

David Hallauer
District Extension Agent, Crops & Soils

What is a Biological?

When we hear the term biologicals in commodity crop production, the first question is typically: do they work? Unfortunately, the answer often isn't a simple yes or no, often in part because biologicals can refer to so many different things.

It's been said that soybean inoculum was the original biological, and we've used it for what seems like forever. It's not the same, however, as products *called* biologicals but that are much different than soybean inoculant. Humic and fulvic acids come from decomposing organic matter or mineral deposits. Hydrolysates are from plant and animal byproducts and alginates are as the name sounds: from seaweeds. The latter are often used in specialty crops whereas soybean inoculant is applied in a crop decidedly *not* specialty in nature.

To be fair, biologicals might not even be the right term. Biostimulants are what they are referred to by regulatory bodies and in scientific literature. Regulation – or lack thereof – is a confusing point as well. Some products aren't regulated at all while others that might be very different are lumped under the same set of regulations. It can cause a lot of confusion.

Unfortunately, where there's confusion there's an opportunity for unsubstantiated marketing.

University of Illinois agronomist Dr. Fred Below said this in a June 2025 article

(<https://aces.illinois.edu/news/biologicals-vs-biostimulants-illinois-study-clarifies-crop-input-confusion>): *Very often, marketing exceeds the actual research. Clearly, that's the case here.* He and fellow University of Illinois have researched a number of products, but face challenges in doing so because of inconsistent terminology used to describe products, not to mention the regulations surrounding them. With new products entering the market all the time, it can feel a little like the wild, wild west. That feeling has led Below and fellow researchers Dr. Connor Sible and Juliann Seebauer to look deeper into the definition and categorization of these products. They hope more streamlined terminology and maybe even regulations can help with product evaluations while keeping opportunities open for exploration of products with the hope of finding the ones that really live up to their marketing.

In the meantime, they've developed some tips to help growers evaluate products already on the market. In two weeks, I'll share their tips with hopes they'll help you find which products might be a fit for you – and which one are just marketing.