



# ExploGrow

ExploGrow™ is a revolutionary 100% organic biofertiliser in a league of its own, comprising 17 highly complex micro-organisms, environmentally friendly soil ameliorant and plant growth stimulant, with increased soil microbial balance properties: contains no growth hormones and no genetically modified organisms.

**Fully approved by The South African Department of Agriculture, Forestry & Fisheries**  
Registration Number: B4807

**Fully approved by The Namibian Ministry of Agriculture, Water & Forestry**  
Registration Number: N-F 1005- EXPLOGROW



**BIO-FERTILISER ~ FERTILISER GROUP 2 ~ Act 36 of 1947. RSA Dept. of Agriculture, Forestry & Fisheries Product Reg. No. B 4807**  
Organic, environmentally friendly soil ameliorant and plant growth stimulant, with increased soil microbial balance properties

## Live Microbial Bio-Fertiliser

A poly-microbial blend with natural organic carbon as carrier  
Certified for application in certified organic production units



**ACTIVE INGREDIENTS PER CONTAINER: Confirmed by DNA Genetic Identification Technique**

<ul style="list-style-type: none"> <li>• Flavimonas oryzihabitans</li> <li>• Rhizobium radiobacter</li> <li>• Pseudomonas japonica</li> <li>• Bacillus licheniformis</li> <li>• Bacillus thuringiensis</li> <li>• Bacillus cereus</li> </ul>	<ul style="list-style-type: none"> <li>• Trichoderma virens</li> <li>• Trichoderma harzianum</li> <li>• Trichoderma inhamatum</li> <li>• Trichoderma aureoviride</li> <li>• Sinorhizobium americanum</li> <li>• Azotobacter vinelandii</li> </ul>	<ul style="list-style-type: none"> <li>• Azospirillum humicireducens</li> <li>• Azorhizophilus paspali</li> <li>• Ensifer numidicus</li> <li>• Ensifer meliloti</li> <li>• Ensifer fredii</li> </ul>	<p>Net Contents: <b>10kgs.</b> 10 litres will cover 1 ha (10 000 m<sup>2</sup>) in one growing season. See application rates for specific crops. Mix 5 litres with 500 litres of water and spray on moist ground. Repeat after 6 weeks.</p>
<p>CFU Count per ml... &gt;5.7 x 10<sup>9</sup>. No Contaminants or Pathogens Present. Natural Organic Carbon Carrier 100 g/kg.</p>			<h1>10 litres</h1>
<p><b>ExploGrow™</b> consists of living organisms and requires air for survival – an air space is left in each container for that purpose. If the product is stored for any period of time, please loosen the cap to enable air circulation in the container. Application instructions must be followed to the letter for optimal results and to enable the microbes to establish in your crops and soil.</p>			

### APPLICATION:

- **For Agricultural Use:** 10 litres of product per hectare diluted with 1,000 litre water (1:100).  
For optimal results: **Apply twice per growing season** 5 litres/ha with planting and 5 litres/ha after sprouting.
- **For 500m<sup>2</sup> Garden:** Mix 250 ml with 25 litres of water and spray on ground or directly on plants or grass.
- **For Pot Plant or Individual Plants:** Mix 100 ml with 10 litres of water or 10 ml with 1 litre of water and apply as above.

**IMPORTANT:** KEEP OUT OF DIRECT SUNLIGHT. MIX WELL BEFORE USING. If spilled on the skin, wash it off with soap and water.

Recommended shelf life of 12 months if stored at 4.44 to 26.7 deg. C. Although entirely natural, if ingested, seek prompt medical attention.

Notice: Our recommendations for the use and storage of the product are based upon tests believed to be reliable. Open the container every 6 weeks for aeration. The use of this product is beyond our control. No guarantee expressed or implied is made to the effect of such or the results to be obtained. The buyer assumes all responsibility including injury or damage resulting from the misuse as such, or the use in combination with other materials or products.

[www.explogrow.com](http://www.explogrow.com)

ExploGrow SA (Pty) Ltd Reg. no. 2013/177688 /07. PO Box 13263, Humewood, 6013, Port Elizabeth, South Africa

# Excerpt of Expert Opinion by South Africa's leading microbiologist on microbial approach in agriculture

Dr Stephanus Malherbe, BSc; BSc Hons.; MSc (Microbiology); Pr.Sci.Nat. (Agricultural Science); PhD (Agronomy).

Extract from report by Dr Malherbe's expert microbiologist report on the Nelson Laboratories ISO 17025 test of ExploGrow™ submitted to the Department of Agriculture Forestry & Fisheries together with the Nelson Laboratories report for the full product approval of ExploGrow™

## Dr Malherbe Independent Agricultural Scientist

- BSc (cum laude) (microbiology)
- BSc Hons (cum laude) (microbiology); MSc (microbiology)
- Pr. Nat. Sci. (agricultural science)
- PhD (agronomy)
- *05th June 2015*

## RE: INTERPRETATION AND SUMMARY OF MICROBIOLOGICAL TEST REPORT FROM NELSON LABORATORIES.

- The Report is termed: Study Details for Lab Number 821347, Final Report
- Sample ID: ExploGrow™
- Test Description: SPC110: Standard Plate Count; Aerobic Bacteria

Sir,  
Thank you for the opportunity to participate in this process. I will elaborate on the Nelson Laboratories Report in detail below, in order to ensure all parties understand the process and the significance of the results.

As requested, and for ease of reference, I herewith, summarize my opinion as a Professional Scientist – Agricultural Science, specializing in microbiology, as follows:

**A. The Nelson Labs Report comprehensively identifies all the microbial organisms in the sample. All the microbes are safe, naturally occurring and harmless and can safely be used in agriculture.**

**B. The Report comprehensively identifies the dominant unique microbes as well as several additional isolates. It is safe to say, that the dominant microbes are the main constituent active organisms in the sample.**

**All the other organisms constitute minute elements which are fairly irrelevant and/or non-active and simply present as a function of being related sub-species. Nonetheless: they are all identified.**

**C. It is evident that no pathogens are present in the sample. This is obvious from the identifications of the microbes by the full spectrum analysis. None of the microbes are pathogens.**

**For completeness sake, I list below a short summary with a few facts about each of all the organisms:**

### **[NITROGEN FIXERS]\***

**Azospirillum humicireducens** A free-living nitrogen fixer (therefore suitable for non-legumes); grows under anaerobic conditions, which means it can function in waterlogged heavy soils); optimum pH is 7.2; optimum growth temperature is 30° C.

**Azotobacter vinelandii** A free-living nitrogen fixer (therefore suitable for non-legumes); grows under aerobic conditions; known for the secretion of phytohormones and vitamins into the soil; is an ideal 'plant growth promoting bacterium'.

**Ensifer fredii** A nitrogen fixer that forms nodules on legumes; earlier known as *Sinorhizobium* but was recently reclassified as *Ensifer* spp. (this means *Sinorhizobium fredii* literature can be used for marketing).

**Azorhizophilus paspali** Nitrogen fixing from atmosphere. This organism is efficient in plant growth-promotion, and most of its beneficial effects to crop productivity can be attributed to nitrogen fixation, phytohormones production, and biocontrol of phytopathogens. Plant inoculation of cereals and grasses with this organism, can lead to strong promotion of the development of the root system with increases in density and length of root hairs and in the number and volume lateral roots; significant increases in nutrient absorption by the host plant (K<sup>+</sup>, Ca<sup>2+</sup>, PO<sub>4</sub><sup>3-</sup>, H<sub>2</sub>O), increase in plant resistance to water stress (drought resistance), acceleration of N-mobilization of seed and plantlet growth (increased precocity) and early flowering.

**Ensifer numidicus** Symbiotic properties of isolates showed diversity in their capacity to nodulate their host plant and to fix atmospheric nitrogen.

**Sinorhizobium americanum** Is a predominant symbiont that nodulates and fixes nitrogen.

### **[MINERAL UTILIZATION]\***

**Bacillus licheniformis** A saprophytic soil bacterium; plays a major role in nutrient cycles in the soil; is ideal for use in agro-ecological and low-input production systems where crop nutrients are supplied via the organic matter of the soil.

**Pseudomonas japonica** Calcium ion binding.

**Rhizobium radiobacter** Little information is available about this organism; it is linked to improved plant growth through secretion of compounds that stimulate plant growth. Strains from the genera *Pseudomonas*, *Bacillus* and *Rhizobium* are among the most potent phosphate solubilisers.

### **[ANTI PATHOGENIC, i.e. MICROBES GENERALLY CONSIDERED TO ALSO POSSESS ANTI PATHOGENIC PROPERTIES]\***

**Bacillus thuringiensis** A classic insect biological control bacterium; various formulations and variants are commercially available around the world; has no effect on beneficial insects (like bees, etc.). There are several subspecies, each attacking different types of insects.

**Flavimonas oryzihabitans** Also known as *Pseudomonas oryzihabitans*; known for the control of root knot nematode (*Meloidogyne* spp.) and Fusarium wilt on tomatoes; Pseudomonads are known for their versatility and usefulness in the agricultural context as biological control agents, phosphate solubilisers and plant growth promoting bacteria.

**Trichoderma aureoviridi** All the *Trichoderma* species were found to produce different extralites and enzymes responsible for the biocontrol activities against the harmful fungal phytopathogens that hamper in food production. This potential indigenous *Trichoderma* spp. can be targeted for the

development of suitable bioformulation against soil and seedborne pathogens in sustainable agricultural practice.

**Trichoderma harzianum** A classic and the most well-known biological control fungus; it parasitizes other fungi and is used for biological control of fungal diseases; different formulations are available that determine under what conditions the organism will be effective (e.g., soil versus leaf surface applications).

**Trichoderma inhamatum** Like all the other *Trichoderma* species it is found to produce different extrolites and enzymes, which are responsible for biocontrol activities against various harmful fungal phytopathogens that hamper in food production. This potential indigenous *Trichoderma* spp. can be targeted for the development of suitable bioformulation against soil and seedborne pathogens in sustainable agricultural practice.

**Bacillus cereus** Plants benefit from the presence of *Bacillus cereus* because *Bacillus cereus* often prevents plant diseases, and can enhance plant growth. *Bacillus cereus* benefits by gaining shelter in the plant roots.

#### **[GROWTH STIMULANTS]\***

**Rhizobium radiobacter** Little information is available about this organism; it is linked to improved plant growth through secretion of compounds that stimulate plant growth. Strains from the genera *Pseudomonas*, *Bacillus* and *Rhizobium* are among the most potent phosphate solubilisers.

**Ensifer meliloti** Benefits plant growth in drought conditions. Lucern benefits greatly from this microbe.

**Trichoderma virens** Increased biomass production and stimulates lateral roots.

**Bacillus cereus** Plants benefit from the presence of *Bacillus cereus* because *Bacillus cereus* often prevents plant diseases, and can enhance plant growth. *Bacillus cereus* benefits by gaining shelter in the plant roots.

... *End of extract.*

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\*The categorizations of the microbes are not a part of Dr Malherbe's summary, but added by CFT for clarity.