SAFE FERTILISERS

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News and updates from SAFE Fertilisers

Message from Les and Patti

SAFE founders

Now is the crucial time for farmers to implement a soil carbon program. The following words of wisdom were spoken by Tony Abbott, Leader of the Opposition, recently.

"The smart way to improve the environment is not to impose a new tax on the way every Australian lives and works, but to reduce emissions via common sense environmental improvements that everyone can support: by planting more trees on otherwise marginal land, **by boosting the carbon content of soil through better value organic fertilisers**, and by turning power station carbon dioxide from a waste product into an input in the production of stock feed and bio diesel."

What is good for the environment can also prove to be sustainable for the land, produce increased crop yields and make farming more cost effective. Soil carbon testing with Safe Analytical Laboratories will help farmers calculate and manage their soil carbon levels.

Steve Griffin in corn crop.

On the Road with Neville Janke

SAFE Fertiliser Agronomist

The recovery process from the adverse conditions in the year's beginning has affected all.

The farmers' resilience through this time has shown the true Australian spirit. Crops have been replanted and new growth has appeared, but the pain and wounds of these natural disasters have left scars that will take years to fade. I looked over some barley paddocks that had just emerged from that flood area. They had been four feet under water. The water has gone, the working of the soil and planting is complete, and now the new growth is on course to a harvest. The farmer said to me, "Nev, we must keep planting. Our livelihoods depend on it"! So true it is. All Australian people depend on our farmers . They are the life-blood of our nation.

I visited Agchem in Fiji again in March this year. Ben Nand of Agchem set up meetings in the sugar growing areas around Lautoka and Nadi, and then on to the Department of Agriculture Conference in the Suva area. We had meetings with the Permanent Secretary for Agriculture, the Director of Sugar, and the Permanent Secretary of Strategic Planning, National Development & Statistics. Fiji is a developing nation looking to better its farming practices through nutrition, farm planning and food production. This year many trials will be conducted on sugar, potatoes and vegetable crops to explore the best options of production, using a base plan of testing the soil, developing a program to suit the operation and using SAFE Fertilisers' mineral nutrition.

My travels have taken me through the rich production area of Bundaberg in Queensland and on to the hills and valleys around Gloucester in New South Wales, then through the coastal region of the Northern Rivers. The Warialda to Tamworth region is looking for further rain to plant, but the area has responded well with a good amount of pasture to sustain stock through this winter. In the Warialda area I visited the farming operation of Steven and Nerida Griffin who grew many hectares of dryland corn on a SAFE Fertilisers' cropping program. We inspected the corn and now await the end result when the harvester has completed the operation. Steven has produced many crops of corn at his irrigated Gloucester operation. Steven says, "With dryland cropping, you are at the mercy of the weather. We experienced a lot of rain and wind early in the season and then a dry finish. So it's a 'wait and see' for yield and quality, but all looks good".

It was great to catch up with old friends of Alroc (and to make many new ones) at the Toowoomba and Casino Field Days.

Beware, Beware and Beware: (As the news article reads in relation to Sydney's water biosolids program.) Some operators are sending the biosolids direct to farms. This is cheap waste, but not fertiliser! Consider for a moment the filthy load of baggage that comes with it. Excess pharmaceuticals that resist break-down, heavy metals, mercury, lead, arsenic, cadmium, and E coli (possibly leading to poisoning of livestock, animal water, irrigation water supplies and household water supply). The risks are too great. Farmers, don't be conned by some dodgy operators flogging off this type of product for use on prime agricultural land for a quick fix for urban waste management problems. Additionally, remember the old adage, ***"If it stinks – don't use it"!*** It is full of bad bacteria.

The SAFE Carbon Program

by Neville Janke, Safe Fertiliser Agronomist

'The SAFE Carbon Program' will engage landholders across Australia to undertake, over time, specific land management processes to increase soil carbon on their properties.

The benefits of extra water holding capacity, more friable soil, reduced wear on equipment, and reduced carbon dioxide emissions give all landholders a validated commitment to this program. The land management processes, known to increase soil carbon, and the resulting increase in soil carbon should be recorded for the purpose of any future carbon credit scheme for farmers. The carbon program is designed to give farmers the information and method of a soil carbon building process to fit into their land management operations.

The action applied from this program could contribute to a platform for any future activities toward the development of a soil trading scheme involving soil carbon.

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Implementing the SAFE Carbon Program

by Neville Janke, Safe Fertiliser Agronomist

The Safe Carbon Program

Step 1:
Adopt the Safe Carbon Program for your property.
Step 2:
Implement a Measure and Data Collection process for your property utilising Safe Analytical Laboratories' carbon analysis program. (Dr DD Rathod, who has a doctorate in Agricultural Chemistry, conducts the testing and has contributed to the program.)
Step 3:
Soil tests and consultation on available products to meet the requirements to build carbon levels.
Step 4:
Apply the appropriate products as recommended by the SAFE Fertiliser Agronomist.
Step 5:
Record periodical measurements.
Step 6:
Assess the progress, and make improvements to fit climatic and/or adverse conditions.

Key factors that determine if and by how much a soil can sequester carbon:

- Soil Type
- Rainfall
- Temperature
- Vegetation
- Soil Biology

Management practices that increase soil carbon:

- Application of sustainable inputs (decreasing losses)
- Stubble retention
- Composts (where appropriate and available)
- SAFE Fertilisers' sustainable inputs
- Green manure
- Inter-seasonal pasture/cereal growing
- Cover cropping

The use of sustainable farming management practices can turn a farm from a carbon source to a soil carbon sequestering situation.

Soil organic matter:

Soil organic matter, of which 58% is carbon, is one of our most important national resources. Soil organic matter includes all organic substances in, or on, the soil, e.g.:
Living organisms: Microbes, fungi, nematodes, protozoa, earthworms, arthropods and living roots.
Dead plant material: Organic material, surface residue and plant matter from cover crop.
Active fraction organic matter: Organic matter that can be used as food by the microorganisms.
Labile organic matter: Organic matter that is easily decomposed.
Root exudates: Soluble sugars, amino acids and other compounds secreted by roots.
Particulate organic matter or light fraction organic matter: The active fraction of organic matter.
Lignin: Hard-to-degrade compounds that are part of the fibres of older plants, which microbes consume as food.
Recalcitrant organic matter: Organic matter such as lignin that few organisms can decompose.
Humus or humified organic matter: Complex organic compounds that remain after many organisms have ingested and transformed the original material. Humus is a jelly-like substance that will not leach and is accessible only by plant feeder roots.

Dr DD Rathod of Safe Analytical Laboratories is analysing soil elements using an ICP. Dr Rathod is a specialist in soil chemistry, and is an advocate of mineral fertiliser and carbon sequestering. He will be concentrating his efforts on determining soil carbon levels in line with future Government requirements.

Soil carbon:

Soil organic carbon is carbon stored in soil. It is part of soil organic matter, alongside other elements such as calcium, hydrogen, oxygen and nitrogen. It is made up of decomposing plant and animal materials, by-products of microbial activity and carbon sequestered from the atmosphere by healthy plant life. Soil organic matter is reported in soil tests as the percentage of soil organic carbon in the soil sample. Science tells us that knowing the types of organic carbon in a sample can greatly impact on soil productivity. Dr Jeff Baldock, from CSIRO Land and Water, says, "We have established that the amount of each organic carbon fraction varies significantly across soil types and some fractions can be altered by management practices."

There are four biologically significant types or fractions of soil organic carbon:

Crop Residues - plant residues less than 2mm in the soil and on the surface.
Particulate organic carbon - plant debris smaller than 2mm but larger than 0.053mm.
Humus - decomposed materials less than 0.053mm attached to soil minerals.
Recalcitrant organic carbon - this is biologically stable (e.g. Bio-Char which is the material left after light burning to release gases).

The amount of each type of carbon in our soils varies significantly. Good soils can have organic carbon >10%, whilst poor soils or degraded soil carbon can be <1%. Management practices can also influence proportions of different fractions present. The fractions decompose at rates and contain quantities of nutrients that are different in every case. This affects the health and productivity of the soil.

Carbon levels build up where water, nutrients, and sunlight are plentiful. Soil organic carbon is the most important indicator of soil quality and agronomic sustainability because of its impact on other physical, chemical and biological indicators of soil quality.

It has been estimated that the threshold value for most soils is at 2% soil organic carbon, below which most soils are prone to structural destabilisation and crop yields are reduced. No matter what type of soil, it appears that if soil organic carbon contents are below 1%, it may not be possible to obtain potential yields.

How to get the life and carbon back into soil?

Carbon is the basic building block for all life on, and in, the earth. We cannot live without it. Neither can our soils. Carbon is the driver for every aspect of soil health and soil function – the master key to every door. Increased soil carbon levels are the result of improving on-farm techniques to build soil carbon, the ability to store soil carbon, and to have a soil full of energy and brimming with life. When you look at your soil, you see your management reflected, and the words, "Well done", staring back at you.