



SOIL CONDITIONER

Biogreen Soil Conditioner™ will improve the performance of soils low in organic matter and/or clay. The soil conditioner contains a blend of two parts Biogreens fibrous 'humus rich' peat and one part Biogreen humic clay.

Benefits for soils low in organic matter and/or clay

Increasing humus and Clay Content

- Improves soil friability and resilience (structure) for reduced erosion and increased root development
- Increases available water-holding capacity for improved water use efficiency
- Reduces nutrient leaching and increases nutrient availability for Improved fertiliser efficiency
- Reduces deleterious effects of soil-acidifying agricultural practices
- Increases microbial activity for more complete nutrient cycling and disease suppression
- Increases soil fertility

Biogreen Soil Conditioner™ key analytical parameters

pH	5.0 – 6.0
Moisture when packed	35 – 45 %
Electrical Conductivity	1.0-2.0 dS/m
Cation Exchange Capacity (CEC)	50-70 meq /100gm
Total Calcium	1.2-1.6% dry weight
Total Magnesium	0.4-0.5% dry weight
Total Sodium	< 0.1% dry weight
Total Iron	0.4-0.7 % dry weight
Total Sulphur	0.3-0.5% dry weight
Total Potassium	0.03-0.06 % dry weight
Total Phosphorus	0.02-0.05% dry weight
Total Nitrogen	0.5-1.5 % dry weight
Total Organic Matter (TOM)	35-45 % dry weight
Humic/fulvic Acids	25-35% dry weight

Trace elements: manganese, zinc, copper, cobalt, boron and molybdenum all present in useful concentrations.



The Importance of Soil Organic Matter

A healthy soil requires organic matter to sustain the soil ecosystem and environment. The organic matter supplies microorganisms to the soil environment while also feeding those already present. This allows nutrients held in organic matter to be transformed into inorganic forms for plant uptake.

Ideally, soil organic matter should be a combination of humus (highly decomposed organic matter) and particulate organic matter (organic matter in the early stages of decay). While humus is slow to break down in the soil, once lost, it takes decades to reform.

The particulate organic matter can be readily replenished using green waste or manure. Although manures and green waste composts have significant short-term benefits, their long-term benefits are limited, only small amounts of humus forming as a result of their decay. With the Biogreen Soil Conditioner we have organic matter in the form of humus, ready for application.

Therefore by applying the Soil Conditioner in conjunction with the particulate organic matter, we can maintain both important forms of organic matter. In this way a more sustainable soil system is created where nutrients are continuously cycled and made available for plant uptake and soil structure is made resilient to farm production practices.

As microorganisms break down the soil organic matter, carbon dioxide is released into the atmosphere and the soil's total organic matter is depleted. In cropping systems, where plant parts are harvested, organic matter that would otherwise be returned to the soil is removed for human and animal consumption.

Therefore, in a continuous cropping system it is far more difficult to maintain organic matter levels than in a home garden or rainforest, where the ecosystem is more complex and most foliage from growing plants can be returned to the soil. It is common in cropping systems to apply synthetic fertilisers and although they are often overused, in many instances they are a necessity if farmers are going to meet their crops' nutritional requirements.

However, the application of synthetic fertilisers can lead to an increased rate of organic matter decomposition and therefore greater depletion of the all-important organic matter in the soil.

For example, microorganisms often feed with increased vigour when there is excess nitrogen available in the soil system and this can lead to rapid feeding on the organic carbon also present in the soil. Therefore, in situations where large applications of nitrogenous fertilisers are required, it is all the more important to match these applications with additional organic carbon.



There is an upper limit to soil organic matter content, dependent on soil type, after which benefits are no longer significant, but this limit is not well defined and exceeding it should not damage plant health. On the other hand exceeding any such limit will create a carbon store, which would lead to requiring fewer regular applications.

However, to apply such large quantities would be both impractical and costly, so that application rates should be based on affordability and practicality (see tables 1 and 2).

Application Rates

To incorporate the soil conditioner into the soil profile at approximately 1%, 5%, 10% and 20% by volume, applications should be as presented in tables 1 and 2.

Table 1: Farm application rates to blend at 1%, 5% & 10% of soil profile by volume (m^3/ha)

% Soil Profile Volume	Top 5cm	Top 10cm	Top 20cm	Top 30cm
1%	5	10	20	30
5%	25	50	100	150
10%	50	100	200	300

Table 2: Home garden application rates to blend at 5%, 10% & 20% of soil profile by volume (L/m^2)

% Soil Profile Volume	Top 5cm	Top 10cm	Top 20cm	Top 30cm
5%	2.5	5	10	15
10%	5	10	20	30
20%	10	20	40	60