AgSolutions AUSTRALIA

Products & Advice for Soil Regeneration & Animal Nutrition

From the Directors

With water conservation a hot topic, we thought we'd take this issue underground and relate it to your soil.

In this edition we'll explain the relationship between soil structure, humus and moisture holding capacity - effectively building a "dam" within your soil.

Read how Natra Min fertilizer and soil conditioner have helped farmers improve their water use efficiency. Many are seeing improvements in their soil structure after just one application of Natra Min, with water more likely to infiltrate the soil... and be retained.

Many Australian soils are depleted and have low humus levels resulting in poor moisture infiltration and storage capacity. The use of chemical fertilizers and an excess use of Nitrogen have contributed to nutritional imbalances that effectively change the surface structure of our soils, sealing them and preventing water infiltration. In this situation, water runoff and evaporation are accelerated.

Beneath the surface, soil drainage is also relevant to the amount of humus in your soil. Good soil drainage is important to allow excess Sodium, Chloride and Magnesium present in dark soil to be flushed out of the profile.

Improving your soil requires a balance of nutrition... not just NPK. Soil structure and the biological aspect of your soil (worms and microbes) can often be more important than Nitrogen levels and can make the difference between a good crop and a bad one.

Ensuring that organic material is returned to your soil, adequate aeration and re-mineralizing your soil with Natra Min is the basis for soil health and long term maintenance.

Quality crops, pasture and livestock are a result of healthy soil.

To take this one step further, properties that have had their soil looked after are selling for premium prices, as buyers recognize the value and direct returns associated with well managed soil and lower chemical inputs.

Now there's a thought...

Trevor & Wendy Zerner

NATRA MIN... or nothing

Tired of escalating fertilizer costs, Grafton sugar cane producer Graham Somerville turned to Natra Min in a bid to reduce expenses ….. and received an increase in crop yield and improved soil condition as a bonus!

According to Graham, the decision to trial Natra Min was motivated by the frustration of the continual need to increase conventional fertilizers without a correlation in results.

"Prior to Natra Min we were advised to soil test in order to save dollars on fertilizer …but the recommendations came back at double our usual fertilizer rates... even though our yields were okay."

The Somervilles had been operating using Ratooner-S at 3 bags/ ac and the ground was getting harder to plough. Recommendations suggested increasing to 5 bags/ac with the addition of a bag of DAP per acre in the new country. "Six bags per acre was not acceptable and too expensive which was when another growther recommended Natra Min." Based on **Ag***Solutions* recommendations, Graham made the switch to Natra Min K-Phos at 140kg/ac and Cal-Am at 1.5 bags/ac.

Visible difference in soil condition...

Graham reports that an unforeseen benefit of using Natra Min was the visible difference in soil structure.

"We're farming heavy black wet soils and the difference in the way these soils are working up has to be seen to be believed. Other areas are still lumpy where Natra Min has not been used, so the product is definitely working."

Natra Min is definately working... I see the difference in my soil.
Graham Somerville.

continued over page

In this Edition...

Natra Min... or nothing (page 1/ 2)
Graham Somerville, Grafton Sugar Cane Grower.
Build a Dam in your Soil (page 2/ 3)
Ray & Helen Martin reduce irrigation by 30%.
Phosphorus levels up with use of Natra Min(page 4)
Robert Pugno, small crop grower

NATRA MIN Mineral Fertilizer & Soil Conditioner

The use of Natra Min improved the soil condition...
"We have been able to compare our results and do our own trials. In one paddock 2-year cane has yielded exceptionally well this year and Natra Min K-Phos has only been applied once... and that was three years ago. Two blocks up, the same soil type, has received three applications of Natra Min K-Phos and you wouldn't believe how much better the soil is. It's almost to a point now where our soils are so soft that the harvesters are marking the ground now even when it's dry."

Reduced Tillage Costs...
According to Graham he is able to dig the soil with his hand which is a dramatic improvement... and he is now able to work the ground in two passes instead of four, resulting in reduced tillage costs.

Increased Yield and Quality since using Natra Min...
The use of Natra Min has also had a positive impact on yield and quality. When Natra Min has been used in areas where the stools are aging, yield and CCS still continue to increase.

Graham reports that "we're enjoying higher sugar yields and our CCS is about 2 units higher than the mill average, so this equates to extra dollars.

In newer ground we've been advised to grow varieties high in sugar because new country will grow big cane but low CCS. Since using Natra Min this hasn't been a problem, we're getting the tonnage and sugar content is being retained."

Earn Extra $$$ in return....
Prior to the use of Natra Min, some of Graham's first year cane yielded around 30-32 t/ac. Where Natra Min has been used, yields have increased to around 45 t/ac, with some of this being harvested from 8-10 month old cane.

Improved Water efficiency...
According to Graham, the improved soil structure has meant the ground now handles moisture differently, with far better moisture retention. "We're on cracking clays with coastal rainfall but where the Natra Min has been applied it has to be really dry weather for the soil to crack. In the past, big clods of soil used to dry out and need rain to break them down... but that's all changed now."

Graham has noted that more of his fellow cane growers are looking at using Natra Min, and recommends they start applying now in order to reap results next year.

Our cane stools in general are 4-5 years old however with better soil and improved yields, Graham is committed to sticking with his program and focusing on growing one year cane.

AgSolutions' Grafton based advisor, Roger Newman, worked in conjunction with Graham Somerville to devise a program to regenerate his soil. Roger can be contacted on 0428 448 005.

Irrigation requirements reduced by 30%

Despite experiencing one of the driest winters in recent history, dairy farm managers, Ray and Helen Martin of Kilcoy have managed to save on fertilizer, water, time and money.

Since using Natra Min, they have been able to reduce irrigation water usage by atleast 30% with their normal 9 day irrigation cycle being extended to a 14 day watering interval. According to Ray, "We've had the water and not had to use it, and the soil seems to have held the moisture a lot better".

First application of Natra Min K on Rye...
The Martins have only started using Natra Min K this year, applying it to all Rye paddocks as well as to their kikuyu and clover improved pastures.

"Our Rye was planted in March and first grazed in April... and it is still going strong in October," said Ray.

Nitrogen halved...
"This year, based on our soil tests and **Ag***Solutions* recommendations, we have gone the whole year without Urea or Green Top K." The Martins applied Natra Min K at 250kg /ha pre plant with Gran Am 100kg /ha applied at plant stage and for top dressings. In addition to saving water the Martins have halved the use of Nitrogen based fertilizer.

Improved soil condition boosts growth of Rye grass.

According to Ray, the herd is grazing Rye on a 26-28 day rotation and can't eat it quick enough. "In the past when more chemical fertilizer was used, it was common for the cattle to walk out of the pasture because it was bitter. Since using Natra Min we have noticed that the cows will graze the rye into the dirt if you let them, which to me is a good indication that the soil is right and the pasture is sweeter."

Superior Minerals in Dairy mix...
To further boost the condition of cattle during the dry winter, the Martins had their feed company mix Superior Minerals into their ration at the rate of 20kg/tonne. "The cows look terrific considering the season they've been through. We're also feeding this mix to our heifers and they have picked up condition even before the rain, which they weren't doing on other supplements."

For further information on how you can "build a dam" in your soil, contact **Ag***Solutions* on 1800 81 57 57.

Feed Your Soil... and Your Soil will Feed Your Crop

Build a DAM... in your soil

Risk and Insurance...
Every time you plant a crop, there are associated risks... with the biggest risk being linked with the weather... will there be enough rain when your crop most needs it?

During the 17 years since I have been involved in providing soil management advice, I still have spare fingers on one hand when I count the number of "good" years farmers have experienced during this time. The weather can start off good, only to end up with no follow up rain, and often resulting in a disappointing yield or a failed crop... in other words, there was not enough ground moisture to finish the crop.

Weather dryland farming or irrigating your crop, the urgency to build a sponge in your soil is the best insurance you can have to ensure the performance of your crop.

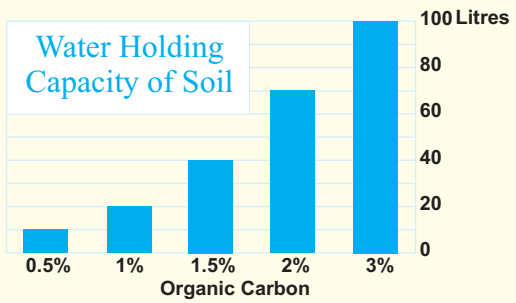
HUMUS - the "sponge" in your soil...
I would like you to think about pouring water onto a ordinary bathroom sponge... noticing how the water soaks into and penetrates the sponge. As more water is poured on, noticing how the sponge continues to take in and hold the water. Once the sponge is saturated, only then will the water start to drain from the bottom of the sponge.

Humus in your soil acts exactly like a sponge, allowing rain or irrigation water to penetrate the surface and providing a storage space to hold that moisture. Then, if there is excess moisture, allowing it to drain.

Soil humus also provides a reservoir for mineral nutrients and can hold up to 200kg of Nitrogen per hectare.

On your soil test, Organic Carbon provides an indication of humus levels. (Note: 1.7% Organic Matter equates to approximately 1% Organic Carbon.)

As indicated on the chart below, the higher the Organic Carbon level, the greater the moisture holding capacity in your soil.



50kg of soil with 1% Organic Carbon can hold only 20 litres of water.

Soil with 3% Organic Carbon provides storage for 100 litres.

Increase humus levels... and build a dam in your soil...
The activity of soil microbes plays a vital role in revitalizing your soil... rapidly, safely and economically.

In healthy soil there can be 600,000,000 individual bacteria per teaspoon of soil. These microbes can produce their own weight in humus every day... building a reservoir for moisture and nutrients in your soil.

In addition, soil microbes can help you to address a number of other soil management issues. Soil microbes assist to...

- Build soil structure, increasing water penetration and helping to reduce tillage costs.
- Neutralize pH in both alkaline and acid soil.
- Increase nutrient availability, reducing the need for water soluble fertilizer.
- Suppress and prevent plant disease.
- Act as bio-filters to clean up pollutants in your soil.
- Produce plant growth promoting hormones and chemicals to improve production.

Protect, nourish and stimulate your soil's micro-organisms...
Having established that healthy soil with good humus levels and healthy microbial activity provide the ideal environment for your crops, our next consideration is how to achieve this desired goal.

Decades of farming practices have too often focused on only one aspect of soil health... it's nutritional status... or how much NPK fertilizer is required to grow this crop?

Following farming practices that nourish and stimulate soil microbes and at the same time minimizing the use of practices that have a negative influence will assist you to build the Biological and therefore the Structural aspects of your soil fertility.

While I recognize that many commonly used farming practices cannot be changed overnight, I have made a list below of some of the important things to be considered. In subsequent newsletters I will give more detailed information.

In the meantime, for personalized advice, give us a call and let one of our trained Field Advisors assist you to take positive steps to restore fertility to your soil... and to build a dam in your soil.

Trevor Zerner

Beneficial to BUILD Soil Microbe populations...
- ✓ Broad Spectrum MINERALS
- ✓ Mulch
- ✓ Moisture
- ✓ Soil Aeration
- ✓ Animal manure
- ✓ Compost tea
- ✓ Crop rotation with legumes

What Soil Microbes DON'T like...
- ✗ In-organic soluble fertilizer
- ✗ High speed tillage (rotary hoe)
- ✗ Herbicides and Insecticides
- ✗ Lack of organic matter
- ✗ Compacted soil
- ✗ Waterlogged soil
- ✗ Hot, dry conditions
- ✗ Mono cropping

NATRA MIN *Two products in ONE...*

Microbe Stimulant & Mineral Supply

All Natra Min blends provide broad spectrum minerals and contain a catalyst to stimulate microbe and worm activity in your soil.

Natra Min	broad spectrum minerals
Natra Min HI-Phos	extra Phosphorus, Calcium & Sulphur
Natra Min K-Phos	extra Potassium, Phosphorus, Calcium, & Sulphur
Natra Min K	extra Potassium & Sulphur
Natra Min Cal-S	extra Calcium & Sulphur
Natra Min Cal-K	extra Calcium, Sulphur & Potassium

Providing You with Products & Advice for Regenerative Agriculture

Phosphorus levels increased with the use of Natra Min...

Eukey small crops grower, Robert Pugno incorporated Natra Min HI-Phos as part of his farming practices over 4 years ago, and his soil has since enjoyed dramatic improvements in condition, and at the same time reducing the need for other fertilizers by 30-50%.

The use of secondary and trace elements is essential for the uptake of phosphate. *(Source: Fertilizer Industry Handbook.)*.

Robert is one of the increasing number of farmers who are conscious of the need to restore broad spectrum minerals and trace elements, and the role that soil microbes play to restore fertility to his soil.

As Robert says, "you have to look after your soil... and that's a fact. You might be able to grow a crop for four or five years on NPK but after that things deteriorate rapidly. The advantage I see is that Natra Min delivers the best value and returns by balancing the soil and releasing locked up nutrients."

"For small crops we apply Natra Min at 500kg/ha which in turn has saved us a lot more in our NPK program. This reduction is critical given the increase in fertilizer prices in recent years."

Soil tests show optimum Phosphorus levels…..
"We've seen a number of improvements since monitoring the results of the Natra Min blends. More recently our soil test results have shown exceptional levels of Phosphorus - which is something not heard of in our sandy loam soils Other blocks that haven't had Natra Min record lower Phosphorous levels."

In terms of soil improvements, the Pugnos use Natra Min in conjunction with green manure crops and manure to improve soil humus which has had a positive impact on the colour of the soil. As Robert adds, "the changes and improvements are happening down in the ground where it's needed".

Beef Cattle take to Pastures...
Robert also runs commercial beef cattle and takes advantage of lightly grazing their green manure crops of rye and triticale. In the first year when Natra Min HI-Phos was trialed, Robert noticed that the cattle definitely prefered to graze where Natra Min HI-Phos had been used.

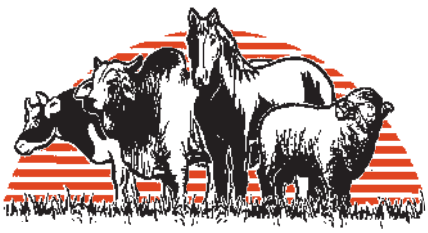
Whilst Robert has enjoyed better yield in his small crops due to the use of Natra Min, it is the green manure crops that follow that have really shown dramatic growth differences. "Where Natra Min was first used in some bays and not others there was a 5-6 inch difference in the height of the cover crop."

Water savings…
Robert concludes, "water retention is a major issue in sandy soils but our program is definitely having results as we are growing tomatoes on less water than most, getting away with only an hour a day of irrigation .

What I tell others is that with Natra Min, you won't see a change overnight. It takes time, however Natra Min is a vital component of our farm management program to ensure the future productivity of our soil."

Minerals and "peg legs"...
Tenterfield's Jeff Campbell had noticed for three consecutive years, steers grazing one particular paddock were developing "peg-legs" or arthritis.

A similar condition can be genetic, hereditary or caused by poisonous plants, however since the steers were bought in from three different areas and were non-related, **Ag***Solutions'* animal nutritionist identified a nutritional deficiency.



SUPERIOR
MINERAL SUPPLEMENT
MEGA MINERALS
LICK BLOCKS

If left untreated arthritis can severely reduce performance as animals are restricted in their movements to graze and travel.

Since last year Jeff has been using **Ag***Solutions*' **Mega Mineral lick blocks** and has seen the "peg-legs" disappear, with no sign of the condition reappearing.

Animal and soil nutrition directly impact on the health of your livestock and can be affected by fertilizer "tie-ups" and imbalances in the soil. Mega Mineral lick blocks contain all minerals and trace elements including copper, cobalt and selenium essential for livestock nutrition in the New England region, where repeated applications of Phosphorus may have tied up copper and other elements.

For further information or advice on animal nutrition and supplements, contact **Ag***Solutions* on 1800 81 57 57.