Newsletter for leading crop producers *Winter 2004*

AgriEnergy Resources

New soil testing improvements are emerging from our laboratory. We now have a more convenient soil sampling probe which you can take apart for easy travel and storage. Also, a new digital refractometer is available to show instant brix readings.

Our soil lab offers a new guide to help you choose appropriate tests. More producers are asking for "flashback" soil test results via e-mail. Lab manager Gary Campbell reports, "We're getting a lot of samples from new clients who've seen our soil testing services offered on our website."

Winter is the time to...

✓Budget
✓Soil test
✓Plan herbicides
✓Fine-tune the planter
✓Finalize the 2004 fertility plan
✓Check and clean sprayers, tanks
✓Study the best hybrid-herbicide combinations for 2004
✓Plan to test at least one new biological product or idea in a statistically sound way in 2004

2004 PREPAYMENT SCHEDULE

When we receive your prepayment on or before:	We'll credit your account with an additional:
Feb. 15, 2004	3%
Mar. 15, 2004	2%

Example: We receive your check for $1,000 on Feb. 15, 2003:

We credit the check amount to your account	$1,000
Plus, we credit your account with an additional 3% of the check amount	+$30
Total credit to you	$1,030

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

These "bullet points" from our December dealer meeting highlight a few of the significant Renewable Farming trends around the country. You might see an opportunity in one of these:

Corn growers are fascinated by the "Francis Childs phenomenon." Childs is the champion corn grower who has raised 500-bushel corn on some research plots. His top yield in 2003 was only 397 bushels on 18 inches of rainfall — about half of normal rainfall. It's a clear signal that biologically active soil is critical for digestion of crop residue into humus. Childs tills continuous corn fields 12 to 14 inches deep.

Biological fertility programs for pasture are catching on fast. Grass responds rapidly and visibly to biological programs. On dairies, cows respond rapidly too, with higher production and improved herd health. More beef producers are also finding a growing niche market with grass-fed beef. In turn, they're looking for ways to produce more pounds of beef per acre from pasture. Ray Roettger reports that after three years of bio-fertility on a farm near Shipshewana, IN, pasture roots are healthy; residue recycles quickly. Earthworms and nightcrawlers are abundant. Roettger says, "In the evening, you can hear the nightcrawlers working. The ground looks like someone drilled a 3/8-inch hole every few inches... those are nightcrawler burrows."

Organic foods win a rising share of retail food sales worldwide. More fertility consultants are using certain AgriEnergy Resources products which are specifically certified for organic use. Major retail chains such as Whole Foods have mostly shifted to "buying national" rather than buying from local organic growers. Some organic growers are attempting to build marketing groups big enough to service these major chains.

Universities, Extension jump onto the microbiological movement. Nebraska farmer and AgriEnergy dealer Brad Lauber reports, "Ten years ago, the universities would hardly acknowledge that there are microbes in this soil. Now, I just received an invitation to a University of Nebraska conference on the impact of microbes in the soil."

AgriEnergy Resources refines production, quality control measures. Owner and chairman Paul Aley told dealers, "The emphasis since 2002 has been on quality of products. We're learning how to make it better." Before a tanker leaves the plant, every compartment is sampled for one more quality control backup. Several years ago, we bought several biological products from other manufacturers. We found the best way to maintain consistent quality is to build our own. For example, we built a climate-controlled greenhouse as a way to manufacture high-quality algae year-around.

Stressful 2003 weather again confirmed benefits of biologicals. Bio-Cal greened up yellow pastures almost overnight on several of our clients' farms. We encourage SP-1 on all crops, side-dressed or broadcast. It's especially synergistic with liquid fish. Bio-Humus is another broadly beneficial product we like to see in virtually every application. Agri-Carb, which helps anchor nitrogen, is a "must" for application with fall or spring Residuce.

The right starter this spring can make a big yield difference at harvest

In the coming 2004 season, the perennial pressure for early corn planting and this year's higher nitrogen costs make your choice of starter fertilizer *very* important.

We've developed a 4-21-4 blend of starter fertilizer which has shown several advantages over the conventional 10-34-0 starter sold by other commercial suppliers. Here's a summary of those benefits:

✓ The potassium content in our 4-21-4 is especially effective if soil temperatures are cool at planting and germination time. A little potassium, applied close to seedling roots, can increase yields even on soils testing high in potassium.

✓ Our 4-21-4 contains no chlorides, making it safer for seedlings when applied close to the seed row.

✓ It has a lower salt index than 10-34-0 or chloride-containing fertilizers of similar NPK analysis. It has an even lower salt index than most clear liquid blends.

✓ It's a 50-50 poly-ortho blend. It contains more ortho than 10-34-0, which is a reason it's more available at cooler soil temperatures.

✓ You can blend our 4-21-4 with sulfur, trace elements, and other sources of additional nitrogen such as liquid 28%.

✓ The 4-21-4 has a pH of 5.5. This slight acidity improves phosphorus availability, which is critical on high pH soils in early stages of crop growth.

✓ We've buffered the 4-21-4 blend with several carbon sources to prevent tie-up of phosphorus in the soil.

We also offer a clear 3-18-18 if your soil analysis shows that you need extra potassium in the starter.

This blend is excellent for seed placement or foliar feeding. However, it can't be tank-mixed with trace elements or other sources of nitrogen.

AgriEnergy Resources: an observer's perspective

Commentary by Jerry Carlson, Pro Farmer Editor Emeritus, who originated Renewable Farming seminars in the early 1980s

General Manager Dean Craine invited me to "audit" the December 2003 meeting of AgriEnergy Resources dealers and field representatives in Princeton. I returned home enthused! Two of the most positive aspects I saw at the two-day event:

1. **A growing number of smart, dedicated crop consultants, farmer-dealers and other representatives** are linking up with AgriEnergy Resources.

Since I first began organizing "Renewable Farming" seminars under the Pro Farmer banner in the early 1980s, one of my dreams was that dozens, then hundreds, of crop consultants across the nation would pick up the principles of rebuilding soil biological life and productivity.

But as the 1980s and 1990s flowed into 2000 and beyond, I saw few agribusiness firms recognizing the opportunity. For example, at recent ACRES conferences, the seminar speakers have been mostly the same pioneers who staffed our Renewable Farming seminars in the 1990s.

Where's the dynamic new army of innovators to deliver this vital technology to more farmers?

But as I looked around at the people in that conference room in Princeton, it was clear that *a new array of leading consultants are connecting with AgriEnergy Resources.*

This dealer and consultant force has grown to 57 firms and individuals in 21 states. If I was asked to name one as an outstanding consultant, in fairness I'd have to list them all. These are already highly successful crop consultants, farmers, or ag suppliers. For them, AgriEnergy "Resources" is aptly named: The firm is a *resource* for research, consistently high-quality products, and a network of knowledgeable people.

2. **AgriEnergy Resources remains dedicated to its original mission.**

Chairman and owner Paul Aley reaffirmed that commitment directly to everyone at the December meeting in Princeton.

Ray Roettger, a longtime friend and representative of AgriEnergy Resources, gave the dealers and reps an inspiring presentation on founder Dave Larson's vision, plus the firm's growth in recent years.

Ray told the group: "The original AgriEnergy Resources mission statement is still in place. It lives in the hearts of a lot of people. Now, more than ever, it's a worthy cause.


Ray Roettger

"We are bringing soils back to life. When soils are living, we get healthy crops, healthy livestock — and healthy people.

"AgriEnergy is clearly a cutting-edge company. We are out there doing development and getting consistent results. We have a niche in the market where conventional systems fall short. As far as I know, there's no other company that has a whole nutrient system worked out to the point where it can be implemented consistently.

"We can positively affect the lives of people in your community and your world."

And when you hear Ray Roettger say something, it's for real!

I'm still a strong advocate of Renewable Farming, even though I've retired and Pro Farmer no longer offers such seminars.

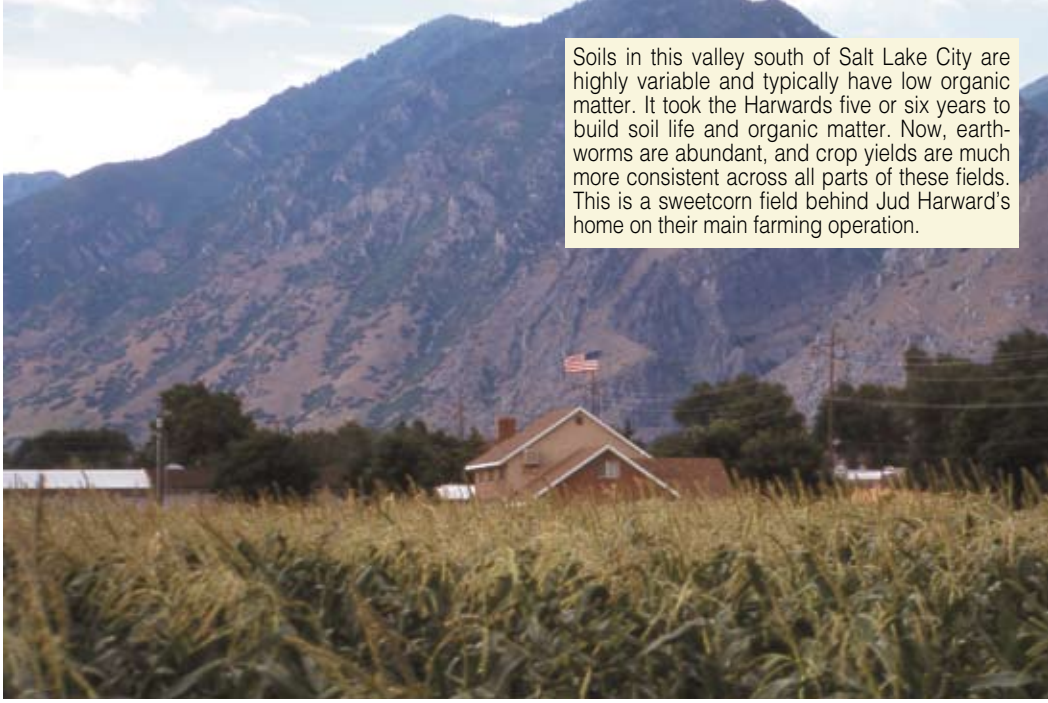
I'm also still impatient with current progress. Why do so many farmers ignore the degradation of their soil, relying more and more on the downward spiral of toxic technologies instead of restoring biological health in their soils?

The nation needs 100 firms like AgriEnergy — researching, developing useful plant foods and biological products, and educating farmers on innovative ways to profit with these healthy, renewable concepts.

Jake Harward sells corn for $3.50... per dozen ears at retail stands, that is! When AgriEnergy Resources rep Bill Krejci visited the Harward family's farm near Springville, Utah, last summer, sweetcorn was yielding 1,400 dozen ears per acre. That's 16,800 high-quality, saleable ears per acre.

Jake's father, Jud, began experimenting with biological technologies in the mid-1990s. Jake took on the sweetcorn operation, and now uses AgriEnergy products. Result: Few pest problems, high-brix (high-sugar) corn, and enthusiastic customers who know great corn by its taste.

Most of the Harward Farms corn is sold from flatbed wagons under canopies like those above, shown during a picnic for visitors at the farm.

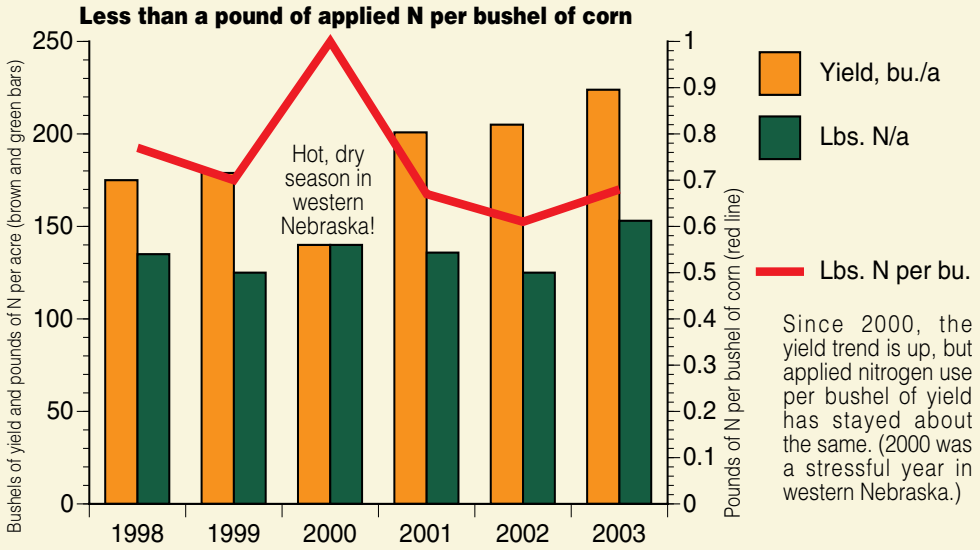


Soils in this valley south of Salt Lake City are highly variable and typically have low organic matter. It took the Harwards five or six years to build soil life and organic matter. Now, earthworms are abundant, and crop yields are much more consistent across all parts of these fields. This is a sweetcorn field behind Jud Harward's home on their main farming operation.

Producing a bushel of corn for 0.6 to 0.7 pounds of nitrogen is what Dennis Demmel, Perkins County, NE expects to do every year under irrigation. The chart at right shows weigh-wagon results from representative plots. The same hybrid is represented in all years.

Corn may still need a pound of total nitrogen per bushel, but active biology in the field can provide a substantial share of it, once you get a biologically alive soil that converts residue to humus quickly. Even though his corn usually follows sunflowers, residual nitrogen in fall tests has shown from 11 to 36 pounds per acre the past three seasons. Demmel also applies SP-1 through the pivot, along with Bio-Cal and Trace Pak. As his soil tilth improves, Demmel reports that "Infiltration of irrigation water has improved over the years, and is now better than ever. I can pivot-apply 1 inch per irrigation, with no runoff."

Fall nitrogen tests, usually on sunflower ground going to corn, have shown an average of 25 lbs. of residual nitrogen from 2000 through fall 2003.



"We must *rise to the next level of quality and efficiency: Making soils healthy*"

That statement was the keynote of microbiologist Kathleen Draper's presentation to consultants and dealers in December.

She detailed how farmers are facing worse problems with nematodes, fusarium and aphids in soybeans as well as rootworm and borers in corn.

These organisms attack plants most viciously "when soil has low organic matter and a low level of microbial life," she said.

As a result, crops first suffer from imbalances in nutrient uptake, weak cell membranes and inability to react with normal protective responses.

A typical imbalance is high nitrogen and low potassium in plant cells, leading to excessive amounts of amino acids and sugars in the cells. The cells exude amino acids, feeding pathogenic fungal spores and other disease organisms.

The health-giving roles of beneficial bacteria are becoming more evident to crop-protection firms. Many of these firms are patenting and registering beneficial organisms, or isolates from those organisms, for use as part of integrated pest management programs.

Since many of these beneficial microscopic species occur naturally, Kathleen emphasized that a farmer's primary line of defense for crop health is this: "We need to build a soil that can respond to the needs of the plant."

One way to accelerate this build-up of beneficials is an AgriEnergy Resources Residuce program, fall or spring. Kathleen also encourages cover crops with corn and soybeans.

Cover crops like oats, fall rye, winter wheat or vetch provide benefits which enhance soil life by:

- ❒ Improving water infiltration,
- ❒ Reducing nutrient leaching
- ❒ Helping break up compaction
- ❒ Capturing more carbon dioxide
- ❒ Improving soil tilth
- ❒ Building natural nitrogen

For example, turning under a crop of hairy vetch can contribute 180 units of nitrogen. Kathleen is testing cover crops on her family's farm in Illinois. There's a widening interest in cover crops, including crops that help constrain insect infestations.

AgriEnergy Resources

This letter brought to you by your AgriEnergy Resources consultant

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Combine's GPS monitor reveals impact of calcium

A major premise of Renewable Farming: Calcium is the "king of nutrients," not just something you spread to raise pH in your soil.

A DeKalb, IL, corn-soybean producer tells us that his GPS combine yield maps reveal a consistent corn yield increase of about 10 bushels per acre in the "dust fallout" shadow along country roads graveled with limestone. The yield increase fades with distance from the gravel road. And there's no such yield effect along paved or asphalt roads.

This fall, he pulled a series of soil samples from the edges of the road inward. The pH dropped slightly with distance from the dusty gravel road, but the operator theorizes that the extra calcium is also important for nutrient transport, cell wall strength and disease resistance.

Maybe this incidental calcium "application" from fine gravel dust helps explain why corn often looks good along the road, but not so good inside the field.

One thing for sure: Only a combine monitor and its GPS map can show you such yield differences in a quantitative way.

It helps you see yield-enhancing opportunities and solve nutrient problems or drainage problems more quickly and precisely.

That's why we encourage GPS yield mapping in every field, every year.

Four farmer "success stories" with AgriEnergy Resources

Here's a sample of farmer "success stories" from the 2003 season, extracted from a report to our field representatives by agronomist Ken Musselman, AgriEnergy Resources.

A Henry County, IL, grower harvested 198-bushel organic corn last fall — after applying only 5 units of nitrogen from Chilean nitrate last spring — and despite a dry August in his locality.

Two "secrets" behind that yield: The corn followed alfalfa, and the AgriEnergy Resources nutrient program enhanced biological activity to help release nitrogen produced by alfalfa. His 2003 nutrient program:

Row support applied 2 x 2:	
Chilean nitrate solution	10.00 gal
Bio C	4.00 gal
Bio Mix	1.00 gal
Compost Tea	1.00 gal
Humic concentrate	0.25 gal
Manganese Sulfate	16.00 oz
Seaweed	16.00 oz
Liquid fish applied in-furrow:	**2.50 gal**

In late 2002, a Bureau County grower had challenged us by proposing that we deal with a problem field that had frustrated him with low yields for years. He had just fall-applied a ton of gypsum and a ton of high-magnesium lime per acre before calling us.

Our soil tests showed the soil to be very high in magnesium. AgriEnergy agronomists recommended the following nutrient program for 2003, broadcast preplant (Part of the field was untreated as a control):

SP-1	2.00 gal
Bio-Cal	1.50 gal
Bio Humus	0.50 gal
AgriCarb	0.50 gal
Bio C	0.45 gal
Zinc	6.40 oz
Solubor	8.00 oz

The immediate impact in 2003: A gain of 10 bushels per acre, compared with the control.

More importantly for the future, the producer saw a major difference in soil tilth, more profuse rooting and greener plants during August dryness. The aerobic zone was already 2 inches deeper in the treated area and will improve with time.

Two Ohio growers who had their first full season with AgriEnergy Resources in 2003 report:

One tested Residuce on corn ground in fall 2002. The field went back to corn in 2003, and yielded 212 bushels per acre, versus 195 for the untreated control.

A grower in Findlay, OH had been liming a problem 67 acres the past three years, but still couldn't push average yields over 158 bushels per acre. In 2003 he tried AgriEnergy's seed treatment, then SP-1 added to his row support.

With a cost of less than $10 per acre, yield rose to 191 bushels per acre compared with 145 bushels on a control field. Ken Musselman quipped to field representatives, "That's way too cheap on fertilizer for a 46-bushel yield increase."