

Watch for copper toxicity



Barnard Castle-based vet Debby Brown, who works for Dugdale Nutrition, takes a look at health and welfare issues that can affect dairy herds across the UK. This time she focuses on a nutrition-based condition that becoming more prevalent in UK herds.



Producers are very aware of copper deficiency and the problems associated with it. But they're not so clued up when it comes to copper toxicity and it's becoming a serious issue in some herds. I've recently seen several cases of copper 'overload' and the symptoms are very similar to those caused by copper deficiency. This is a problem because misdiagnoses of toxicity, and thinking that cows are actually deficient, leads to additional copper (Cu) supplementation, which simply exacerbates the problem. So, it's vital that producers consult their vet and nutritionist and check copper levels in the cows' diet. The optimum level is between 10ppm and 20ppm, with 30mg/kg of feed the maximum supplementation now permitted.

Copper is stored in the liver. So, for a clear diagnosis, a liver biopsy is the way to go. Carrying out post mortem checks on a few cull cows will quickly confirm a suspected problem. Blood tests are not reliable because Cu levels tend to be high in samples if there is any inflammation, which there will be if cows are under stress, lame, or suffering from other diseases. The cases I've seen have manifested as poor fertility. Cow were bulling and milk yield, fat and protein were OK. But they were not holding to service. I've also seen a herd where cows 'crashed' after calving, exhibiting a high incidence of LDA and simply just failing to 'getting going' at the start of their lactation. Ironically, excessive supplementation is the result of producers becoming more aware of the impact of copper deficiency – and being too eager to avoid it. As a result, Cu builds up to toxic levels. Copper in the diet comes from mineral mixes and other concentrates and forages. It is often combined with copper in licks and boluses.

The good news is that the liver will usually recover once copper levels in the ration are reduced, or completely removed for a period of time in the most extreme cases. The key to maintaining optimal Cu levels – so cows are neither deficient or overloaded – is to closely monitor levels in the ration and carry out an annual check.

Encyclopaedia: copper toxicity

Cause

Excessive copper supplementation in cow rations. Liver biopsy results typically reveal a copper level above 6,000µmol/kg DM.

Symptoms

Cows may be jaundiced and are more typically lethargic, dull, and have reduced intakes – but without the brown-tinge to their coats seen with Cu deficiency. An increase in production diseases and conditions, such as LDA, post calving may also be seen. Poor fertility is also typical.

Diagnosis

Checking copper levels in the diet can be revelatory. Blood tests are not reliable. Liver biopsy will give a clear indication.

Treatment

In the first instance, remove copper from the cows' diet entirely and then gradually add it back in at the recommended level to prevent deficiency or toxicity from occurring. Molybdenum can also be added to rations if signs are severe, as this helps to lock up Cu.