



# Technical Information Sheet

## Noculate Complete

Noculate Complete greens grade fertiliser is scientifically designed to address both biological and chemical needs of soil nutrition. The balanced N:K ratio is ideal for year-round maintenance application.

For use on greens, tees, and other closely mowed turf.

### Features

Each of the noculate granular products contains high quality nutrition along with humic acid, kelp, soil wetting agent and 24 strains of beneficial microbes.

The Noculate Range of fertilisers are manufactured using a unique, technology driven production process. Each individual formulation benefits from the addition of a select group of highly beneficial soil microorganisms. These microscopic elements have the ability to fix atmospheric nitrogen and solubilize minerals in the soil profile enhancing plant nutrition.

Soils contain many naturally occurring inorganic substrates such as calcium phosphate, which are not plant available. Many of the microbial species in Noculate fertilizers have the capacity to produce organic acids which solubilize a portion of the calcium phosphate. The end result is more calcium and phosphorus is made available to the plant essentially tapping a nutrient reserve not available under normal circumstances.

Noculate fertilisers also incorporate nitrogen-fixing bacteria into their fertilizer blends, which serves to help satisfy the nitrogen requirements of plants. Free-living, nitrogen-fixing bacteria have the capacity to convert di-nitrogen (N<sub>2</sub>) from the atmosphere into a plant available form of nitrogen (NH<sub>3</sub>). Roughly 2/3 of the global input of fixed nitrogen arises from biological processes.



Pack size 20kg

### Guaranteed Minimum Analysis

|                             |                              |
|-----------------------------|------------------------------|
| <b>TOTAL NITROGEN (N)</b>   | <b>17%</b>                   |
| - as urea                   | 6.2%                         |
| - as ammonium               | 5.7%                         |
| - as methylene urea         | 5.1%                         |
| <b>TOTAL PHOSPHORUS (P)</b> | <b>1.3% as water soluble</b> |
| <b>TOTAL POTASSIUM (K)</b>  | <b>14.1% as sulphate</b>     |
| <b>TOTAL IRON (Fe)</b>      | <b>2.0% as sucrate</b>       |
| <b>TOTAL MANGANESE (Mn)</b> | <b>1.0% as sucrate</b>       |
| <b>TOTAL CALCIUM (Ca)</b>   | <b>0.5% as sulphate</b>      |
| <b>TOTAL SULPHUR (S)</b>    | <b>11.3% as sulphate</b>     |

Independent studies have shown that soils rich in nitrogen fixing bacteria can sequester upwards of 100 Kg of N per hectare per year thus supporting the importance and benefit of incorporating nitrogen fixing bacteria into fertilizer blends.

The addition of microorganisms also enhances a plants ability to absorb nutrients. A complex series of biochemical reactions increases the permeability of the plants cellular membrane, which in turn facilitates nutrient uptake. Tissue analysis trials at Auburn University in USA have consistently shown that plants fed biologically enhanced fertilizers contain more nitrogen, phosphorus and potassium than plants fed non-biologically enhanced fertilizers with the same N, P, K analysis.

The addition of microorganisms, also serves to prolong the fertilizers ability to stimulate growth by reducing the incidence of nutrient leaching. Soil bacteria incorporate free nitrogen into their metabolic functions. Much of this nitrogen would have been lost to the plant through the leaching process had the bacteria not incorporated it into their cell mass and temporarily stored it. This storehouse of nitrogen is then returned to the plant through a complex process known as nutrient mineralization. In short, the addition of beneficial soil microorganisms to Noculate fertilizer blends serves to satisfy the short term and long term nutritional requirements of the plant. These microorganisms have the capacity to expedite nutrient availability, facilitate nutrient absorption and to continue providing these nutrients (fungi). Many soil bacteria have the capacity to produce a glue-like substance (polysaccharides), which serve to create micro-aggregates in the soil profile. These micro-aggregates are then bound together by fungal hyphae to create macroaggregates. This biologically induced process improves soil structure over time enhancing percolation as well as the oxygen holding capacity of the soil matrix.

# Noculate Complete



## Other Benefits

They serve to stabilize soil pH, increase humus levels, improve CEC of soil, increase the photosynthetic capacity of the plant, enhance root structure, stimulate plant growth via production of PGR's and provide plants with increased resistance to environmental stress such as disease, heat, cold, drought and foot traffic.

The Microbial elements in Noculate fertilisers are identifiable and quantifiable.

## Benefits of Noculate Complete

- Fixes atmospheric nitrogen and solubilises minerals in the soil profile making them plant available
- Produces organic acids that solubilise calcium phosphate making it available to the plant
- Incorporates bacteria and micro-organisms to enhance the plants ability to absorb nutrients.
- Reduces nutrient leaching.
- Improves soil structure through the addition of soil bacteria.
- Use of Noculate Complete will help stabilize soil pH, increase humus levels, improve CEC of soil, increase the photosynthetic capacity of the plant, enhance root structure, stimulate plant growth via production of PGR's and provide plants with increased resistance to environmental stress such as disease, heat, cold, drought and foot traffic.

## Directions for use

Apply at 3kg per 100m<sup>2</sup> to turf and landscape every 4 to 6 weeks during the growing season.

Noculate fertilizers contains multiple strains of each genus / species outlined below:

| Strain  | Description   |
|---|---|
| <i>Bacillus subtilis</i> ,<br><i>Bacillus licheniformis</i>   | <ul style="list-style-type: none"> <li>• Prolific enzyme producer, catalyzes countless bio-chemical reactions in the soil.</li> <li>• Produces organic acids to solubilize mineral for plant availability (mineralization).</li> <li>• Produces polysaccharides to improve soil structure (micro-aggregates).</li> <li>• Stimulates plant growth through the production of plant growth compounds (PGR)</li> <li>• Provides plants with increased resistance to environmental stress</li> </ul> |
| <i>Bacillus megaterium</i> ,<br><i>Bacillus coagulans</i> ,<br><i>Bacillus coagulans</i> ,<br><i>Bacillus pumilus</i> | <ul style="list-style-type: none"> <li>• Prolific enzyme producer, catalyzes countless bio-chemical reactions in the soil</li> <li>• Produces organic acids to solubilize mineral for plant availability (mineralization)</li> <li>• Produces polysaccharides to improve soil structure (micro-aggregates)</li> </ul>   |
| <i>Bacillus stearothersophilis</i>  | <ul style="list-style-type: none"> <li>• Prolific enzyme producer, catalyzes countless bio-chemical reactions in the soil</li> <li>• Produces organic acids to solubilize mineral for plant availability (mineralization)</li> <li>• Produces polysaccharides to improve soil structure (micro-aggregates)</li> <li>• Performs well in extremely warm soils (thermophilic)</li> </ul>   |
| <i>Bacillus azotoformans</i>  | <ul style="list-style-type: none"> <li>• Produces polysaccharides to improve soil structure (micro-aggregates)</li> <li>• Fixes atmospheric nitrogen into a plant available form</li> <li>• Stimulates plant growth through the production of plant growth regulatory compounds (PGR)</li> </ul>  |
| <i>Trichoderma viride</i>   | <ul style="list-style-type: none"> <li>• Stimulates plant growth through the production of plant growth regulatory compounds (PGR)</li> <li>• Provides plants with increased resistance to environmental stress</li> <li>• Improves soil structure through the formation of macro-aggregates</li> </ul>   |

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