

# Pasture & Forage

Boreal Agromineral (BAM) has been used extensively on pasture and forage lands in Ontario, Quebec and Michigan and remains the largest acreage of application. Over the last 12 years several comparative trials have been run to evaluate hay quality treated with BAM. These case histories are ongoing to evaluate effectiveness on a wide variety of soil types and conditions. It was the Company’s objective to improve pasture and forage quality thus improving animal health and productivity.

The first test areas were soil types that had been identified as naturally acidic. These soil types are prone to aluminum, iron and manganese toxicities. Aluminum (“AL”) toxicity is a widespread problem and is one of the major limitations to world food production. Al toxicity is progressive, it will not go away.

Concurrent with this research BAM was applied on soils recognized as base saturated. The application of calcium on such soils is never recommended yet forage analysis from these plots documented changes in protein and mineral levels.

One field test included that of Zubler Dairy Farms which is comprised of 800 acres & 85 dairy cows. The farm purchased 40 metric tonnes of BAM in the spring of 2001 and commenced trails on forage crops.

Crop	Application Rate	Dry basis Protein	Ca %	p %	K %	Mg %	Na %	Zn ppm	Mn ppm	Cu %	Fe
Haylage	1000 lbs/acre	22.85	2.05	0.25	2.62	0.26	0.05	23.3	19.93	8.36	107.53
haylage	0 lbs/acre	16.04	1.05	0.24	3.18	0.22	0.02	30.0	15.67	5.06	103.52

Based on these results Zubler Dairy Farms has incorporated BAM into their fertilizer program since that time and continues to achieve the same results.

The latest research plot was conducted at D-Line Farms in Watford. The farm is located on the Lampton clay plain that is comprised of calcareous fine silt to clay. The preliminary soil analytical work showed well mineralized profiles with natural low levels of magnesium. Initial tissue samples were taken seven weeks after application. The representative samples were sent to AGAT Laboratories for a 35 element ICP scan.

Sample Description	Al %	Ca %	Co ppm	Cu ppm	Fe %	K %	Mg %	Mn ppm	Mo ppm	Na %	Ni ppm	P ppm	Sulfur %	Zn ppm
Alfalfa B - Control	0.22	12.18	1.00	100.00	0.18	27.60	2.20	300.00	32.50	0.50	10.00	>10000	1.40	150.00
Alfalfa A - SRC	0.15	12.90	1.50	106.00	0.12	26.70	3.45	200.00	29.00	1.65	10.00	>10000	1.10	180.00

Like all other test plots forage analysis showed a reduction in potential plant toxicities (Al, Fe, Mn, K) and an increase in essential macro and micronutrients. Of particular interest was the increase in magnesium content on a naturally Mg deficient soil.

There is a strong trend to having an increased mineral content on dairy operations with the exception of potassium. With the long term use of dairy manures potassium levels are usually too high and often results in herd health problems. In situations of excess potassium BAM reduced plant uptake, conversely in other agricultural applications where potassium deficiencies were documented SRC increased potash uptake.

BAM is a vital ingredient in the restoration and improved vitality of soils. This calcium based mineralogical complex agromineral stimulates soil biota resulting in the increased mineral uptake through improved soil aggregation, elimination of potential toxicities and lastly increased sequestration of nitrogen and carbon.

