# The Miracle of Macracote® *Coloniser plus* and the advantages for containerised plant production in nurseries


"Biologically Coated Controlled Release Fertilisers"

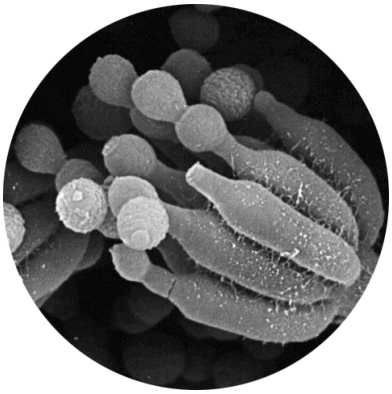
LANGLEY FERTILIZERS

AUSTRALIAN MADE®

**The Miracle of Macracote® *Coloniser plus***
**and the advantages for**
**containerised plant production in nursery conditions**

There has never been a fertiliser as innovative as Macracote® *Coloniser plus.* The system of controlled nutrient release in containerised plant production in nursery has been perceived by growers as very effective and efficient.
Macracote® *Coloniser plus* range of Microbe coated fertilisers have now made their entrance and are being seen as the beginning of a whole new principle of fertiliser application in containerised plant production.

**Δ Beneficial Bacteria**

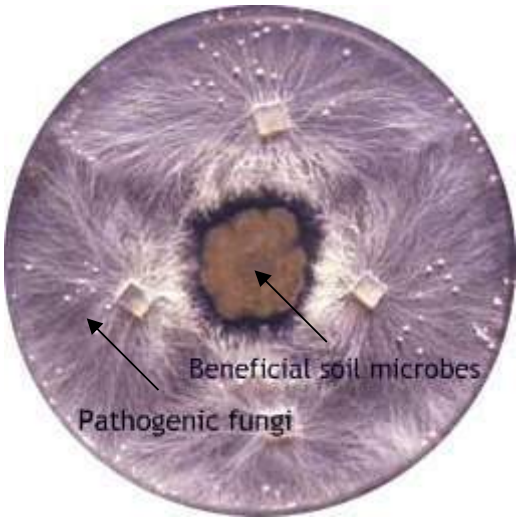


**Δ Beneficial Fungi**

**Δ Microbial envelope**
***two hours after activation***

Most plants in nursery conditions are grown in containers and this causes them to be very susceptible to water and transplant stress. Containerised plant production is a very intensive process and generally, commercial nurseries grow pot plants in pre-sterilised soil or soil-less mixes. Such growing media may have no or very low levels of microbial activity.

Plants are unable to take the much needed nutrients required for optimum growth performance without beneficial microbes in growing media. These microbes are rarely found in nurseries due to the use of composted soil-less media, high level of fertiliser and intensive application of fungicide. Inoculation of plants with beneficial bacteria can significantly improve plant performance and has been known by farmers for years. Colonization process of introduced bacteria begins first at the root tip. These microbes are then multiplied and spread along the roots. They can carry out a wide range of activities in root zone of plants such as nutrient fixing, nutrient building, growth hormone production, removing growth inhibitory products and biological disease control etc. Therefore, they may contribute in the significant increase in plant growth and in enhancing water stress tolerance and disease suppression.




Beneficial microbes stimulate plant defence genes – if attacked by pathogens

Generally, nursery grown pot plants are subject to extensive irrigation and application of a high level of nutrients. This gives rise to leaching and runoff of excess nutrients.
Micro-organisms in the root zone compete for nutrients with plants and therefore help in maintaining the nutrient availability for plants by storing them and making these nutrients available when plants need them.

Inoculation of plants with beneficial bacteria can therefore significantly contribute in increasing the Nutrient Use Efficiency (NUE) as well.

The potential of beneficial soil microbes to enhance plant performance is well recognised but not exploited by nursery, horticulture and forestry industries to the full extent, partially due to the lack of availability of easy to apply products.

In addition to the important role of controlling the release of nutrients as per desired longevity, Langley's **Macracote®** *Coloniser plus* range of fertilisers are specially designed to colonise the root of the plant by introducing a consortium of Australian cultured soil bacteria and Mycorrhizal fungi (with up to 24 strains) through soil media. These include Azobacter, Azosprillum, Rhizobium, Myxobacteria, Pseudomonas, Bacillus, Phosphobacter, Tricoderma, Vesicular Arbuscular Mycorrhizal (both endo and ecto) and cellulosic fungi.



**Langley Fertilizers**
*(Fertiliser division of Sunpalm Australia Pty ltd)*
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In general, shortly after micro-organisms are introduced into the soil the bacterial population declines progressively. However, this uniquely designed and comprehensively trialled suite of micro-organisms, protected in a specifically developed organic polymer coating on **Macracote®** *Coloniser plus*, creates synergistic interaction when exposed to moisture. This prevents bacterial population from decline by providing an environment that is conducive to their survival and growth.

Beneficial effects of **Macracote®** *Coloniser plus* are:

- better root development;
- extended shelf -life of container grown plants;
- improved top growth and flowering;
- increased tolerance to water stress and diseases;
- reduced turnaround time from nursery to market; and
- protection against transplant shock

Protection against possible transplant shock is of significant value to end-users as various researches and trials have suggested that plants colonised with beneficial soil microbes survive and grow better in heterogeneous and unpredictable environments.

**Δ Extended root system – microbial network helps increase nutrient uptake**

Commercial growers can take competitive advantage by creating a "Unique Selling Proposition" for their plants and promoting their plants as "**Colonised Plants** with **Beneficial Soil Microbes**" and thus differentiating their products in the marketplace.

**References for further reading:**


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| Product | Release Period (Months) | N P K | Recommended Use |
|---|---|---|---|
| **Macracote® Blue** *Coloniser plus* | 3 to 4 | 16 4 10 + TE | Fast growing foliage and flowering shrubs |
| **Macracote® Brown** *Coloniser plus* | 3 to 4 | 18 1 8 + TE | Natives or wherever a low P is required |
| **Macracote® Extra DCT** *Coloniser plus* | 3 to 4 | 15 3 8 + TE | General purpose for harsh climate with extra TE |
| **Macracote® Gold** *Coloniser plus* | 3 to 4 | 12 4 10 + TE | Indoor foliage, cut flowers and vegetables |
| **Macracote® Yellow** *Coloniser plus* | 5 to 6 | 15 3 9 + TE | Medium term foliage and flowering shrubs |
| **Macracote® Green** *Coloniser plus* | 8 to 9 | 12 4 10 + TE | Indoor foliage, cut flowers and vegetables |
| **Macracote® Grey DCT** *Coloniser plus* | 8 to 9 | 18 1 10 + TE | Natives or wherever a low P is required |
| **Macracote® Extra DCT** *Coloniser plus* | 8 to 9 | 15 3 8 + TE | General purpose for harsh climate with extra TE |
| **Macracote® Red** *Coloniser plus* | 8 to 9 | 15 3 9 + TE | Long term foliage and flowering shrubs |
| **Macracote® Black DCT** *Coloniser plus* | 12 to 14 | 18 1 10 + TE | Natives or wherever a low P is required |
| **Macracote® Extra** *Coloniser plus* | 12 to 14 | 15 3 8 + TE | General purpose for harsh climate with extra TE |
| **Macracote® Orange** *Coloniser plus* | 12 to 14 | 16 4 10 + TE | Long term foliage and flowering shrubs, advance stock |

***NB: Custom blends are also available, minimum quantities apply.***


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