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Managing pregnancy in ewes

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Abstract: Pregnancy is generally 150 days (five months). The majority of foetal growth occurs in the final 60 days, however, setting up effective nutrient transfer from the ewe to the foetus occurs with udder and placental development in the first trimester of pregnancy. Most of the wool follicle development occurs in the second and third trimesters and can be significantly affected by nutrition.

The nutrition of the ewe during pregnancy affects the liveweight and the wool production of the progeny over its lifetime. The ewe's ability to survive and provide for the lamb over the difficult lambing period is also greatly affected by nutrition, will also affect her wool quality and quantity

Keywords: Pregnancy, Development, Ewe, Growth, Lamb, Production, Nutrition.

Poor nutrition throughout pregnancy can affect lamb growth and development by restricting the growth of the placenta (the channel that carries all nutrients to the developing foetus) and foetus.

The placenta and foetus are most susceptible to restrictions in the nutrition of the ewe during the periods when their growth is most rapid. For the first 50 days of pregnancy, growth of the placenta and foetus is minimal. In mid pregnancy, from day 50-100, growth of the placenta is rapid while foetal growth is minimal. In late pregnancy, from day 100-150, growth of the placenta has finished but growth of the foetus increases rapidly until birth. Inadequate nutrition of the ewe in mid pregnancy can reduce the size and function of the placenta and nutrient restrictions during late pregnancy can reduce the growth rate and size of the foetus.[1]

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A lamb›s future wool production is affected by ewe nutrition during pregnancy. Primary follicles (broad fibres) develop in the growing foetus from around day 60 of pregnancy and are completed by about 90 days after conception. Secondary follicles (fine fibres) develop from around day 90 to birth, with some follicle maturation occurring in the first month of the lamb›s life. The density of follicles is determined prior to birth and will not change for the entire life of the animal.

Secondary follicles are the most important part of the wool-producing skin, having a direct influence on the density and fineness of the fleece. A reduction in nutrient supply to the developing foetus at the time of secondary follicle development (either because of poor nutrition or because there are multiple fetuses competing for nutrients) will lead to less secondary fibres, resulting in broader fibre diameter and lower fleece weight. These effects will persist throughout the lifetime of the progeny. There are linear relationships between changes in ewe condition and the amount and quality of wool produced by single and twin lambs.[1,2]

The effects of changes in the condition score of the ewe during early or late pregnancy have a similar effect on hogget clean fleece weight and fibre diameter. The responses are liner:

- an increase of more than one condition score of the ewe results in an increase of 0,2 kilograms (kg) in clean fleece weight and reduction of 0,4 micron in fibre diameter in the progeny
- twin lambs produse 0,3 kg less wool that is 0,3 micron broader than single lambs under the same nutritional scenario
- ewes that lose 0,5 condition scone in early to mid-pregnansy increases the progeny fibre diameter by 0,2 micron in both single and twin lambs
- ewes that lose 0,5 condition score and then regain this condition by lambing produse progeny that will cut the same amount and fibre diameter of wool as those from ewes that maintain condition score throughout pregnancy.

The effects of early and late pregnancy nutrition on progeny wool production and qualare permanent throughout the animal›s lifetime. They cannot be fully compensated for by improved nutrition after birth.

Lamb birthweight is the single most important predictor of lamb survival. Poor ewe nutrition during pregnancy will reduce lamb birth weight by up to 0,5 kg if significant condition is lost. These smaller lambs-particularly twins-are less likely to survive birth and will be smaller at weaning. The first 48 hours of lamb›s life are critical. Around 70% of lamb mortality that occurs between birth and weaning occurs within this period. Lamb survival is related to lamb birth weight. Lamb birth weight is strongly related to the nutrition of the ewe during pregnancy, particularly late pregnancy and accounts for nearly 70% of the variation in survival.

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The optimum birthweight for maximum lamb survival is between 4,5-5,5 kq, but lambinq environment and whether they are a single or twin, also affect the response. Ewes in better condition at lambing produce bigger lambs. Optimal birthweights are from 4-6 kg and a decrease in condition score of ewes during pregnancy can reduce lamb birthweight by 0,4-0,5 kg in both single and twin lambs. Birthweights are most sensitive to changes in ewe condition in late pregnancy.

Lamb survival rate is mostly explained by differences in lamb birthweight but the lambing environment (such as bad weather, mothering) and whether they ara born as a single or twin lamb affects the response.[3,4]

Survival decreases sharply when lamb birthweight drops below 4,0 kg. 0,5 kg decrease in birthweight from the average has less effect on the survival of single lambs than the survival of twin lambs (approximately 10-15% lower).

Lamb birthweight is determined by ewe nutrition both in early pregnancy (during placental development) and in the last third of pregnancy, which is a period of rapid foetal growth. Ewe nutrition during late pregnancy and lambing has a large effect on lamb survival through its influence on lamb birthweight.

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