Mineral nutrition of beef suckler cows

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Cattle and sheep need at least 15 different minerals for good health and productivity. Some minerals, such as calcium (Ca), are required in relatively large amounts. Others, known as trace elements, are required in much smaller quantities.

Cattle production is largely grass and forage-based. If the soil cannot supply sufficient trace elements to the plants that animals are eating, a deficiency will occur.

In general:

- Sandy soils contain less trace elements than clay soils
- Free-draining soil contains less trace elements than poorly drained soils
- Soil derived from acid rocks such as granite is low in trace elements
- Excessive liming will reduce herbage cobalt levels but increase the amount of molybdenum present The latter can reduce the availability of copper to livestock
- Herbs and weeds have much higher trace element levels than grasses
- Clover is generally richer in trace elements than grass.

Beef producers are often well aware of the potential impact a number of trace element deficiencies may have on their stock. However, while a trace element deficiency is often blamed for poor production, rations short of energy or the presence of gut parasites or liver fluke are often more common causes of ill-thrift. Therefore a deficiency should always be confirmed by blood and/or liver tests before additional supplementation is given.

The main minerals impacting on beef suckler cows are shown in Table 1.

Table 1: Main minerals and trace elements affecting suckler cows

Mineral	Why it is important
Calcium	Crucial immediately after calving to reduce the risk of milk fever
Phosphorus	Important for energy transfer and deficiencies can lead to infertility, however, requirements are very small. Excessive quantities can prevent the uptake of calcium, resulting in milk fever.
Potassium	Excessive quantities in forage can lead to a reduction in magnesium intake, increasing the risk of grass staggers
Magnesium	Magnesium deficiency results in grass staggers
Selenium	Low selenium levels can reduce the vitality of the calf at birth and can predispose the cow to retained cleansings and uterine infections
Copper	Deficiencies associated with reduced growth and fertility, however this mineral is often over-supplemented leading to toxicity
Iodine	Herds with iodine deficiency suffer with more still born calves, or calves that do not thrive after birth.

Nutrient requirements for the minerals in Table 1 will vary depending on the age, weight, stage of production, breed, stress and mineral bioavailability. Hypocalcaemia (milk fever) and hypomagnesaemia (grass staggers) are two of the more common issues related to mineral levels. It is therefore important to ensure that calcium and magnesium levels are correct and there is not an oversupply of potassium, sodium and phosphorus which can interfere with uptake of calcium and magnesium.

The use of supplementary minerals needs to be targeted to suit the status of the cow. Cows that are lactating or in the latter stages of pregnancy have very different mineral requirements. Their energy and protein requirements are also different, so it is important to make sure these are also accounted for. If energy and protein requirements are not met then this will have a more significant impact on performance than mineral balance.

It is important to check the composition of a ration with your nutritionist. Asking your vet to take blood or liver samples from the cows will help determine if any changes are required. A ration on paper is only as good as the information used to formulate it, so make sure you have analysed the forages being used.

There are a number of ways to supplement minerals, including free choice and in-feed minerals, drenches and slow release boluses, each with their own advantages and disadvantages (Table 2).

Table 2: Comparison of different methods of trace element supplementation

Option	Cost (Score £-£££*)	Effectiveness (Score 1-3*)	Ease of use (Score 1-3***)
Free choice minerals	£	1	3
In feed minerals	£	2	3
Drenches	£	2	2
Injections	££	3	2
Bolus	££	3	1
Top dressing pasture	£££	1	2

**£ = lower cost, £££ = higher cost*

***1= least effective, 3 = most effective*

**** 1 = least easy to use, 3 = very easy to use*

With routine supplementation, monitoring levels in the animal is important to check that the supplement provided is sufficient to make up any shortfall and not providing more than is necessary, which would waste money. A monitoring programme should be drawn up by your vet as part of an active health plan.

Further information on mineral requirements and supplementation can be found in the BRP+ document Trace Element Supplementation of Beef Cattle and Sheep