Trace element testing of ewes

Trace element supplementation of sheep is widely used. Appropriate use of supplements can improve production, with beneficial effects on fertility, improved lamb vigour at birth and prevention of conditions such as swayback in young lambs. However use of supplements when sheep have sufficient reserves, or where their needs are met by standard nutrition, is wasteful and can even lead to deaths due to toxicity, for example if too much copper or selenium is provided. Blood samples collected by your vet can provide useful information on whether supplementation is worthwhile. Advice can be provided to HiHealth Flockcare members on the best and most cost effective means of providing trace elements based on laboratory results and your flock situation.

- Deficiencies of important trace elements can have negative effects on production. But, over supplementation, particularly of copper and selenium, when they are not needed can cause ewe deaths due to toxicity.
- Blood samples from 6 ewes taken before tupping can be used to assess the copper, cobalt and selenium status and provide useful information on whether supplementation is likely to be beneficial. In addition a single pooled plasma inorganic iodine measurement can be carried out to check the diet at around tupping is adequate.

Copper deficiency in ewes can lead to lambs with swayback that have difficulty standing and hindlimb weakness. Deficiency can arise due to antagonists such as iron, sulphur or molybdenum in the soil and forage. This may be worse on some pastures and can be worsened where over grazing leads to greater soil intakes. Forage analysis together with results of blood testing can be useful in deciding on how to meet copper requirements. Conversely too much copper can lead to poisoning, which can be chronic or acute. Acute copper poisoning is usually a result of over dosage with copper-containing supplements. Whereas chronic copper poisoning can occur in sheep that receive feed with added copper (such as cattle feed) or receive high levels of concentrates over a prolonged time frame, even where the feed is intended for sheep and has no added copper. In either case there may be deaths and these may be avoided by knowing the trace element status of your ewes.

Cobalt deficiency is more of a problem in growing lambs than in ewes, but lambs born to deficient ewes may be slower to get to their feet and suck, which can lead to problems with poor intakes of colostrum and leave lambs vulnerable to other infections. Cobalt is converted to vitamin B12 in the rumen and so blood levels of vitamin B12 are used to assess cobalt status in sheep.

Selenium, together with vitamin E, is an important antioxidant. Areas of northeast Scotland and southeast England are deficient in selenium. Deficiency causes white muscle disease in lambs and has been linked to impaired immunity and infertility with weak or stillborn lambs. Early embryonic death in ewes has also been attributed to selenium deficiency. Trials in flocks where selenium supplementation was given showed increased lambing percentage and less barren ewes. An enzyme called glutathione peroxidase (GSH-Px) is measured to assess selenium status in livestock. However every year there are cases of selenium poisoning leading to deaths often due to over supplementation with selenium containing products, so it is important to know the selenium status of ewes before supplementing.

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Iodine deficiency in sheep may manifest as late term abortions, stillborn and weak live lambs, often with swelling in the throat region due to enlarged thyroid glands. Poor libido in rams and infertility has also been recorded. A single test on samples pooled from 3 – 5 ewes in the same management group can be used as a cost effective way to assess iodine levels in the diet at the time of sampling. When plasma inorganic iodine levels are found to be low it is sometimes necessary to measure thyroid hormones (T4 levels) to assess thyroid function. Iodine is stored in the thyroid and levels in blood can be low where thyroid function is normal and supplementation is not needed. When brassicas are fed, which affect iodine uptake and metabolism, measuring thyroid hormones can check there is sufficient iodine in the diet in the face of goitregenic feeds, when iodine levels in blood may be normal.

The timing of sampling to assess trace element status is important. So often blood samples are submitted from ewes when scanning results have been disappointing, but testing at this time will only provide information on the trace element status at the time of sampling, rather than 3 months earlier when the all-important conception ***should*** have happened. In addition sampling healthy ewes for trace element testing at times when they are receiving concentrates is also generally a waste of time and money.

Adopting an effective routine for trace element supplementation can be difficult. There are many trace element supplements available in different formulations from buckets and blocks to oral drenches to boluses to injectable preparations. In addition there are breed differences for example in terms of susceptibility to copper poisoning, geographical differences, in terms of soil levels, and management practices, such as brassica feeding, that can affect the requirement of ewes for essential trace elements.

It can be difficult to get a handle on whether your current strategy is cost effective, but including blood sampling to monitor for trace elements in your flock health plan may save money from unnecessary gathering of sheep to administer supplements or allow a supplement that provides only the trace elements that will produce a benefit to be selected from the wealth of products out there.

HiHealth Flockcare members can receive pre-tupping trace element testing for £123 and includes full veterinary interpretation of lab results and advice on action that can be taken to correct deficiencies if present. This package includes copper, cobalt and selenium testing on 6 ewes plus a single test for iodine on a pooled sample. Ask your vet to collect clotted (red top vacutainer) and heparinised (green top vacutainer) samples from 6 ewes and provide details of your flock management to allow the best advice to be provided.

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