

Strong relationships exist in the natural world between the mineral nutrition of soils, plants and animals, including humans. Although we are primarily interested in mineral nutrition of farm animals, dietary mineral supply depends on the composition of forages and feedingstuffs. These are obviously influenced by the soil and rocks from which they come, so to better understand animal mineral nutrition it is necessary to look at the natural mineral cycle to ensure the dietary mineral supply offered is both optimal and well-balanced in content. To support this, T&J provide the following Mineral Specialist Services.....

GROUND LEVEL NUTRITION—GLN

- Offers a Soil Improvement Programme based on comprehensive soil analysis, covering physical, chemical, nutritional and biological areas.
- An Action Plan is based on the above report, designed to improve soil fertility and nutrient supply, benefiting forage crop yield and nutritive quality.
- Although many of the recommended soil inputs are commonly available fertilisers, GLN also offers BioAg biological products which improve the biological activity of soils.
- Led by Josephine Scamell, a Nuffield Scholar, who has studied the relationship between soils—crops—animals, in Australia, the USA and within the UK.



- Using analytical data from a specific forage sample, a profile of the mineral status of the total diet can be created, allowing a customised mineral supplement to be designed which balances the complete diet.
- Offers Albion Metal Amino Acid Chelates (MAAC) to overcome inherent mineral imbalances and poor availability of mineral salts. MAAC are more efficiently absorbed due to their unique chelate protection.



- Used in a targeted way (customised mineral supplement) MAAC can improve production, fertility and health in an efficient and cost-effective manner.
- Support is on hand from David Atherton, John Long and James Bretherton, who are experienced and well respected in the livestock and feedingstuffs industry.
- T&J can also offer BioAg Digest-it, a biological slurry additive which both improves the fertiliser value of slurry and converts it into an aerobic liquid which also benefits soil fertility and forage mineral balance.



ALBION LABORATORY SERVICES—ALS

ALBION PLANT NUTRITION—APN


- Offers a full mineral analysis service for all crop types.
- Reports have customised recommendations, dependent on crop type and stage of growth.
- Offers the Albion “Metalosate” Foliar Micronutrient range, based on the Albion patented amino acid chelation principle, a highly available/low application product range which is extremely effective at correcting mineral imbalances and deficiencies, thereby improving crop yield and nutritive content.
- Led by Michael Tew, an agronomist with many years experience. Michael is on hand to give advice and support on the most available and cost-effective way to improve crop yield and feeding value expectations.



- Offers a comprehensive mineral analysis service for forages, feedingstuffs, plant tissue, soils, water, milk, hair and manure/slurries—any sample from a farm not animal based (i.e. blood or liver).
- Once received, sample is logged and passed to the lab for analysis. Results are converted to an easily interpreted report in bar chart format.
- Reports are despatched in electronic form, or by post if preferred.
- Gives a rapid, accurate and effective service in support of our soil, plant and nutrition services.

THOMSON & JOSEPH—T&J

- The original Mineral Nutrient Division created to ensure ruminant diets were balanced for their mineral content.



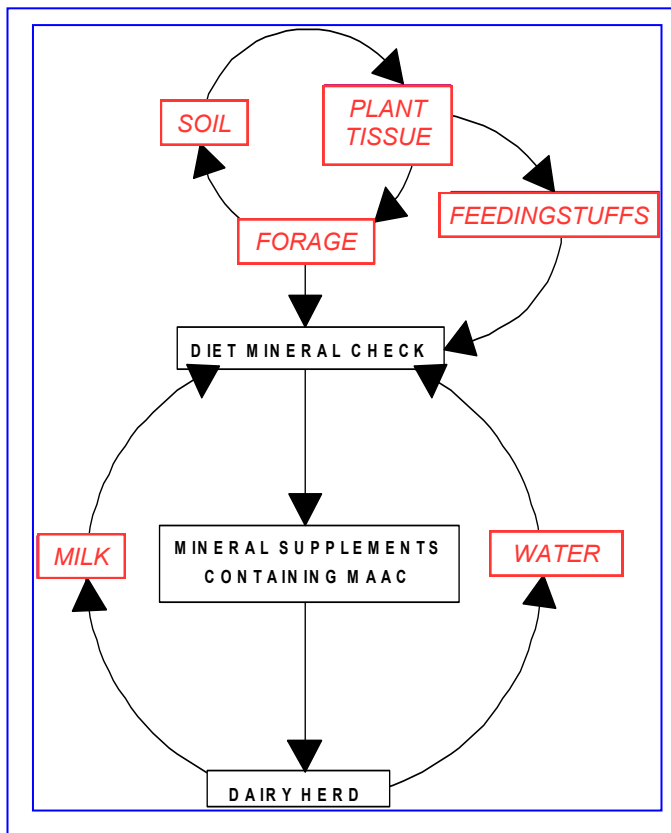
Forage Mineral Report

SAMPLE TYPE	Green Stage FARMER	Mean of 352 samples
SAMPLE REF	2013 FIELD ID	2013
DISTRIBUTOR	Thomson & Joseph Ltd. POSTCODE	
DISTRIBUTOR'S REF	DATE	12 September 2013
MINERAL ELEMENT (ON BASIS)		
	ASSAY	MEAN LOW HIGH MEAN HIGH MEAN
Calcium	Ca %	0.60 0.2 0.8 0.4 0.7 0.9
Phosphorus	P %	0.32 0.2 0.3 0.36 0.4 0.50
Magnesium	Mg %	0.18 0.2 0.2 0.2 0.2 0.2
Potassium	K %	2.89 0.1 0.1 0.2 0.1 0.1
Sulphur	S %	0.24 0.1 0.2 0.2 0.2 0.2
Chloride	Cl %	0.09 0.0 0.0 0.0 0.0 0.0
Sulphur	S %	0.19 0.1 0.1 0.2 0.2 0.2
Calcium-Amino Balance	meq/kg	418 0 100 200 200 300
Manganese	Mn mg/kg	120 0 10 100 120 200
Copper	Cu mg/kg	7.5 0 10 10 10 10
Zinc	Zn mg/kg	20.8 0 10 10 10 10
Cobalt	Co mg/kg	0.13 0 0 0 0 0
Iodine	I mg/kg	0.68 0 0 0 0 0
Selenium	Se mg/kg	0.08 0 0 0 0 0
Iron	Fe mg/kg	300 0 100 100 200 300
Aluminium	Al mg/kg	127 0 0 0 0 0
Molybdenum	Mo mg/kg	1.27 0 0 0 0 0
Relative Copper Antagonism		
Soil Contamination Index		

MINERAL ANALYSIS PATHWAYS

Two mineral analysis pathways are available to be followed:

- 1. Soil-Plant Tissue-Forage/Feedingstuffs Cycle**
This cycle enables Soil Analysis to be used to improve soil fertility and nutrient use in forage and feedingstuffs crops. Soil analysis can also be supported by the Plant tissue analysis in growing crops to optimise crop yield and feeding value.
- 2. Forage-Milk-Water Cycle**
This scheme of analysis uses the Forage Mineral analysis report as a starting point for generating a customised Mineral Supplement through the use of the Diet Mineral Check facility. Milk and Water mineral analysis can then be used either as a monitor of mineral status or to provide additional information. In both cases this data can be used to modify the mineral supplement specification.



With Mineral Nutrition being integrated between soils, plants and animals, analytical information is essential for the development of appropriate mineral nutrition inputs to both plants and animals, to ensure productivity is optimised in an effective and economic manner.

Serving agriculture with specialist mineral products and services.

The central diagram shows a circular flow of mineral analysis services. At the center is 'MINERAL ANALYSIS SERVICES'. Arrows point to 'SOIL', 'SLURRY/MANURE', 'ANIMAL', and 'PLANT'. Each of these points is associated with an expert or product:

- SOIL:** Josephine Scamell, Soil Scientist. Products: Ground Level Nutrition, Specialist Fertilisers & Minerals, BioAg.
- SLURRY/MANURE:** Digest-it, BioAg.
- ANIMAL:** David Atherton, James Bretherton. Products: Novus MAAC, Novus, SoyChlor, WEST CENTRAL.
- PLANT:** Michael Tew, Agronomist. Products: Albion Plant Nutrition, Albion Foliar Metalosates.