



FERTILIZER INNOVATION *thru* TECHNOLOGY



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The Fertilizer Catalyst That Reduces Fertilizer Costs

Announcing a Better Way to Boost Fertilizer Performance

Recently, rising natural gas prices, increasing use of corn-based ethanol, and growing offshore demand have combined to feed a “perfect storm,” which has driven fertilizer costs to record highs. In many markets, fertilizer costs have nearly doubled since 2007. In addition, the growing environmental movement is raising concerns about nitrate and phosphate leaching and runoff. These issues impact everyone, from fertilizer manufacturers to the applicator—whether homeowner, landscaper, superintendent, or lawn care.

Fortunately, a uniquely formulated liquid fertilizer catalyst has been proven to enhance nutrient management. When pre-blended with liquid or dry fertilizers, the catalyst increases the availability of nutrients significantly, allowing end users to control their costs and reduce the potential for nutrient leaching at the same time without compromising turf quality.



The Fertilizer Catalyst That Reduces Fertilizer Costs



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Welcome to FIT: **The Fertilizer Innovation thru Technology Program**

This brief but informative curriculum is designed to give you an overview of the latest developments in nutrient management. Review the reading material at your own pace. When you have finished all four modules, please turn to the Self Assessment Summary.

USE LESS: Increase nutrient management efficiency by 25% or more

Fertilizer 101: The Basics Of Plant Growth

As you know, grass and other plants require nitrogen (N), phosphorus (P) and potassium (K) to support plant metabolism. Along with readily available carbon, oxygen and hydrogen, these three macronutrients provide the raw materials that the plant needs at a molecular level to grow and thrive. Plants also need secondary nutrients and micronutrients in very small amounts. The plant uses these elements—particularly nitrogen—to generate the amino acids necessary for protein synthesis. In nature, nitrogen, phosphorus and potassium can come from decayed plants; however, over time their levels in the soil can be depleted or unavailable. Addition of N-P-K to the soil through packaged fertilizers replenishes levels of these essential nutrients.

Metabolic Activity Matters More Than Microbe Counts

Adding microbes and their byproducts to the fertilizer can help increase the availability of the essential nutrients. Recent research shows, however, that the product's metabolic capacity, and not microbial counts, is the critical variable in enhancing fertilizer efficiency. (See Figure 1.) Products with a very broad metabolic profile can metabolize a wider range of food sources and nutrients, making them more available to the plant. As a result, there is greater nutrient uptake and the plant builds greater biomass—roots and shoots.

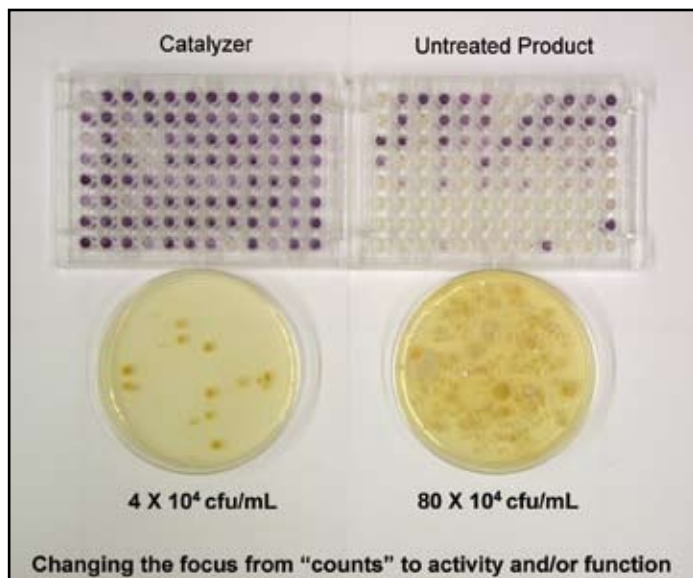


FIGURE 1: Metabolic activity of NutriLife has a greater impact on the plant's ability to form roots and shoots than does the microbial mass itself. Each dark circle indicates metabolism of a distinct, carbon-based food source.

Introducing A New Generation Of Fertilizer Catalysts

NutriLife® liquid fertilizer catalyst is carefully formulated to maximize metabolic activity. NutriLife is derived from a proprietary fermentation process that harvests naturally occurring, beneficial soil microbes along with their fermentation medium. Unlike conventional biological products, NutriLife is carefully formulated with a biochemical reaction and a stabilization process to aid in consistent performance, batch to batch and application to application. When added to fertilizer blends, NutriLife has been shown to enhance nutrient availability and plant uptake. In addition to this unique metabolic activity, NutriLife can also help break the chemical bonds that lock up nutrients in salt-contaminated soil. Figure 2 shows the results of soil analysis conducted by the Texas A&M extension service. In this case, the application of NutriLife helped reduce the level of total salt in the soil by more than 60 percent in the first year.

Soil analysis results on extremely salt-contaminated soil by Texas A&M University:

	Calcium	Magnesium	Potassium	Sodium	Total Salinity	Soluble Salts
SoilLife™	154 ppm	83 ppm	44 ppm	178 ppm	815 ppm	2.06 mmhos/cm
Alternate Treatment	493 ppm	284 ppm	94 ppm	494 ppm	2138 ppm	5.37 mmhos/cm

FIGURE 2: The technology in NutriLife catalyst has been shown to reduce total salinity and soluble salts, freeing up nutrients for plant use.

NutriLife Catalyzed Fertilizer Performs Better

Studies at top universities show that the catalyst technology used in NutriLife increases nutrient uptake by 25 percent or more. In one study conducted by the University of Florida, NutriLife increased nitrogen uptake in turfgrass by 75 percent! (See Figure 3.) In a study at Auburn University, researchers applied catalyzed 18-5-9 fertilizer to bentgrass at 4 pounds/1,000 square feet, and conventional 18-5-9 fertilizer at the same rate. The NutriLife fertilizer significantly out-performed the untreated fertilizer in all areas. Bentgrass treated with the NutriLife fertilizer had 37-percent greater average root diameter, 91-percent higher fresh root weight, and 105-percent higher fresh shoot weight. (See Figure 4.)



USE LESS: Increase nutrient management efficiency by 25% or more

With greater nutrition, grass is able to grow stronger and healthier. In turn, more and deeper roots further enable nutrient uptake. They also help the plant better survive conditions of environmental stress (see Figure 5), including in dry, compacted soils. This also means quicker grow-ins and renovations.

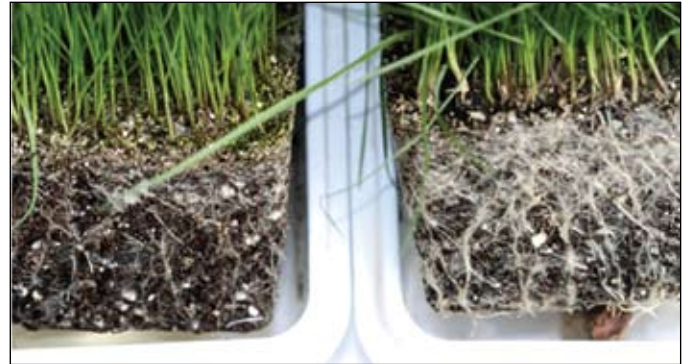


FIGURE 5: A study at Auburn University compared root growth in tall fescue. The samples treated with the NutriLife technology showed increased biomass, particularly in the roots, in less than four weeks.

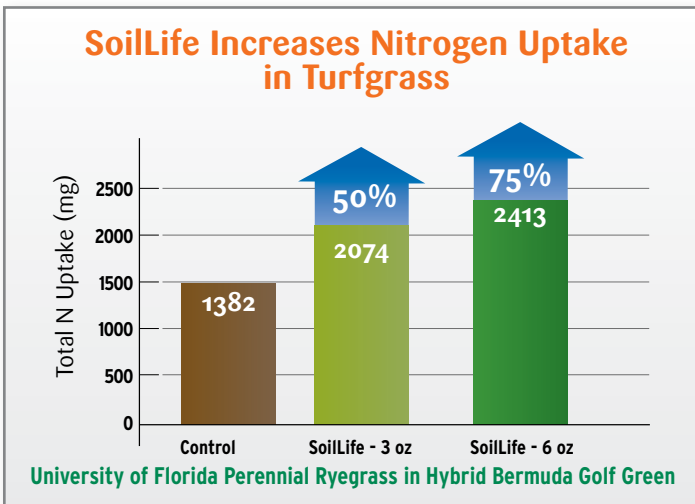


FIGURE 3: The technology in NutriLife significantly increases nutrient uptake.

More Effective Nutrient Management Means You Use Less Fertilizer

Greater efficiency translates to the potential to get the same, high quality turf results with lower rates of fertilizer. NutriLife enhanced fertilizers have been shown to be effective at up to 25 percent reductions—either through lower applied rate or a lower ratio of nutrients. For example, a study at Auburn University showed that NutriLife fertilizer with 80 percent nitrogen significantly outperformed untreated fertilizer with 100 percent nitrogen. Thirty-two days after transplant, plants in the NutriLife group were more than 30 percent larger. (See Figure 6.)

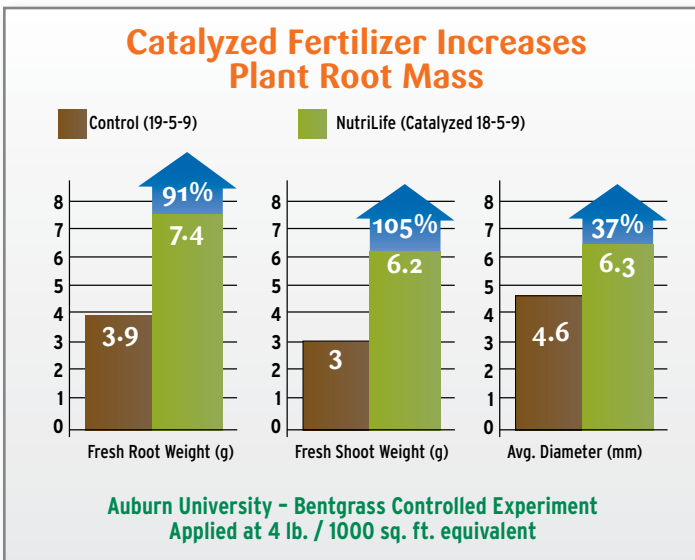


FIGURE 4: NutriLife fertilizer increases plant root mass.

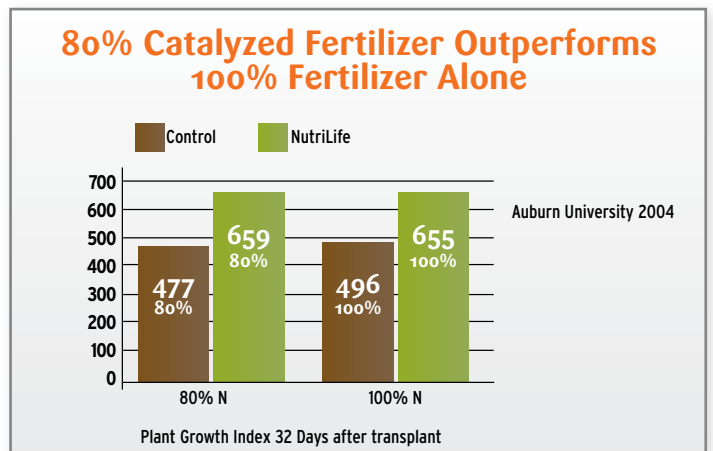


FIGURE 6: In a broccoli study that was conducted in the field at Auburn University's Sand Mountain Research Station, transplanted plants that were treated with 80-percent fertilizer containing the NutriLife fertilizer showed significantly better growth than plants treated with 100-percent fertilizer alone. You'll learn more about fertilizer reduction with the NutriLife fertilizer catalyst—and its economic benefits—in Lesson 2.

SPEND LESS: Cut Costs Significantly

No matter how you work it, NutriLife fertilizer catalyst helps save money

With today's high costs, increasing nutrient management efficiency is a key to improving fertilizer economics. Savings of 15 percent or greater are significant—especially for high-volume users. NutriLife® fertilizer catalyst offers two ways to save:

1) Lower applied rate: For example, say a user would ordinarily use a 30-0-10 fertilizer for fall maintenance applied at a rate of 4.0 pounds per 1,000 square feet. With NutriLife, the user can apply catalyzed 30-0-10 fertilizer at a rate of only 3.2 pounds per 1,000 square feet—using 20 percent less volume to cover the same area, or treating 25 percent more area with the same amount. This reduces the cost per treated area by 16 percent.

Let's look closer. If the user is applying fertilizer alone at 4 pounds per 1,000 square feet, or 174.2 pounds per acre, a ton of fertilizer treats 11.5 acres. If the user is applying fertilizer with NutriLife, he can apply it at a 20-percent lower rate of 3.2 pounds per 1,000 square feet, or 139.4 pounds per acre. One ton of the catalyzed fertilizer treats 14.4 acres—or 25 percent more than the fertilizer alone.

The bottom line is this: A user that was planning on using 250 tons of fertilizer alone, could switch to fertilizer with NutriLife and need only 200 tons – an average savings of 20% or more.

2) Lower ratio: As an alternative, it is possible to reduce the nutrient content and apply the product at the same rate—particularly for spring pre-emergence herbicide applications. For example, instead of applying conventional 30-0-10 fertilizer at 4.0 pounds per 1,000 square feet, it is possible to apply a catalyzed 22-0-8 fertilizer at the same rate to achieve the same results. This approach allows for a lower cost fertilizer while still allowing excellent coverage for the pre-emergent herbicide.

Either way, NutriLife fertilizer makes it possible to treat more area per ton of fertilizer at a lower cost. As always, the practice of soil sampling is recommended to better understand the exact needs of the areas to be treated.

Applicators Consistently See Real Savings

NutriLife fertilizer commands a premium price per ton—but since it can be applied at significantly lower rates, it still results in net savings for the applicator. (See Figure 7.)

NutriLife Certified Blenders Get The Competitive Edge

A number of high-quality blenders and lawn care operators are already seeing the economic advantages of offering NutriLife® catalyzed fertilizer products in order to maintain profit margins and deliver quality turf to customers. In the next lesson, you'll learn about some of the other advantages that NutriLife offers.

FERTILIZERS	Cost per Ton	Application Rate- lb/1000 sq ft	Amount Nitrogen	Cost per 1000 sq ft	Savings Per sq ft
30-0-10 50% Slow N	\$920.00	3.5	1.05	\$1.61	
30-0-10 50% Slow N with NutriLife	\$980.00	2.75	0.825	\$1.35	16.30%
46-0-0	\$1,000.00	2.5	1.15	\$1.25	
46-0-0 with NutriLife	\$1,060.00	2	0.92	\$1.06	15.20%
15-25-10 33% SCU	\$1,085.00	4	0.6	\$2.17	
15-25-10 33% SCU with NutriLife	\$1,150.00	3	0.45	\$1.73	20.51%

FIGURE 7: These figures show that, despite a higher cost per ton, catalyzed fertilizers deliver real bottom-line savings of up to 20 percent.

LEAVE LESS: Minimize Environmental Impact

Nutrilife® Fertilizer Catalyst Supports A Greener Approach To Growing Grass

Contrary to popular belief, you can get too much of a good thing, nutrients included. Although nitrogen and phosphate are critical to plant growth, these elements can create problems when excessive amounts leach into the soil or run off into groundwater. Regulators are restricting fertilizer use for this reason. Although requirements for nutrient application reductions vary from one state to another, most states seek to reduce the amount of nutrients that can be applied or can remain in the soil.

Using fertilizer treated with NutriLife can help reduce potentially negative environmental impacts in two ways:

1) Lower volume requirements: Fertilizers catalyzed with NutriLife can be applied at a significantly lower rate. Applicators use less fertilizer, so fewer nutrients are applied.

2) Greater plant uptake: Thanks to enhanced metabolic activity, NutriLife enables plants to absorb more nutrients from the NutriLife fertilizer than they can from untreated fertilizer. More nutrients remain in the root zone, so there is less runoff or “leaching”.

Studies Show That Nutrilife-Enhanced Fertilizers Can Be Kinder To The Environment

A study by Arise Research & Discovery, Inc. looked at leaching from fertilizer applications. Using catalyzed fertilizer reduced nitrates at 12-inch depths by 48 percent, and resulted in nitrate reductions of 57 percent at a depth of 30 inches. The study also showed a 37-percent decrease in phosphates in the soil. (See Figure 8.) Ultimately, use of NutriLife fertilizers can improve the soil condition.

Nitrate Leaching:

48% reduction in nitrates at the 12” depth
57% reduction in nitrates at the 30” depth

Phosphate Leaching:

37% decrease in phosphates

Arise Research & Discovery, Inc.



FIGURE 8: The unique catalyst technology used in NutriLife promotes more plant uptake and holds more nutrients in the root zone, reducing the likelihood of nitrates or phosphates leaching into the soil or groundwater.

Get More: Enjoy All the Benefits of a Better Fertilizer Product

NutriLife® fertilizer catalyst provides quality and cost-savings without compromise.

Very often, if you want to control costs, you need to sacrifice performance. The environmentally responsible product usually costs more and/or it doesn't work as well. With NutriLife fertilizer, you can have it all: significant cost savings, exceptional performance and a green approach.

NutriLife delivers more.

Pre-blending NutriLife fertilizer catalyst with liquid or dry fertilizers offers multiple benefits:

More control over fertilizer cost.

Whether applied at a lower rate or at a lower ratio, the bottom line is lower cost of Fertilizer per treated area.

More high-quality turf and ornamentals.

Fertilizers catalyzed with NutriLife have enhanced metabolic activity, which makes nutrients more available to the plant. As a result, plants have greater vigor and better mass. They're healthier, so they have more eye appeal.

More environmental responsibility.

Plants treated with catalyzed fertilizer leave less nutrients behind, so leaching and runoff can be reduced.

More satisfied customers—existing and new.

In an economy where everyone is cost conscious, the ability to reduce the applicator's costs—while still enjoying excellent performance—can give you a competitive edge.

Be ready for the season

To learn more about the advantages of using NutriLife fertilizers, or for specific bid information, call Nutrient Technology Partners at 610-594-9950 or log onto www.nutrienttechnologypartners.com to find the NutriLife Certified Blender near you.



FERTILIZER INNOVATION
thru TECHNOLOGY

Self Assessment Summary

All information must be complete for you to receive your gift.

Your name _____

Company name _____

Address _____

City _____

State _____ ZIP _____

Phone _____

Fax _____

E-mail _____

Profile

Blender Distributor Landscaper

Lawncare Operator Superintendent

Other _____

Approximate annual fertilizer volume (in tons)

Please complete the questionnaire below and return it to:
404 Newcomen Road, Suite 200
Exton, PA 19341

1. What factors are driving current fertilizer price increases?

- a) Natural gas
- b) Corn-based ethanol
- c) Offshore fertilizer demand
- d) All of the above

2. In addition to carbon, oxygen and nitrogen, what elements are necessary for plant growth?

- a) Nitrogen (N)
- b) Phosphorus (P)
- c) Potassium (K)
- d) All of the above

3. What is the primary driver of fertilizer efficiency?

- a) Metabolic activity
- b) Microbial count
- c) Nitrogen
- d) Photosynthesis

4. NutriLife® fertilizer catalyst is different from biological catalysts because it...

- a) Costs less
- b) Undergoes a biochemical reaction
- c) Contains no microbes
- d) Contains more microbes

5. NutriLife improves plant vigor because it...

- a) Is better for the environment
- b) Includes a stabilizer for consistent performance
- c) Makes nutrients more available for plant uptake
- d) Contains microbes

6. NutriLife can save applicators money because they can...

- a) Apply it at lower rates
- b) Apply it at lower ratios
- c) Buy it for less money
- d) a and b but not c

7. If the applicator has been applying uncatalyzed fertilizer at a rate of 4 lbs/1000 sq. ft., fertilizer at the same ratio with NutriLife can be applied at what rate?

- a) 1.2 lbs./1000 sq. ft.
- b) 3.2 lbs./1000 sq. ft.
- c) 4.2 lbs./1000 sq. ft.
- d) 6.2 lbs./1000 sq. ft.

8. For an applicator using fertilizer catalyzed with NutriLife, average savings per treated area are...

- a) 2% Savings
- b) 20% Savings
- c) 200% Savings

9. Why is reducing the potential for nutrient runoff important?

- a) Nutrient application reductions are environmentally responsible.
- b) Nutrient application reductions are required in many states.
- c) Nutrient applications can contaminate soil and groundwater
- d) All of the above

10. How does NutriLife help minimize potential nutrient leachate and runoff?

- a) Lower volume of applied nutrients
- b) Greater plant uptake
- c) Both a and b
- d) Neither a nor b



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