of the experiment are shown in table 1. The result showed that flushing had a significant on lamb mortality rate at birth. Ewes received more metabolizable energy in last six weeks of pregnancy had higher lamb mortality rate at birth ($P < 0.05$) than ewes received lower metabolizable energy in last six weeks of pregnancy. Breed had a significant effect on lamb mortality and Zel×Shal breed had high lamb mortality rate at birth than Zel breed ($P < 0.05$). Flushing increased ewe weight at parturition ($P < 0.05$) and ewes received more metabolizable energy in last six weeks of pregnancy had high weight at parturition than non flushing ewes. Parturition weight in Zel breed was lower than Zel×Shal breed ($P < 0.05$).

Valls et al. (1984) found a significant effect of age of ewe on lamb mortality. Similar effects of age on lamb mortality have been reported by Fitzhugh and Bradford (1983). The effect of year of lambing on mortality rate of the lambs could possibly be due to the annual variations in climatic conditions and, the availability of feed between years. These results support the findings of Bunge et al. (1993) who reported year of lambing to be an important source of variation in lamb survival. Similarly, the increase in mortality rate in the dry season is probably due to the shortage of nutrients for the ewes that gave birth in the dry season. Under such conditions ewes are hardly able to produce enough milk for their lambs. Torto (1996) reported similar seasonal trends for Horro and Menz sheep.

Table 1. Effects of treatment on lamb mortality and ewe parturition weight

Item	Nutrition		Breed		SE
	Flushing	No Flushing	Zel	Zel×Chal	
Ewe parturition weight (kg)	39.60 ^a	36.77 ^b	36.72 ^b	39.50 ^a	1.35
Lamb mortality (%)	5.75 ^a	2 ^b	3 ^b	4.75 ^a	1.68

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