

Tiros 2.0

“The new formulation of Tiros Max sets the bar even higher.”

Bioscience in brief

A new generation of biological seed treatment has been unveiled which promises to deliver performance over the product it supersedes. CPM finds out more.

By Rob Jones

With a steady pipeline of biological innovations from companies worldwide all vying for grower attention, competition in this market segment is stiff. But new product development doesn't always involve starting from scratch, that's the message from Unium Bioscience.

By building on the reputation of its existing seed treatment Tiros, Unium has developed a unique, advanced formulation of endophytes which supports and enhances rhizophagy and enables crops to fix atmospheric nitrogen.

And just like its predecessor, Tiros Max acts as a 'back up' power supply — fixing nitrogen from the atmosphere throughout the season, enhancing yield where standard rates are applied, or maintaining yield where nitrogen is required.

The new seed treatment also promotes the plant's ability to sequester phosphorus, potassium, zinc and additional microelements, but it does it all better, says Unium's director, John Haywood. “The enhanced formulation provides a prebiotic, also known as an extender, in powder form rather than a liquid.

“This delivers 13% more Colony Forming Units (CFUs) per seed by preserving the endophytes during application, as well as supporting and promoting early population growth during germination and establishment,” he explains.

In the field, Tiros Max-treated seed has been shown to accelerate plant establishment and growth compared with untreated seed, with better root structure and biological interactions being observed. Additionally, trials show Tiros Max provides benefits equivalent to 30KgN/ha.

Essential endophytes

From a scientific perspective, work undertaken by Professor James White at Rutgers University in New Jersey, USA, shows that endophytes are essential for root hair development as well as their role in rhizophagy — where plants effectively 'farm' microbes to help them sequester nutrients from the soil.

James believes that microbes applied as biostimulant seed treatments can replace some of the microbes lost from seed during its journey from seed producer to farmer. As well as this, he says biologicals can also act as a supplement in soils where microbial communities are depleted.

“Biostimulant microbes placed on or near to the seed can kickstart the rhizophagy cycle. Some treatments contain endophytes which set up a more permanent association, provided the consortia selected are adapted to the crop plant, and the plant requires that community in its environment.”

But this isn't the only way plants use microbes — some endophytes will be moved from the roots and spread throughout a plant's tissues. “Many plants will transfer these bacteria into their leaf hairs (trichomes) where they're fed plant sugars in exchange for the nitrogen these endophytes will fix from the atmosphere,” explains James.

However, biological treatments have historically been variable in their effects when applied to seed. Therefore it's hoped the use of the extender in Tiros Max will bring new levels of consistency in performance, delivering the benefits James describes.

“The new formulation of Tiros Max sets

the bar even higher. It marks a real advancement in seed treatment technology by supporting the biology to a greater extent, demonstrated by the higher CFUs achieved per seed,” comments John.

Whereas the dry formulation offers benefits over and above added performance in the field, it also offers flexibility at the time of seed treatment, he adds.

“Previously, the minimum quantity that could be treated was a batch of 10t. Through the new formulation, not only is a mixing phase cut out, it means it's now possible to treat small seed batches of five or one tonne, giving farmers much more flexibility when treating their own seed through a mobile unit,” says John.

To celebrate the launch of Tiros Max, Unium is hosting an educational evening on endophytes in collaboration with BOFIN, featuring leading endophyte researchers from the United States. Farmer and agroecology consultant Ben Taylor-Davies (Regen Ben) will dig into the science and application of endophytes in agriculture in a 'fireside chat' style webinar with Professor James White and Washington University's Professor Sharon Doty, who discovered the strains of endophyte used in Tiros Max. ■

The event will take place at 6pm on 2 July. For further information see page 14.



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