

Twin N Fact Sheet



1 What is TwinN?

TwinN is an organically certified soil improver that can be used as a complete or partial replacement for synthetic nitrogen fertiliser.

2 Accurate nitrogen supply

TwinN offers season-long balanced nitrogen delivery to the crop, supplying the plant's nitrogen requirements at the correct time.

TwinN is capable of fixing a minimum of 125kilograms per hectare or 40 units per acre, per application. As with the legume/Rhizobium relationship, **TwinN** microbes are the servants of the plant and supply nitrogen as and when the plant demands it, which is dictated by the prevailing growing conditions. In this way nitrogen is supplied at the optimum level for the plant. This takes the guess work out of trying to calculate nitrogen fertilizer requirements based on the predicted season ahead. With **TwinN** the plant will take what it needs whatever the conditions.

3 Healthy form of nitrogen for the crop

TwinN supplies natural amine and ammonium forms of nitrogen which are metabolically more efficient for the plant to use.

4 Minimal leaching, no volatilization

A large percentage of applied synthetic fertiliser never ends up in the plant. Typically agronomists work on 50% efficiency for urea. This is because nitrogenous fertilisers are prone to leaching and volatilization (escaping back into the atmosphere as nitrogen gas or nitrous oxide), one of the largest contributors to greenhouse gases. Leaching and volatilization of synthetic nitrogen fertiliser is costly to the farmer as well as the environment. Nitrogen supplied to the crop via a **TwinN** application does not leach and does not volatilize.

5 Healthier plants

TwinN does not produce nitrate nitrogen which results in reduced levels in plant tissue. Animals fed on **TwinN** pastures have demonstrated improved health compared to urea-fed pastures, due to lowered nitrate levels of the pasture.



natural soil improver

using selected
nitrogen fixing microbes

5 ha

Net Contents

100g Microbe + Carbon Product

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6 Larger root systems—no loss of organic carbon from the soil

Unlike synthetic nitrogen fertilisers, **TwinN** helps to build soil organic carbon levels by increasing root size and increasing root carbon dumping into the soil. **TwinN** microbes produce large quantities of indole acetic acid (IAA), a root growth enhancing biological compound. For every kilogram of nitrogen above plant requirements supplied to the soil in the synthetic/salt form (urea, gas ammonium nitrate etc), 100 kilograms of soil organic carbon is lost, metabolised into carbon dioxide (CO₂) by soil microbes attempting to balance their carbon/nitrogen ratios.

7 Increased phosphorus availability

TwinN microbes produce organic acid metabolites that help dissolve tri-calcium phosphate and make both CA & P more plant-available in the soil.

8 Improved produce quality

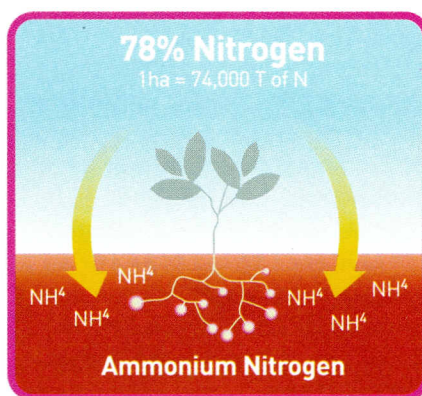
The natural forms of nitrogen supplied by **TwinN** allow the plant to build longer chain amino acids and more complete proteins, resulting in higher plant protein content and improved product quality. The bacterial form of nitrogen is utilised by the plant for growth protein requirements and reproductive protein requirements. By contrast, most synthetic nitrogen sources are in the nitrate form, or mineralise the soil quickly to the nitrate form. Over-supplying nitrate nitrogen in the reproductive stage of the crop results in reduced shelf life, flavour and appearance.

9 Reduced disease and insect pressure

Insects and disease are attracted to plants carrying high nitrate nitrogen levels. **TwinN** does not supply plants with nitrate nitrogen making them less likely to attract insects and disease. Plant sugar levels (BRIX levels) are also higher in crops treated with **TwinN** which supports the natural immune system of the plants.

10 Improved soil friability

TwinN microbes also colonize the root zone. Because of their large numbers and small size, they are able to enter soil spaces too small for plants roots. Once inside these micro-spaces, they produce gasses that create internal pressure within the soil structure. The resulting increased friability improves water and air movement in the soil.



In this way, widespread adoption of **TwinN** nitrogen-fixing microbe technology is a very real tool for agriculture to use in significantly reducing carbon emissions, and increasing carbon sequestration into our valuable soils.

Farmers win and so does the environment

11 Economical

TwinN is a very economical form of applied nitrogen particularly in high nitrogen demand crops. Currently **TwinN** retails for approximately US\$40 per hectare or US\$16 per acre. *Prices may vary due to the exchange rate and local taxes.

12 Easy application

TwinN is easily stored, handled and applied via boom spray or any irrigation system.

13 Reducing Agriculture's carbon footprint

TwinN has been designed with the environment in mind. Produces in a laboratory the microbes are freeze-dried resulting in a very compact product that can be sent through the post. The manufacture of nitrogenous fertilisers is highly dependent upon a supply of natural gas and over 1% of the world's energy supply is used in the production process. Each year, 500 million tons of artificial fertiliser is produced, this process and the transportation of product contributes greatly to greenhouse emissions. Synthetic fertilisers also produce nitrous oxide, a greenhouse gas 310 times more potent than carbon dioxide.

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Soil Association

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