

AgriEnergy Resources



Mark Aug. 16 and Aug. 25 for these exciting meetings!

We're preparing another excellent set of summer seminars and field days to bring you the latest, most profitable Renewable Farming research and information:

Aug. 16, 2005 — *AgriEnergy Resources Seminar* at Princeton, IL. We're assembling a full array of informative speakers, along with a tour of the AgriEnergy Resources Research Farm and Laboratories.

Watch your mail in a few weeks for a flyer with a detailed schedule and list of presentations.

Aug. 25, 2005 — *Wisconsin Field Day* based at the Fresh Country Aire Banquet Hall in Stratford, WI.

The morning meeting runs from 9:30 a.m. to 12:30 p.m., followed by a lunch at the Country Aire.

Field visits to see actual examples of pastures and row crops run from 1:45 p.m. to 3:00 p.m.

Your field day speakers include crop consultant Reggie Destree and AgriEnergy Resources agronomists.

To be announced — Watch your mail and our website for news of a summer field day in either *western Ohio* or *eastern Indiana*.

If you've never attended one of these seminars or field days, it's a great way to get connected with other knowledgeable producers with many years of experience in building their soil productivity with biologically friendly fertility systems.

And the fact that these very knowledgeable growers regularly return to these meetings indicates we all still have a lot to learn!

Foliar fertilization — an important link for healthy crops

Today's farming environment requires getting the most out of each acre, maximizing inputs, and lowering production costs per unit. The question becomes: *What can you do to maintain your top yield potential?* Every season, crops are threatened by insects and disease. This year's new threat is Asian Rust.

The best defense against disease is a healthy plant. Maintaining a high nutrient status helps to ensure plant health. This can be measured in the field by checking plant sap, conductivity, and brix levels. It can be measured in the lab by analyzing tissue or petiole samples. If the plant sap pH is less than 6.4, the plant is lacking cations such as calcium, magnesium, and potassium. If the sap pH is greater than 6.4, it's lacking anions such as nitrates, sulfates, and phosphorus. Supplying proper nutrients will help the plant maintain its pH balance. This will make the plant less attractive to both disease and insects.

Foliar feeding nutrients is one way of improving crop yield and quality. Foliar applications can be timed before or during key stages in crop development or nutrient demand by the crop. This can help the plants overcome the "hidden hunger" where nutrient availability falls short of crop demand for top performance.

One of those key times is just prior to fruit initiation. Another peak nutrient demand is in the early flowering stage. Plants often run out of energy to maintain all the blooms or kernels they have initiated. Too often, many of the blooms fall off or kernels slough off in the early stages of development.

Supplemental nutrition can help the plant hang on to more flowers or kernels and keep pushing for increased yields. Placement of the nutrients on the leaf surface where there is rapid absorption is another reason foliar applications can be effective. By stimulating the plant in this way, new root growth is encouraged, which in turn enables the plant to obtain more nutrients from the soil. Foliar application of nutrients is a way to overcome the lack of availability of certain nutrients from the soil during critical times of crop development. Those extra nutrients in the plant can be translated into extra bushels and quality at harvest time.

Foliar programs are available for organic and non-organic growers looking to increase yields. Include high quality biological products, such as SP-1, in your foliar program. This will increase the overall effectiveness of your foliar applications. Foliar nutrients can be sprayed as tank mixes with herbicides or fungicides.

Products and rates used depend on the crop being grown, timing and number of applications. You need optimum production to be profitable. High yields themselves are a stress on the plant. Foliar applications can help relieve the stress and bridge the fertility gap on the road to higher yields.



How to raise high-nutrition forages — naturally

Whether your goal is alfalfa for market, milk from dairy, or beef from grass, the renewable fertility approach results in more productive, higher quality pastures and forages.

Just because the grass may be greener on the other side of the fence doesn't always mean it is better for your livestock!

A little commercial fertilizer and a big dose of nitrogen can make it look green, but is it good, high-quality feed? *No!*

It can even show high protein. Since protein is measured by nitrogen content, it may not be a true protein that livestock can utilize.

Can we affect the feed value of grain and forages? Yes, we can! We need to gear our thinking towards *building livestock nutrition from the soil up*. Over time we can build a more sustainable operation.

Beneficial biological organisms are also essential in this system to

achieve efficient and complete nutrient cycling. Where beneficial environments exist, the forage will have high palatability, high sugar levels, complete proteins, and the proper balanced nutrition for top livestock production.

It has been our experience that the conventional approach can give you quantity, but not necessarily quality in your grass, hay, and grain.

AgriEnergy's renewable system can mean both quantity and quality crops. This translates into high production and a healthy bottom line.

The best way to start is with a complete soil analysis. Using these soil tests, we can prioritize your budget to supply what your soil needs. A soil that contains 25% water, 25% air, 5% humus, and 45% mineral is ideal. Initially, we may need to mechanically aerate while addressing our major building blocks, secondary nutrients, and trace minerals.

Key Elements: Nitrogen, Phosphorus, Potassium, Calcium, Magnesium, Carbon, Sulfur, and Sodium.

Trace Minerals: Boron, Copper, Manganese, Iron, Zinc, Cobalt, Molybdenum, and Selenium.

Next, make sure soil life is flourishing and the decomposition cycle is working.

This can be aided with SP-1, Fish, Myco Seed Treat, Bio-C, M-Carb, Residue, and other products which build both the quantity and diversity of beneficial soil life.

To keep crop energy levels high and the soil life active, it is beneficial to use several liquid applications over the growing season.

This approach to complete, renewable, soil fertility results in productive, high quality pastures, forages, and crops.

After the spring rush, take a breather . . . and start planning for better crops next year

With your 2005 crop in the ground, it's time to start thinking about the 2006 crop.

Actual work and investment in the 2006 crop doesn't begin next spring; it begins this fall as soon as the current crop is harvested.

Apart from weather, the single biggest effect on the yield and quality of next year's crop is how soils are treated this fall.

Many factors go into deciding what's done in the fall.

First, what crop is to be planted next year, and in what condition should the field be left over winter?

Beyond that there are considerations for erosion control, cash flow management, soil moisture, soil temperature, labor scheduling and countless others.

Yet in the midst of all those factors remember one very valuable tool in your toolbox. AgriEnergy's RESIDUCE. RESIDUCE fits in nicely where enough time and moisture

is left in the season to accelerate the breakdown of residues.

But how does a person know if a quicker, more thorough breakdown of residues will be beneficial to their operation?

Answer by asking yourself several questions:

- ✓ Would a better seedbed increase yields?
- ✓ Am I tired of fighting cornstalks in the spring? Especially corn on corn or Bt fields.
- ✓ Am I following alfalfa with potatoes or beets (or other deep-rooted crops)? Would I like the alfalfa roots to break down quicker?
- ✓ Have I lost yield because of herbicide carryover?
- ✓ Do I want my organic N flush to occur earlier?
- ✓ Would I like to add bio-diversity to my soils? Is the Fall my only opportunity for doing so?

There are many more reasons why RESIDUCE might belong on your farm. We have several forms of RESIDUCE - RESIDUCE Liquid, RESIDUCE Plus, or RESIDUCE DF.

Give us a call to determine which form of RESIDUCE would be most practical and profitable for you.



The rows on the right side of the red line were treated with Residue in early fall before these soybeans were planted. Most of the previous year's cornstalks had been digested, making more nutrients available to soybeans during their rapid growth and pod setting stage. When the cultivator hit these treated rows, most of the remaining fragile stalks disintegrated. Untreated rows left of the red line still have much of last year's raw stalks intact.

Natural crop vitality helps defend against Asian Rust

A primary Renewable Farming principle of battling Asian Rust or any other pathogen is this: The healthiest crop has the strongest natural defenses.

That means the crop must have excellent fertility to minimize stress, especially during the heavy nutrient demand period between early flowering through pod fill.

In a recent study reported on the Potash and Phosphate Institute website, researchers said: "Potassium deficiency symptoms such as thin cell walls, weakened stalks and smaller and shorter roots, accumulation of sugar in the leaves and accumulation of unused nitrogen encourage disease infection."

A field experiment on Asian Rust of soybeans in the Philippines showed rust resistance and yields rose when soybeans were fertilized with phosphorus and potassium. In plots with 27-60-32 lbs. per acre as N + P₂O₅ + K₂O, yields averaged 22.1 bu. per acre compared to 15.5 bu. where no added fertility was used.

Other studies have shown that plant tissue vulnerable to fungal, viral and bacterial organisms are usually low in manganese.

One indication of rust's affinity for stressed soybeans: Infestation often shows up earliest in lower leaves of crops deficient in nutrients.

The plant depletes minerals and other nutrients from lower leaves to support pod fill and upper leaves. Rust spores colonize under the canopy in a warm, damp environment loaded with weakened plant cells. This area of the plant is also the hardest to treat effectively with fungicide sprays, especially in drilled or split-row soybeans.

As AgriEnergy Resources agronomists have maintained, calcium is the "king" of nutrients for building strong plant cell walls and other plant defense mechanisms which resist disease attacks.

However, uptake of calcium depends on availability of micronutrients such as silica and boron.

Crop consultant Phil Wheeler, a

longtime advocate of biologically sound agriculture, says lack of silica and boron is worsened by excessive rates of soluble nitrogen fertilizers.

He maintains that other chemicals which destroy beneficial soil organisms also diminish the crop's natural resistance to rust pathogens. In the June 2005 issue of ACREs U.S.A., Wheeler writes that an AgriEnergy Resources biological product, SP-1, "has also shown excellent response" in adding and multiplying populations of beneficial soil organisms.

Wheeler is head of Crop Services International at Grand Rapids, MI.

If your soils are already rich in beneficial microbes and fungus such as mycorrhizae, you're less likely to have a lack of silica available to plants because these organisms produce acids which convert silica into an available form for the plant.

Building your basic fertility and soil biological life is a long-term defense against Asian Rust and other pathogens. It calls for well-managed fertility protocols:

1. Test soils thoroughly and ask our lab for a complete report including micronutrients.

2. Work out a long-term fertility building strategy which recycles the maximum amount of carbon and other nutrients from crop stover, as well as adding biologically benign plant foods.

3. During the crop year, analyze growing crop tissue according to our petiole sampling procedures so you have an ongoing track record of your overall plant health.

Also, consultant Bruce Tanio advises checking the pH of your plant sap during the growing season. If it's below 6.4, the crop may be more vulnerable to fungal disease.

Inexpensive instruments are available to check pH of crops as you scout your fields.

4. Foliar feed as needed to offset the most pronounced deficiencies.

Meanwhile, Midwest soybean growers are watching for any advance of Asian Rust out of the southern states.

You can get regular updates on migration of rust this season, plus other valuable information, from several websites such as:

www.SoyRap.com — a joint effort of the American Soybean Association, Doane Agriculture Service, Syngenta and other firms.

www.AgWeb.com — a special sponsored section offers real-time rust updates.

www.sbrusa.net — a special site maintained by USDA which shows

maps of scouting sites and confirmed outbreaks. As we go to press, four counties in Florida have confirmed overwintering rust on kudzu. Seminole County, Georgia, is the only county with formally reported rust on soybeans.

In Brazil, farmers usually retain a professional agronomic

consultant to help them battle rust — primarily by using fungicides. These fungicides may add about 15% to the total cost of growing a typical soybean crop in Brazil.

Brazil's government and agribusiness firms maintain more than 100 trained Asian Rust scouts, who regularly check more than 1,300 early-warning fields.

Many AgriEnergy Resources clients are organic growers or are transitioning parts of their farms to organic production.

Standard fungicides aren't available to them, but one company, AgraQuest Inc., has received Section 3 registration for two OMRI-approved fungicides, named Ballad and Serenade MAX.





AgriEnergy Resources

This letter is brought to you by your
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Using lab tests to maximize summer fertility dollars

In this age of rising NPK costs, more growers are utilizing lab analysis to make the most efficient use of each sidedress and foliar dollar.

At AgriEnergy Resources, we offer several ways to fine-tune your summer applications:

1. Pre-Sidedress Nitrogen Test (PSNT)

The high cost of N this season can make this simple test a big dollar-saver when determining how much nitrogen to apply to a corn crop.

Pulling a soil sample when the corn is 6-12" inches in height can indicate how much nitrate N is present in the soil.

Then sidedress rates can be adjusted accordingly. Iowa State University uses 21ppm (42 lbs/a) as the point above which no additional N is needed.

While this is no guarantee that a little more won't help yields, the results can be used to prioritize where to put more or less N, to be most efficient.

2. The Ammonia N test and the N Mineralization test.

These two separate tests will indicate how much nitrogen is held in reserve to become available later in the season.

In addition, a complete soil test

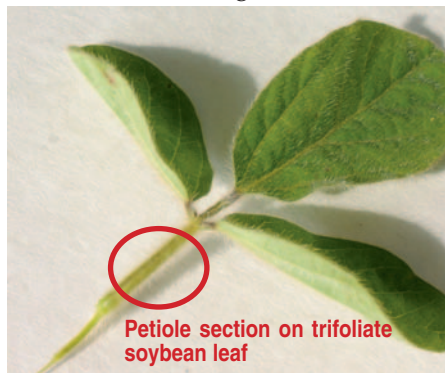
can tell you how the rest of the key nutrient levels are doing.

3. Plant Analysis

In addition to monitoring the soil for nitrogen and other nutrients, a plant analysis offers insight into what the plant is actually receiving, and what it is lacking.

The most commonly asked question is "what part of the plant should I sample?"

This is an important consideration, since nutrient content of leaves and petioles vary with location on the stalk. The age of the leaf or petiole also makes a big difference.



Here are a few general pointers:

Sample Handling: Rinse and wipe off any dust or contaminants from the plants before wilting.

Place them in paper bags or plant sample bags. DO NOT seal in plastic bags, as moisture in the plant will

create mold which distorts tests.

Identification: Fill out our plant sample submittal form. Be sure to fill out the section on crop size, conditions, and moisture. This gives our agronomy staff a better picture of the crop so we can interpret results and make recommendations.

Size of Sample: Take 30 to 50 individual leaves or petioles, depending on the stage of growth or size of the leaf or stem.

A good rule of thumb for the number of petioles needed is to fill a circle area that is made by connecting your index finger and thumb.

Which leaves or petioles? Sample from the most recent fully developed part of the plant.

Take leaf samples from long-growing plants (fruit trees, shrubs, onions, berries, etc).

Take petioles (stems) from short-term crops (beans, tomatoes, peppers, etc).

When sampling grasses and forages, clip the whole plant. Corn differs from other grasses because sampling varies by plant stage.

The best times to sample corn are at 6-in. height, pre-tassel, and pollination.

Have questions? Call the AgriEnergy Resources office or lab or access our website for instructions specific to your crop.