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PLANT of HEALTH

+61 7 3865 1288

info@plantofhealth.com.au

PO Box 54, Geebung QLD 4034

22 Morrisby St, Geebung QLD 4034

Back to Basics – Plant and Soil Nutrition

In a world of corporate enterprise where the next “miracle cure” is promoted on a daily basis, how do us mere mortals know what is best for healthy plants, crops or for ourselves for that matter? Maybe with the invent of computers with fast access to information, those of us that **decide** we want the best for our health and hip pockets can wise up and develop strategies to achieve excellent results.....the only thing is, if you try something different, and get great results, you can only **tell** those about it that **want** to listen.

When it comes to plant health **and from asking growers a few questions**, I can say that I have **never** met a grower or a gardener for that matter that doesn't want to increase the **quality or value** of their crop and to **reduce or minimise** their reliance of chemicals or pesticides....they know there is something “scary” about chemicals; but what's the alternative? Many growers and most gardeners, simply **do what they always have done** and don't think about the long-term overall health of their plants or soil. Secondly, when it comes to commercial crops, much money has been made by **generations** of growers doing the **same** practices year after year and to risk even a portion of a crop by trialling different methods is something many growers, “don't get around to.” Then comes a “trigger”; the tipping point that makes the grower look at his procedures. The trigger comes in many forms; it may be **economically** driven where the grower needs more volume or margin. In the case of council parks and gardens, it may be **socially** driven where direction is given by governments that strive to be seen to be doing “best practice”. It may even come for **health** reasons, where the grower must change on medical advice, and one of the most powerful reasons for procedure review, is on the **emotional** level where someone close has had a very bad **experience** from his growing practices and does not want others to go through similar. Whatever the reason, help is **always** at hand for those that **decide** on looking at change...create the vacuum or need.... and it will be filled.

When it comes to plant nutrition, we have all heard “keep your plants healthy and they resist pest attack” but how can we do this, how do we know what is required and what determines “healthy plants”? It's easy for the organic purists to say, “get rid of the chemicals, use natural products and nature will look after itself” but, unfortunately, as any commercial growers will tell you, this approach has many **flaws** in many applications, and sometimes the organic growers are doing themselves a **disservice** by not properly identifying natural **deficiencies** resulting in substandard produce. Many people are **rightly concerned** about exposure to the massive number of synthetic chemicals in our modern society. More than 7200 registered biocides (pesticides, fungicides and herbicides) products are used in Australian agriculture alone¹ So how do we decide what's best for our own unique situation?

Firstly, it's important to understand that we all have a **unique** situation and the only person to work out what is best for you is..... you. Blind faith in fertiliser suppliers for advice is inherently flawed when commercial reality generally overrides social conscience or environmental concerns. Secondly, as we are dealing with **natural living things** it makes sense to ensure we always include inputs that **support life**, as the nutritional requirements for living cells has remained constant for millions of years. Thirdly, when it comes to high production or commercial competitiveness, understand we cannot rely **solely** on the natural process and, more often than not, a **hybrid** approach is necessary to **balance** yields, quality, costs, risks and profit, resulting in **sustainability**.



Fortunately, information is at hand, and many dedicate their life's work into finding this balance for sustainable, profitable, environmentally friendly growing practices. One such person was **Dr. William Albrecht**. Dr. William Albrecht was born on a farm in central Illinois. His four academic degrees including his PhD were earned at the University of Illinois. As Chairman of the Department of Soils at the University of Missouri, College of Agriculture, Albrecht pioneered the study of **soil fertility** and its effect on plant and animal health. He retired from the university in 1959, but before his death in 1974 at age 85, he left his collection of published papers, now published as four volumes. He has left us **evidence** in his papers of this link between the nutritional value of the crop and these critical factors— soil fertility, crop health and animal health.

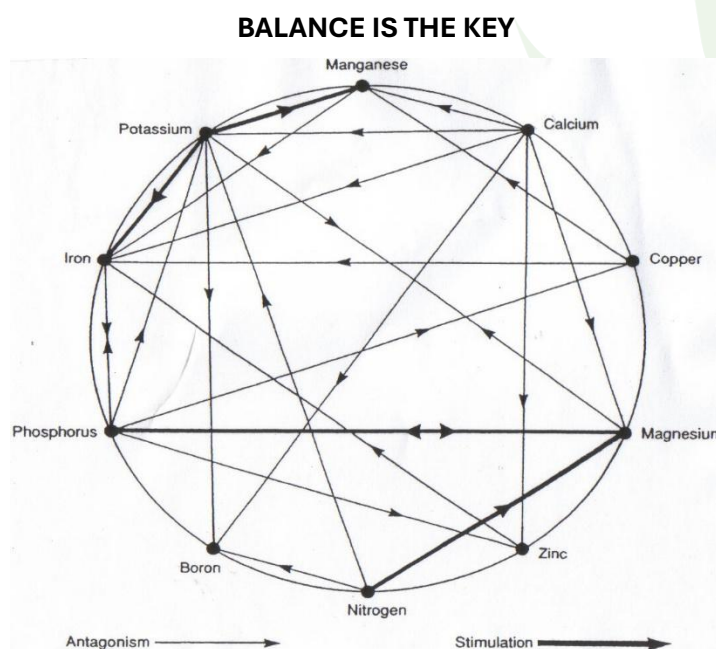
*We select nutrition based on how the food, we are going to eat, looks. When given the chance to choose, cows select their nutrition based on **soil fertility and nutrient content** rather than on the crop growing there.*

So in effect, healthy soil, healthy plants, minimal pest and disease pressures and, intern, healthy animals and humans.

When it comes to soil and, intern, plant nutrition, it is important to understand that the **elements** in the soil all play a vital role in the **health** of a plant even though some elements are required in only **minute** quantities? The **balance** of these elements is far more desirable than an abundance or **imbalance** of a few. Chemical inputs nearly **always** create **imbalances** long term and the grower should clearly understand the mode of action of each input prior to continued use.

*Unfortunately, we live in an era where we have been **indoctrinated** to use excessive chemical inputs that **weaken plants** only to spray pesticides and fungicides to prevent the pest attack, even though pests were **designed by nature** to get rid of **weakened** plants. This leads to a cycle where we spray as a preventative out of fear of loss as opposed to dealing with the **cause** of the problem.*

When it comes to the balance of elements for healthy plants, the most graphic illustration of the interaction of essential elements is called a Mulders Chart. This chart demonstrates the effect that some elements have on the **availability** of others to the plant. Some elements **stimulate** the uptake of others and **increase** the availability of that element. When an element **interferes** with the availability or uptake of another it is called antagonism. Also, **excessive applications** of elements can also **bind** with others causing lock ups, making other elements **unavailable** to plants. E.g. excess liming (calcium) will affect the availability of magnesium, zinc, iron, potassium and manganese.





It's important to understand the influence of balanced nutrition and can be seen in the image below,



Two healthy and normal plants of *Dimorphotheca* sp. (African Daisy), the small one on the left grown in **sand**, the right hand one in a good garden **loam**. Both were planted at the same time. The plant grown on the left is **small**, as its supply of nutrients was **limited**; the loam-grown one is **large**, as it had a **good** supply of nutrients. Both are healthy and normal because they had a **balanced** supply of nutrients. Health and normality can be present without optimal development having taken place.

In short, you can use all the N-P-K you like and, in appearance, you will see the plant “grow” but this has little to do with plant **health**. To me, it is absurd to even consider we can reproduce nature’s food for **healthy** plants, **solely** in a lab when the world’s foremost botanists will tell us how little we know about how plants actually grow. This is why with **all** our fertiliser programs we **always** include **natural inputs with any chemical inputs**. Known products like humates, fish and seaweed, carbon and inputs that **support** soil fertility, microbial activity, plant health and **buffer** chemical inputs. Consider chemical inputs as **tools** that you can learn to use to **enhance** your situation and profitability **providing you understand the correct way to use them**. Blind faith in the chemical supplier will cost you more than money. Other tools like soil testing, plant tissue testing, crop rotation, microbe counts and grower education all contribute to building a long-term sustainable program and I encourage any grower to consider these factors on an ongoing basis. For those people like **home gardeners** that **don’t** soil or tissue test, they cannot possibly know, or be expected to know, what specific elements are required and in what ratios. They are exposed to a huge range of products in pretty packets, so they continue to, collectively, spend billions of dollars on products sold as plant “**food**” or the next miracle “**cure**”. Our board spectrum range of products was designed specifically for this consumer, so we maintain or improve balance, increase plant health, improve soil fertility and support the natural processes with each application. We do this because we can, and when you work **with** nature you always get improved results.....and it feels great.

So, balance is the key. Prior to applying chemical fertilisers or biocides, ask yourself” will nature approve” does it make sense to **continually** use any single product year after year, or continually spray toxic chemicals due to constant bug or disease infestations. Given that fungal spores latch onto the surface of weak plants, would it not make sense to **strengthen** the plant as opposed to continually spraying fungicides? If your situation does not include or warrant proper test procedures, find out about what you are using and question whether they **contribute** or **detract** from soil / plant health, **long term**. Look it up.



At the end of the day, whatever we put on our soil ends up in our **mouths** and given that in Australia (and I suspect Nth America) degenerative diseases like hearth disease, cancer and obesity have dramatically increased over the last 100 years should we look at what we were eating 100 years ago as an indicator or guide to better health? Are we using our knowledge of chemicals as a tool or are they dictating our habits? From my experience generally **plants with good nutrition.....when challenged..... recover**. Maybe we should go **back to basics**.

