

# Irish Grass Mineral Analysis Report – October 2019

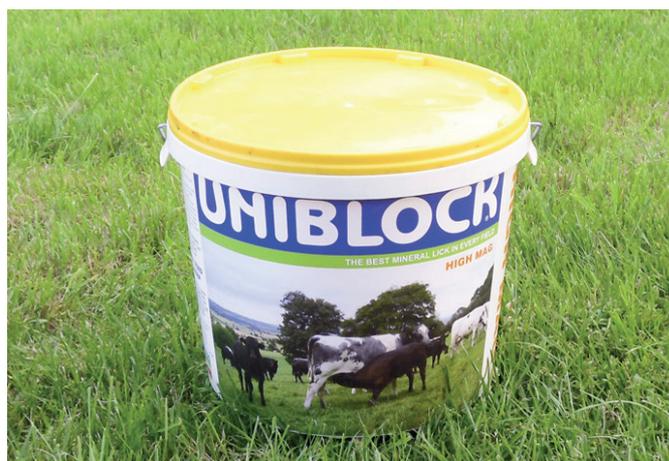
## Comparison of grass samples: October Versus July analysis

Results from our grass samples collected across the country in the month of October are quite different to what we seen back in July. Average Nitrogen levels in the grass are somewhat higher in October (3.5%) compared to grass sampled in July (2.8%). We also seen an increase in levels of calcium, phosphorus, potassium, copper, zinc, manganese, molybdenum, cobalt, iron, and aluminium over the last three months (see table 1).

Table 1: Comparison between July and October grass mineral analysis

Mineral	July Av.	October Av.	Difference
Nitrogen (%)	2.8	3.5	+0.7
Calcium (mg/kg)	4061	4215	+154
Phosphorus (mg/kg)	2841	3865	+1024
Potassium (mg/kg)	29345	32722	+3377
Magnesium (mg/kg)	1795	1408	-387
Sodium (mg/kg)	1523	1321	-202
Sulphur (mg/kg)	2858	2714	-144
Copper (mg/kg)	7.3	9.3	+2
Zinc (mg/kg)	26	31	+5
Manganese (mg/kg)	95	100	+5
Molybdenum (mg/kg)	1.6	3.1	+1.5
Cobalt (mg/kg)	0.1	0.35	+0.25
Selenium (mg/kg)	0.13	0.09	-0.04
Iodine (mg/kg)	0.38	0.35	-0.03
Iron (mg/kg)	110	428	+318
Aluminium (mg/kg)	78	491	+413

As expected, the magnesium levels are reduced in the autumn grass and sodium levels are also down due to the large volume of rainfall (approx. 30% more than normal) we have had over the last few months – the rain has washed the sodium out of the soil. As a result of the reduced levels of sodium, the animal will absorb more potassium to replace the sodium. Potassium levels have increased as well as protein (nitrogen x 6.26) and this can leave animals very



susceptible to grass tetany (staggers) especially during cold wet conditions. Thus, supplementation with magnesium and shelter for the animals (harsh weather can predispose cattle to grass tetany) is necessary during this high-risk period. Although, it is important to remember even if magnesium buckets are provided, animals should still be checked three to four times per day as the risk of tetany is high and the ability to absorb magnesium is reduced. To help increase the levels of minerals (to include magnesium) in pasture it is recommended that legumes are included in the sward.

In addition to tetany issues, the primary cause of a milk fever (hypocalcaemia) problem is usually the high potassium or calcium content of the forage content in the dry period. These October grass results would indicate milk fever could be a real issue if grazing pre-calving cows. Bone resorption of calcium is inhibited in cows fed high potassium diets as a result of metabolic alkalosis (Goff and Horst, 1997). High levels of potassium (application of potash fertilisers) can lock up magnesium in the rumen which slows down the mobilisation and absorption of calcium. E.g. The requirement of the dry dairy cow for potassium is much lower than the lactating cow, they only require 0.5% in their diet. These results show that average potassium levels are 3.27%, providing 6.5 times more than the requirement. Potassium levels can be managed through correct magnesium supplementation.

Older cows are more susceptible to milk fever episodes due to the increase of milk yield per lactation and their ability is reduced to mobilise calcium from the skeleton.

The calcium intake during the dry period should be kept below 50 g/day (ideally below 20g/day) in order to improve the efficiency of calcium absorption and mobilization (Horst, 1986; Thilising-Hansen et al., 2002). For example, if a suckler cow consumed 15kg DM grass at calcium level 4.2g/kg (October grass result) x 15kg grass = 63g. Cows would be over-consuming calcium at this rate and this will encourage onset of milk fever.

High levels of ammonia (from nitrogenous fertilisers) also inhibit magnesium absorption. Throughout the dry period a cow needs approx. 25-30g magnesium per day. Example: Cow eats approx. 17kg DM grass at 0.14% magnesium, cow will take in 2.38g of magnesium from grass only. Therefore, supplementation will need to make up a minimum of 22.5g magnesium/day. This is the equivalent of 150g/head of a 15% magnesium block.



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Fresh grass is a poor source of copper, particularly in autumn and winter when it becomes contaminated with iron from soil. These results reflect the high level of iron in the grass collected in October.

To determine copper deficiency in cattle, it is important to look at the levels of antagonistic trace elements available such as molybdenum, sulphur and iron. The high iron, sulphur and molybdenum in October grasses will increase risk of copper deficiency. Avoiding the application of lime to pasture can help reduce molybdenum.

In conclusion, the average mineral analysis results for October pastures indicate that there are ideal conditions for any grazing cows to be exposed to grass tetany and milk fever and potential copper deficiency. Magnesium supplementation is necessary during this time to reduce risk of these metabolic diseases from occurring.

Met Eireann historical weather:  
[www.met.ie/climate/available-data/monthly-data](http://www.met.ie/climate/available-data/monthly-data)

### Regulation of blood calcium levels

