



THE SOIL-WATER CONNECTION

Many clever water conserving devices and techniques are surfacing which is encouraging and I am excited to trial many of them. However there is no question that in conjunction with this we need to start taking responsibility for our soil's water-holding capacity because when we only have restricted access to water the soil has to be able to hold onto the limited amount that it will receive during the dry, hot periods. Most people know this and so there is hardly a person that does not want to create good soil when asked the question. Furthermore, nearly everybody buys into the natural logic that good soil promotes healthy plants, and healthy produce promotes healthy people. So the will is largely present, but do we know what good soil is? And do we know how to create it in our home gardens?

Conventionally we have become accustomed to buying some kind of dark compost to mix into our soil, and then we typically mulch with another layer of similar courser material because we have been told it is beneficial to do so. However, this is of limited value as many of you will have come to realise, a disheartening reality as evidenced by poor soils despite decades of following this, or similar practices.

Unfortunately the truth is that often this 'beautiful' looking black compost you purchase has been literally burnt through overheating in the compost-making process, which unfortunately means that it has lost many of its valuable nutrients to gas exchange as well as its ability to bond nutrients. Assuming, however, that it has not been overheated, it is also probable that the compost is



By now all gardeners have had some experience with water restrictions, whether for brief periods of time or long whole hot summers, and with that a gnawing, knowing feeling that this is to become a way of life into the future, and that we all need to be prepared on one level or another. Sarchen Bassingthwaight digs deeper.

sold to you before it has been allowed to build up again. Why do I say this? Compost goes through to two phases; one, where it heats up and organic content breaks down, and two, where it cools down and nutrients are locked into the organic content again. The appearance of the compost can seem the same, or similar, to the layman and most gardeners would never know the difference. So, unfortunately, good soil-building is not going to be achieved by following the basic conventional wisdom of religiously adding compost and mulch.

But yet it remains critical to have good soil because this will nourish and provide moisture to plants for season upon season, and in this time of never-ending water restrictions it is fool-hardy not to look closer at the moisture retaining capabilities of good soil.

The ingredients of good supercharged soil building are simple:

- **Green nutrients** to provide the nutrition base for soil building and to strengthen the immune system of the soil and plants;
- **Composting worms** to start the decomposition process of the organic material;
- **Micro-organisms** to further decompose the organic material and then to re-arrange nutrients into stable usable bonds, and Trace Elements to help in the vital bio-electro-chemical processes involved;
- **Carbon bonds** to provide the building blocks for humus chains.

It is worth following this strategy because many scientific studies have shown that good soil can retain three times more locked-in moisture

than poor soils, ensuring a higher plant carrying capacity, and plants with a drought tolerance which show limited adverse effects during dry periods. Conversely, poor soils lose their moisture retention capabilities and their plant carrying capacity.

But it is not just about the ability to retain moisture, because, after all, plants need more than just moisture to survive and thrive. In the presence of moisture micro-organisms remain active, nutrient exchanges continue and immunity is high; whereas the absence of moisture retention limits nutrient exchange and immunity is diminished.

We also have to adjust our notion of water vs moisture. Micro-organisms require a microscopic film of moisture around particles to perform the nutrient exchanges and the immune responses, this and oxygen circulating through a porous soil structure that can be absorbed into this tiny film of water around the particles. In fact water *per se* leads to the expulsion of oxygen from the soil and a potential detrimental effect due to resultant anaerobic conditions which lower-energy life forms require – not good for growing plant life.

But exactly how is this done? Over the last 15 years we have experimented with various simple methods of creating soil *in situ* in home gardens and have devised a simple 4-step system for you to utilise. This 54 second animated video below gives a splendid overview:



Essentially, the process is as follows. 1) Dried and fresh greens are laid down to form the food source for the life forms that you will inoculate. The first life form is 2) composting worms which will start to propagate and multiply in as little as a few weeks. They are fantastic contributors to the formation of humus and only need to be inoculated once a year, 3) Micro-organisms are the second life form to be inoculated via a simple water solution that one

easily flicks onto the soil. These firstly break down the organic matter and later build nutrient chains up again; meaning one gets break-down-micro-organisms and build-up-micro-organisms which basically need a constant food supply in the form of organic matter. These micro-organisms need to be re-applied constantly as they tend to die off easily in our compromised and modern environments. We suggest fortnightly in most cases.

Electrolytes in the form of trace elements are vital to this bio-chemical process and are added in the same application. 4) Carbon Build is applied to form the basis of nutrient chains that are subsequently released back to the plant as and when the plant requires the nutrients. This reflective mulch, as with shredded thatch, is also advantageous in keeping the supercharge soil building layers which are cool and moist via a miniature greenhouse effect contained in the supercharge soil building layers, whilst dark inert material attracts heat and adversely affects the moisture-holding capacity.

Building a good soil with moisture-retaining capabilities clearly has benefits in times of drought but it also has health benefits to us;

1. Plants that are grown in good soils have high immune responses which, as it turns out is good for you and me. By way of illustration you may consider the cancer-reducing potential of fruits and vegetables grown naturally by comprehending Dr Burke's findings. Dr Dan Burke discovered that cancer cells in humans have a specific enzyme called CYP1B1 that does not appear in healthy human cells, which basically means cancer cells have the potential to be specifically targeted by virtue of this unique enzyme that exists only in cancer cells. And indeed Dr Burke found an agent called Salvestrol that in fact targets this enzyme and thus kills cancer cells. But here's the real discovery relevant to this topic: Salvestrol exists naturally in healthy fruits and vegetables. But how so? It appears that salvestrol is predominantly found in fruits and vegetables that have been attacked by pathogenic fungus, and that the plants' natural defence against this attacking fungus is to produce salvestrol. Imagine that, a cancer preventative agent in fruits that have had to 'toughen up' and produce salvestrol in order to fend off an invading bad fungus.





It may be worth considering that naturally grown fruits and vegetables with blemishes on them are evidence of a plant that has had to fight back and survive, and potentially has health-promoting agents in it, otherwise absent in conventionally grown produce. (*See disclaimer below)

2. Plants that receive too many water-soluble nutrients are too high in the wrong nutrients and have been proven to be unattractive to pasture animals when compared to grasses grown in healthy soils which produce pastures with a more comprehensive nutrient component. (This diverse nutrient component is incidentally delivered to the plant via the nutrient-tie-in-micro-organisms that are so often deficient in commercial composts).
3. Science has also proven that mature soils produce plants that are not contaminated by radioactivity. This was proven by virtue of two adjacent fields; one with good soil high in micro-organisms, and one with poor soil low in micro-organisms which produced foods that were respectively; not radioactively contaminated as in the case of good soils, and radioactively contaminated as in the case of the adjacent poor soil.

Of course, there are also the environmental considerations of superior soils such as: preservation of our water sources from reduced water soluble fertiliser contamination, topsoil preservation, wildlife preservation and so on. And one would do well to remind oneself of this factor too as we all try and do our bit for the environment, however large or small that may be. **SG**

For further background information, a case study, a 3-step programme and a way to get started you can visit www.superchargesoil.co.za

***Disclaimer: Research this yourself as I am not a medical doctor and do not make this claim.**

Plants need more than just moisture to survive and thrive. In the presence of moisture micro-organisms remain active, nutrient exchanges continue and immunity is high; whereas the absence of moisture-retention limits nutrient exchange and immunity is diminished. Thus soils need to be able to retain moisture through good soil building practices