



Armament[®]

BENEFITS OF ARMAMENT VERSUS HUMIC ACID

INHERENT PROBLEMS WITH HUMIC ACIDS

Armament has been in production for years. It is used as a soil amendment to treat hostile soils where nutrients are largely tied up or in soils with marginal levels of certain nutrients. Humic acids have historically also been used for these purposes. However, a few inherent problems with humic acids make them challenging to work with. Humic acid is based on natural materials that are mined from the earth. With natural materials, there is always variability and, therefore, a lack of consistency. Humic acids are also known to have solubility issues. Foliar-Pak BioDrive (now discontinued) contained only 4% humic acid by weight. Therefore, we knew it was necessary to use higher rates to effectuate change in the soil.

HOW ARMAMENT IS DIFFERENT AND BETTER

When we created Armament, we kept in mind the minor components in humic acids that make a difference for nutrient uptake. At the same time, we created a structure that is more powerful, predictable, and reliable than humic acids. Armament's helical structure and molecular weight (small enough to be highly water soluble but also large enough to persist in the soil for up to 3 months) maximize its performance and longevity in the soil.

Compared to humic acids, Armament has a much greater concentration of negative charges. When all is said and done, it's the negative charges that improve soil nutrient uptake efficiency. Instead of a heterogeneous molecule with unpredictable size and performance, Armament is homogenous and reacts in a controlled environment to provide a predictable and reliable polymer. Every time you open a jug of Armament Concentrate, you get the exact same consistency of this powerful carbon source, which is far more concentrated than humic acid materials. This superior concentration and consistency are why Armament Concentrate is very productive in the soil when applied at much lower rates compared to humic acids.

Armament is cleaner, easier to use, and comes without the mixing and nozzle-clogging issues you can have with humic acids.

For more comparisons between Armament and humic acids, view the comparison chart on the opposite page.

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ARMAMENT AND HUMIC ACID COMPARISON CHART

	HUMIC ACID	ARMAMENT	NOTES
SPECIFICATIONS			
Long Chain Carbon Molecule	•	•	
Abundance of Negative Charge	•	••	Armament was designed to harbor more negative charge than humic acids
Naturally Derived Substance	•		
Variable in Nature	••		
Manufactured Substance		•	Armament was developed to overcome the inconsistencies inherent to a natural substance
Engineered for Consistency		•	
REASONS FOR USE			
Soil Buffer Agent	•	••	Armament has a greater ability to counteract deficiencies, surpluses, and imbalances of soil nutrients
Complexes/Protects Nutrients	•	••	Armament has more negative charge than humics, making it a more powerful complexer
Improves Root Uptake of Nutrients	•	••	
Feeds Soil Microbial Populations	•	•	
Improves Foliar Nutrient Uptake		•	Armament has a humectant property that keeps spray solutions in liquid phase for a longer period of time
Reduces NH ₃ Volatilization		•	Urea impregnated with Armament will reduce ammonia volatilization by 65% for 3 days after application
ADVANTAGES/DISADVANTAGES			
Causes Nozzle and Screen Clogging	••		Humic acids are largely unrefined and insoluble, while Armament is very soluble
Very Compatible		••	Armament will actually improve negative tank mix interactions, while humic acids can worsen existing interactions
Clean and Easy to Use		••	
Low Use Rates Work Well		••	Armament Concentrate is 38% active, while most humic acids max out at around 4%
Stimulates Rooting Activity	•	••	