

AgriEnergy Resources



An important starter fertilizer choice for 2006

4-21-4

- ❑ **Premium performance** at a reasonable price. Compare the price to clear liquids; compare the performance to any other product.
- ❑ **Has potassium.** A little bit of potassium as a starter can increase yields even on soils testing high in K. Important especially with cool soil temps.
- ❑ **Contains no chlorides**, making it safer for seedlings.
- ❑ **Lower salt index** than 10-34-0 or chloride-containing fertilizers. It's even lower in salt index than most clear liquid fertilizers.
- ❑ 50/50 poly ortho blend
- ❑ Contains a greater proportion of ortho than 10-34-0, so it's more available at cool soil temperatures.
- ❑ Can mix with nitrogen, sulfur and trace elements.
- ❑ Has a pH of 5.5; slightly acid for better P availability.
- ❑ Buffered with several carbons to prevent soil tie-up of P.
- ❑ Creating an acid band is critical on high pH soils.

2005 PREPAYMENT SCHEDULE

When we receive your prepayment on or before: We'll credit your account with an additional:

Dec. 15, 20056%
Jan. 14, 20065%
Feb. 15, 20063%
Mar. 15, 20062%

Example: We receive your check for \$1,000 on Dec. 15, 2005:

We credit the check amount to your account \$1,000
 Plus, we credit your account with an additional 6% of the check amount. . . . +\$60
 Total credit to you \$1,060

NOTE: Money received will be applied first to any outstanding accounts receivable balance and then to prepay your account.

Research confirms: "biological buffering" restrains weeds

Our fall newsletter reported research by Dr. Larry Phelan which showed that crops on biologically "live" soils generally have lower insect pressure. His field trials at the Ohio Agricultural Research and Development Center (OARDC) also verify what Renewable Farming enthusiasts have long observed: A soil rich with biologically active carbon — "organic matter" — typically has lower broadleaf weed pressure.

The ratio considered favorable for crops is 25 units of carbon to 1 unit of nitrogen. In one weed-infested field, Phelan modified the carbon:nitrogen ratio in randomly assigned checkerboard plots 10 feet square. By adding sugar, sawdust and straw, some plots were adjusted to 25:1, some 50:1, and still others to an extreme 75:1. For contrast, Phelan reduced the C:N ratio in some plots by adding a nitrogen source — composted chicken manure.

Results: As carbon levels and resulting biological activity rose, infestation with broadleaf weeds was reduced as much as 75%. Reduction in grass pressure wasn't as pronounced. "This is consistent with our studies on organically managed farms," said Phelan. "Most of the weed problems on those organic farms are with grasses, while conventionally fertilized farms in our area have most of their weed pressure from broadleaves."

We've had a near-ideal fall for Residue effectiveness!

Producers who took advantage of early harvest and applied Residue immediately enjoyed an unusual benefit this fall: Remarkably warm days in October and early November. That stimulated soil biological activity. In early November, soil temperatures were 5 to 7 degrees warmer than normal. Converting more raw crop residue to humus will help capture and hold more moisture this fall and next spring. That'll be essential to help make up for the 30% below-normal precipitation in much of the Midwest during March through November. Soils that capture and hold more moisture can help carry crops through dry weather like we saw in summer 2005.

Look for AgriEnergy Resources at these winter shows and meetings!

Event	Date	Location
Great Lakes Expo	Dec. 6-8, 2005	Grand Rapids, MI
ACRES USA Conference	Dec. 8-10, 2005	Indianapolis, IN
Illinois Organic Conference	Jan. 11-12, 2006	Bloomington, IL
Ohio Fruit & Vegetable Congress	Jan. 16-18, 2006	Columbus, OH
Barenbrug Meetings	Jan. 20-21, 2006	Ohio (locations TBA)
Minnesota Organic Conference	Jan. 20-21, 2006	St. Cloud, MN
Indiana Horticultural Conference	Jan. 23-25, 2006	Indianapolis, IN
Minnesota Grazing Conference	Jan. 24-25, 2006	Mankato, MN
Texas Conf. on Organic Production Systems	Jan. 25-27, 2006	Kerrville, TX
Colorado Grain and Potato Conference	Jan. 31-Feb. 3, 2006	Monte Vista, CO
Northern Indiana Grazing Conference	Feb. 3, 2006	Shipshewana, IN
AgriEnergy Resources Winter Seminar	Feb. 7-8, 2006	Annawan, IL
Wisconsin Grazing Conference	Feb. 9-11, 2006	Stevens Point, WI
Northern Plains Sustainable Ag Conference	Feb. 10-11, 2006	Fargo, ND
Kansas Sustainable Ag Roundup	Feb. 20-21, 2006	Manhattan, KS
Upper Midwest Organic Conference	Feb. 23-25, 2006	La Crosse, WI
Nebraska Sustainable Ag Conference	Feb. 26, 2006	Aurora, NE
Michigan Organic Conference	Mar. 4, 2006	East Lansing, MI

Strategies for coping with climbing costs in 2006

The University of Illinois projects the variable costs for growing a corn crop in 2006 to rise to \$221 an acre.

That's a 33% increase since the 2002 crop! These figures are based on the Illinois Farm Business Farm Management records kept by the state's farmers.

The costs include fertilizer, pesticides, seed, drying, storage, machinery fuel, repairs and machine hire.

Fertilizer, the biggest culprit in the surge of escalating costs, is projected to rise nearly 52% over 2002 levels. Nitrogen prices, which are closely connected to energy prices, are leading the increase within the fertilizer segment.

The good news is that a healthy soil with a good balance of beneficial living organisms requires less applied nitrogen to grow a bushel of corn or other nitrogen using crops.

Research through more than a decade by AgriEnergy Resources, plus the experience of our customers, has demonstrated this many times.

Even in the dry, high-stress 2005 season, the AgriEnergy Resources farm produced corn yields over 200 bu. per acre on test plots with *less than 10 lbs. of applied nitrogen*.

On most of our fields, we usually apply 130 lbs. of nitrogen per acre for corn after corn. That's a lower rate than many farmers use, yet most of our farm had yields above 225 bu. per acre this year. This is common, not a 1-year anomaly.

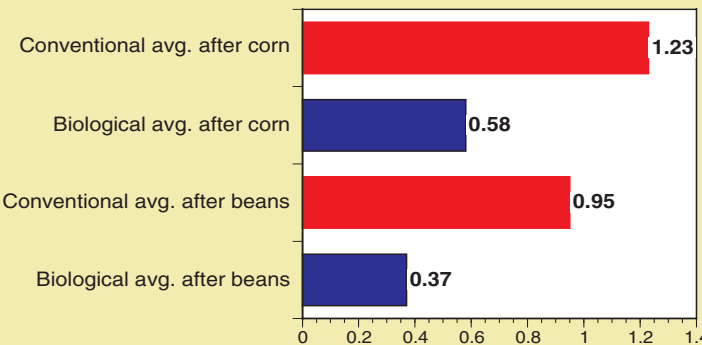
The following chart is a summary of our nitrogen rate studies conducted over a nine-year period for corn grown on a biological program compared with University of Illinois yield studies under conventional fertility programs.

This research shows that using a biological approach to enhance nutrient recycling reduced the applied nitrogen requirement by as much as 100 lbs. per acre.

That could save as much as \$40 per acre at today's nitrogen prices!

Pounds of N required per bushel of corn yield

Data for biological yields are from several years' trials at AgriEnergy Resources. Data for conventional corn is from University of Illinois multi-year evaluations.



However, that amount of savings won't be achieved in the first year of a switch to biological farming. Soil life and health has to be nurtured over a period of time to reach this point.

There are several things you can do in 2006 to help you shave nitrogen rates by 15% to 25% while maintaining yields. These include:

1. Use good residue management, including our Residue, to recycle crop nutrients.
2. Use biological products, such as Bio C and SP-1, that support soil health and include nitrogen fixing organisms.
3. Split applications of nitrogen.
4. Apply nitrogen closer to the time when the crop needs it.
5. Utilize a pre-sidedress nitrate nitrogen test to determine how much nitrogen is actually needed at that point.
6. Anchor nitrogen with Ammonium Thio-Sulfate and carbons such as humic acid and sugars.
7. Foliar feeding.

Nutrient cycling with microbes helps stretch your other fertility dollars as well. Nutrient cycling can provide phosphorus, potassium and trace elements all season long.

Another concept that deserves serious attention: banding nutrients.

For example, applying liquid phosphorus with the planter gives you an advantage with the proper timing, form and placement of fertilizer. The proper time is close to when the plant needs it.

For corn, it's critical to get phosphorus uptake in the plant prior to the 6-8 leaf stage. This is when the plant determines the number of kernel rows. It also allows you to use products that contain more orthophosphate, which is more available in cool soils. By placing it in a band near the seed, it's in close proximity to the young seedling roots. Banded

fertilizer is less subject to being fixed or tied up by the soil, leaving more nutrients available for crop uptake.

Adding Humic and/or Fulvic Acid to the liquid fertilizer further enhances uptake of nutrients. Adding SP-1 improves nutrient uptake and buffers the fertilizer band by improving soil biology.

We've observed the same thing by banding potassium. Banding liquid potassium on soils deficient in potassium has resulted in top yielding crops. This becomes more important with today's high potassium prices.

Building soils to the desired level is the ideal approach. But using all liquids can allow you to grow top yielding crops on a tight budget.

In some tests, banding has raised soil test levels faster than broadcasting. Banding liquid potassium can result in better yields at a lower cost than broadcasting 0-0-60.

The key to making fertilizers perform where soil test values are low is a "Systems Approach."

That means good residue management, adding the proper biology and food sources and putting them in a good home — and providing a smorgasbord of crop nutrients, even if at low levels.

Contact your AgriEnergy Representative to see how the AgriEnergy Resources approach can save you fertilizer dollars while growing top yields in an economical and environmentally friendly way. You can improve your soils in the process.

Let us show you how you can improve your net profit in 2006!

Here's a summary of AgriEnergy microbial products for 2006

AgriEnergy's 2006 product lineup provides liquid and dry microbial products that can accommodate every producer's needs.

All of these products are formulated to supply your soil with a broad spectrum of soil microbial species that aid in nutrient cycling. These products are user-friendly and easy to apply.

They're available for conventional and organic production.

SP-1 (liquid)

Every crop can benefit from the broad diversity of beneficial microbes in this product. Formulated for both soil and foliar application.

MST (dry)

MYCO SEED TREAT (MST) for 2006 is a new formulation.

It's applied to the seed prior to planting to enhance yield benefits by colonizing microbes on roots early in the growing season.

MST is a diverse blend of bacteria, fungi and actinomycetes, plus both

endo and ecto mycorrhizal fungi which colonize the roots and aid in making nutrients available to the growing plant.

The 2006 MST product has been reformulated to include trace amounts of micronutrients to satisfy a wider range of microbial needs.

This product can be applied to treated seeds and should be included when Rhizobium legume inoculants are being applied.

Bio-Aid (dry)

This is a new product introduced for 2006. It's a great way to apply a diverse microbial package along with any dry fertilizer application.

This could also be tank-mixed with any spray application, as long as there is good agitation to maintain a suspension.

Residue

Available in liquid and dry formulations for fall and early spring application.

A biological and nutrient package

formulated to aid in the breakdown of crop residue.

Myco Bio Boost (pelleted)

Give your garden, lawn, trees or any horticultural crop the added advantage of a complete fertilizer and microbial blend in an easy-to-spread package.

Root Lock (dry)

Inoculate the roots of transplants with beneficial endo and ecto mycorrhizal fungi and root colonizing bacteria to help the plant adapt to its new environment.

A dry blend of beneficial root colonizing microbes, when mixed with water or SP-1, forms a slurry that adheres to the transplant roots.

Contact an AgriEnergy Representative or local dealer for more information on how to get the most out of your fertility inputs by using microbial products to enhance nutrient cycling and availability during the 2006 crop year!

For organic growers: A new nitrogen fertilizer from AgriEnergy Resources

ORGANIC TEN, a new product from AgriEnergy Resources, is a 10-0-0 liquid fertilizer that is compliant with USDA's National Organic Program standard (NOP).

(For details on NOP criteria, visit <http://www.ams.usda.gov/nop/indexNet.htm>)

It's designed to be a nitrogen supplement to organic crop production. Because of ORGANIC TEN's form and its high availability, it can greatly enhance organic cropping systems.

It can even enhance systems where strong levels of nitrogen already exist from manuring or green manuring.

The top ten reasons for using ORGANIC TEN are:

1. To supply nitrogen early in the season, before fertility from manures is readily available to crops.

2. For improved growth of acid loving plants which prefer the form of nitrogen supplied by ORGANIC TEN.

3. To acidify neutral or calcareous soils and increase the availability of other nutrients.

4. To give your crop a stimulus at any time in the season, without creating excessive vegetative growth.

5. To set more blooms during reproduction.

6. For improved root uptake of nitrogen during reproduction. This is a growth stage when ORGANIC TEN is more easily absorbed than other forms of nitrogen.

7. To improve corn kernel set, especially if your corn hybrid has a history of aborting kernels.

8. Supplies good levels of organic carbon in a form which can enhance nutrient cycling.



9. To accelerate early alfalfa growth, as well as improving regrowth after cutting without retarding nodulation.

10. Offers a profitable, practical, and environmentally friendly source of nitrogen when needed most.

ORGANIC TEN can be applied in any way that liquid nutrients are normally applied, with the exception of placing it directly on the seed.

Typical rates for broadcast or band applications are 4 to 12 gal. per acre. For foliar applications, apply 0.5 to 1 gal. mixed with at least an equal amount of water.



AgriEnergy Resources

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An “inside story” of how we’re improving bio-products with research

One of our most cost-effective products is Myco Seed Treat, a planter box treatment which helps colonize the seedling root zone with mycorrhizal fungi and beneficial bacteria.

The added fungi and other organisms enhance the young crop’s ability to extract nutrients from the soil in critical early stages of growth. When a germinating crop first sends out roots, it begins a complex interaction between the roots and surrounding organisms.

About a year ago, AgriEnergy Resources Microbiologist Kathleen Draper envisioned a way to enhance MST by including small amounts of micronutrients which a seed requires just after germination.

Testing various formulations of enhanced MST in our greenhouse for the past year showed very positive results in replicated trials with a variety of crops. The enhanced Myco Seed Treat formulation will be available for 2006.

MST provides a beneficial blend of mycorrhizal fungi, bacteria and micronutrients for many different crops. (Some crops do best with ecto-mycorrhizae and others do best with endo-mycorrhizae.)

Adding small, non-toxic levels of trace elements in MST insures that this synergistic interaction of enzymes, sugars and other life processes have access to the trace elements they need.

Plant roots which aren’t colonized with mycorrhizal fungi have a nutrient exchange area — the rhizosphere — which extends up to one millimeter from the cells of the root hair.

However, if a new root is colonized with mycorrhizal fungi, the soil-plant exchange area reaches out about 15 millimeters from the root — offering a greatly expanded area for nutrient uptake.

The Myco Seed Treat contains mycorrhizal fungus spores and “propagules” which quickly develop in the soil and send out tendrils called hyphae, which are large enough to see without a microscope. The hyphae weave an interconnecting web, and extend smaller threads called mycelium.

USDA’s Ag Research Service is increasing its research into mycorrhizal fungi, and reported at a special conference this summer that these organisms can:

1. Enhance the crop’s interaction with soil nutrients and water.
2. Enhance photosynthesis through increased leaf surface area.
3. Encourage colonization of beneficial bacteria.
4. Mycelium form a sticky network which helps stabilize soil aggregates against erosion and compaction. The fungi contain a substance which Agricultural Research

Service scientists call glomalin. It contains various sugars and polysaccharides which literally glue soil crumbs into loose aggregates. That’s the ideal structure for soil life.

ARS researchers say that in a living soil, 25% to 50% of total soil carbon can occur in the form of glomalin, which is produced only by mycorrhizal fungi.

Glomalin is normally very stable in soils, but does break down in acidic soils.

ARS scientists have found that even if only 20% of crop roots are colonized by mycorrhizal fungi, crops can benefit significantly.

Light tillage, such as cultivation when there’s some moisture in the soil, can “seed” mycorrhizae by spreading it through the soil profile. Thus, light tillage in the fall to incorporate crop residue tends to broadcast these organisms.

Mycorrhizal fungi are especially effective in bringing phosphorus and other nutrients into the plant. The tiny mycelium become extensions of the roots and are able to access soil nutrients that would otherwise be unavailable to the plant.

ARS scientists are finding that established webs of mycorrhizal fungi can tolerate applications of chemical fertilizers and survive foliar-applied fungicides. However, they’re badly damaged by fumigants intended to kill all soil fungi.