

NADIS Sheep Disease Focus

Prevention of Metabolic Disease in Early Lambing Flocks

Lambing is now less than six weeks away in some early lambing flocks. Good nutritional management over the next few weeks will be crucial to ensure that good scanning results result in high lambing percentages. Undernutrition could result in poor lamb survival associated with low birthweights and poor milk production, while overnutrition is wasteful and could result in dystocia (birth stress) problems.

Nutritional requirements for mammary development

Protein and energy requirements for foetal growth are relatively small during the middle third of pregnancy, when most of the placental development occurs. Indeed ewes with adequate body condition (score 2.5 – 3.5) can afford to lose between 0.5 – 0.75 units of body condition score during this period without affecting lamb birthweights. Undernutrition needs to be severe for at least 7 days before placental development is seriously impaired. However, while most mammary development occurs during the final third of pregnancy, there is some evidence to indicate that sustained poor protein nutrition from 8 – 10 weeks before lambing can result in poor colostrum accumulation and milk production, with subsequent poor lamb survival, poor lamb growth rates and ewe losses from acute mastitis. In recent years, substantial improvements in lamb survival and weaning weights have been reported in an 800 ewe spring-lambing flock, following supplementation of a hay diet with a source of rumen degradable protein during the period from housing in early January to the start of concentrate feeding in mid-February.



POOR RUMEN DEGRADABLE PROTEIN NUTRITION MAY BE ASSOCIATED WITH A HIGH INCIDENCE OF ACUTE MASTITIS

Determination of the adequacy of protein nutrition

The rumen degradable protein content of hay and straw is variable. The adequacy of protein nutrition can be reliably determined by blood sampling about 10 ewes and measuring serum or plasma concentrations of urea nitrogen and albumin, which reflect short and long-term protein status respectively. (Recent concentrate feeding can affect blood urea nitrogen levels, so ewes should be sampled at least 4 hours after feeding.)



THE ADEQUACY OF RUMEN DEGRADABLE PROTEIN NUTRITION CAN BE DETERMINED BY BLOOD SAMPLING ABOUT 10 EWES

Rumen degradable protein supplementation

Adequate rumen degradable protein supplementation can be achieved by the inclusion of distillers' dark grains (beware of the copper content) or soya, although the protein content of these feeds can also be variable, so further blood sampling about a week after the introduction of these supplements is usually recommended. Urea can provide a cheap and effective means of rumen degradable protein supplementation, although great care should be taken to avoid excessive intake by individual animals. Your vet or nutritional advisor can provide more specific advice about dietary protein supplementation of pregnant ewes.



DARK GRAINS CAN PROVIDE A USEFUL, BUT VARIABLE SOURCE OF RUMEN DEGRADABLE PROTEIN



SUPPLEMENTING POOR QUALITY HAY WITH 100 GRAMS OF SOYA PER EWE PER DAY DURING MID PREGNANCY HAS BEEN SHOWN TO IMPROVE LAMB SURVIVAL

Protein and energy requirements during the final 6 weeks of pregnancy

About 75 % of foetal growth occurs during the last 6 weeks of pregnancy. Energy and protein undernutrition during this period have a direct effect on lamb birthweights and colostrum accumulation, particularly in twin and triplet litters. The adequacy of dietary energy supply relative to metabolic demands can be determined in most flocks by blood sampling about 10 ewes 4 weeks before lambing and measuring serum or plasma concentrations of 3-hydroxybutyrate. Furthermore, when the mean 3-hydroxybutyrate concentration is raised the dietary energy deficit can be estimated and feeding adjusted accordingly.

Separation of ewes into different feeding groups on the basis of ultrasound scanning results, ram harness marks, and body condition score can also serve to ensure adequate nutrition during late pregnancy and avoid wasteful overfeeding of late-lambing or single-bearing animals. Your vet can provide specific advice about blood sampling of ewes in your flock to determine the adequacy of protein and energy nutrition.

Pregnancy toxemia

Pregnancy toxemia is a common disease of undernourished, stressed ewes carrying multiple foetuses, associated with a failure to adapt to the increasing metabolic demands of foetal growth during late pregnancy. The early clinical signs of pregnancy toxemia include depression, apparent blindness, salivation and fine muscle tremours. Similar clinical signs are seen in cases of listeriosis, early cases of hypocalcaemia and polioencephalomalacia, but the diagnosis of pregnancy toxemia can be confirmed on the basis of

elevated blood 3-hydroxybutyrate concentrations.



SEPARATION FROM THE FLOCK, DEPRESSION AND APPARENT BLINDNESS DUE TO PREGNANCY TOXAEMIA

Various treatments including oral glycerol, glucose, propylene glycol and concentrated rehydration solutions, intravenous glucose and injections of corticosteroids, B vitamins and insulin have been advocated, however despite intensive therapy the response in confirmed cases is poor. In many cases, treatment may be uneconomic and humane destruction should be considered to prevent further suffering. Your vet can advise you on the most appropriate treatment for pregnancy toxemia in your flock.

The occurrence of pregnancy toxemia usually indicates an urgent need to increase the energy nutrition of the flock. In the short term this can be achieved by introducing *ad-lib* treacle. In the longer term it may be necessary to increase the amount and/or quality of the concentrate feed, and/or change to higher quality hay or silage

[Ultrasound scanning](#)

Many early lambing ewes have been ultrasound scanned to determine the number of foetuses and identify any barren animals. It is important that the information gained is used -

- to remove barren animals from the lambing group
- to allocate ewe feeding according to foetal numbers
- to ensure that those animals likely to require assistance at lambing (usually twin and triplet-bearing ewes) are separately managed, enabling less time to be devoted to the lower risk groups

- to put an accurate figure on lamb losses before docking/marketing, so that unexpectedly high perinatal lamb mortality rates can be investigated and addressed in subsequent years

Hypocalcaemia

Last year, there were several NADIS reports of hypocalcaemia in recently housed, early-lambing ewes at the end of November. Hypocalcaemia is a common metabolic disease of pregnant ewes which is usually seen from about six weeks before lambing. The disease is only rarely seen after lambing. It is important that the condition is accurately recognised, because while untreated clinical cases die, treatment with injections of calcium borogluconate is usually successful. Under some management conditions, large numbers of animals can be affected.

The initial clinical signs associated with hypocalcaemia are weakness and excitement, but affected ewes are usually found recumbent, often lying with their chins resting on the ground. The pupils are dilated and the ewes appear to be blind. Affected ewes are constipated and sometimes appear slightly bloated. Untreated animals become comatose and die after about 24 hours. In practice, the diagnosis is supported by a history of stressful management and a rapid response to treatment.



RECUMBENT HYPOCALCAEMIC EWE WITH THE CHIN RESTING ON THE GROUND

Ewes are generally unable to absorb sufficient calcium from their diet for the

metabolic requirements of pregnancy and lactation, so depend on the mobilisation of skeletal calcium reserves. Clinical hypocalcaemia occurs when the rates of dietary calcium absorption and resorption of skeletal calcium reserves are insufficient to meet the requirements for pregnancy and lactation.

Clinical hypocalcaemia is usually associated with a combination of severe dietary calcium deficiency and stressful husbandry. Older ewes are most susceptible, due to depletion and subsequent incomplete repletion of skeletal calcium reserves during and after previous pregnancies. Rapidly growing lush pasture and cereal-based diets contain particularly low levels of calcium, while stress associated with transport, change in feed, hunger due to snow-covered pasture, or temporary water deprivation can precipitate the clinical disease.

Treatment by injection under the skin of 1ml/kg (60 - 80 ml for a Down-cross ewe) of warm 40% calcium borogluconate solution is usually successful. Ewes stagger to their feet within 15 to 30 minutes of treatment, urinate, defaecate, show generalised muscle tremours and compulsively eat. However, it is sometimes useful to administer about 20 ml of the drug very slowly intravenously so that any response can be quickly noted. Failure to respond to treatment or relapse after a few hours may indicate the presence of another disease problem, for example, ewes with pregnancy toxemia are often also hypocalcaemic and may respond briefly to calcium borogluconate treatment.

Prevention of hypocalcaemia in ewes depends on the avoidance of stressful conditions during late pregnancy, in particular unnecessary gathering or transport and sudden changes in feed. Feeding of high levels of calcium to pregnant ewes is ineffective and probably counterproductive, because it could inhibit the rapid mobilisation of skeletal calcium reserves.

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The Meat and Livestock Commission is a sponsor of NADIS (National Animal Disease Information Service), which is a network of 40 veterinary practices and 6 veterinary colleges monitoring diseases in cattle, sheep and pigs in the UK.

