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The impact of nutrition on mastitis

Can the incidence and severity of mastitis be affected by nutrition?

Malnutrition and imbalance of the major dietary nutrients can increase stress and thus susceptibility to all infections, including mastitis.

Cows at risk of milk fever (hypocalcaemia), both clinical and subclinical, have a higher incidence of mastitis at calving. Negative energy balance particularly in early lactation, can lead to increases in clinical cases of mastitis, and higher SCC levels.

Mammary white blood cell (leucocyte) function, the important defence mechanism against bacterial infection of the udder, is modulated by antioxidants and other nutrients in the diet. Antioxidants believed to have an effect on the intramammary infection rate include vitamin E (alphatocopherol), vitamin A (beta-carotene), caeruloplasmin (a copper plasma protein) and vitamin C. Copper, zinc and selenium are three micronutrients that are also required for leucocyte antioxidant activity.

Deficiency of these trace elements and vitamins in the diet of dairy cows may predispose these animals to increased occurrence and/or severity of mastitis. In situations of deficiency, supplementation can reduce both occurrence and severity of mastitis cases.

Under normal conditions in Ireland, vitamin A and E supplements are not required for cattle on pasture. However, during winter feeding, supplements are recommended if the ration consists essentially of grain and conserved fodder.

The following suggestions MAY contribute to mastitis management:

- Ensure that lactating dairy cow rations are adequate and balanced in major nutrients of water, energy, protein and fibre.
- Throughout lactation ensure the cow is being fed a ration that includes essential minerals (macro minerals such as calcium and phosphorous and also micro minerals such as selenium, copper and zinc) and vitamins.
- Use dry cow and transition period rations that will reduce incidence of milk fever.
- Dry cow and heifer rations should contain sufficient levels of minerals in order to ensure the cow is getting adequate supplementation for late pregnancy.
- Minerals such as copper, selenium and manganese fed throughout the lactation cycle are reported to have benefits on SCC management. Biotin has also been shown to improve SCC in some herds.

It is important to note that mineral supplementation on its own is not enough to counter poor hygiene and environmental management and their impact on mastitis incidence.