Rooted in resilience: Trillum® and the Nitrology® foundation for stronger soybeans



NITROLOGY® RANGE

Nitrology®: World-class Rhizobium technology for legumes

Soybeans depend on a successful partnership with *Bradyrhizobium japonicum* to convert atmospheric nitrogen into plant-available nitrogen through biological nitrogen fixation. This process takes place inside root nodules and can supply a major portion of the crop's nitrogen requirement. However, effective nodulation depends on more than simply applying bacteria to seed.

Rhizobial survival, compatibility with seed treatments, early root colonisation and stress tolerance all influence field performance.

The Nitrology® range brings together a portfolio of rhizobial inoculants and support technologies designed to meet different soybean production needs. At the core of the range is the delivery and protection of *B. japonicum*, the bacterium responsible for effective nodulation and biological nitrogen fixation in soybean.

For more specialised production requirements, the range includes differentiated technologies that support rhizobial performance in harsher planting environments.

Nadine Loubser
MBFi

Technologies present in the Nitrology® range, include:

Nitro-Liq® Soybean provides a premium liquid inoculant option, supported by Premium *Rhizobium* Liquid technology, and is focused on strong rhizobial delivery and reliable nodulation.

Rizo-Liq® Soybean offers advanced liquid inoculation supported by OSMO Protection®, which helps maintain bacterial survival and improves on-seed performance under stressful conditions.

Rizogen® Soybean combines OSMO Protection® with EXO Activation®, supporting bacterial resilience while enhancing early root interaction and nodulation potential.

Signum® Soybean combines OSMO Protection® with Signal Generation, designed to encourage faster interaction between soybean roots and rhizobia, particularly where early establishment may be challenged.

Elite® Soybean inoculant contains Membrane Protection, which helps protect bacterial cells against seed-applied stress factors and supports extended on-seed survival.

Bio-Shield® XT completes the system by improving compatibility and protecting inoculant survival where seed treatments, storage periods, or environmental stress may reduce viable rhizobial numbers.



Together, the Nitrology® range provides growers with flexible inoculation options, allowing the correct technology to be matched to the required planting window, seed-treatment programme and field conditions.

Importantly, these products are not identical. The technologies behind the inoculants differ, allowing producers to select the best fit depending on planting conditions, seed-treatment requirements, pre-treatment windows and desired level of protection. >>



Trillum®: Green Chemistry® protection for the root zone

Trillum® contains *Trichoderma asperellum*, a beneficial fungal active used to protect the crop against important soil-borne diseases such as *Pythium, Fusarium* and *Rhizoctonia*. These pathogens attack young roots and seedlings, reducing early vigour, root mass and establishment. By supporting a healthier root environment, Trillum® helps protect the crop during one of the most vulnerable stages of development.

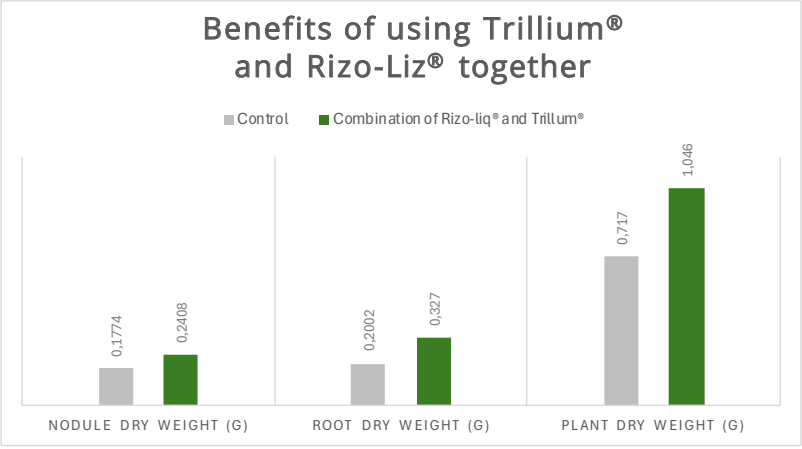
Rather than positioning Trillum® only as a biological control product, it should be viewed as part of a Green Chemistry® root-protection strategy. It works in the root zone where disease pressure, moisture fluctuations and seedling stress intersect. This makes it especially valuable in programmes where early root protection and crop establishment are key objectives.

Synergy between Trillum® and Nitrology®
A strong soybean crop needs both healthy roots and functional nodules. This is where the combination of Trillum® and Nitrology® becomes important.

Bradyrhizobium supports nitrogen fixation, but it depends on an actively growing root system to form nodules and supply the plant with nitrogen. Trillum® supports this by helping protect the young root system from soil-borne disease pressure. When root stress is reduced, the plant is better positioned to develop a larger, healthier root system and support stronger nodulation.

MBFi's foundation packs give growers the flexibility to choose the most suitable approach for their production system, whether the programme requires seed application, in-furrow application, or a combined strategy.

These packs combine products from the Nitrology® range with Trillum® from MBFi's Green Chemistry® range, bringing together advanced rhizobial inoculation technology and root-zone disease protection in one integrated foundation programme.



Benefits of using Trillium® and Rizo-Liq® together.

This flexibility is important because farms differ in planting equipment, soil conditions, biological activity, disease pressure and planting practices. By selecting the correct foundation pack, growers can match the technology to their specific field requirements and support optimum crop establishment.

Soybean plant trial results

The soybean trial compared a standard Rizo-Liq® seed treatment as the control against a combined Rizo-Liq® + Trillum® seed treatment to determine the effect of adding root-zone support to the inoculation programme. Clear differences were observed in root and plant development.

The combined Rizo-Liq® + Trillum® treatment produced higher nodule dry weight, root dry weight and plant dry weight compared with the Rizo-Liq® control. This indicates that the addition of Trillum® provided complementary root-zone support, helping create a healthier root environment for improved nodulation and early plant growth.

This is important because stronger root systems support nutrient uptake, water absorption and nodule development, all of which contribute to early soybean vigour. These results support the value of combining effective rhizobial inoculation technology with Green Chemistry® root protection to strengthen early soybean establishment.

Conclusion

Trillum® and the Nitrology® range work together as a foundation platform for soybean establishment. Nitrology® focuses on world-class rhizobial inoculation and nitrogen fixation, while Trillum® supports root-zone protection through Green Chemistry® against soil-borne disease pressure. When used strategically, these technologies help create the conditions needed for stronger roots, improved nodulation and better early plant growth.



Nitro-Liq Soybean® Reg. no. L8986 Act 36 of 1947 | A.I.: *Bradyrhizobium japonicum* 2×10^9 Cfu/mL
Rizo-Liq Soybean® Reg. no. L8738 Act 36 of 1947 | A.I.: *Bradyrhizobium japonicum* 6.5×10^9 Cfu/mL
Signum Soybean® Reg. no. L8988 Act 36 of 1947 | A.I.: *Bradyrhizobium japonicum* 6.5×10^9 Cfu/mL
Elite Soybean Inoculant® Reg. no. L8925 Act 36 of 1947 | A.I.: *Bradyrhizobium japonicum* 1×10^{10} Cfu/mL
Rizogen® Soybean Reg. no. L10801 | A.I.: *Bradyrhizobium japonicum* 6.5×10^9 Cfu/mL
Trillum® Wp Reg. no. L 11032 Act No. 36 of 1947 | A.I.: *Trichoderma asperellum* 2×10^9 Spores/g
Trillum® Ds Reg. no. L10241 Act No. 36 of 1947 | A.I.: *Trichoderma asperellum* 2×10^9 Spores/g

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