NATURE JUST GOT BETTER

MORE RESISTANT, HEALTHIER AND
PRODUCTIVE PLANTS, TREES, CROPS AND GRASS

TERRACOTTEM®
Leading soil conditioning technology

AUSTRALIA
NEW ZEALAND AND
SOUTH PACIFIC
EDITION

AN EXTRAORDINARY STORY

In 1983 Dr. Willem Van Cotthem and a team of scientists from the Laboratory of Plant Morphology, Systematics and Ecology at the University of Ghent (Belgium) began researching methods which would enable plants to grow with a minimal supply of water. In particular, the team was looking for ways to alleviate the grave situation existing in the dry Sahelian countries of Western Africa, where encroaching desert and continued drought were leading to widespread ecological, economic and social ruin.

Only the reforestation of the sandy and stony soils with indigenous tree species and other savannah plants will restore the natural equilibrium in the Sahel region. Yet massive dam construction projects to collect scarce rainfall and the drilling of thousands of pumped wells had little or no effect in creating a new and complete vegetation deck in the region.

Experimenting with the large variety of materials available for such work, the team from Ghent found that by mixing certain hydroabsorbent, nutritive and root growth stimulating components together, a superior soil-conditioning compound was attained which produced dramatic and swift results. The hydroabsorbent components absorbed and released the water that was usually lost to evaporation and leaching, providing the plants with their most basic need; water. The nutrients provided a second element crucial to healthy plant growth: nutrition. Lastly, and perhaps most importantly, root growth precursors provided a catalyst, the "jump-start" needed by the plant to rapidly establish itself and survive with little or no care in such poor environment. Not only did this TerraCottem® mixture significantly improve the capability of soils to retain and provide water and nutrients, but it also promoted biomass production and plant growth.

Years of testing in both the laboratory and the field were conclusive: even in the poorest soil conditions a wide variety of indigenous trees, grasses, vegetables and herbs flourished, reversing the devastating pattern of desert encroachment, deforestation and wind erosion. In their search for a way to halt the continuing cycle of environmental degradation and starvation in Africa, Dr. Van Cottem's team had discovered a tool with universal applications reaching far beyond anything they had imagined...

Encouraged by the results obtained in Africa, and with assistance from colleagues and scientists in universities around the world, Dr. Van Cottem tested the TerraCottem® mixture in other cultivations, climates and applications. Utilizing data collected from these and other experiments, the TerraCottem® mixture was refined and improved, and the foundation laid for it being utilized on global scale.

More than simply fulfilling the hopes of Dr. Van Cottem and the team from the University of Ghent, what had begun as a research project driven by pressing ecologic, environmental and social problems in less developed countries had evolved, after a decade of work, into a viable tool used by a wide scope of professionals in the landscaping, sports turf, reforestation and horticultural industries.

TerraCottem® is the world's first and leading soil conditioning technology, designed with the specific purpose to improve the water and nutrient retention capacity, structure, aeration, quality and performance of growing media, ...and to improve root and plant growth.

TERRACOTTEM®
Leading soil conditioning technology

TERRACOTTEM® IN A NUTSHELL

The range of TerraCottem® soil conditioners are a proprietary mixture of more than twenty components from six different groups all assisting plant growth processes in a synergetic way:

The growth precursors play a very important role in the initial growth phase of the plant. They activate root cell elongation and differentiation, promote leaf development and biomass production and encourage roots to grow in depth even in conditions of drought.

TerraCottem®'s crosslinked hydroabsorbent polymers absorb and store water at root level that is normally lost to evaporation and leaching, optimising water resources and reducing the volume and frequency of necessary irrigation up to 50%. The stored water is then kept at the disposal of the plant that accesses the water on demand through its root hairs, keeping the water in the root zone for a longer period of time.

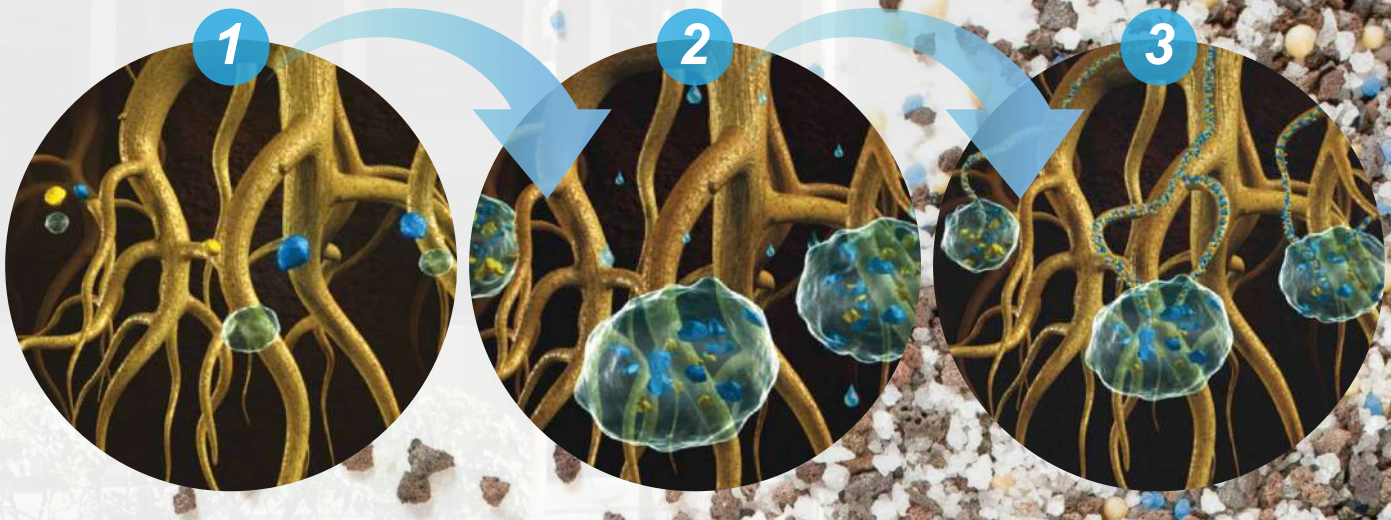
In dry form, the polymers are white, crystalline granules. Upon contact with water, the granules swell quickly, absorbing water and expanding into a gel-like substance. Each polymer is capable of storing many times its own weight in water. The resulting balanced mixture of water capture/release characteristics has a low sensitivity to electrolytes, and yields numerous wet/dry cycles.

The soluble mineral fertilisers absorbed by the hydrogels feature a low phosphorous NPK mixture used as a starter component for the first growth phase of plants. They contain a high amount of trace elements.

The slow release fertilisers offer a constant flow of nutrients and play an important role in soil fertilisation for many months. The release of nutrients starts approximately 2-3 weeks after application and is temperature activated.

The synthesized organic fertilisers stimulate microbiological activity in the soil and contribute to overall soil conditioning by releasing nitrogen and other growth stimulating elements.

TerraCottem®'s carrier material consists of a particular kind of volcanic pyroclastic rock (lava). The material acts as a component binder, a vehicle for the growth stimulators and allows homogenous distribution of all components. Lava also improves the soil's aeration.



TerraCottem® works at root level. It has to be mixed with the soil.

TerraCottem® is activated by watering the plant. The polymers absorb the water and fertilisers for many years.

The growth precursors encourage root hair growth. These root hairs grow inside the polymers and absorb the required amount of water and nutrients.

TERRACOTTEM® PRODUCTS

Leading soil conditioning technology supported by highly qualified people

PHYSICAL SOIL CONDITIONING PRODUCT

Each TerraCottem® soil conditioner contains water absorbing, growth stimulating and nutritive components. They all work in synergy to stimulate root development and plant growth, even in poor and degraded soils. The effect is twofold: you get sustainable, healthy plant growth and savings of up to 50% in irrigation water, even in challenging conditions.

A win-win situation for you, your clients and the environment.

TerraCottem® universal

For optimal growth of all your plants with less water

TerraCottem® universal is the original TerraCottem® soil conditioner and can be used for all types of planting projects such as trees, shrubs, revegetation, annuals, perennials, roof gardens, agriculture, horticulture and potting soils. The soil conditioner helps you to succeed in your planting projects despite challenging conditions generated by poor soil and climate change. TerraCottem® universal is a granular mixture based on volcanic lava, water-absorbing polymers, NPK fertiliser with trace elements and biostimulants.

TerraCottem® arbor

Life insurance for your trees

TerraCottem® arbor stimulates growth of trees and shrubs, boosts their resistance to drought stress and increases their survival rate. It saves you the cost of replacing dead plants. TerraCottem® arbor is a granular mixture based on volcanic lava, water-absorbing polymers, NPK fertilisers with trace elements, humic acids and biostimulants.

TerraCottem® turf

For a deep root system and a healthy, drought-resistant lawn

TerraCottem® turf is the soil conditioner for ornamental and sports grass. Grass that has been seeded or turfed on soil in which TerraCottem® turf has been incorporated will be more resistant to drought. It will stay green longer and recover better after a period of drought compared to untreated grass. TerraCottem® turf is a granular mixture based on zeolite, waterabsorbant polymers, NPK fertilisers containing magnesium and biostimulants.

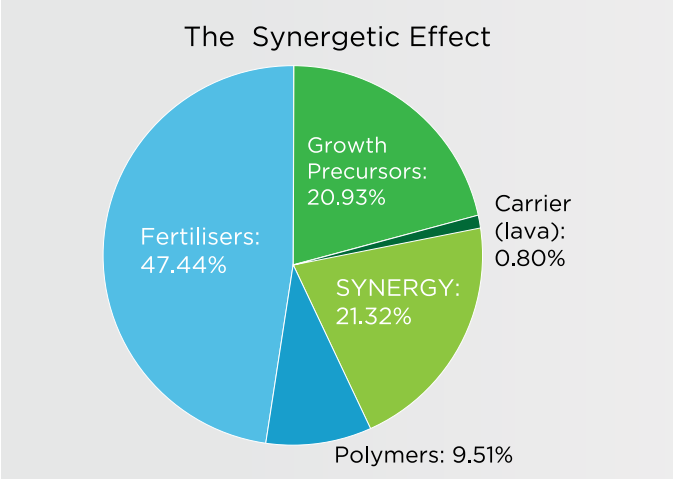
TerraCottem® complement

Supplement to TerraCottem® universal

TerraCottem® complement has been specially formulated for applications in flower beds and horticulture previously treated with the "universal" soil conditioner. TerraCottem® complement replenishes the components that have been consumed by the plants during the previous growing season and those lost each time a crop or annuals are pulled from the soil. Due to its application the nutrient and water holding capacity of soils and growing media is kept in optimal conditions. TerraCottem® complement is volcanic lava enriched with NPK fertiliser with trace elements, waterabsorbant polymers and biostimulants.

THE BENEFITS

Simply mix TerraCottem® at the recommended rate with the soil during planting or prior to seeding and turfing, and get the following results



Each TerraCottem® component has its impact on plant growth but it is above all the synergetic effect of all the product's components which makes the TerraCottem® soil conditioning technology so unique and successful.

STRONGER AND DEEPER ROOT DEVELOPMENT

TerraCottem® activates rootcell elongation and differentiation, resulting in a well developed root system. In addition, roots are encouraged to grow more rapidly to depths where more water is present.

HEALTHIER PLANTS AND INCREASED YIELDS IN ALL APPLICATIONS

The dependable moisture supply and proper nutrition which TerraCottem® provides, increases the plants' biomass, producing higher yields, better survival rates and increased returns on your investment.

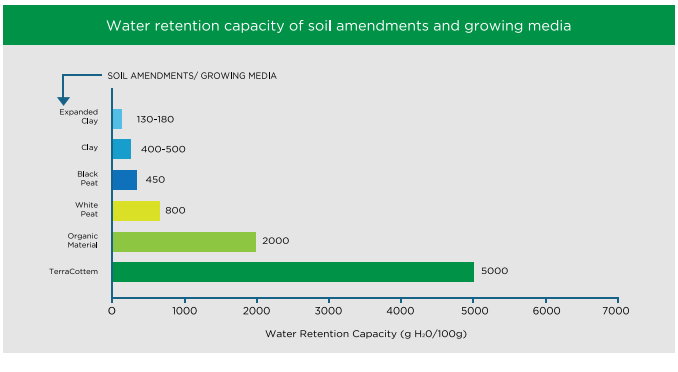
WATER SAVINGS

TerraCottem® absorbs and stores water that is normally lost to evaporation and leaching, reducing the volume and frequency of necessary irrigation up to 50%. This water is then kept at the disposal of the plant. It is stored in a form which plant roots can access on demand through their root hairs, keeping the water in the root zone for a longer period of time.

SMART DROP Certified

WATER CORPORATION waterwise

TerraCottem® has been independently accredited by the peak bodies of Australian urban water industries for a direct connection between use of the product and water savings.



GOOD FOR THE ENVIRONMENT

The presence of TerraCottem® in the soil reduces the amount of water and nutrients necessary to establish and maintain plants. As part of the nutrients are captured within the polymers there is less leach-off and contamination of the rivers, streams and other sources of fresh water.

HIGHER RESISTANCE TO DISEASES

Healthier plants are more resistant to diseases.

INCREASED SURVIVAL RATE

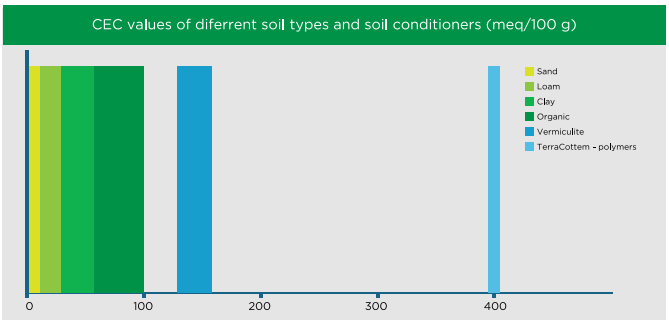
TerraCottem® reduces the effects of transplant shock by diminishing the desiccation of the root system during transportation and after planting, while its nutritive and growth stimulating components increase biomass and help keep young plants growing during the critical period following transplantation.

SOIL CONDITIONING

TerraCottem® supplies both useable nitrogen and carbon to micro-organisms. In turn, ammonium nitrogen is gradually released back to the soil and subsequently in a nitrate form that plants prefer.

BETTER USE OF FERTILISERS

Many nutrients and fertilisers which are normally leached from the soil into rivers, streams, aquifers and other sources of fresh water are captured by TerraCottem®'s hydroabsorbent component and made available to the plant. The Cation Exchange Capacity, or CEC (quantifying a substance's ability to provide nutrients to plants by measuring its capacity to exchange cations) of TerraCottem®'s hydroabsorbent component is very high compared to that of most soils. By binding with the nutritive elements, TerraCottem® can reduce fertiliser requirements by up to 40%.



ENABLE PLANT GROWTH IN DEGRADED, SALINE OR OTHERWISE MARGINAL SOILS

By exchanging cations depending on their levels, the polymers maintain an equilibrium between external and internal (= polymer) salt concentration, improving growing conditions in degraded soils and limiting the amount of salinity or contamination available to plant roots. Cation buildup in the hydroabsorbent component due to high levels of salinity can be flushed out by rain or with purer irrigation water, increasing the absorption capacity again. TerraCottem® is effective in helping to restore vegetation in areas reclaimed from sea or from mines, dumps and industrial areas.

TERRACOTTEM® APPLICATIONS

TREE AND SHRUB PLANTING AND REVEGETATION

GOLF COURSES

SPORTS GROUNDS / TURF

FLOWER BEDS AND HANGING BASKETS

SWALES / RAIN AND BIO-FILTRATION GARDENS

ROOFTOP GARDENS

SPECIALLY SUITED FOR APPLICATION IN:

- Sandy soils
- Contaminated soils
- Embankment and hillside planting
- Dune restoration
- Land reclamation and environmental remediation
- Brownfield sites
- Horticulture

FREQUENTLY ASKED QUESTIONS

When should TerraCottem® be applied?

Before planting, seeding, turfing or sprigging. It has to be mixed with the soil. TerraCottem® can be incorporated into existing turf when it is being aerated and hollow cored.

How long does TerraCottem® last?

The nutrient starter component and trace amounts of growth stimulating agent are designed to perform during the initial growth phase after incorporation, and the slow-release fertiliser component has a 6 to 12 months utility, depending on the average temperature and specific TerraCottem® formulation used.

While the different hydroabsorbent components in TerraCottem® have high but varying levels of mechanical and biological stability, the longest-lasting components have demonstrated a lifespan of more than eight years in practical applications.

Are all products containing hydroabsorbent polymers (also known as hydrogels or super absorbents) the same?

Although on the exterior one hydroabsorbent polymer may look similar to another, their chemical construction, the physical structure of the network, and especially the crosslinking density can be vastly different and will affect how they absorb, store and release their contents, and will determine their toxicity, longevity and sustainability for use in growing plants. Caution must be exercised, as many are sodium-based, manufactured principally for use in baby diapers and other sanitary wares, for use as flocculants and for chemical liquid waste disposal, making them unsuitable for use with plants or turf. Unfortunately, some of these products are repackaged and sold for use in horticulture.

The TerraCottem® mixture simply contains those hydroabsorbent products that have demonstrated the best results on plant growth and water efficiency, in independent efficacy trials carried out on behalf of TerraCottem®.

What effect does TerraCottem® have in soils with high or low pH?

An acidic soil is characterised by a concentration of protons (H+) higher than 10^{-7}. Incorporated into such an acidic soil, TerraCottem's hydrogels are able to absorb a number of these protons, and in turn release some cations, like K+ and NH4+ or other cations already absorbed from the soil solution. In this way, the pH level can be increased up to a change of 1pH point.

In alkaline soils, characterised by a concentration of hydroxyl ions (OH-) higher than 10^{-7}, TerraCottem® hydrogels absorb some hydroxyl ions and release some protons (H+), thus decreasing th pH up to a change of 1 pH point.

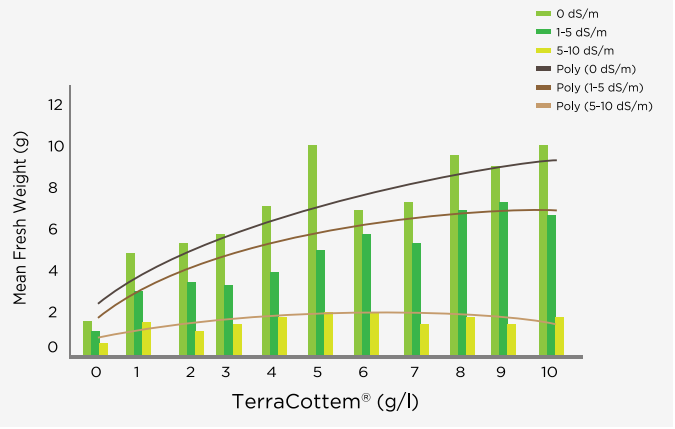
Is TerraCottem® toxic in any way?

TerraCottem® is non-toxic, environmentally safe and does not contaminate plants, soils, growing media and ground water.

How does TerraCottem® improve plant growth in saline growing conditions?

Due to the chemical composition of the crosslinked hydroabsorbant polymers, there is a preference for absorbing K+ - over Na+ -ions. This results in a lower salinity level of the water inside the polymers offering the roots of the plants an improved growing environment.

The Influence of TerraCottem® on plant growth (Zea mays L.) in saline growing conditions



How often should areas treated with TerraCottem® be fertilised and irrigated?

Customary types and rates of fertiliser and irrigation should be used on areas treated with TerraCottem®, according to the recommendations of the project manager, architect or consultant. After plants and turf have been established, lower rates of both irrigation and fertiliser may be evaluated in order to find the most effective one. Significant reductions in irrigation (up to 50%) and in fertilisation (up to 40%) have been confirmed by TerraCottem® clients.

What methods are used to apply TerraCottem®?

TerraCottem® can be applied manually for smaller surfaces or volumes, or mechanically using traditional agricultural or landscaping machinery such as fertiliser spreaders, rotovators, rototillers, etc...

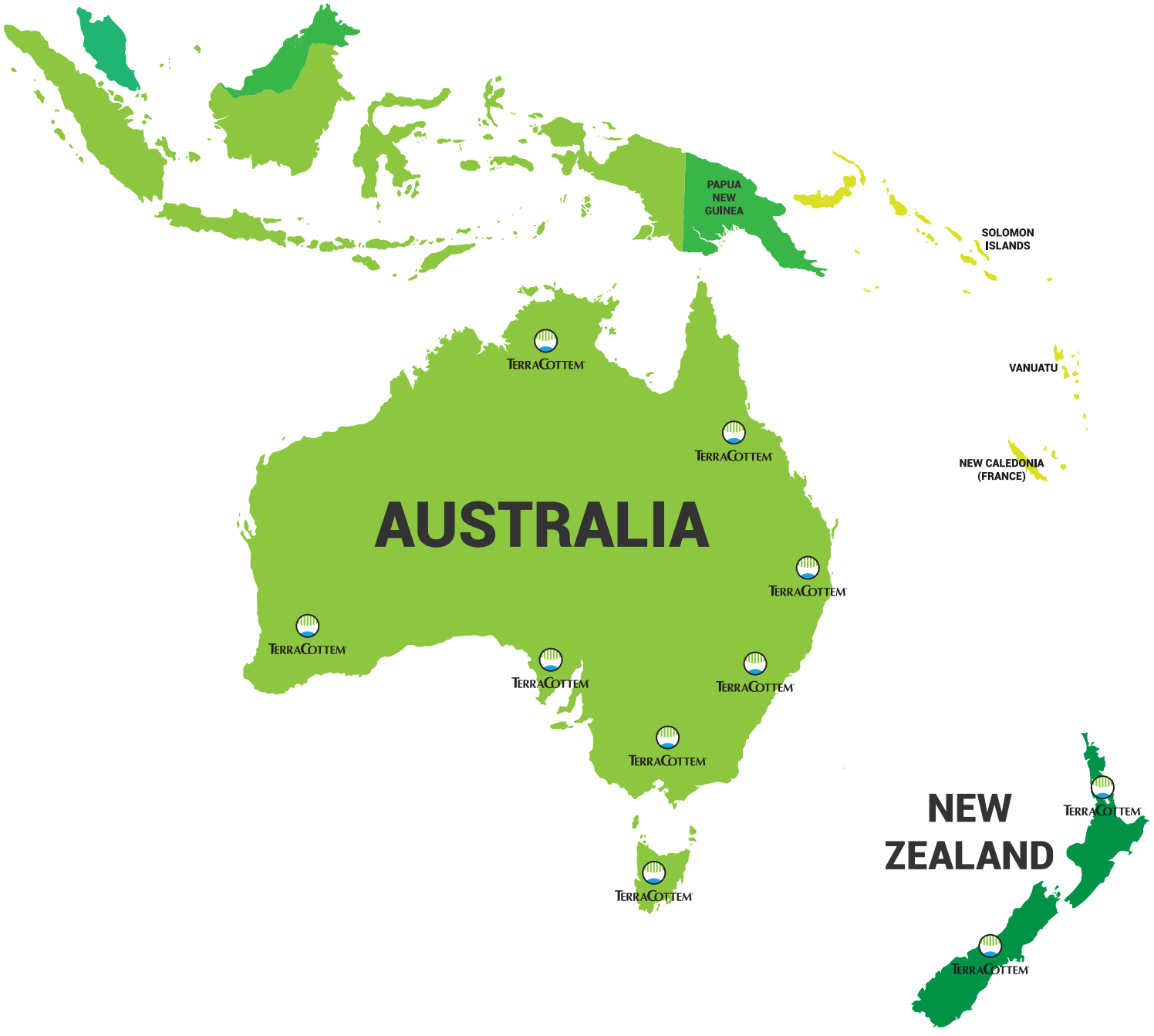
Is TerraCottem® safe to be used with Australian native plants?

Yes, even phosphorous sensitive plants like banksia sp. and grevillea sp. establish well when planted with recommended rates of TerraCottem®.

PROUDLY SPREADING THROUGHOUT AUSTRALIA NEW ZEALAND AND THE SOUTH PACIFIC

TERRACOTTEM®
Leading soil conditioning technology

TerraCottem® is the world's first and leading soil conditioning technology, designed with a purpose to improve the nutrient retention quality and performance of growing media, and to improve root and plant growth.



MANUFACTURER:
TerraCottem BVBA
Mekeirleweg 5 - 8570 Vichte
Belgium
Tel. (32)56/78 27 58
Fax (32)56/78 27 59

TerraCottem® is the first soil enhancer to be accredited with the "Smart Approved Watermark" for it's proven water saving capabilities

SMART DROP Certified

WATER EFFICIENCY waterwise

FOR MORE INFORMATION:
TerraCottem Australia
PO Box 3024
Lesmurdie WA 6076
Freecall: 1800 658 281
Email: info@terracottem.com.au