



A Sustainable Fertility Strategy for Conventional Growers

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Our friend over at Beem Biologics Inc., Ben Cloud, has discovered what is likely to become a major biologic platform used in the crop protection industry. Along with his team of skilled experts, they've discovered isoprenoid compounds (IsoExtracts) that can be used as biostimulants and biofertilizers. Today he explains a sustainable fertility option for conventional growers:

Conventional growers are using combinations of natural nutrient cycling (soil biology, microbial interactions) and synthetic/chemical fertilizers. The question is, does **synthetic/chemical fertility work with natural nutrient cycling?**

These two approaches are not generally complimentary and should be prioritized for the greatest benefit on yield, soil health, and reducing nutrient runoff.

Here is the suggested priority:

1. Use Natural Nutrient Cycling as the primary fertility method.

- At planting or prior to, inoculate with beneficial microbes. (use compost, cover crops, AND/OR a liquid microbial extract)
- Also at planting, feed the microbes by applying a biofertilizer (primarily amino acids and complex carbohydrates) to grow the microbial biomass and optimize soil functionality to provide crop nutrients.

2. Use Synthetic/Chemical Fertility only as supplemental fertility.

- Apply later in the crop cycle at peak nutrient demand.
- Use leaf tissue sampling to determine if nutrients are needed.
- Apply small dose applications, ideally foliar, for the highest possible nutrient uptake efficiency in the leaves of the plant.

3. Use a Biostimulant to optimize crop and fertility performance.

- Biostimulants act on plant physiology to improve crop vigor, yields, quality and post-harvest shelf life.

Why Promote Natural Nutrient Cycling First?

If a conventional grower wants the benefits of soil health and sustainability, a grower should use *natural nutrient cycling* as the primary fertility method and not both at the same time for the best results.

Natural nutrient cycling is the conversion of organic and inorganic matter into plant usable proteins, carbohydrates, vitamins, and minerals by the microbial population of the soil. Plants naturally trade energy (root exudates) to soil microbes in exchange for nutrients. The objective is to utilize this natural benefit to the greatest extent possible for soil health and sustainable crop production.

This means applying a microbial extract (inoculate) and biofertilizer (feed) at the beginning of each crop cycle. It is important to understand that the applied amount is not an N-P-K measurement, this is simply establishing sufficient microbial numbers to be sure that the nutrient cycling is functional. A few gallons of biofertilizer can be as effective as 10's of gallons of synthetic/chemical fertilizers. By relying on *natural nutrient cycling* as the primary fertility approach, we can provide the primary crop nutrient needs, while being assured that our soil is gaining in health and functionality.

If a synthetic/chemical application is applied with an inoculate and feed strategy at the beginning of the crop cycle, *natural nutrient cycling* is weakened and often lost, soil health declines and money is lost from yield loss and ineffective input costs.

Why Shift Synthetic/Chemical Fertility To A Supplemental Role?

We simply must do a better job of matching up the crop nutrient needs with application timing to minimize the impact on *natural nutrient cycling* to become sustainable. When seeking an economical means of compliance with emerging fertility runoff and percolation regulations, prioritization of fertility methods must lean towards *natural nutrient cycling*. Therefore, it is incumbent on conventional growers to use products that promote, rather than inhibit soil functionality.

This means using *synthetic/chemical fertilizers* in low dose applications only when nutrient demand is highest during the crop cycle. For example, testing plant tissue

for nutrient deficiencies can determine if added nutrients are required, then a foliar application (low dose compared to larger volume soil applied methods) can be tailored to the specific nutrient needs of the crop. Foliar applications are up to 99% metabolized, versus 10% to 40% of soil applied nitrogen.

A sustainable fertility strategy promotes functional soils through *natural nutrient cycling*, limits the use of *synthetic/chemical fertility* to peak nutrient demand, and adds *biostimulants* to optimize crop genetic potential.

Why Use A Biostimulant?

Biostimulants foster plant growth and development throughout the crop cycle from seed germination to plant maturity in a number of demonstrated ways, including but not limited to:

- Improving the efficiency of the plant's metabolism to induce yield increases and enhance quality.
- Increasing plant tolerance to and recovery from abiotic stresses.
- Enhancing certain physiochemical properties of the soil and fostering the development of complimentary soil microorganisms.

What distinguishes Biostimulants from traditional crop inputs?

- Biostimulants operate through different mechanisms than fertilizers, regardless of the presence of nutrients.
- Crop biostimulation is thus complimentary to crop nutrition and crop protections.

- Submitted by Ben Cloud, COO, Beem Biologics Inc.

Beem Biologics, Inc is the manufacturer of ISO NPK 3-1-3, a biofertilizer formulation that includes Isoprenoid Amino Complex, a naturally derived biostimulant. ISO NPK is an excellent companion product, for both conventional and organic methods, applied at a rate of 4 oz to 16 oz per acre.

See www.isonpk.com for more information, or contact your **AgriEnergy** rep. **815.872.1190**. Don't wait, see what ISO NPK can do for your crops!