

Hello and welcome to the October Newsletter. Autumn has definitely arrived – lots of wet weather but still strangely warm.

Some lovely news this month – the photo here is of our very own Tom’s firstborn – daughter Amelie Jayne, born last month. With Tom’s partner Bronnie and son Leo, Tom is part of a very happy family of four. Congratulations to them, we are all delighted for him.

With the already wet weather, housing cannot be very far away – meaning a lot more work for you all. Thank you to all of you who are bearing with us cross questioning you about medication requests – a necessary evil!

This month, Russell is talking about ‘mineral audits’. This follows on from a course he attended earlier in the year which enthused him to offer this service – read on.

Mary



Mineral audits

We are frequently contacted by farmers who are suspicious that trace element deficiencies are causing problems in their livestock. Typically, we investigate by taking blood samples from animals in the affected group. Ideally, we would need to test between 10 and 20 animals per group, per trace element, to be sure of finding a deficiency rate of 20%. However, due to cost (around £10 per animal per trace element), we often sample fewer animals than ideal, which runs the risk of missing low deficiency rates, often seen in the early stages.

So, let’s go back a step. Every trace element can be found in three separate forms in the animal. First is the storage pool – often the liver. This allows the animal to store the trace element when intake is above the daily requirement. Second is the transport pool – how the trace element is moved around the body. Finally, is the functional pool – where the trace element is doing its job.

When an animal experiences a trace element deficiency, firstly it mobilises body stores. Second, the transport pool reduces, as there is not enough trace element to move around the body. Clinical signs of deficiency only appear once the functional pool is reduced, and the animal is not able to maintain normal health and production.

In many cases, the blood tests we use check the functional pool of the trace element, so will only return low results once health is affected. This clearly means a production loss in the group, which we would all like to avoid.

Mineral requirements for livestock are well established, and we also know that over-supply is as dangerous as under-supply. We are all aware of copper toxicity in sheep, but did you know that the need for selenium was discovered because of selenium poisoning? Each animal’s requirements are also affected by multiple interactions between minerals.

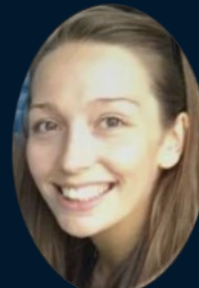
The starting point for a mineral audit is to analyse forage and water mineral content. These analyses often only need carrying out once, as forage mineral content remains fairly constant, unless reseeding or liming are carried out. Also, there is no need to test mains water for mineral content, as it is effectively zero. Finally, fields can be grouped by soil type, meaning that even large farms can be covered by

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6-8 samples.

Once mineral intakes from various sources are known – forage, water, cake, boluses etc, they are compared to the animal’s requirements. We also take account of any inhibitory elements, as well as changes in the animal’s production cycle, as pregnancy and lactation affect requirements. By looking at the requirements on a monthly basis, we can predict where any shortfalls will occur, along with times when the animal is being oversupplied.

Below is an example of a mineral report

MINERAL ELEMENT (DM BASIS)			ASSAY	VERY LOW	LOW	MEAN	HIGH	VERY HIGH
Calcium	Ca	%	0.61	0.30	0.50	0.60	0.70	0.90
Phosphorus	P	%	0.28	0.20	0.30	0.35	0.40	0.55
Magnesium	Mg	%	0.13	0.10	0.15	0.20	0.25	0.40
Potassium	K	%	3.32	0.50	1.00	2.00	3.00	5.00
Iron	Fe	mg/kg	252	50	100	150	200	350
Aluminium	Al	mg/kg	136	25	50	100	150	300
Manganese	Mn	mg/kg	33.8	50	75	100	125	200
Zinc	Zn	mg/kg	26.6	25	40	60	80	130
Cobalt	Co	mg/kg	0.05	0.10	0.20	0.25	0.30	0.40
Iodine	I	mg/kg	0.16	0.25	0.50	1.00	1.50	2.00
Selenium	Se	mg/kg	0.17	0.05	0.10	0.15	0.20	0.25
Copper	Cu	mg/kg	6.4	5	8	10	12	15
Molybdenum	Mo	mg/kg	2.66	0.10	0.35	0.80	1.25	2.00
Sulphur	S	%	0.19	0.10	0.15	0.20	0.25	0.40

We can now carry out forage and water mineral analysis for £50 – 60 + VAT per sample. Once the baseline mineral intake is known, supplements can then be adjusted (e.g. a cobalt drench lasts a few weeks, whilst a selenium drench lasts a few months). This allows any shortfall to be corrected, without spending money on unnecessary supplements.

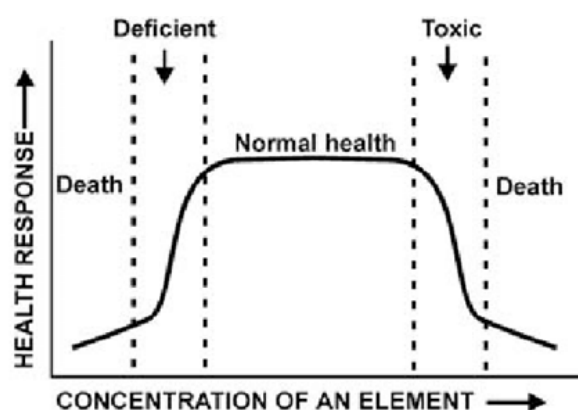
Getting mineral nutrition correct is vital to maintain productivity on farm. Conducting a mineral audit will allow potential problems to be corrected before they occur. The initial cost of the forage and water analysis, along with carrying out the audit is high. However, after carrying out the audit, the information will be valid for several years, and will only really need updating after reseeds or heavy liming.

For all minerals, there is an ideal intake range. Note that both above and below this range, animal health and performance is affected, with death at both extremes.



This month’s author is Russell. He has an interest in ruminant nutrition and it’s effect on animal health and production. So, if you would like to discuss anything mentioned in the article in more depth or would like to chat about any other aspects of nutrition/feeding livestock, then please contact us at the surgery and ask for Russell.

Mineral concentration effect on health chart



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