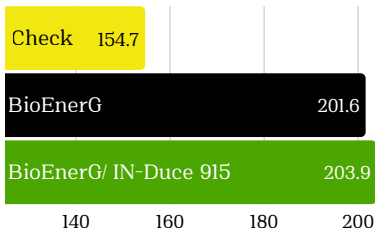


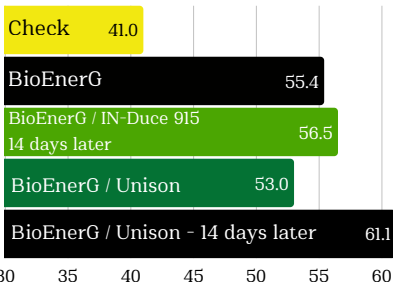
### In-furrow Corn Trial in NC

BioEnerG™ outperformed 4 different replications of 2 competitors' products and 10-27-0. Was applied in-furrow at 2 gal/acre.



### Soybean Trial in PA

BioEnerG™ combined with other products was in top 3 for the highest yield. Applied foliar at 1 QT/ acre.



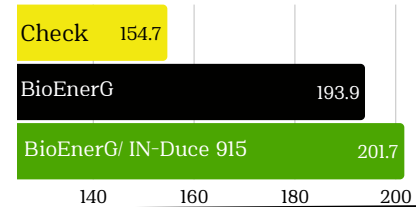
BioEnerG™ consists of living microorganisms such as nitrogen-fixing bacteria, phosphate solubilizing bacteria, and fungi that enhance plant nutrition when applied to seeds, soil, or plant surfaces. These beneficial microbes colonize the rhizosphere of plant roots and improve nutrient availability by fixing atmospheric nitrogen into plant-usable forms, solubilizing insoluble phosphorus and potassium.

1. BioEnerG™ allows for better nutrient uptake, stimulating root development, while boosting crop growth, yield, and resilience without relying heavily on synthetic chemicals.
2. Helps promote sustainable agriculture by enriching soil organic matter, lowering farming costs, and increasing long-term soil health, making them an eco-friendly alternative to conventional fertilizers.

A simple but stubborn belief is that we could create a biofertilizer that would truly regenerate soil, boost yields, and reduce reliance on synthetic inputs. Every member of AgriEnergy Solutions have poured their heart and 40 years of expertise into this product. The result is a product we are truly proud of. A product that truly serves agriculture and the environment.

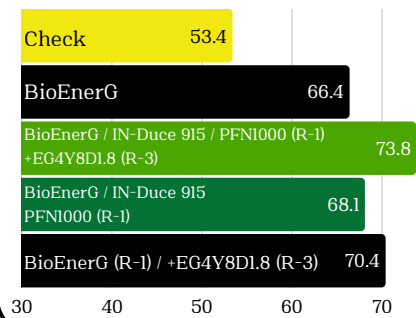
### V6 Corn Trial in NC

BioEnerG™ yielded 39.2 bu better than the check. Applied foliar at V6 at 2 gal/acre.



### Soybean Trial in NC

BioEnerG™ alone or with other treatments resulted in the highest soybean yields. Applied foliar at 2 gal/acre.



The presence of increased life in our plant's rhizosphere compounds on itself. More activity around the roots causes increased exudation by the plant. More exudation boosts the microbial activity further which accelerates nutrient use efficiency through food web activity/mineralization/organic matter/residue decomposition. Increased nutrient cycling feeds the plant which results in higher brix that causes more sugar/carbohydrates to be available to build the plant and further feed the roots/microbes. All of this action as described results in increased carbon in the root zone. We often show pictures of soils darkening around the roots when the biology is thriving. This has been obvious in as little as 3 weeks. This is true carbon sequestration with increasing CEC and a more valuable productive soil during one growing season. BioEnerG™'s live organisms cause larger deeper root systems. A well inoculated, colonized root system moving deep in the soil profile is a soil builder.

## Performance & Benefits

- **Improved Soil Health and Fertility:** Enrich soil with organic matter, enhance microbial biodiversity, and restore soil structure over time. Continuous use builds long-term fertility.
- **Increased Crop Yield and Quality:** Studies show yield boosts depending on crop and conditions. Crops often have higher protein content, better taste, and longer shelf life.
- **Cost-Effective and Sustainable:** Lower production costs and reduced need for chemical inputs.
- **Climate Resilience:** BioEnerG™ supports sustainable farming by mitigating soil degradation and reducing reliance on synthetic inputs.

# The BioEnerG™ Effect: Revolutionizing Crop Resilience and Water Uptake

## BioEnerG™ Contribution to Tilth

Most soils can become compacted for various reasons. Clay soils are inherently tight. Pairing BioEnerG with amendments that flocculate (clump together) clays will establish Tilth. Various forms of calcium (see AES Transformer products) with food sources for BioEnerG™'s live microbes will develop soils that feel like carpet under foot. Soils will aggregate which provides many **TILTHY** benefits that will save you money on purchased fertilizers and raise the yield bar.

## Active Microbial Mineralization

As we seed/inoculate live microbials into the root zone, an active rhizosphere develops. This provides many advantages as described in this sheet. As roots form and root exudation starts a chain of events unfold. More microorganisms actually stimulate more root exudation which stimulates more organisms which enhances nutrient availability. As bacteria and fungi populations greatly increase so do their predators often referred to as grazers. These grazers largely protozoa consume large quantities of bacteria. Bacteria contain too much protein (nitrogen) for them, so they expel ammonia that quickly becomes ammonium in the soil. Ammonium is a quite stable nitrogen source that is readily used by plants. And all of this happens right in the rhizosphere where the plant roots are active.

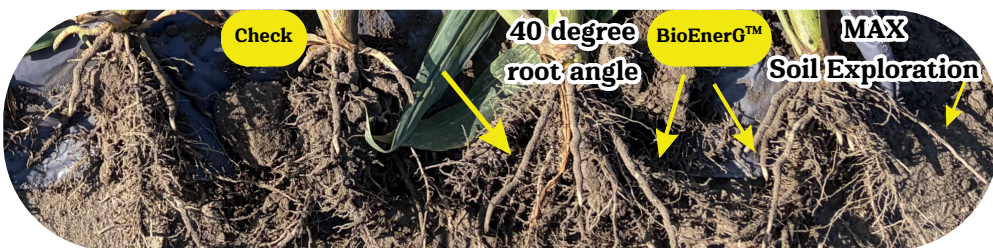
## Rhizophagy

Rhizophagy is plant roots eating bacteria in the rhizosphere. Bacteria are taken into the root and are stripped of their cell wall causing their contents to leak feeding the plants. The plant harvests some of their N, P, K, for the plant's use. The stripped bacteria are expelled back to the soil where they can heal, and the cycle can repeat itself.

## Why It Matters

"Understanding the rhizophagy cycle is currently revolutionizing sustainable agriculture and botany. It suggests that robust soil biology is just as critical to plant nutrition as traditional fertilizers, by promoting diverse, healthy microbial communities in the soil. Using practices like compost extracts, bio-stimulants, and regenerative farming; farmers can optimize this natural nutrient-delivery system and drastically reduce chemical inputs."

*Rutgers's University, Professor James White*



## Energized Root Growth

BioEnerG™ provides unrestricted root growth. Notice above the angle of the roots penetrating restricted zones. The untreated roots are struggling. The treated plant's roots have soil clinging to them representing an active rhizosphere. A penetrometer will demonstrate a significant tilth difference where the roots with enhanced colonization are growing.

- WUE Bigger deeper roots from Organic N
- More roots find more water and nutrients

## Unlock Soil Compaction

BioEnerG™ works as an anti-compaction tool. The live organisms produce compounds that cause sticking and bridging of flocculated clays, minerals, and organic matter. The resulting clumped aggregates are visible in healthy, tilthy soil and the mucilage coated roots penetrate tight soil. The fungi aiding in the aggregation adds "root like" extensions into the soil that captures water and nutrients and exchange the found nutrients with the plant for carbon/energy compounds.

## Aminization

Microbes doing their thing cycling residues and nutrients produce amines. Boosting microbial populations in the rhizosphere or on crop residues results in increased quantities of these amines. The breakdown of organic nitrogen from residues, cover crops, manures, or humus (including dead microbes themselves) produces amines. The quantities are small, and amines don't last long in the soil; they are quickly consumed and changed into ammonium then nitrate as part of the nitrogen cycle. But plants can also access the amines directly and greatly enhance their nutrient-use efficiency, because converting these proteins requires significantly less carbon than converting non-organic source back to proteins in the plant.

## Why It Matters & Why BioEnerG™ Delivers

Amine nitrogen is the most efficient form plants can use. Unlike nitrate or ammonium, amine N is taken up directly by the plant with almost zero energy cost, due to no heavy carbon conversions needed inside the leaf or root. This saves the plant ATP (adenosine triphosphate is the primary energy carrier in plants, essential for various metabolic processes including photosynthesis and cellular respiration) and carbon, letting it grow faster, stay healthier, and handle abiotic stresses (drought, heat, salinity) better.

## Where it comes from?

Live beneficial microbes (applied via **BioEnerG™**) feed on root exudates, explode in numbers, store nutrients in their cells, then die and release amine-rich organic nitrogen right in the rhizosphere. The plant can grab it before it turns into less efficient nitrate that can leach or volatilize.

- **Timing is everything:** Microbes colonize the seedling from the moment the seed germinates.
- **Location is perfect:** Amine N is delivered exactly where the young roots need it most; right at the root hair zone.
- **Efficiency skyrockets:** Early microbial nitrogen turnover reduces the need for synthetic N right from V1-V2, builds soil aggregates faster, and creates a resilient plant from day one.

## Microbial Bioremediation

BioEnerG™ buffers salty fertilizer applications. When we use fertilizers that cause dehydration we may kill beneficial organisms and cause compaction/crusting. Many organisms in BioEnerG™ can use salt in their growth and sequester the salts to prevent this negative aspect of many fertilizers. This buffering of salts is a significant advantage that should be utilized with every fertilizer application that is salty. Anchoring your needed fertilizers in our microbial populations biomass reduces leaching, tie up, and denitrification risks.

## The Foliar Catalyst

BioEnerG™ applied to leaf surfaces causes a cascade of benefits. Stomata snap open and shut vs leaking moisture. The plants use less water but use the water more efficiently to cool the canopy. During heat and drought the plants are more resilient. A colonized phyllosphere triggers messaging throughout the plant and to the roots with signals and compounds to increase nutrient and water efficiency. Photosynthesis/carbon compounds are maximized leaving large amounts of sugars and other carbon compounds that will move throughout the plant for growth and out the roots as increased exudates to stimulate soil life.

- Improved stomatal control
- Cooler Canopy
- Reduces water usage
- Maximize photosynthetic rate
- Stimulate plant to expand chlorophyll content that results in a significant boost in carbohydrates that will move down to sinks and the roots to further feed soil microbes with more exudation.