NERO™

IMPROVE PLANT NUTRITION, GROWTH, AND YIELD

Nero™ contains a highly select duo of microorganisms that allow for better crop nutrition by fixing nitrogen (N) and improving nutrient availability in high-value specialty and row crops.

The microbes in Nero™ can mitigate, buffer, or reduce the need for growers to apply synthetic nitrogen while still providing the plant with appropriate levels of this critical nutrient.

Nero™ is available in two formats: a liquid soluble concentrate (SC) that can be used in all systems and as a slow-release dry granular (G) that is ideal for use at transplant, soil incorporation, top dressing, broadcasting, or in-furrow.

Contains: Azospirillum brasilense, Pantoea dispersa

DIRECTIONS FOR USE - NERO™ SC

Nero™ SC should be applied via drip irrigation systems for maximum efficacy. The beneficial N-fixing microorganisms in Nero™ enhance microbial activity in the rhizosphere and enable greater nitrogen uptake, ultimately reducing the need for additional nitrogen fertilizer.

CROP	Application per crop cycle	Rate of application	
		mL/gal (container)	L/acre (field)
Cannabis	6-8	0.5mL - 2mL	1-2
Vegetable Crops	4-6	-	2.5-5
Row Crops			
Nut Trees			
Fruit trees	5-8	0.5mL - 2mL	2.5

* ***Application rates and frequencies should be optimized for your crop environment and operation. For application assistance please consult with Impello's technical team.***

DIRECTIONS FOR USE - NERO™ GRANULAR

Nero™ Granular should be applied at transplant or incorporated into the soil prior to planting. Nero™ Granular can also be top-dressed, broadcast, or applied in-furrow. The beneficial N-fixing microorganisms in Nero™ Granular enhance microbial activity in the rhizosphere and enable greater nitrogen uptake, ultimately reducing the need for nitrogen fertilizer.

CROP	Application per crop cycle	Rate of application	
		g/gal (container)	lbs/acre (field)
Cannabis	6-8	5-10	1-2
Vegetable Crops	4-6	-	2.5-5
Row Crops			
Nut Trees			
Fruit trees	5-8	34.0	2.5

* ***Application rates and frequencies should be optimized for your crop environment and operation. For application assistance please consult with Impello's technical team.***

APPLICATION NOTES

Nero™ SC is easy to apply through all fertigation systems.

For Batch Tanks:

01 Calculate the volume of Nero™ SC required to treat the desired area or irrigation volume.

02 Mix thoroughly.

03 Fertigate as usual. If desired, flush the system with clean water after fertilizer injection is complete.

For Stock Tanks and Nurse Tanks:

01 Calculate the volume of Nero™ SC required for the volume of your tank and injection (dilution) ratio.

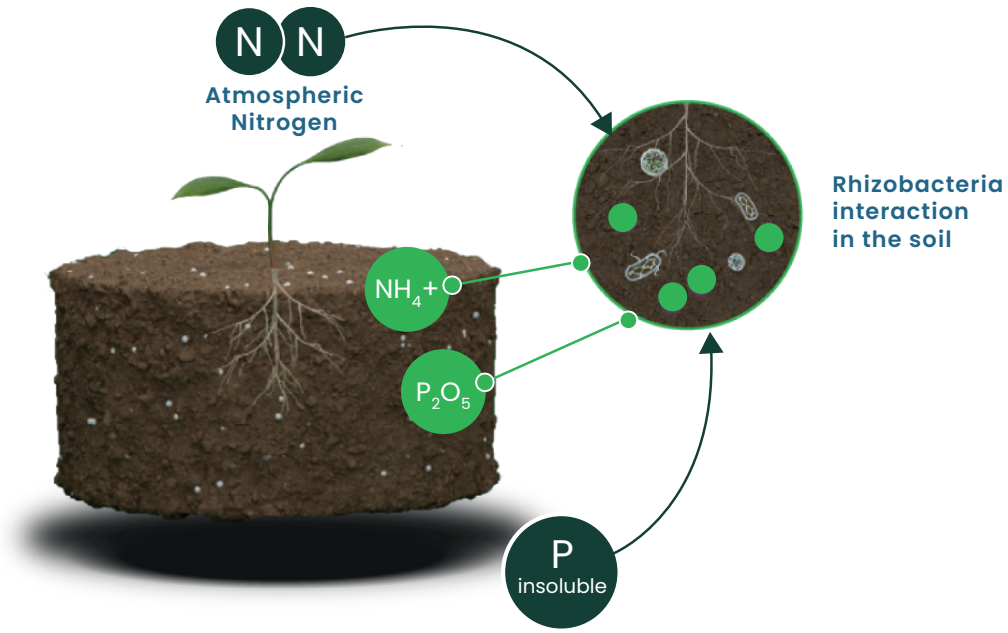
02 Mix thoroughly.

03 Fertigate as usual. If desired, flush the system with clean water after fertilizer injection is complete.

WHY NERO™?

Nero™ maximizes nitrogen use efficiency, directly translating to enhanced plant productivity and growth. The microbes in Nero™ ensure a consistent and reliable source of nitrogen, reducing the need for synthetic inputs and thus minimizing costs and environmental impacts. Its synergistic bacterial components ensure that plants receive an accessible and balanced nutrient supply. In combination with existing fertilizer regimes, Nero™ acts to improve overall nutrient uptake, promoting improved crop resilience and yields sustainably.

HOW DOES IT WORK?



- Makes atmospheric nitrogen available for plant use by fixing into a plant-available form (NH_4+)
- *Pantoea dispersa* paired with *Azospirillum* improves efficacy compared to *Azospirillum* isolate
- Increases the absorption of other fertilizer cations like potassium and calcium.

ENZYMES AND THEIR FUNCTIONS

• **Nitrogenase**: Catalyzes the conversion of atmospheric nitrogen (N2) into ammonia (NH3) through a complex series of reactions, which in soil, can receive H+ to produce ammonium (NH4+), the form of nitrogen that plants can absorb.

• **Indole-3-Acetic Acid**: IAA production stimulates root development and overall plant growth. Pantoea dispersa can produce enzymes such as tryptophan decarboxylase and indole-3-pyruvic acid decarboxylase, which are involved in the synthesis of IAA.

• **Phosphatase**: Help solubilize inorganic phosphates in the soil. This makes phosphorus more available to plants, promoting root growth and development.

• **Siderophores:** Siderophores are compounds that chelate iron and make it available to plants in iron-deficient soils. Nero™ can produce enzymes involved in siderophore synthesis to improve iron uptake by plants.

• **Cellulase & Pectinase:** These enzymes can break down complex plant cell wall components like cellulose and pectin. By producing these enzymes, Nero™ can aid in the decomposition of organic matter in the soil, releasing nutrients for plant uptake.

• **Protease:** Breaks down proteins into amino acids. Nero™ may produce protease enzymes that help release nitrogen from organic matter, making it available to plants.

• **Lipase**: By producing lipase enzymes Nero™ can assist in the breakdown of organic matter, releasing energy and nutrients for plant growth.

WHAT'S INSIDE?

A. brasilense

- Phytohormone production to improve root architecture and surface area for young or established plants
- Improves seed germination, stand establishment, and transplant success
- Enzymes that solubilize phosphorus and potassium and chelate iron and zinc.

P. dispersa

- Improves nutrient availability for plant uptake
- Improves structure of soil or substrate through secretion of polysaccharides
- Can also solubilize phosphorus in the soil

Together

- Fixes atmospheric nitrogen into plant available form
- Reduce dependency on synthetic N fertilizers by actively synthesizing nitrogen in the root zone
- Maintains atmospheric N fixation even when synthetic N is available in the system
- Increases biomass and yield
- Increases plant tolerance to abiotic stress

NERO™ FEATURES

- Reduce dependency on chemical fertilizers
- Improve the productivity of the soil microbiome
- Macronutrient and micronutrient transformation

STORAGE CONDITIONS

Nero™ is stable for at least 12 months when stored in a cool, dry location in a tightly sealed container. Exposure to high heat and humidity are not recommended.