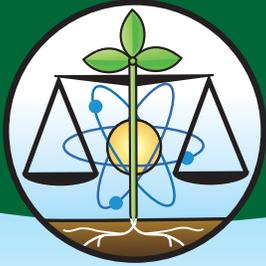


Providing the Missing Link for Full Potential Agriculture



## Marietta Pickett

### Sustainability at Indiana's Bio-Energetic Harmonics

by Amy Hibberd

Marietta Pickett (pronounced Merita) has been tirelessly chasing knowledge for most of her life. Pickett's Indiana farm, Bio-Energetic Harmonics is dedicated to teaching regenerative farming methods and sustainable living. She is a rare breed: a female American farmer with her roots firmly in the heartland and her curiosity in the cosmos. In 1901 her grandfather, Lawrence Beck, purchased the 80 acre farm in Hamilton County, Indiana which is the current location of Beck's Hybrids facilities. In 1937 her Grandfather and her Dad, Francis each planted a three acre allotment of hybrid parent seed corn offered by the Purdue Botany Department. They planted the crop with a two-row, horse-drawn planter and harvested it by hand. Marietta recalled riding on her Dad's shoulders that first year while they pulled tassels. This six-acre plot became the first crop of Beck's Superior Hybrids, and the farm and business are still in the family.

It's easy to imagine the rich smell of the newly turned earth; the slow plod of the horse, the trickle of sweat, the lazy fly. Marietta Pickett grew up on that farm as daughter and granddaughter of two farmers who consistently sought a better way. Pickett and her husband, Robert moved to the farm next door to her childhood home in 1958. "We actually planted our first crops in 1957." A life of farming informs her search for sustainable agricultural methods. Pickett's Bio-Energetic Harmonics farm has been certified organic since 2001. Spending a lifetime on the same soil gives her the unique perspective of observing changes over time.

Though firmly committed to her farm life in Indiana, Pickett's curious mind led her on an ever branching career path. She taught music at Ball State and Anderson University in Indiana. While on sabbatical to finish her doctorate at Arizona State in 1975-76, she and her husband, Robert met many people in the emerging field of meta-physical awareness.

She was invited to become a charter founding member of the American Holistic Medical Association and served on the board there for 12 years and as President of the Foundation. As a professional member of the National Speakers Association for more than 20 years, she helped to found the "Health and Wellness Division" as a way to teach the teachers and train the trainers of corporate America.

Her 95 acres, with 85 tillable, are devoted to organic blue corn, spelt, wheat, and tofu soybeans, "Food for people" she said. With her background in both farming and in natural health and wellness,



(Continued on Pg. 2)



*Greetings to our loyal farmers...*

*Hi everyone,* We have experienced an unusual summer weather wise and for many of us the harvest is largely completed and we are thinking forward to another year while preparing our fields for a season of rest and regeneration this fall.

Many of the farms we have been working with have not experienced as significant yield losses at harvest this year. Really healthy crops have much larger root systems and higher levels of stress tolerance which allowed them to thrive even in the very dry weather we experienced in some parts of the country. In addition soils with higher organic matter content are able to store a good deal more moisture which can be released later in the growing season. Crops grown on soils which did not have as much of a buffer showed moisture stress symptoms much earlier and a great deal harder overall than those which had water stored in the soils organic matter complex.

We have just experienced a very beautiful fall season here, and across much of the northern states I believe. We experienced our first frost in mid October. Given the dry summer and cool fall weather we experienced the trees began losing chlorophyll earlier than usual, resulting in spectacular colors well before the frost would scorch them. I find it always interesting to watch the natural rhythms and cycles flow constantly. Fall is preparation for a period of dormancy, rest, and regeneration, leading to a burst of energy and the expression of exuberant life anew the following spring.

(Continued on Pg. 4)



Join our...  
**'Farming Insights'**  
conference line  
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## Marietta Pickett - Sustainability at Indiana's Bio-Energetic Harmonics (cont'd from pg. 1)

Bio-Energetic Harmonics is a natural for Pickett. "My husband Robert (now deceased) was a master with radionics," she explained.

"He could measure the energy of anything - how much calcium or magnesium--how to enhance what you have. It is a wonderful tool for agriculture."

Pickett's search for answers to regenerative agriculture and better food have spanned a lifetime and shows no sign of slowing down. "I have been going to ACRES conferences since they began 40 years ago. I have been told that it is time to bring the cosmic energy into the physical - the same as proposed by Rudolph Steiner in Bio-Dynamic Agriculture." This is not a new ideal. The development of Bio-Dynamic agriculture began in 1924 with a series of lectures on agriculture given by philosopher, Rudolf Steiner in Silesia, Germany. Steiner emphasized the holistic development and interrelationships of the soil, plants and animals as a self-sustaining system.

A voracious reader and researcher, Pickett perceived a certain lack of continuity as she struggled to assimilate knowledge from so many sources. She felt the all too familiar emotions any farmer feels looking over her fields and wondering if she was on the right path, while feeling very alone. "I knew I needed to do this," she recalled, "after all, the vision for our farm is to be a Demonstration, Education, and Research Farm where people can learn about regenerative agriculture and sustainable living.

"Beginning our transition to organic three years before, in 2001, we planted wheat that first fall we were eligible to be certified and that was an easy transition to hay. We had alfalfa for seven years; we kept it because the market was good." Though Pickett's husband became ill and made his transition in 2007, she continues to feel a strong connection with his knowledge and energy. "We held Robert's Celebration of Life on a Sunday night and Monday morning I was in Louisville for the ACRES Pre-Conference Seminar where I had enrolled in Arden Anderson's 3-day course on Sustainable Agriculture.

Pickett describes the evolution of her farm - Hay was easier as it did not require tilling. Row crops are more of a challenge. We foliar feed and this is our first year on the AEA program. We are keeping good records of nutrition, doing tissue tests before and after each foliar to track the changes.

Marietta Pickett generously gives a lot of the credit to Jason Hobson, AEA Staff Consultant. Hobson is the man in the field - just the sort of "hands on guy" who is a Godsend to a farmer. Hobson has his own dairy farm in Bloomington, Indiana, yet still manages to make the rounds of conferences and farms for the ever increasing consultations on the AEA system.

Hobson is an affable man, and laughed as he recalled meeting Pickett at the December 2011 ACRES Conference in Columbus, Ohio, "She waited patiently while I finished a very long discussion with someone about their garden." Apparently the meeting was well worth the wait. Pickett's soil is on a path to being highly biologically active, and her beans and corn are already looking better than many neighboring farms using conventional methods.



"We have had a drought this summer almost as bad as the one in 1988—and record high temperatures. Still my corn looks better than most farms around here," said Pickett. "I am encouraged I have Jason here as a partner to help me figure out what is needed."

Like Pickett, Hobson too is a farmer's farmer, he brings a decade of experience and education and is imbued with a sixth sense of the state of the soil. "When people call us for

help and say, 'This is not working', we assess where they are, then help them along. We meet everybody where they are.

The notion that conventional methods are falling apart is nothing new—Rudolph Steiner's lectures on Bio-Dynamic Agriculture were developed at the request of farmers frustrated by conventional methods—and the year was 1924.

Farmers today, as well, are beginning to look for systems of agriculture that both work in harmony with nature and make a sustainable profit. "I know of many farmers, even very large farmers, that by all the outer metrics are very successful, and they still feel like they could be doing something differently," Hobson said. For Marietta Pickett and Jason Hobson, what fuels the search

for biological, sustainable agriculture is pretty basic: consumer demand for nutritious, high quality food. Consumers can provide the incentive for farmers to use more biologically friendly methods by demanding it in the grocery stores and farmers' markets.

The reluctance Pickett and Hobson notice in some farmers to embrace biological methods is an understandable emotion: fear of the unknown. "I understand our thinking is different," said Hobson. "We say 'here's how you can do it. This works. No farmer wants to take a risk--they naturally fear a financial loss. Even with corn prices driven up over the last few years, thanks to ethanol, their margins are still very tight."

Pickett has not yet completed her first year on the AEA program, yet she is already seeing changes on her established all organic farm over the preceding years. "I can already see the health of my plants is improving. My blue corn, compared to my neighbors' is healthier despite droughty conditions—I have not had curled leaves up to this point. When we had a half inch of rain there was standing water in the field next door and on ours it had all soaked in. We have humus and good bacteria, along with the right ratio of calcium and magnesium. Our soil is charged so the particles



of soil stay separate and leave space for air and water, said Pickett. "We foliar feed and test after each feeding and we feed through the season. The plant decides how many ears of corn, as well as the length of the ear and how many rows around fairly early in its life. By feeding at these growth or stress points for the plant, we have the potential to increase our yields," explained Pickett. "Not all AEA farmers are organic, but if you can increase your quality from feed grade to food grade you get more for it."

Although this is the first year the Bio-Energetic Harmonics farm has been on the AEA program, and the weather is breaking drought and temperature records, Marietta Pickett is confident in her results and eager to share her methods. One of her next projects is to create a Web University that is not a degree program but practical information for anyone who is choosing to learn more about how to make the transition to regenerative, sustainable and more profitable ways of growing crops.

In the past, one of her challenges was having to go to 4 or 5 different companies to get all the nutritional needs for the soil and plants and then not knowing if they were compatible. Finding Advancing Eco-Agriculture has solved that problem. "With AEA not only do we have quality products, we know they are all compatible - a total systems approach - and in addition we have a company that provides well-trained plant and soil consultants to partner with us."



# Rejuvenate your soil

by Jason Hobson

One of the most common questions about making the transition to a regenerative system of farming is what is the best place to begin. When faced with the myriad options of tillage tools, cover crops, dry and liquid fertilizers, and biological inoculants in the marketplace, and the fall pressures of harvest and preparations for winter, often the simplest approach works the best.

Balancing soil minerals and stimulating soil biology are the all important first steps on the path of biological farming. Using soil test to check the level of soil minerals and designing a long term plan to bring them into balance can help create the conditions for microbial life to thrive.

More importantly, we have to remember that even if we don't have any livestock of the hooved or feathered kinds, all farmers

have the responsibility caring for the 2-3 tons of microbes that live in each acre of soil. Ensuring that this underground livestock-bacteria, fungi, actinomycetes, and other microscopic organisms-have the food and shelter needed for survival is one of a farmer's primary jobs. In return, the soil biology can work for us by buffering soil pH, making soil nutrients more available, and synthesizing compounds, like complex carbohydrates and amino acids, for crops to absorb.

At AEA, we use our microbial stimulant and soil conditioner, **Rejuvenate™**, to help farmers care for the microbial life in their fields. Made from a combination of humates, molasses, and trace minerals, **Rejuvenate** performs three important functions.

First, it assists in the decomposition of fall crop residue. The stalks, leaves, and stubble left in a field after harvest are an often neglected source of fertility. An NRCS study showed that there is on average \$150.00 or more of fertilizer in the residue left on every acre after a 180 bushel corn crop.<sup>(2)</sup> The problem is that plant debris left lying on top of the soil will often oxidize slowly, losing valuable nutrients to the atmosphere.

Increasing soil contact through tillage can help, but if the digestive capacity of the soil is not strong enough, highly lignified residue, especially from tilled corn varieties, may remain in untouched in the soil for some time. Spraying a field after harvest with two gallons of Rejuvenate will stimulate the microbial life already in the field and encourage them to break down the stubble more quickly, and bring the nutrients from the decaying residue into the soil system, where they can be used by next year's crops. If residue from the previous year is still visible at the end of the next season, chances are that there is a significant amount of fertilizer value left untapped in the soil.

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This period of rest and dormancy is a very important period for all plants and soils. While all appears still and quiet to our senses, yet in reality there is a great deal of activity going on just below the surface, both in the soils and in plants. In the soil system the soil microbial community never really stops. It slows down a little bit as soil temperature decreases, but still continues its process of digestion and release of soil nutrients and microbial metabolites, setting the stage for a vigorous rush of growth in the spring.

We can see many different natural rhythms expressed all around us if we simply take the time to learn and appreciate what we are experiencing and seeing. Natural processes do not know time as we usually think of time, they only feel and operate in rhythms. These natural rhythmic cycles help determine form and function in plants and other life forms. Form is rhythm come to rest.

One of these natural rhythms we can easily observe is the daily breathing of the earth, inhaling and exhaling. We can see this expressed in the movement of water in the earth and humidity in the atmosphere. In the morning, as the earth is exhaling, moisture rises. We can see the mists rising from water surfaces in the morning. In the evening, as the earth is inhaling, humidity settles, and dew drops form on the energetic tips of living, growing plants, standing straight up in an expression of very high energy. We can also see rhythm and form expressed in frost patterns, which often express the signatures of plants and life forms in close proximity to the frost patterns.

This year we have been running a variety of test plots comparing our products and programs with other materials which may be available. These tests have been providing some very interesting and exciting results on a variety of crops, and we are looking forward to running many more tests this next year.



On one of radish trials we conducted in late summer, we have been able to harvest some unusually large and sweet radishes. Using our complete program at planting, within six weeks we were



harvesting radishes that weighed an average of eight ounces each without the tops. What we found very encouraging and interesting was the fact that these radishes were still very sweet and crisp. Usually when radishes reach such a large size they become woody and bitter and completely inedible. This has not been the case at all. In fact, today, we are still harvesting from these radish trials and they are still sweet and crisp, while they have continued to gain in size.

These results are quite encouraging and provide clear evidence that we routinely harvest only a small portion of our crops inherent genetic potential which our seeds are capable of producing. We can produce crops which are much higher in both quality and quantity than that which is usually accepted as normal today.

So what really are the differences between healthy plants and unhealthy plants? And what is needed to produce crops with a functional immunity, and which can be fully resistant to disease and insect pests? At our meetings this winter we will be talking about how we can produce healthy, high quality crops in the field, crops which are capable of achieving much higher yields and better nutritional quality than most farmers are harvesting today. We will also be discussing some of the new things we have learned this past year and exciting new products we have been working with. We look forward to seeing you there!

**Have a great winter and enjoy preparing for another growing season!**

- John Kempf

## Rejuvenate your soil (cont'd from pg.3)

A related benefit of **Rejuvenate™** is its ability to help suppress overwintering crop diseases. Many disease pathogens, whether from aspergillus and diploida in corn or timber rot in tomatoes, spend the winter as spores in the shelter of undecayed crop residue.<sup>(3)</sup> Strong and efficient microbial digestion can break infected residue down more quickly and deny the disease spores their winter cover.

A healthy soil biological system is a teeming jungle of microscopic life, the majority of which is helpful to the development of plants. These beneficial bacteria, fungi, and other organisms out compete the disease causing organisms and do not allow them to become established. Pathogenic organisms may be present in the soil, but their numbers are held in check by the number and intense activity of the beneficial organisms.

This tendency is crucial to restoring the health and vitality to soils that have been treated for a number of years with chemical controls. Many herbicides and fungicides are toxic to bacteria, fungi, and other organisms important to plant health. Azotobacter, which are crucial to the soil nitrogen cycle, micorrhizal fungi, that incorporate into the roots of most plants to bring them Phosphorus and other minerals, and actinomycetes, which break down organic materials that other organisms cannot, are all significantly affected by glyphosate, pyraclostrobin, and other materials. In addition, studies have shown that glyphosate encourages the growth of pathogenic soil fungi like rhizoctonia, phytophthora, fusarium, and pythium, which take advantage of depleted numbers of beneficial organisms to become dominant in the soil community.<sup>(4)</sup>

It is no surprise, then, that in the last 15-20 years, we have seen an increase in the appearance of fungal diseases caused by these fungi, such as take all in wheat, head scab in corn, and root rot and sudden death syndrome in soybeans.<sup>(5)</sup> Reducing or eliminating the use of these chemicals and employing management tools like the use of cover crops and biological stimulants like **Rejuvenate** can begin to shift the balance of the soil microbial communities back toward balance and health.



The third benefit of the consistent use of **Rejuvenate** is improved soil structure. No matter what the soil type of a given field may be, increasing the level of biological activity in that soil will improve its tilth. From crop fields in Ontario, to produce patches in Ohio, to hay fields in Indiana, we have many stories of soil that is softer, looser, and works more easily after **Rejuvenate** applications.

One of the most important aspects of better soil structure is better air and water infiltration. When

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Mark your 2013 calendar!

## 'Farming Insights' Conference Line

Each month, John Kempf and his staff host an informative call to discuss a topic of interest. Each call starts with a topic lecture, followed by lively and enlightening Q&A. We hope you will join us. All calls are held at 7pm Eastern time. The schedule of upcoming calls is as follows:

CALL DATE	TOPIC
Jan 7	What are the differences between healthy and unhealthy plants?
Feb 4	Releasing soil mineral reserves
Mar 4	Critical Factors for successful planting
April 1	Healthy Photosynthesis
May 6	Vigorous fruit set, how?
June 3	Monitoring Plant Health
June 10	Catering to your corn and beans
Aug 5	Building yield in perennial crops
Sept 9	Amazing cover crops, Guest Speaker
Oct 7	Building Organic Matter
Nov 4	Planning for success
Dec 2	Farmers report: results in the field



Dial-in number: 1-719-457-0816  
Access Code: 320010#

Join us in 2013...

## Winter Meeting Schedule

Mark your calendar for 2013

MEETING DATE	PRESENTER/LOCATION
Jan 16	David Miller, Harrisonburg VA
Jan 28	Keystone BioAg, Tyrone PA
Jan 29	Keystone Bio Ag, New Holland PA
Jan 30	Harold Shrock, Deansboro NY
Feb 19	Twin Oaks AgriService, Medford WI
Feb 20	Sam Werlein, Viroqua WI
Feb 26	Craig Dow, Alma Michigan
Feb 27	Jason Hobson, Atlanta IN
Feb 28	David Miller, Millersburg, OH



## Rejuvenate your soil

(cont'd from pg.5)

fields are hard and compacted, the ability of the soil to absorb and hold rainfall is severely limited, often resulting in ponding or runoff. Whenever water stands in or runs off a field, there is the possibility of losing available nutrients through asphyxiation or erosion, but more importantly, in dry years, every drop of water that runs off a field is water that is lost for the season.

I was on a farm in Indiana, in late April when it rained close to two inches in two hours. The farm I was visiting had been organic for more than 10 years, had always used cover crops and good crop rotation, and as a result had open, well-aggregated soil structure. Their fields were able to absorb that heavy rain with little or no runoff. Neighboring fields under a more conventional management system showed heavy ponding and water running over the ditches and onto the road.

We didn't know on that day that this would be the last significant rainfall until the middle of July. The crops soon to be planted in those fields would need every bit of that rain to weather the heat and drought coming in the next three months.

Better soil structure will also mean more oxygen will be available in the system, allowing the natural processes of the soil, like the Nitrogen cycle, to function more efficiently, which will make more nutrients available to growing crops and reduce the need for off farm inputs. When these functions are working well, the soil shows the ability to stand up against weather stress, and bounce back when field operations, like tillage or harvest, need to happen is less than optimal conditions.

Of the many biological stimulants on the market, **Rejuvenate™** stands out because of the complexity and quality of its ingredients, and because it provides soil life with food, water, shelter, and the micronutrients that are key to breaking down organic matter. It contains food-grade molasses, an excellent source of energy and nutrition for many soil organisms, and humates which are a complex form of carbon that perform several vital functions in the soil.

The humates, in **Rejuvenate**, are derived from Leonardite and are micronized rather than chemically extracted so that they contain the humic, fulvic, and humin components of the parent material. The humate molecule is one of the largest and most complicated in nature, and this intricate structure holds onto water, provides shelter for many kinds of soil biology, and increases the nutrient holding capacity of the soil. Humates also have the ability to chelate, or grab onto soil minerals and make them more available to plants.

The trace minerals, sourced from sea water and plant sources, further enhance the effectiveness of the material by providing essential enzyme cofactors that many soil organisms use to break down their food.

In addition to being one of the highest quality biological stimulants available, **Rejuvenate** has a wide range of application methods to fit the needs of any farm. The most common use of the product is as a fall field spray, where it can help break down crop residue, unlock soil nutrients for the coming crop, loosen soil structure, and stimulate soil biology.

**Rejuvenate** can also be applied as a spring foliar on cover crops before incorporation. Here it will help the cover crop to break down more quickly and completely, which means less lag time between green manure plow down and field crop planting. Spring foliars with **Rejuvenate** on hay fields and pasture give the chance to improve soil structure without the need for tillage.

Another important place for **Rejuvenate** is in starter and transplant solutions, where it can help create a zone of intense biological activity around the seed or transplant that will encourage rapid germination and strong early development. It can also improve the efficiency and effectiveness of liquid nitrogen by reducing its susceptibility to leaching and volatilization, and make liquid manure more stable and biologically friendly.

If indeed the key to soil fertility is the vitality of its biological life, then **Rejuvenate** is a very sound investment. In many cases, because of the increased nutrient availability that it can create, other inputs, like dry fertilizer and liquid nitrogen, can be reduced to the point where there the costs to the farmer are neutral. When the value of the minerals that are biologically released is added to the savings in money spent on chemical controls on soil borne diseases and the increased revenue from better yield and quality at harvest, the math for **Rejuvenate** looks even better.

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# Agriculture past, present, future

Challenges presented by current agricultural practices and what we can do about them.

For the last sixty plus years agriculture has become increasingly dependent on the use of commercial fertilizers and pesticides to treat the ailments which are often increased by the use of fertilizers and petrochemical based compounds. In spite of new and improved genetics and ever better and stronger pesticides, the problems have remained fairly constant or even increased. We still have very similar crop losses to what we had before pesticides were ever put to common use. Why then are we addicted to using these materials?

Unfortunately most of these pesticides have never been properly tested for their accumulative affects on animals, people and the environment. We really have no idea whether these materials are safe or not, yet we continue to use them in, on, and around our food supply every day, which has resulted in every person being tested today carrying at least thirteen or more common agricultural pesticides. We are just beginning to learn about some of the effects of several common and widely used pesticides. Even though we have no idea of how many of these compounds affect the human body over time, alone or in unknown combinations, we can build some potential possibilities based on what we do know about these products and how they serve to destroy crop pests.

We have several broad spectrum groups of pest control products, those used for controlling insect pests (insecticides), those for controlling weeds (herbicides) and those for controlling diseases (fungicides) as well as several others. Within each of these groups there are many different products which work in different ways. We can look at each group and see how many products which are in that group work in general.

Lets look at the group of 'plant protection products' used for insect control. Many of these products function in controlling insects by serving as hormone or endocrine disruptors. Hormones regulate life processes and reproduction in plants, animals, man, and insects in very infinitesimal small quantities, generally in the parts per million

to parts per billion range. Very small amounts can have very significant impacts. Unfortunately we really have not adequately tested how these hormone and endocrine disruptors which are used as insecticides affect animals or people which are exposed to these insecticides on the foods they eat.

To provide some perspective on the dangers represented by these toxic and artificial compounds, lets look at the sensitivity of mankinds hormonal system.

In general, men have about ten times greater levels of hormones than women, yet the actual amounts of hormones for both men and women is very, very small. If we were to assemble all the hormones contained in the bodies of all the men living on the earth today and bring them together in on space, we would have a grand total of seventy pounds. If we could assemble all the hormones from all the women living in the world today, we would have a total of seven pounds.

**Yes, you read that right.**

**Not very much is it?**

Birth control pills are effective at .15 parts per billion.

No, not fifteen parts per billion,

**0.15 parts per billion.**

This is the equivalent of **seven drops** in an Olympic size swimming pool, which contains 660 thousand gallons of water. Or one half second in one hundred years.

What do you think could be the potential impact of literally **millions of pounds** of untested insecticides sprayed on our food every year? The food on our table? These materials are in and on our food supply in quantities which greatly exceed the natural hormones produced by our bodies.

Is there any possibility that these products might have something to do with the escalating rates of infertility? What about

(Continued on page 8)



## Agriculture past, present, future... (cont'd from pg. 7)

cancer? We know that cancer is an uncontrolled cell growth. Could these hormonal compounds be stimulating and enhancing cell growth and cell division to cause cancer? The answer to many of these questions is that **"we chose not to know."** If we don't test to see if they are harmful we have no reason to discontinue using them. Never mind the consequences.

We can see some very similar pictures emerge when we look at herbicides, used for controlling weeds. Herbicides function in basically two ways, first as a plant hormone, secondly as a chelation agent. 2-4D is a good example of a plant hormone being used as an herbicide. Essentially, 2-4D is a synthetic plant hormone imitator of a hormone called auxin. It simply causes the cells of the plant to grow so extremely rapidly that they explode, thus killing the plant.

Much more common than synthetic plant hormones however, are herbicides which kill plants by tying up key trace minerals, called chelation. Essentially these compounds bind certain trace minerals, shutting down the plants enzyme system, which causes the plant to become extremely sick and unhealthy. To describe the function of exactly how these compounds work would be content for an entire article in and of itself. Lets just say that in general these products do not kill plants. Rather, they make the plants so sick that soil borne fungi and bacteria attack the plant and destroy it.

Glyphosate, the active ingredient in Roundup is a good example. Glyphosate is a strong chelation agent and has an especially high affinity for manganese and zinc as well as other minerals, and also greatly stimulates fusarium

in the soil. So when the plants health collapses, fusarium is actually what kills it.

There are several other serious problems with glyphosate of course. We now know that it can remain in soils for as long as 22 years, however a bigger concern is how it affects reproduction of animals and people. Manganese and zinc are directly connected to reproduction in plants as well as in animals. Large amounts of these two trace minerals are stored in seeds. Since glyphosate has such an affinity for these two trace minerals, when glyphosate is present in the soil it will be bound up with these two minerals and also present in the seed. This provides an explanation for why glyphosate is found in animal manure, meat, eggs, dairy products, and in people. It becomes concentrated in the seed and then passed on to those which eat the seeds. What are corn, soybeans, small grains, and fruits? For many of our food crops we harvest the seed as a food source, which results in transferring the glyphosate on.

The reality is that most herbicides function as chelators of trace minerals.

I have said many times that as farmers and food producers we have a tremendous responsibility. We can do **more** to keep people healthy **than all the doctors and hospitals combined.**

**How?** Simply, we can prevent them from becoming ill by providing nutritious and healthy food. **This, they cannot do.**

*Choosing to not accept the responsibility will not make it go away. If we can do more to keep people healthy than anyone else, we can also do more to make them ill than anyone else.*

**If ignorance is bliss, then knowledge is responsibility.** Now that we clearly know some of the dangers presented by using pesticides, we are responsible for the choices we make and how we produce food for our friends, neighbors, and family.

### **Responsibility suggests that we also need response-ability.**

Agriculture practices are beginning to change very quickly. We have many newer and interesting products and tools to work with which were not available even a few years ago. The science and art of growing crops which are very healthy and are completely resistant to disease and insect pests is becoming much more widely known. Plants which have a functional immunity and pest resistance can then transfer that immunity to the people and animals that use those crops as a food source.

Many farmers are experiencing and enjoying the success of producing healthy crops with a functional immunity to pest attack. The need for pesticides can be completely eliminated by providing plants with the proper nutrition to ensure that they have everything they need to be perfectly healthy. When this is accomplished, the need for pesticides completely disappears and farming becomes very enjoyable.

**At Advancing Eco-Agriculture we understand how to grow healthy crops using sound scientific principles of plant nutrition and soil biology. We can help provide you with the RESPONSE-ABILITY you need to be successful on your farm.**

- John Kempf

HELP  
WANTED

## Sales Consultant

contact us at....

**Advancing Eco Agriculture** is seeking qualified candidates for **sales consultant positions**, contributors who are comfortable in a high performance culture where proactive thought, continuous improvement and excellence are top priorities. We are seeking top performing individuals with a passion for changing the future of food and agriculture in the world. Previous sales experience and an agricultural background are strongly preferred.



# Systemic Solutions vs. Silver Bullets

All organisms grow, reproduce, eat, move and breathe – we call this life. Life on this earth is wonderfully complex, interdependent and beautiful. Words cannot fully describe and minds cannot fully comprehend the complexity and interdependency that links all living organisms with one another.

I don't think there is anything lovelier on this planet than a flower, or more essential than a plant. The existence of human life is completely dependent on the greensward covering the earth. Without green plants we would neither breathe nor eat.

Of the billions of tons of food we consume annually, the bulk of it comes from plants who synthesize it out of the air, the soil and the sun. The remainder comes from animal products which are also completely derived from plants. All the food, drink, and medicines that keep man alive are ours through the sweetness of photosynthesis. Plants produce all our starches, fats, oils, and cellulose. From crib to coffin, man relies heavily on cellulose as the basis for his shelter, clothing, fuel, and the paper on which he scribbles his philosophy.

So, stop the tractor or the horses or whatever you are doing, and take time to walk through your fields and observe the wonder of life. Dig a handful of your soil. Is it loose and crumbly? Does it have a rich earthy smell? Do you see any signs of earth worms or residue from last year's crop? The answers to these questions indicate your soil's state of health.

Listen to the rustling of the leaves and feel the energy of the plants. Do you sense that the plants are vigorous and robust? Do you see signs of stress such as drooping, curling, or yellowing? Are the leaves dark green, thick and wide? What size is the stem? How long are the internodes? Answers to these and many other questions can tell you a lot about what's really happening inside your plants.

The time you spend actually IN the field is one of the most critical inputs there is. I am not talking about the time you spend on equipment in the field, but rather the time when you really "SEE WHAT YOU ARE LOOKING AT." I encourage you to walk your fields on a weekly basis. You will be surprised how much nature has to show you.

Conventional agriculture methods attempt to separate the parts of the grander biological system into tiny, finite and unrelated pieces. For instance, if you have insect infestation, conventional methods tell you to spray an insecticide. If your plants are attacked by a fungal disease, convention tells you to spray a fungicide. Conventional agriculture does not consider that the issues with

insects and fungus are related. Because of this narrow focus, today's conventional agricultural methods are failing.

Taking a biological approach to understanding the issues of insects and fungus helps us to understand interrelationships and identify what's causing the proliferation of insects and fungus.

Do we really think that we have a headache because we have a deficiency in aspirin; or that our plants have fungal disease because they have a deficiency in fungicide?

The grander biological system is not a bunch of separate pieces but rather, a synergistic, interrelated and complex system of interdependencies with direct and indirect relationships of cause and effect.

Let's stop looking for the silver bullets, the quick fix, or the easy way out. Identify what the problem really is and fix the problem instead of treating the symptom. Often, a single symptom is caused by a combination of issues or compounded issues and the source of the problems may not be what we initially think it is. Like so many things in life where there are interconnections and interdependencies, when one factor is out of balance, it causes another one to go out of balance.

### **The Solution is the System**

The solution lies in fixing (or balancing) the system. The challenges that we see in agriculture today are signs of a broken (or unbalanced) system. We have been growing food in this unbalanced system that creates the need for herbicides, fungicides, insecticides. Many farmers don't know any other way. The system cannot be brought back into balance by simply employing more powerful weapons such as insecticides to control nature. We must focus on working with nature because, in the end, nature will always win.

When the system as a whole is working like nature intended, everything is growing, reproducing, eating, moving and breathing... in a perfectly synergistic and symbiotic relationship of "give and take."

### **Microbes**

The bacteria, fungi, mycorrhizae, actinomycetes, atropods, etc, function as a plant's digestive system. These are microscopic little creatures, but they are the most critical part of the system.

Microbes need food, air and water which they get from the soil in the form of crop residue, root exudates, soil minerals and other microbes, both living and dead. The soil is their home. The total

*(Continued on page 10)*



## Systemic Solutions vs. Silver Bullets

(Continued from page 9)

mass of these microbes in an acre of topsoil may easily weigh as much as a cow, yet each one is so small that when we look at the handful of soil in our hand we cannot see them.

What if these microbes were the size of cows, dogs, and cats and we would be able to clearly see them and observe what they are doing? We would notice if they became gaunt from hunger or if they were miserable because they didn't have any shelter. We cannot see the microbes but they are there and we must take care of them as we would care for our favorite pet or the most valuable animal on the farm. These little beings give so they can take and take so they can give and thus begins the carbon cycle.

## Carbon cycle

The seed, when placed in a growth-promoting environment, will sprout, sending a root downward and a shoot upward. There is enough energy in the seed to support these two growing tips until the shoot breaks through the soil surface and into the sunlight. Now begins the marvelous process of photosynthesis. The chloroplasts in the leaves capture sunlight, stomata receive carbon dioxide and the plant produces sugars and releases oxygen. Wow! We receive this oxygen when we inhale and give carbon dioxide when we exhale. Isn't that great?

As stated earlier, life without plants would be impossible. They take what we give; make what we need and then give it back. Now, what happens to the sugar that is produced in this process? Some of the sugar (glucose) is hooked together with minerals in many combinations and will eventually form proteins and cells to build the plant and its fruit or seeds. Some of this sugar is pushed out through the roots to give the microbes food, oxygen and shelter which are all contained in glucose (C6 H12 O6). This formula indicates that there are 6 atoms of Carbon, 12 atoms of Hydrogen, and 6 atoms of Oxygen in one molecule of sugar. So, the sugar that the plant is giving is exactly what the microbes need to live and grow. In turn, the microbes give the plant the minerals it needs to make more sugar for the microbes. Some of the carbon is used as shelter for the microbes and as a sponge to absorb water and minerals that are in the soil solution. Some of the carbon is released back into the atmosphere to be used for the photosynthetic process.

This carbon cycle is what makes cover crops the most efficient way to build organic matter in the soil.

Another stage of the carbon cycle starts when crop residue is deposited onto the soil surface. This crop residue (some people call it trash but, I think it should be called treasure) contains all the

glucose molecules and minerals that were used to build the plant from which it came. If our friends the microbes are healthy and well, they will decompose the crop residue into organic matter and humus. The minerals that are contained in this residue will be digested and made available for the next crop.

You can see that the whole carbon cycle depends on the interdependencies of organisms growing, reproducing, eating, moving and breathing.

## Mineral balance

Minerals are used by plants as building blocks and by the microbes as catalysts. The levels of the macro nutrients of calcium, potassium, phosphorus and magnesium in the soil are usually indicated by a soil analysis. However, it is important that we use soil analysis as a tool, and not a rule. You may be surprised to learn that most macro minerals are present in abundant quantities in your soil. However, they are locked up in the soil matrix and are unavailable to plants.

By looking at a standard soil test; a water soluble saturated paste analysis; a geochemical analysis; as well as what the plant is telling you either visually or via a tissue analysis, you can learn some

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very interesting facts. There is no gain in trying to boost mineral levels in the soil by spreading a lot of ground up rock if our soil's digestive system is not working because the minerals will not become available to the plants. It is also important to note that micronutrients are a critical component of the soil's digestive process.

## Micronutrients

Micronutrients act as activators or catalysts for the macronutrients. Boron, for example, is a much talked about catalyst for calcium. But what we don't often hear about is the need for silicon to enable this reaction to happen. I must wonder how many other trace elements play similarly critical roles. I believe this is why we see great results from the use of products derived from ocean minerals like Sea-Crop® and Sea-Stim™ as they contain small quantities of a large number of trace and ultra-trace minerals.

Micronutrients are also used as enzyme co-factors to catalyze the reactions that occur every time a protein is built and a cell is formed. In fact, without trace minerals like cobalt; microbes such as Ryzobium the Nitrogen fixer cannot function efficiently. A lot less N is fixed from the atmosphere where cobalt is deficient than where cobalt is present. Boron, manganese, zinc and copper are often added in fertilizers individually. From the perspective of an interdependent and interconnected system, we want to add a whole host of micronutrients because we know that the whole is greater than the sum of the parts.

Hey, it's about time to get back on the tractor and continue with your day but, before you do, listen to what your plants and soil are saying. Decide to take the steps and eliminate the cause instead of applying more Band-Aids to the symptoms.

1. Plant a diverse cover crop. Foliar feed it and do everything in your power to ensure it is healthy and vigorous.
2. Manage crop residue by making sure it is in contact with the soil and spraying it in with a biological stimulant like **Rejuvenate™**. Crop residue that is not properly decomposed can harbor pathogenic bacteria and fungi that can attack your next crop.
3. Tillage, when needed, should be done with a purpose and should disturb the soil only to the depth absolutely needed to do the job. Tillage is turning the microbes' home upside down and will kill them in large numbers. They will need to rebuild and reestablish before they are ready to work for us again.
4. Add available nutrition to the plant at Critical points of Influence as needed to ensure the microbes have everything they need to give and take as they grow, reproduce, eat, move and breathe.

Let's work together to move beyond sustaining a broken system. Let's decide now to regenerate and restore our farms to the way nature intended. We are only here for a season and then our children and grandchildren will inherit .....it's our choice. Will we give them a worn out, disease ridden, chemical laden farm or will we hand over a thriving, vigorous, wonderfully complex work of nature?

**The choice is ours.  
Let's decide and get back to work.**

- David Miller, *Plant and Soil Health Specialist*  
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From  
*Veronnika's Kitchen*



by Veronnika Greanthum

## Creamy Italian Breadsticks

Looking for an easy and delicious snack you can make for your next gathering of friends or family? Try these whole grain breadsticks...satisfying, full of flavor and healthy!

1 cup warm water, 1 tbslp instant yeast  
1 tsp honey, 1 tbslp olive oil, 1 tsp salt  
3 cups whole wheat flour  
1/3 cup *Italian Dressing\** (see below)

Mix water, yeast, and honey and let stand for five minutes. Add olive oil, salt, and whole wheat flour. Knead until smooth. Roll out on buttered 14 inch pizza pan. Spread with Italian dressing.\* Mix the topping below and spread on top.

1/4 tsp garlic powder, 1/4 tsp oregano  
1/4 tsp thyme, 1/4 tsp chili powder  
1/4 cup shredded Parmesan cheese  
1 cup shredded cheddar cheese

Bake at 450 degrees for 15 minutes. Cut into strips. Serve with pizza sauce as a dip.

### \* *Italian dressing*

1/4 cup lemon juice, 1/4 cup apple cider vinegar  
1/2 tsp garlic powder, 1/2 tsp onion powder  
1 tsp sea salt, 1/2 tsp green mustard  
1/2 tsp oregano, 1/2 tsp basil, 1/4 tsp paprika

Mix all ingredients in a jar and shake well.



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We are offering an "Early Order Discount" for orders placed by Dec. 14th and delivered in the Spring.

Our "Place and Pay" discount of 7.5% will be applied to your order if you order your products and pay by Dec. 14th!

The "Early Order Placement Discount" of 3% will be applied to your order if your order now and pay upon shipment in the spring.

**Providing the Missing Link for Full Potential Agriculture**

# ADVANCING ECO-AGRICULTURE

Fall 2012

Agriculture...past, present  
and future

In this issue...Marietta Pickett ~Sustainability at Indiana's Bio-Energetic Harmonics Systemic Solutions vs. Silver Bullets • Rejuvenate Your Soil...and more