CONSISTENCY BRINGS CONFIDENCE

Rod Vautier, BiOWiSH, explains how agricultural retailers can help growers navigate the dynamic bio-enhancement space.

While many growers continue to see a bright future for the biological product space, some remain hesitant and want more proof before investing. A recent survey found that 41% of retailers reported trust as a top concern as to why biological products have difficulty finding

market acceptance.[1] These trust issues stem from products that have not performed as well as their research claims. Growers want to mitigate their risks, not add more. This is understandable as many early generation biological products over-promised, yet under-delivered.
However, there are biological products that do work reliably. The problem is that researching all available products to find the right fit may feel like an impossible burden to growers.

So, what can be done to help growers navigate the biological space, specifically bio-enhanced fertilizers, more successfully? The answer is multi-faceted and hinges on trusted agricultural (ag) retailers. With the abundance of options on the market, growers do not have the time or tools to fully evaluate every product themselves.
However, ag retailers have the expertise and greater capacity to review the entire market landscape. Many use their own field trial programmes to evaluate products based on performance, consistency, value, and market needs to identify stable products that can work upstream. In turn, retailers can confidently recommend and supply the right bio-enhanced fertilizer programme to support a grower's specific crops and operation.

Questions to consider when evaluating fertilizer enhancements

Retailers must sift through biological product claims and evaluate their research before recommending them to their customers. It is crucial to fully understand a product's technology and the stability of the manufacturing process. Questions to consider when evaluating products include:

How does its technology work?

Taking a deep dive into a product's technology can ensure a full understanding and and help decipher whether the microorganisms attach to the plant. Many growers worry that if the microorganisms can not attach to the plant, they will have a limited food supply. Look for products with endophytic microorganisms that can surpass basic root association. These are ideal because they can enter through the roots of their host plants. This provides the foundation for reliable performance – allowing them to actively deliver soil nutrients, which triggers a cascade of beneficial effects for the crops and soil.

In addition, check if the product inoculates soil with non-native microbes. Products often fail when other organisms attack them because they are non-native to the soil. Rather than trying to inoculate the grower's soil with non-native good bacteria, look for a product that utilises endophytic *Bacillus* technology to deliver soil nutrients to crops through the rhizophagy cycle – a process which also enhances beneficial microbes in the rhizosphere.
This mechanism creates a symbiotic relationship between the plant and soil microbes. The new plant-microbe alliance can increase nutrient use efficiency, support nutrient uptake, enhance beneficial microbes in the rhizosphere, optimise soil conditions for greater root mass, and improve soil conditions for improved plant vigour.

Does the product have proven, diverse research?

Proven research speaks volumes.[2] Evaluate how a company conducts research to validate its product claims.
While growers want to see results of on-farm demo trials relevant to their farm, single replicate, side-by-side trials are not enough to prove the efficacy or consistency of a biological product. There are too many factors that can contribute to failure. There must be solid replicated research that serves as the foundation of a product's research programme. This does not mean on-farm demo trials are not helpful. The purpose of demo trials is to provide qualitative, real-world farming data.

While many companies only use one research method, innovative solution providers use a meta-analysis approach for their research programmes. This statistical technique integrates data from replicated, geographically diverse studies to estimate the real impact of product performance across various locations. This allows a company to achieve broader, cumulative conclusions rather than only focusing on individual locations.
Corroborating results using a meta-analysis allows retailers to assess how product performance translates into real-world farming with varying growing conditions and geographical challenges. When reviewing a product's research, also take note of its win rate, average yield lift, and confidence level. A product with strong, consistent results can provide further peace of mind that it will complement the customers' farming goals.

For example, in Figure 1, meta-analysis from a biological provider reveals a striking similarity in the performance results between the replicated

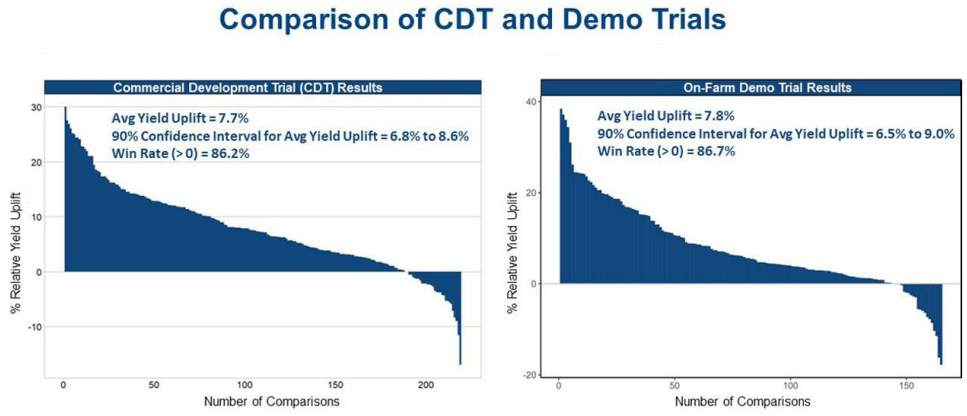

Figure 1. The comparison of results for commercial development trials (CDT) and on-farm demo trials reveals consistent yield uplift, win rate, and confidence level between the two programmes. These results confirm there is no significant difference between the two testing methods and that the product performs, with high success, consistently.

Figure 2. Growers are relying on trusted ag retailers for their expertise in evaluating, recommending, and supplying effective biological fertilizer enhancements.

commercial development trials (CDT) and on-farm demos – indicating that there is no significant difference in the two testing methods. The average yield uplift, with a 90% confidence interval, between the two trial programmes are basically the same at 7.7 – 7.8%. Both data sets indicate that the product wins a trial 86% of the time, regardless of whether the trial is conducted by a professional independent third-party or performed on a real commercial farm. Proven corroborated research like this provides growers with the peace of mind that the product does work.

Does the product support a broad range of crops, climates, and management practices?

Evaluate whether the biological product can support a broad range of farming scenarios. Retailers conduct business with many diverse growing operations in the US and globally, so it is essential for a bio-enhancement to be efficacious across a broad range of geographies, climates, and crops. This proves consistency and allows retailers to recommend the product with confidence. Knowing it can perform dependably in a myriad of situations and farm operations can give retailers peace of mind with their recommendations.

For example, rice research studies conducted in Shuangcheng District, Heilongjiang Province in Northeast China and in Marysville, California, US, tested the same biological product in extremely different climates.[3, 4] The soil type, climatic conditions, management practices, and economic considerations varied significantly, yet both locations realised an increase in yield for the biological treatments, despite the reduction in fertilizer, which ultimately led to an increase in profit.

In addition, every farming operation requires its own set of management practices to support its business needs. A natural, safe, non-GMO product is easy to implement. Ensure it arrives on farm ready to use, does not require fermenting, special equipment, or mixing, and can work in harmonisation with a wide variety of crop protection products.

Is it easy to use on-farm?

Take note of a product's shelf life, coating/mixing process, and compatibility. Since bio-enhanced fertilizers are living organisms, consider how a provider keeps the microbes alive. Some products are extremely temperature sensitive, making it hard to transport them successfully. Coating and quality control innovations maintain the stability of the microorganisms. This preserves the physical and chemical properties of the fertilizer to meet the global fertilizer industry's shelf-life integrity requirements. Stability through the supply chain is important because it results in a product that is easy to use for the grower, with a consistently strong value proposition. Retailers should ensure you can support your growers by completing the coating/mixing process upstream to provide seamless implementation. Also, look for suppliers who can provide data on the compatibility of their biologicals with other products.

"When retailers can achieve the right coating and application rates, whether coating onto granular fertilizer or pre-mixing the liquid fertilizer, it makes it easier for farmers to implement," said Graig Whitehead, ADM Director of Biologicals and New Technology. "Companies that don't test products for compatibility with other commonly used ag inputs and publish shelf-life results are not doing anyone any favours."

Always focus on consistency

Successful fertilizer enhancements work in collaboration with the fertilizer industry rather than in competition. The goal is to give farmers better options and greater control over their business. The biological and bio-enhancement products that will see a major uptick in adoption are the ones that can prove their value and worth. The key is consistency, because consistency brings confidence in results. If a retailer is confident in a biological product's performance, it will give the grower assurance that they are choosing the right product. Growers should continue to rely on their trusted retail partners to help them find the right product for their specific operation – one with cutting-edge technology that can demonstrate consistency through timely, accurate research studies and real-world farming situations. WF

References

1. https://www.croplife.com/special-reports/biologicals/biologicals-in-2024-some-headway-but-headwinds-remain/
2. https://www.biowishtechnologies.com/resources/?fwp_document_type=case-study%2Cresearch-
3. https://biowishtechnologies.com/resource/evaluation-of-biowish-crop-liquid-on-rice-in-shuangcheng-district-china/
4. https://biowishtechnologies.com/resource/evaluation-of-biowish-crop-liquid-on-rice-in-shuangcheng-district-china/