



Nitro invests BRL 10 Mn in next-generation bionematicide for Brazil

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Elmo Max combines five *Bacillus* strains and multiple modes of action as Nitro targets more consistent root protection across Brazil's diverse cropping systems



Brazilian agricultural inputs company Nitro has launched Elmo Max, a multi-strain biological nematicide developed through a BRL 10 million investment in research and development as the country's growers increasingly turn to biological technologies to manage one of the most persistent constraints on crop productivity: nematode damage.

The new formulation brings together five *Bacillus* strains with complementary biological functions. Nitro's strategy is to move beyond single-strain or single-mechanism approaches and build a microbial consortium capable of establishing itself around plant roots while attacking nematode pressure through several pathways.

The formulation contains *Bacillus amyloliquefaciens* CCT 810, *Bacillus subtilis* CCT 8100, *B. subtilis* ATCC 6051, *Bacillus licheniformis* ATCC 14580 and *Bacillus megaterium* CCT 8101. Elmo Max is registered in Brazil as a biological nematicide with the Ministry of Agriculture and Livestock under registration No. 21424. The product is formulated as a concentrated suspension with a guaranteed concentration of 1×10^8 CFU/mL and an 18-month shelf life.

Five strains, multiple biological functions

The central proposition behind Elmo Max is not simply the number of microorganisms in the formulation, but how their functions can work together around the root system. Nitro's technology is designed to colonise roots and establish a protective biofilm in the rhizosphere, creating a biological barrier between the plant and nematode populations.

The bacterial consortium can compete for space and nutrients, as well as oxygen and root exudates, potentially reducing the biological resources available to nematodes and making roots more difficult for the pests to locate and exploit. The formulation also incorporates antibiosis and induced plant defence mechanisms. According to Nitro, the bacteria produce metabolites with activity against nematodes and can contribute to degradation of the nematode cuticle. At the same time, microbial interaction with the plant can stimulate induced resistance mechanisms that prime plants to respond to biological and environmental stresses.

This combination is intended to create a broader mode of action than a product relying on a single biological pathway.

Nematodes turn root damage into a yield problem

For Brazilian agriculture, nematode management is fundamentally a root-management challenge. Nematodes attack underground plant tissues, compromising root development and interfering with the crop's ability to acquire water and nutrients. The consequences can extend well beyond visible root damage, affecting crop establishment, plant development and ultimately yield potential.

The issue is particularly important in soybean production, where nematode pressure can become a significant constraint across successive production cycles. This has created a growing role for biological nematicides within integrated pest-management programmes. Rather than treating nematode control solely as a direct pest-suppression problem, biological approaches can combine organism suppression with efforts to maintain healthier roots and a more resilient rhizosphere. Nitro is positioning Elmo Max within that broader management model.

From single strains to microbial consortia

The development of Elmo Max reflects a wider evolution in agricultural biologicals: the move toward microbial consortia that combine different biological functions in a single formulation. A single microbial strain may have strong activity under specific conditions, but agricultural environments vary considerably in soil characteristics, temperature, moisture, crop systems and existing microbial populations.

Nitro's five-strain architecture is designed to address some of that variability by combining organisms with complementary characteristics rather than relying on one biological mechanism. The company says this approach is intended to provide greater consistency across different soil and production conditions while maintaining the core objective of protecting the crop's root system.

Broad crop opportunity

Nitro is positioning Elmo Max for use across a wide range of Brazilian crops, including soybean, corn, cotton, coffee, sugarcane, citrus, winter crops, beans and sesame, as well as fruit and vegetable production. That breadth gives the technology a potential role across both major row-crop systems and higher-value perennial and horticultural production.

The company identifies root-system protection and vigor, multiple modes of action, performance across production systems and compatibility with chemical crop-protection products among the principal characteristics of the formulation. The compatibility dimension is particularly relevant to integrated pest management, where biological products increasingly need to fit within existing crop-protection programmes rather than operate as standalone interventions.

BRL 10 million bet on biological technology

The BRL 10 million R&D investment behind Elmo Max signals Nitro's broader ambition in biological crop protection. Brazil has become one of the world's most important markets for agricultural biologicals, supported by the scale and diversity of its cropping systems as well as growing demand for alternatives and complements to conventional crop-protection technologies.

For Nitro, the opportunity is to convert microbial diversity into commercially reliable products. Elmo Max represents that strategy in nematode management, using a defined consortium of five *Bacillus* strains rather than a single-organism approach. The commercial test will ultimately be field consistency: whether the technology can translate its multiple biological mechanisms into reliable root protection under the wide range of conditions encountered across Brazilian agriculture.

If that proposition holds at scale, Elmo Max could strengthen Nitro's position in a market where the next stage of biological innovation is increasingly focused not simply on finding useful microorganisms, but on combining them into more resilient and predictable crop-protection systems.