Environmental Fertilisers | Beyond Organics™

Winter 2014

Newsletter 09

# Benefits of Sustainable Farming

*By Rachel Sorley, Environmental Fertilisers*

**Farms have been getting a bit of "bad" press lately for water quality.**

For example, in a survey carried out by Fish and Game earlier this year, "70% of the 3100 people questioned believe dairy farming expansion has made water quality worse than it was 20 years ago", "66% believe that the dairy industry's environmental performance has impact on New Zealand's global reputation and its 'clean green, 100% pure' brand" and nearly 90% support "that waterway polluters being made accountable for their restoration". Nearly 80% of those questioned felt that "fencing livestock, dairy cows in particular, out of waterways – including small streams – be a mandatory requirement" from www.fishandgame.org.nz

The status of freshwater is a good gauge of the overall environmental condition of a country because freshwaters unsurprisingly assimilate most of the impacts occurring on land. According to fresh water ecologist, Dr Mike Joy, in 2011, "nitrogen fertiliser use had risen by 700% in a decade", "35% of native species are threatened" and "almost all river quality monitoring sites show a worsening trend. 43% of them regularly fail to meet bathing standards. Almost half our lakes are polluted by excess nutrients."

We certainly haven't had a 700% increase in agricultural production in this time. Synthetic fertilisers do nothing to maintain healthy soil structure or build soil microbial activity – in fact they burn the carbon in your soil. Carbon is important to hold on to nutrients (the loss of carbon accounts for the grim water quality picture painted above) and water (loss of carbon means more droughts in summer or increased flooding during storms).

**Continued on page 2 >**

## Inside this issue:

**Pg 1** Benefits of Sustainable Farming

**Pg 2** Soil Energy

**Pg 3** Foliar Feeding – Improving profitability

**Pg 4** News in Brief

**Pg 4** Manganese



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## Benefits of Sustainable Farming contined...

However, fencing livestock out of waterways and planting riparian strips is not the answer, if we do not change our farming practices to more sustainable methods. This is because riparian strips only trap phosphorus from runoff from entering waterways. Improving grazing practices so there is some pasture cover left to protect the soil from storm events is also necessary to help stop phosphorus from entering streams.

Riparian strips and fencing waterways do nothing to stop nitrate. Nitrate enters the steams after being leached into the groundwater. Where does the nitrate come from? Using urea fertiliser to grow more grass, results in high nitrate content in the grass that the animals are eating. Cows need to get rid of excess nitrate from their bodies through their urine. These urine patches are the main sources of the nitrate getting leached into the groundwater. Moving stock off paddocks during wet periods and lowering stocking rates will help. Changing to different nitrogen sources such as growing legumes to fix free nitrogen from the atmosphere such as clover, lotus major, lucerne and trees such as alders and tagasaste (tree lucerne) will also help.

EF Bio-Rocket helps farmers grow grass while they are transitioning to more sustainable farming practices. EF Bio-Rocket contains both ammonium and nitrate forms of nitrogen (a urea alternative) and carbon to prevent them from being leached during high rainfall events. Adding extra carbon, such as EF Soluble Humates or Raw Humates helps to absorb nitrogen from animal urine – preventing this valuable nitrogen being lost from the system to pollute rivers and lakes.

# Soil Energy

**In the soil, the current energy level in the field or in the lab can be measured by an electrical conductivity meter.**

Electrical conductivity is a direct measure of the energy flow in the soil. Energy, measured in ERGS (energy released per gram per second) is a function of the soil's ion concentration, clay type, moisture content, porosity, salinity and temperature.

The energy reading of a soil can also indirectly measure crop productivity, as it is an indication of the quantity of ions surrounding a soil colloid. Albert Einstein taught us that an objects mass is a function of energy. If you apply this concept to crop production, crops (mass) are simply an expression of energy. In order to produce mass (yield) an initial energy requirement must be met. This energy requirement comes largely from the electrical current in the soil. The energy needed to produce mass (yield) in the form of plant growth varies between 200-600 ERGS. When energy levels fall below or above these values, the plant can no longer produce mass or grow.

Fluctuations in electrical conductivity can occur. In the soil, the conductor of electrical current is water. As soil moisture changes due to dry periods or rainfall, the electrical conductivity will also change.

If your goal is to produce high-quality, nutrient-dense plants, your energy source must come from "good" sources, such as organic matter, biological amendments, cover-cropping, low salt fertilisers and looking after your soil. All of which indirectly restores your soils fertility and sustains it for future generations. The added carbon in EF Bio Rocket is a good way to add energy, nitrate and ammonium nitrogen for your plants without losing it leaching or burning up your soil carbon.

*Adapted from Electrical Conductivity: the pulse of the soil by Glen Rabenberg & Christopher Kniffen, Acres USA April 2014*

# Foliar Feeding
# Improving profitability

*By GTP*

**Foliar Feeding is a way of raising the efficiency and production levels of your farm with a lowered environmental foot print is the name of the game.**

Traditions are hard things to break, but if we want to move forward we need to consider new approaches to growing pastures and looking after our soils and ultimately our environment.

So why wait till legislation (EPA- Environment Protection Authority or local councils under the RMA) forces us to make this change? The simple reason is if we do wait until then, you may need resource consent (these cost money) and you will be taxed through rates to support clean-up schemes (again more money).

### WHAT CAN WE LEARN FROM OVERSEA RESEARCH ON FOLIAR FEEDING?

**Michigan University Drs Witter and Turkey** "Leaves lap up food like blotting paper and it spreads in a few hours from tip to root and in many cases as much as 95% of the food sprayed on the leaves is used immediately by the plant, where under some conditions, the roots take up no more than 10% of the same amount placed in the soil" and "trials showed there was a 12-20% increase in crop yields and plant health vs solid fertiliser applications, more than 90% of the foliar fertiliser is utilised by the plant compared to only 10% when soil applied".

**Louisiana State University- Drs A.L Bertrand and L.L Rusoff** Tracer elements were used to ascertain conclusively that plants absorb nutrients through their foliage, fruit, flowers and twigs as well as their roots.

**University of Tennessee- prof T.S. Osborne-agronomist** Research indicates only 10-12% of phosphorus is taken up by plants in the first year, the rest is locked up or washed away. The foliage of plants, including bark of dormant trees, can take in nutrients much as roots can, even at temperatures below freezing.

**Agricultural Chemicals Magazine-** Phosphorus availability studies have given a ratio of 20:1 in favour of foliar feeding over soil feeding. There seems to be little doubt that where soil fixation exists (such as our Volcanic Ash soils here in NZ), foliar applications of nutrients constitute the most efficient method of fertiliser placement and with plants of sufficient leaf area.

**Ontario Agricultural College- Dr T.E Bates** "We increase corn yields 7 bushels per acre [180kg/acre or 440kg/ha] at five different locations with liquid fertiliser placed directly with the seed. The corn received the recommended amounts of fertiliser in a band. The most startling difference is in the size. Some fields were half again as tall two weeks after the corn came up"

**Big Farmer Magazine- Dr S.H. Wittwer of Michigan State** "Farmers should fertiliser according to soil test recommendations, follow with a starter solution or pop-up fertiliser and finish the job with foliar applications"

### SO WHAT'S THE BENEFIT OF FOLIAR FEEDING HERE TO DAIRY FARMERS?

In 2004, I carried out a trial on a dairy farm in the Bay of Plenty. We had cow condition of 4, average cover of 16ookgDM/ha at 1 June, and 200 conventional bales of hay in the barn – not much really! I decided to follow an Anionic-Cationic Mineral Balance Programme using a monthly foliage mineral analysis from Hill Laboratories and sprayed these minerals along with urea 10kg/ha in front of the cows.

The end result was a 37% increase in total milk solids (compared to the best year the farm had ever done) and a further 17% increase in year 2. A total increase in milk solids of 54% over and above the farm record over the two years.

The farm also had a 3% empty rate in the dairy herd - the area average was 12-14%. So this resulted in a saving of $10 000/100cows/year due to the lowered requirement to rear replacement stock. Also the cull cows brought a $400/head premium as they were sold as replacement cows to neighbouring farms so they could maintain their stocking rates.

**There is quite possibly a $15 000- $25 000 per year gain to be had per 100 cows milked if dairy farmers have a mineral management plan change.**

### IMPORTANT FACTORS WHEN FOLIAR SPRAYING

**1.** Use the finest possible nozzle as practical with the sprayer facing 90 degrees to the ground

**2.** Make sure you use minerals in a chelated form (these are plant available). Other forms require more energy to be broken down to become plant available.

**3.** Ensure you have a Reams Soil Test calcium level greater than 2000kg/ha. This is to ensure a more reliable outcome from foliar feeding.

**4.** Get a comprehensive plant tissue test done, including trace minerals - Hill Laboratories can do this.

**5.** KISS- keep it simple at the start. Don't get too fancy with adding too many additives to your tank until you know what you are doing (there is nothing so deterring than to have to dig out a brew from your tank and fix your pump because the additives have reacted with each other [ = 2-3hrs lost]

**6.** A little and often is the trick- you don't get Breakfast/Lunch and Tea all in one feed do you and neither should a plant.

**7.** Always add a carbon source to all foliar spays- the more diverse the carbon the better the outcome- e.g. Molasses/ Sucrose/Glucose/CO2/Char/Humic Acid/ Fulvic Acid.

Growing high brix mineral dense grass/ clover swards and crops is an art, attention to detail and good record keeping will get you over the line- after all first place is not a bad place to be is it ?

**Anyone interested in trialling the EF Anionic-Cationic Mineral Programme are more than welcome to ring us and we can work a programme out for you.**

# News in Brief
## (from Acres USA)

### HEALING THE SOIL WITH BIOLOGICAL METHODS

Rodale Institute has launched a global campaign to generate public awareness of soil's ability to reverse climate change, but only when the health of the soil is maintained through organic regenerative agriculture. The campaign calls for the restructuring of our global food system with the goal of reversing climate change through photosynthesis and biology. The white paper, "Regenerative Organic Agriculture and Climate Change: a Down-to-Earth Solution to Global Warming," is the central tool of the campaign. If management of all current cropland shifted to reflect the regenerative model as practiced at the research sites included in the white paper, more than 40 percent of annual emissions could potentially be captured. If, at the same time, all global pasture was managed to a regenerative model, an additional 71 percent could be sequestered.

### KID'S CLOTHES CONTAIN HIDDEN HAZARDS

Hazardous chemicals have been found in children's clothes and shoes made by major brands including Disney, adidas, GAP and Nike, according to an investigation released by Greenpeace East Asia. The finding showed little distinction between the levels of hazardous chemicals in clothing made for children – a group particularly vulnerable to the effects of these chemicals when released to the environment – and adults when compared to previous studies.

### SUGAR OVERLOAD IN KIDS' CEREALS

Eating a bowl of kids' cereal every day would add up to eating 10 pounds (4.5kg) of sugar a year, according to a new Environmental Working Group analysis of more than 1,500 cereals, including 181 marketed for children. Children's cereal contained on average 40 percent more sugar per serving than adult cereals.

### ORGANIC FARMS SUPPORT RICHER BIODIVERSITY

On average, organic farms support 34 percent more plant, insect and animal species than conventional farms, according to research by Oxford University scientists published in Journal of Applied Ecology. Researchers examined data going back 30 years and found that this effect has remained stable over time and shows no signs of decreasing. "Our study has shown that organic farming, as an alternative to conventional farming, can yield significant long-term benefits for biodiversity," said Sean Tuck of Oxford University's Dept of Plant Sciences. For pollinators such as bees, the number of different species was 50 percent higher on organic farms, although it is important to note that the study only looked at species richness. "Species richness tells us how many different species there are but does not say anything about the total number of organisms," said Tuck.

# Mn
## Manganese

In the last Newsletter, we talked about "breast cancer and prostate cancer is a result of lack of manganese in the diet". We would like to note that manganese like any other trace element is important in a balanced diet. Helping people grow nutrient dense fruit and vegetables is important to us, that is why we recommend carrying out a Reams Soil Test to find out what nutrients are lacking in the soil and using fertilisers such as Natures Garden Fertiliser in your gardens as it has a wide range of trace minerals to help grow nutrient dense food.

**Ring our sales team for this seasons new products and specials!**

**Call today 0800 867 6737**

### DID YOU KNOW?

Monsanto is the creator of Saccharine, Aspartame, PCBs, DDT, Agent Orange, Bovine Growth Hormone & Glyphosate, which have all been linked to cancer & other health problems.

## Our Goal

**To maintain and grow your soil health & productivity, pasture & crop yields & profitability by supplying fertilizers producing mineral-dense feed/food.**

## Our Motto

**Healthy soil, healthy pasture/crops, healthy animals, healthy consumers.**

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