



# *Activate N*<sup>®</sup>

Biostimulant



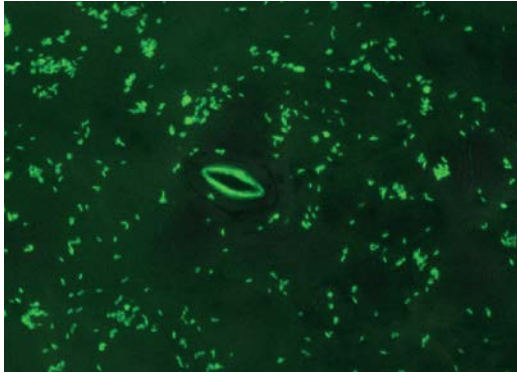


Fig 1: *Activate N*<sup>®</sup> bacteria colonising a leaf surface with the stomata clearly visible. Open stomata and bacteria.

## *Activate N*<sup>®</sup>

### Active ingredient

*Herbaspirillum seropedicae* and *Bacillus subtilis*  
(Total  $1 \times 10^9$  CFU / ml)

A combination of natural plant growth promoting bacteria formulated to enhance nutrient utilisation, especially nitrogen.

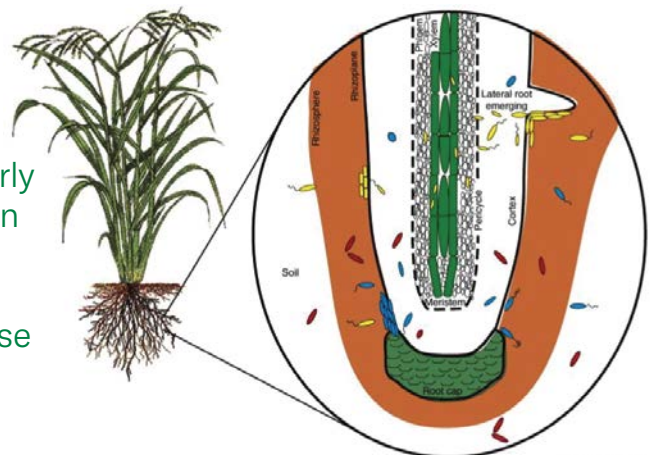
### *Activate N*<sup>®</sup> Features:

- Improved effectiveness of nitrogen (N) fertilisation programs through Integrated Fertiliser Management.
- Provides consistent nitrogen levels to overcome nitrogen deficiencies that would otherwise limit yields.
- Improved mobilization and uptake of soil nutrients e.g. phosphate.
- Improved root development and health.
- None of the negative impacts of synthetic nitrogen fertilisers e.g. soil acidification, pollution of groundwater, etc.
- Versatile and effective on a wide range of crops as foliar or soil application.
- The activator for foliar application improves the coverage, penetration and colonisation of the bacteria on the plant surfaces, resulting in increased consistent efficacy.

### Mode of action:

*Activate N*<sup>®</sup> can be applied as both a foliar or soil application. After application, the *Activate N*<sup>®</sup> bacteria colonise the plant surfaces. On the roots they provide a number of benefits to the plant ie. promotion of root growth, improved mobilisation and uptake of nutrients such as phosphorous. The *Bacillus* species is particularly known for its plant growth promoting impact on the plant.

The endophytic *Herbaspirillum* bacteria colonise the intercellular cavities in the plant tissues where it fixes plant atmospheric nitrogen and also increases production of the nitrate reductase enzyme. Both these mechanisms result in increased levels of nitrogen being available to the plant.



FRNCCI in Microbiology

## Trial data:

Wheat: Western Cape, South Africa

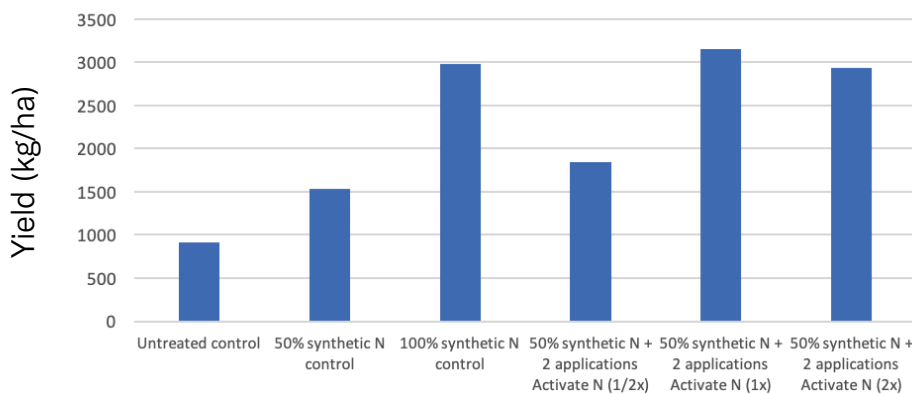
A field trial was conducted in the Overberg region of the Western Cape, South Africa. The primary objective of the trial was to investigate the efficacy of *Activate N*<sup>®</sup> on winter wheat under dryland, winter rainfall conditions.

	Treatments	Basal fertiliser LAN	Top-dress or <i>Activate N</i> <sup>®</sup> week 4	Top-dress or <i>Activate N</i> <sup>®</sup> week 10	Total synthetic N kg/ha
1	0% fertiliser control	-	-	-	0
2	50% fertiliser control	200 kg/ha	-	-	56
3	100% standard fertiliser control	200 kg/ha	100 kg/ha LAN	100 kg/ha LAN	112
4	50% synthetic fertiliser + <i>Activate N</i> <sup>®</sup> 1/2 rate (1/2 x)	200 kg/ha	<i>Activate N</i> <sup>®</sup> (1/2 x)	<i>Activate N</i> <sup>®</sup> (1/2 x)	56
5	50% synthetic fertiliser + <i>Activate N</i> <sup>®</sup> full rate (1 x)	200 kg/ha	<i>Activate N</i> <sup>®</sup> (1 x)	<i>Activate N</i> <sup>®</sup> (1 x)	56
6	50% synthetic fertiliser + <i>Activate N</i> <sup>®</sup> double rate (2 x)	200 kg/ha	<i>Activate N</i> <sup>®</sup> (2 x)	<i>Activate N</i> <sup>®</sup> (2 x)	56

\*LAN – Limestone ammonia nitrate (28% N)

### Summary of results:

- Full rate *Activate N*<sup>®</sup> with 50% N gave the highest yield and was statistically equal to 100% synthetic nitrogen.
- 50% synthetic nitrogen with no *Activate N*<sup>®</sup> delivered significantly lower yield (50% of control).
- Half rate *Activate N*<sup>®</sup> did not perform and is not recommended at all.
- Double dose of *Activate N*<sup>®</sup> performed no better than a single rate.



Wheat yields achieved under various synthetic nitrogen rates, compared with 50% of the recommended synthetic nitrogen rate combined with *Activate N*<sup>®</sup> at a half, full and double dosage.

## Why Use *Activate N*<sup>®</sup>?

### Intensive Farming Systems

Where growers have the need to reduce applied nitrogen levels to improve the short and long term sustainability of their farms.

### Environmentally Sensitive Areas

Where the use of nitrogen is banned or controlled by local authorities or growers wish to improve their Nitrogen Use Efficiency (NUE) and reduce the environmental impact of nitrogen loss.

### Organic Farming

Where growers are unable to use chemical nitrogen and providing the plant with enough nitrogen is a challenge.

### Subsistence Agriculture

In situations where the cost of chemical fertiliser is high or where growers have limited access to bulk fertiliser or the cost of transport is prohibitive.

Key benefits to the Farmer:



**In summary, *Activate N<sup>®</sup>*:**

- Improves nitrogen availability and uptake.
- Promotes better root growth and development.
- Improves plant growth and crop yield.
- Reduces use of applied nitrogen fertilisers.
- Reduces nitrogen losses into the environment.
- Reduces transport costs and associated carbon emissions.
- Reduces emissions of greenhouse gasses such as N<sub>2</sub>, N<sub>2</sub>O, CO<sub>2</sub>.

Registered Usages:

**Application Instructions:**

- 1 pack will treat 1 or 5 ha.
- Minimum water volume 50 L/ha.
- Ensure application tank is clear of chemical residues. Do not use chlorinated water.

**Foliar:**

- Apply through medium - coarse nozzles.
- Apply early morning or late afternoon.
- Apply to point of run-off.

**Soil application:**

- Apply to moist soil.
- Apply directly on top of seed or into root zone of actively growing, established plants.

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