

In side by side strips treated with **Nutrilease** vs. untreated for 8 years, soil test data proves **Nutrilease** impact on nutrient availability. Multiple soil samples are from treated areas on either side of the untreated checks. Results are averaged.

Fall 2010 soil test data:

lbs/ac of:	untreated	treated	% increase
P <sub>2</sub> O <sub>5</sub>	117	134.5	15%
K <sub>2</sub> O	545	651	19%
Ca	7392	8065	9%
S	212	225	6%
Zn	3.25	4.15	28%

**Summary:** By stimulating the activity of existing microbes, **Nutrilease** enhances the biological processes occurring in the soil. This speeds up the composting process and results in a more aerated soil that holds more moisture and releases more nutrients.



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Photos Courtesy: Dr. Jill Clapperton



# Soil



## Our Greatest Asset



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### Importance of Soil Microbes

When plants emerge and begin to develop a root system, they must first form *mycorrhiza* (fungal growth) on the outside of the roots. These are fungi that attach to and feed the roots. Their presence improves the plants' efficiency of nutrients and water uptake. Also, certain enzymes produced by bacteria must be present for nutrients to be converted to available forms that the plant can utilize. A simple example: the conversion of urea to ammonia requires an enzyme called *urease*. Without urease, our applied nitrogen would NEVER become available to our crops. All nutrients and micronutrients have a specific enzyme that must be present for the metabolism of that nutrient.



Microbes *living* in our soils are necessary to digest and breakdown old plant residue, add oxygen to our soils, im-

prove aeration, thus reducing compaction and increasing the water holding capacity of our soils. Without microbes, plants might live, but they will not thrive. A healthy soil is critical to healthy plant life and production. Take microbes out of our soils and what we have is “Dead Dirt” that will not grow much!



**T**hink of a 50 year old acorn tree in the forest. Plant matter that falls from the tree annually, breaks down and composts into mulch. This mulch becomes organic matter & then humus, which releases nutrients, improves moisture, feeds the bacteria and fungi in this soil and fertilizes the tree. These bacteria also produce the enzymes necessary for the tree to continue to take in available nutrients. So in essence, this cycle of reprocessing nutrients from organic compost feeds the tree. This *Soil Cycle* keeps it going through droughts, storms, extreme winters, insect attacks and disease for many years. However, when we cultivate fields for agriculture, we break that cycle and slow the process of composting. Tillage, herbicides, insecticides, fungicides and even fertilization, are practices that chronically hurt the growth of these microbes that are so necessary for good soil health. Low numbers of microbes result in tight, compacted, poorly aerated soils and poor residue digestion. The result is lower water retention, less oxygen, less nutrient availability and reduced yields.

Even though bacteria are some 80% of the composting process, all soil microbes play some role in the composting and resulting soil aeration process that is so necessary to maintaining healthy plant life.

**Nitrogen:** Composting requires a certain amount of nitrogen in the initial stages or it will be a very slow process. Some experts say the requirement is some 30 units of nitrogen per acre. In some row-crop situations there may be enough nitrogen for this process. A good example would be 30 to 40 units of residual nitrogen from a high yield-



ing legume crop. However, it is more likely that there is not enough nitrogen to ‘kickstart’ this composting process. *It is important to remember that when we enhance composting, we increase our need for nitrogen. However, later in the composting process, additional nitrogen is released and available for plant growth.*



**What is *Nutrilease*?** It is a low analysis micro-nutrient solution, which contains a proprietary blend of specific *amino acids, vitamins, and enzymes* that, under normal circumstances, must be produced by the microbes in your soils. The enzymes breakdown crop residue, while the amino acids and vitamins enhance microbial activity. The small amount of sulfate-based micronutrients present in this formula, assure healthy and sustained growth of your microbes. While in some cases, there may be enough nitrogen remaining in the soil to aid the composting process, additional nitrogen applied with DeltAg’s ***Nutrilease*** has been beneficial.

***Nutrilease***, is designed to enhance the activity and growth of these soil microorganisms. **It does not add bacteria to your soils!** The foundation of the ***DeltAg*** approach is to take advantage of the concept of “**Survival of the Fittest**”, by stimulating the metabolic processes, hence numbers, of the microorganisms that have **already survived** all our cultural practices. *To enhance microbial activity is actually to increase their numbers, not their size or growth.*

### ***NutrileaseRC Impacts the Soil in Three Ways:***

- 1. Chemically** with needed sulfate based micronutrients for microbial growth.
- 2. Biologically** with the ***DeltAg*** amino acids, vitamins and enzymes to enhance microbial activity.
- 3. Physically** with a natural plant extract that functions as a wetting agent to enhance penetration of these catalysts.

**This enhanced microbial activity is what creates the long term benefits of a healthier soil.....*Nutrilease*!**