



BIO-ACTIVE N

Technical Information



*Combining Conventional
with Organic Ingredients*

BIO ACTIVE N FERTILISER

Product Overview

Bio-Active N Liquid Fertilizer is an advanced agricultural input designed to enhance soil fertility and promote vigorous plant growth. This innovative product combines the potent benefits of sugarcane dunder and urea, creating a highly effective and environmentally friendly fertilizing solution.

Composition

- **Sugarcane Dunder:** A by-product of the sugar milling process, sugarcane dunder is rich in organic matter and essential nutrients. It serves as an excellent source of carbon, supporting microbial activity in the soil and enhancing nutrient availability to plants.
- **Urea:** A widely used nitrogen source in agriculture, urea provides readily available nitrogen that is essential for the synthesis of proteins and chlorophyll, boosting plant growth and productivity.

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Key Features

- **Enhanced Nitrogen Stability:** The high carbon content from sugarcane dunder stabilizes nitrogen, reducing leaching and ensuring a steady supply of this crucial nutrient to plants over time.
- **Microbial Stimulation:** The organic components, including complex sugars and crude proteins, feed soil biology, promoting a healthy and balanced microbial ecosystem. This leads to improved soil structure and nutrient cycling.
- **Balanced Mineral Content:** In addition to nitrogen, Bio-Active N contains essential trace elements such as potassium, sulfur, calcium, and magnesium, ensuring a comprehensive nutrient profile for optimal plant health.
- **Fast Uptake and Efficiency:** The formulation allows for quick nutrient uptake by plants, enhancing chlorophyll production and photosynthesis. This results in vigorous growth and increased crop yields.
- **Environmentally Friendly:** By utilizing sugarcane dunder, a by-product of sugar production, Bio-Active N is both cost-effective and sustainable, minimizing waste and reducing the environmental impact of fertilization practices.

Complex of Amino Acids

Bio-Active N Liquid Fertilizer is enriched with several key amino acids that play crucial roles in plant growth and development. Here are the most prominent amino acids found in the product, along with their concentrations and benefits:

Aspartic Acid (2800 mg/kg)

Benefit: Aspartic acid plays a vital role in the synthesis of other amino acids and metabolites essential for plant growth. It is involved in nitrogen assimilation and helps in the formation of key molecules such as nucleotides and proteins.

Impact on Plants: Enhances root growth, supports the development of new tissues, and improves the overall vigor of plants.

Glutamic Acid (1300 mg/kg)

Benefit: Glutamic acid is a precursor for the synthesis of chlorophyll, the green pigment in plants that is crucial for photosynthesis. It also acts as an important signaling molecule in response to environmental stress.

Impact on Plants: Improves chlorophyll production, boosts photosynthetic efficiency, and aids in stress tolerance.



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Complex of Amino Acids

Alanine (750 mg/kg)

Benefit: Alanine is involved in the synthesis of proteins and is a key component in the nitrogen transport system within plants. It helps in converting stored nitrogen into usable forms.

Impact on Plants: Promotes protein synthesis, enhances nitrogen utilization efficiency, and supports healthy growth.

Valine (330 mg/kg)

Benefit: Valine is one of the branched-chain amino acids that are important for protein synthesis and energy production in plants. It helps in the formation of plant structures and the repair of tissues.

Impact on Plants: Supports robust plant structure, aids in tissue repair, and contributes to overall plant health and productivity.

Glycine (320 mg/kg)

Benefit: Glycine is a building block for many important plant molecules, including proteins, chlorophyll, and phytohormones. It also plays a role in enhancing the efficiency of nutrient uptake.

Impact on Plants: Promotes chlorophyll synthesis, improves nutrient uptake efficiency, and supports overall metabolic processes.

Application and Utilization:

The inclusion of these amino acids in Bio-Active N Liquid Fertilizer not only provides immediate nutritional benefits but also enhances the plant's ability to synthesize vital proteins and other compounds necessary for growth and development. This comprehensive nutrient profile makes Bio-Active N an effective solution for improving crop yields and ensuring sustainable farming practices.



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Total Carbon Content:

Bio-Active N Liquid Fertilizer contains a significant amount of total organic carbon, measured at a minimum of 110,000 mg/kg. This high carbon content primarily originates from the sugarcane dunder component, a by-product of sugar production.

Stabilization of Nitrogen:

- **Carbon-Nitrogen Interactions:** The high carbon content in Bio-Active N plays a crucial role in stabilizing nitrogen within the soil. Organic carbon forms complexes with nitrogen, particularly in the form of ammonium (NH_4^+), which reduces the volatility and leaching of nitrogen. This ensures that nitrogen remains available to plants for a longer period, improving nitrogen use efficiency.
- **Microbial Activity:** Carbon serves as a primary energy source for soil microorganisms. Enhanced microbial activity due to the presence of organic carbon leads to the formation of stable organic matter complexes. These complexes help in retaining nitrogen within the soil matrix, further reducing nitrogen losses through leaching or volatilization.

Enhanced Soil Structure and Health:

- **Organic Matter Formation:** The addition of carbon-rich organic matter improves soil structure, increasing its water-holding capacity and aeration. This creates a more favorable environment for root growth and nutrient uptake.
- **Microbial Biomass:** A healthy microbial population, supported by the carbon content, plays a vital role in nutrient cycling, decomposition of organic matter, and overall soil fertility.

Negation of Elements Such as Chlorine:

- **Carbon's Role:** The high carbon content in Bio-Active N helps mitigate the potential negative effects of chloride. Organic matter can bind with chloride ions, reducing their availability in the soil solution and thus preventing chloride toxicity in plants.

Improved Cation Exchange Capacity (CEC):

- **CEC Enhancement:** Organic carbon contributes to the soil's cation exchange capacity, allowing it to hold and exchange essential nutrients more effectively. This includes mitigating the impact of excess chloride by promoting the retention and balanced release of beneficial cations such as calcium, magnesium, and potassium.



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Critical Role of Nickel (Ni):

Bio-Active N contains a minimum nickel concentration of 0.66 mg/kg. While this is a trace amount, it is sufficient to meet the plants' requirements for essential enzymatic functions and stress resilience. Despite being needed only in small quantities, nickel plays a critical role in plant nutrition and metabolism.

Enzyme Activation:

Urease Enzyme: Nickel is a key component of the enzyme urease, which catalyzes the hydrolysis of urea into ammonia and carbon dioxide. This process is crucial for nitrogen utilization in plants, especially when urea-based fertilizers like Bio-Active N are used.

Nitrogen Metabolism:

Protein Synthesis: Nickel is involved in the synthesis of various proteins and enzymes that are essential for nitrogen metabolism. This ensures that plants can effectively assimilate and utilize nitrogen for growth and development.

Stress Tolerance:

Abiotic Stress Resistance: Nickel enhances plants' tolerance to abiotic stresses such as drought and salinity. It helps in maintaining membrane integrity and reducing oxidative damage under stressful conditions.

Environmental Sustainability of Bio-Active N Liquid Fertilizer

Bio-Active N Liquid Fertilizer is designed with environmental sustainability in mind, utilizing sugarcane dander, a by-product of the sugar industry, to reduce waste and promote circular economy practices. The high organic carbon content stabilizes nitrogen, minimizing leaching and protecting water quality, while enhancing microbial activity and soil health. This efficient nutrient uptake reduces the need for frequent applications, lowering greenhouse gas emissions and minimizing soil and water pollution. By supporting balanced plant growth and improved water use efficiency, Bio-Active N contributes to sustainable agriculture and resource conservation, ensuring productive farming with minimal environmental impact.



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TYPICAL ANALYSIS+

N	P	K	S	Ca	Mg	Carbon
19%	0.03%	1.40%	0.32%	0.25%	0.19%	11%

Also available as eNsure 19 CR (Controlled Release) formulation

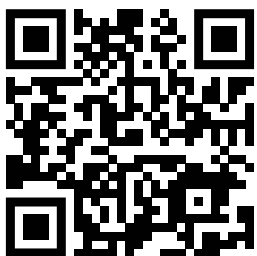
+ Includes trace elements of boron, manganese, copper, zinc, cobalt, molybdenum & selenium Typical analysis may vary due to natural ingredient included in this product.



This Bio-Active based liquid nitrogen fertiliser is a highly stable product in the soil allowing more efficient use. The nitrogen provides energy, enhancing chlorophyll production and photosynthesis. The product is priced very competitively being a by-product from sugar production.

APPLICATION RATES

Application rates of Bio-Active N will be dependent on the specific crop, and the timing of application. Bio-Active N is applied through drip & sprinkler systems. Please speak with Ag Plus Consultancy to determine the best soil application rate for your specific crop.



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