Grower—Grazier Newsletter

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Procrastination vs Reality

Sometimes in life we, namely the writer, just procrastinate! Technically speaking, it isn't procrastination but rather the excuse that other items were far more pressing according to my rules! In a perfect world, I would publish two newsletters per year and host our Soil Health conference annually. The reality is it has been one or the other.

The Board of Directors which consists of me, myself and I, has decided to focus on either or; one year we will host our conference and the other year we will publish a newsletter...or two (highly unlikely)!

So this Fall newsletter is my attempt to communicate the cutting edge, tried and true, successes and failures, and new developments and findings to the CSI viewers and listeners. This is not to say I won't be out speaking, presenting and making my cute face visible, but rather a conscious business decision made based on the time and energy required to stay in touch. I have been very visible this year, presenting in both scheduled and impromptu settings.

Back in February, Krulls Composting in Maple City, MI invited me to present a full day of soil health principles. There were about seventy attendees taking in information I presented that was focused primarily on perennials (cherries, wine grapes, pastures) with a few homesteaders and gardeners present.

In May, I co-presented in FL to the citrus industry with RJ Rant and Joe Mullanix, to an industry that is struggling and would greatly benefit from implementing soil health practices.

The latest was in September at the Leelanau Conservation District (MI), I was the keynote speaker for their annual conference focused on perennials.

I was scheduled to present a two-day conference back in FL to the citrus industry, but Hurricane Ian blew that out of the water. That conference has been rescheduled to January 30-31 in Sebring, FL. More info on page 12.

For the time being, I will be traveling around meeting with growers to talk about their anecdotal and data driven experiences, product successes and failures, and gathering more information to share in these newsletters and future seminars. My wife refers to this work as "information gathering"! Communicating with the growers is where we learn, and I will make every effort convey these findings to you.

Cheers!

Visibility at Conferences?

I don't even want to bring up the Covid Pandemic, but conferences and particularly attendance at these conferences, has plummeted since this idea reared its head. In December 2021, I exhibited at the ACRES conference in KY. It was the most poorly attended ACRES conference I have been part of. Place the blame where you want, but from an exhibitor standpoint it was poorly attended, and I attend those to talk to growers.

Recently I received word the Bionutrient Conference in MA scheduled for early Dec has been cancelled due to low pre-registrations.

For the first year since ACRES started hosting conference, CSI will not be an exhibitor. In the future I will reconsider, but for this year CSI is seeking alternative methods to connect with growers.

Florida Citrus…don't' take a glass of OJ for granted!

For many of us, having a glass of refreshing FL orange juice has been a staple and for some a wonderful libation. Whether it is with breakfast, vodka or a vital supplement to a marinade, it is taken for granted.

For the last 15 years, the FL Citrus industry has been plagued by a pandemic of sorts. Citrus Greening has decimated the industry, leaving thousands of acres of citrus groves dead or dying. According to the "experts", this disease is caused by a psyllid that transmits a disease by chewing on a citrus leaf. This disease effectively shuts down the vascular system of the plant leaving a trail of dead limbs, trees and entire groves in it's wake.

Understand the concept that plants, animals, and humans are only as susceptible to these pandemic outbreaks based on the overall health and vitality of those beings. The fact that it has swept through the citrus industry so quickly leads one to believe these trees were extremely unhealthy to begin with, otherwise the greening wouldn't have had such a impact.

Case in Point, Brad Turner, a life-long citrus grower from Lithia, FL sought out to understand why—if the soil health practices were implemented in the citrus industry—would this have had such a devastating impact? In 2017, Brad began his research based on an observation of perfectly healthy wild citrus trees growing in the FL hammocks and underbrush. Supported strictly by his own finances, acute bull-headedness, and a very understanding wife (Maria), he began his mission. He purchased five acres of land and began his own

trials implementing the very soil health practices proven in what is now deemed "Regenerative" agricultural practices. Based on soil test results, Brad began mineral balancing according to Dr Albrecht's principles. To inoculate biology and stimulate activity, he started applying compost and compost teas according to Dr Elaine Ingham's concepts. Brad then planted multiple varieties of juice oranges, tangerines, grapefruits, lemons and limes. Having researched citrus production practices from 100 years ago where citrus groves were wall to wall green with what is nowadays considered cover crops, he implemented a cover crop strategy with multiple plantings per season of 15-20-way blends. Ideally this strategy would help build soil and eliminate the need for herbicides, particularly glyphosate. Some weather setbacks, excessive rain, left water standing in his newly planted grove and certainly didn't promote a healthy "set". Nonetheless, Brad continued his relentless work and research.

Brad learned about another citrus producer, Ed James of Howie-in-the-Hills, FL. Ed too had succumbed to greening and was at "zero production" in 2010. At that time, he was in the process of removing all citrus trees and planting a cover crop with the ultimate goal of changing to a different crop. Breakdown of his equipment left him with a "zero production grove" and thousands of dollars of purchased cover crop seed. Not knowing any better, he spread the seed throughout the grove, and stopped using Roundup and fertilizers on the typical low organic matter FL soils. Despite a lackluster germination on the initial seeding, Ed added compost and continued planting more seed. Within 18 months he noticed a difference in the trees, they were starting to show some "life". A buried alligator, multiple cover crop plantings, compost applications, eliminating herbicides and twelve years later, Ed James' grove is back in production. His trees show no signs of greening, no fruit drop, and they are producing high Brix fruit. This was the scientific proof Brad needed to prove FL citrus can indeed function with this disease.

"Next to marrying my wife, walking in Ed's grove was the best day of my life!" said Brad Turner in his 2021 FL Environmental Leadership Award video. Ed had already proved some of the concepts that Brad was attempting to prove on his research farm, namely multi-species cover crops and elimination of wall to wall applications of the herbicide glyphosate. This new-found validation was fuel to feed the fire and Brad's confidence in his own research skyrocketed. He armed himself with more tools by traveling throughout the US to better educate himself in soil health practices being utilized and how these could be implemented in citrus as well as other agricultural cropping systems in FL.

With forty years experience in citrus, and this knowledge

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High Fertilizer Prices...borrowing fertility from soil savings account requires more energy!

The price of fertilizer has organic and conventional producers in an uncomfortable position. With costs up 200-300% over 2020 prices, conventional growers have sought out lower cost alternatives like raw and processed manures and mined minerals in lieu of traditional synthetic fertilizers. As we expect with supply and demand, this drove prices up on those fertility products used predominantly in organic production. There is no point in arguing why the prices increased, that just drives a political debate! Forget the politics, and make yourself more comfortable with a better understanding of how to borrow fertility from the savings account by using soil microbes and carbon.

In many soils, especially where the CEC is above 10, the amount of Potassium (K) and Phosphorus (P) in these soils far outweighs the yearly crop requirements, let alone removal rates multiplied many times over. Those two minerals are not as leachable in these heavier soils with the exception of loss to erosion. To validate this, look at the data on a Total Nutrient Digestion tests. There are thousands of pounds (literally) of Potassium, Phosphorus, Calcium and other macro nutrients bound up in the clay portions of these soils. Add to that the applications of "removal" rates applied on an annual basis for multiple years and even decades. Research has documented that some of that applied fertilizer, especially more stable minerals like P and K, are not all removed by the crop, and with good nutrient cycling of crop residue the balance is deposited in your soil savings account. Like many of the financial vehicles that "hold your money" getting those minerals out of those soil accounts does require significantly more "energy"! The energy being referred to is the energy produced by microbes and carbon. Microbial diversity is the governing body in the soil. Their activity levels, driven by carbon as a food source, are how all nutrients (except Nitrogen) are assimilated for crop uptake.

In any case where living beings are required to perform a more monumental task, there is a significant increase in energy requirements. Marathon runners, sprinters, and elite athletes consume more calories to build up energy reserves to perform at top notch levels. Hook up a deep ripper and pull it through the soil, the requirement...more horsepower and diesel. The soil especially higher CEC soils and the microbes are no different. More calories equals more energy released. CO2 respiration rates in soils are dictated by microbial biomass and the amount of calories (carbon) available. There are higher respiration rates when there are more abundant levels of calories in the soil. This is a measurable process using the Haney soil respiration test offered through Regen Ag Lab, Denele Analytical Lab, and other labs that are using some iteration of it. The more calories in the soil= more microbial activity= higher CO2 respiration= more nutrient cycling.

Microbial diversity is the governing body in the soil. Their activity levels, driven by carbon as a food source, are how all nutrients (except Nitrogen) are assimilated for crop uptake.

Grower beware, don't stop applying fertilizer altogether and expect magically that the plants will have full access to your savings account. It will require significantly more carbon stimulating microbial activity before those nutrients are released. Case in point is a blueberry grower in Grand Junction, MI, we will call him John Smith...because that is actually his name. Starting in 2014, his Phosphate levels in a very sandy soil (CEC=5) were 68 pounds (Mehlich extraction). On each subsequent soil test result for the next three years Phosphate numbers increased as did solubility as indicated on his Saturated Paste test. The latest sample from Spring 2022 showed his Phosphate levels are over 600 lbs., on a farm where only small amounts of Phosphorus (from manures) have been applied. The increase in microbial activity and diversity has released more Phosphorus both exchangeable (Mehlich III) and soluble (Saturated Paste) that were locked up in his savings account, albeit it took a couple growing seasons.

That documented evidence above is one scenario, and I don't advocate waiting three years for P levels to improve before planting your next crop. However to speed up the process, high amounts of calories (energy) in the form of Organic acids (talked about in previous articles), biostimulants and biological inoculums should be applied to seed, soil and foliage to push the envelope.

There are some situations, where a small shot of Phosphorus makes dollars and sense. For those that insist on being the first farmer to plant in the Spring, or those that grow perennial crops that come out of dormancy and move directly into a root flush and production, a shot of soluble Phosphorus in the row, or banded on the soil surface will be necessary. This is critically important when soil temps are < 60 degrees. The cold soil doesn't have biological activity to "release" phosphorus. Using what we have learned in organic production (where the tool box doesn't include a soluble Phos product) applying a

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Product Trials and Grower Observations– CalAcid and NStar

As much as we like for growers to "buy in" the entire farm or acreage from a "gross sales" standpoint, realistically it is more important to prove it to yourself, on your farm, in your cropping system with your equipment. Trialing a product is the best way to discern the value of the product being applied. Ideally each trial should have both a control (non-treated) and a treated area to be used to judge the data against. When doing trials it is critical to measure more than just the yield monitor to truly justify the value. In spite of growers only getting paid on yield, there is much more to improving soil health and profitability than this year's yield. For instance, growers have observed 2nd and 3rd year benefits even when just the one cover crop was planted. Unfortunately, many farmers look at the "value received" in the first year, see nothing in the yield monitor and proclaim "it didn't work!"

A Michigan blueberry grower I have worked with on improving soil and plant health, contacted me in the Spring of 2021. He was voicing his concern about the age-old challenge for blueberries of having adequate soluble Calcium in the soil, and more importantly it translocating into the plant. Calcium is critical in all crops as it is the main driver for building cell walls. In blueberries it is critically important for holding the fruit on the bush and fruit quality. His protocol for increasing soluble Calcium in the soil and plant for the last few years has included an application of early season Gypsum to supply soluble Calcium, in addition to foliar feeding and side-dressing Calcium products. All of which failed to move the needle on either the soil test or Plant SAP analysis and he was not achieving the berry quality desired.

In the Spring of 2021, he started applying Microdrive-CalAcid to the soil by banding it with the herbicide spray in mid-April and then again in May. His May Sap results were showing Calcium improvements over the previous years results but still not up to the desired levels. Other blueberry growers have used CalAcid in the past seeing similar small changes also. When talking this over with this grower in the Spring of 2022 he decided to increase the volume stating that "it has been the best movement of Calcium in the plant of any product he has applied over the years." Rarely do I encourage the "Moron" principle (putting more on), but some research later in this article supported the idea of higher volumes. Perhaps we (I) was missing out on the recommended volume needed to move the needle in these soil types on this particular crop.

Starting in April of 2022, he began applying 2-quarts per acre per application targeting a total of 2-gallons for the season. The first application was applied with the herbicide pass, and then another two quarts in May, June and July.

In October, we reviewed his SAP results on both early season (Duke and Bluecrop) and late season varieties (Elliott) after two full years of CalAcid applications. It is difficult to pinpoint whether it was the two years of applying, or the increased levels in the second year…regardless SAP results showed Calcium at optimum, or near optimum, levels in both new and old leaves in all varieties. (I have studied hundreds of SAP results on blueberries and other crops over the years and rarely do growers achieve adequate Calcium levels in the new leaves as it isn't overly mobile within the plant!) There was adequate Calcium in the plant starting with the first SAP Analysis in late May continuing throughout the season even post harvest.

> *Rarely do I encourage the "Moron" principle, but the research coming up next, supported the idea of higher volumes.*

We understand the value of striving for optimum levels of Calcium throughout the blossom stage and the embryo development stage as it is critical for cell division, but it is equally as important to keep the Potassium: Calcium ratio at 3:1 (SAP results) well into harvest to maintain berry quality. If Calcium is deficient in the leaves while the fruit is sizing, the plant will rob the Calcium from the fruit to pull it back into the leaves compromising fruit quality. What he has observed over the two seasons of applying it is good to great berry quality with minimal fruit disease issues.

There has been some CalAcid research worth pointing out that will help validate what this blueberry grower has observed. This is a comparative research trial on CalAcid against a control plot versus four other Calcium and Calcium releasing products. This data was compiled from soil and tissue tests from a walnut farm in California. The testing was completed by Denele Labs, an agricultural research lab in Turlock, CA. The trialed products compared against the control plot were 1) CalAcid as a standalone, 2) CalAcid with a "top-end" polymer product, 3) the polymer as a standalone, 4) a Calcium-Aluminum-Sulfate product, the control plot which didn't receive any amendments, and 5) a prilled gypsum product with added sulfur.

Here is my non-scientific synopsis of these trials.

Based on one application of CalAcid to the soil at a rate of 3.97gallons/acre: Calcium (Ca) levels in ppm (56% increase) the Gypsum product was next best with a 20% in-

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Subtle Energies, Dowsing, Radionics- SE-5 By Ron Ward

Those of you who have attended a CSI Soil Health Seminar have heard me talk about *energy*. I usually ask, "By a raise of hands, how many here have utilized the services of a chiropractor, dentist, health food store or other specialist who uses kinesiology/ muscle testing in their assessment?" If you are someone who answers yes, then you may have a head start in understanding how this energy- concept approach could be of help to you in your farming practice. Those participants skeptical of this approach saw their skepticism change to wonder as I tested the arm strength of an acknowledged skeptic using white table salt in comparison to Redmond salt. The *body* generally responds strongly to the salt with minerals intact (Redmond) vs salt with minerals removed by industry, so their arm usually went weak when testing with white salt while it was *strong* when tested with Redmond. Kinesiology is increasingly becoming a common form of body assessment by practitioners from increasingly varied fields: https://theconversation.com/muscle-testing-kinesiology-panacea-or-placebo-11075 .

Dane told me the story of presenting before a group of farmers whereupon one came up to him afterwards and said, "as soon as you walked up on the stage, I knew I needed to work with you." This could be called a form of sixth sense or built-in kinesiology ability.

In using kinesiology, the purpose of testing is looking for something to strengthen an energy field e.g., an animal body or a farm field. In other words, what mineral, vitamin, amino acid, fertilizer etc. will strengthen my livestock and/or crops and which will energetically test to weaken them? Besides muscle testing, which usually tests arm or finger strength, this approach most commonly makes use of a pendulum to dowse or ask questions to come to conclusions or answers: https://www.youtube.com/watch?v=uPCtoP0ufVw

Dowsing can be used to analyze a *body, field, or substance* for the purpose of determining if the energies of that substance (e.g., calcium carbonate, potassium sulfate or potassium chloride, for example) are beneficial or detrimental to the energies of the field or body. This approach allows the farmer to select positive inputs and avoid negative inputs. Obviously, farmers have used the university/USDA potassium standard – potassium chloride – for years with seeming good results. So too have they used MAP, monoammonium phosphate. Yet as growers increasingly question the long-term effects of these university/ USDA approaches, as well as too often mediocre crop health results requiring pesticides for *crop protection*, they are increasingly looking at other, perhaps more sustainable and/ or nutrient enhancing approaches or models.

Our sustainable/organic/ biodynamic industry has long used the refractometer to help assess crop health. If testing shows low brix during the growing season the grower could respond with an application of a liquid foliar fertilizer that tested *strong* to strengthen the crop. Whereas the refractometer was developed for assessing a finished result e.g., fruit/ grapes, it can also be used to assess the leaves of the growing crop. The brix chart was developed by Dr. Carey Reams and Dr. Dan Skow with some assistance by a then very young Arden Anderson. Now, as new testing approaches are being developed – such as the state-of-the-art Bionutrient Meter https://bionutrient.org/bionutrientmeter with its current list of 10 vegetable crops with new data for grains and animals coming in – it will be increasingly easy to respond to crop nutrient needs at a much more precise level.

Those of you who attended AcresUSA conferences in the 1980's-1990's know that radionics was a hot topic back then. A radionics device https://en.wikipedia.org/wiki/Radionics or instrument is used to determine the same type of results as does kinesiology. Yet the radionics device will also send out balancing energies as determined by the operator. Radionics could be considered a form of *hands-off* healing for the field (or body).

Last January at our soil seminar one of CSI's grower*s* approached Dane after having now watched three of my energy presentations suggesting it was *time to take the next step* by which he meant, *I want you to work on my fields this next season.* And so, we did.

Dr. Phil and I have taught many 3-day seminars using what could be considered a standard 2-bank instrument shown here. Two-bank tunings, also called dial-rates, such as 24-04 for Calcium, 32.5-16.5 for Nitrate Nitrogen or 48-39.25 for ammonium sulfate, are

dialed in on a bank. *These rates or tunings* are sent to the subject, in our case fields of corn or soybeans, providing a subtle energy (can't feel it) with the *signal* or *frequency* of the rate chosen. That's how radionics works. In our case this season, we used an SE5, a computerized radionics instrument https://radionic-international.com/se-5-1000/

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Forage Plots...Attracting deer and building soil health! by Dale Wallace

Animals instinctively will eat their breakfast, lunch, and dinner where the most accessible quality diverse nutrient-dense meal is. Hi Brix food is not only desired for human health and wellbeing, but as important for livestock, as well as wildlife (deer, elk, moose, turkeys, etc). These consumers generally will return to these ecosystems to eat their future meals...alas a hunters dream—If you grow it they will come!

Numerous articles have been written, pod-casts recorded, and ideas have targeted forage plots "If you build it, they (deer, elk, moose, turkeys) will come! In addition these "consultants" have touted the idea that soil health is critical when (seeding) these "forage plots". These tried and true agricultural principles of soil health correlate perfectly when attempting to grow crops as forage plots to successfully attract wildlife. It is not simply throwing a forage plot mix out and praying, it is far more complex. Hunters are spending enormous sums of money to provide a better 'quality" crop to attract (and feed) their "prize buck!"

Dale Wallace lives fifteen minutes from my office and contacted me to have a soil test completed on one of his forage plots. Once he had the results, he visited the office and we reviewed the results and recommendations. He said "it's too complex" for most hunters to follow these given they are "just trying to attract wildlife"!

Dale started Five2Outdoors in 2020 with the goal of supplying quality seed and develop forage plot mixes based on growing a diverse above ground biomass to attract the hunted animals. I explained to Dale "while implementing soil health practices may be the furthest from these hunters' minds, these concepts will promote growing a diverse above ground biomass to attract these wild game based on nutrient density and Brix!" Despite his concerns about the complexity for most hunters, Dale listened intently as he was eager to learn about these concepts on how the recommendations would benefit soil health and attract wildlife, ultimately improving his forage crop business and customer satisfaction. For the last 3 years, Dale has been blending his own seed mixes and packaging them for sale in local sporting good outlets in Michigan. He has developed quite a following in the Michigan and Indiana, but because of his newly developed website presence, he also has clients in VA, KY and TN all trying to bring in the bucks.

From Dale: "Five 2 Outdoors was started on the idea of changing the industry, by that we wanted to get high quality seed into mixes that make sense at an affordable price. From Brassica mixes, Cover mixes to Soil building mixes, we include at least three or more of each variety in a mix. Selecting the correct mixes based on maturity dates, or plant types that perform better than others based on the soil conditions: shady, sunny, wet soil and soil types. Important to note: with the soil building mixes there must be enough food in them to survive the browse pressure, if not you have no soil building plants.

With these ideas, we started with the basic Brassicas Blend that is very common in the industry, we just use better quality seeds! With the Just Bulbs mix you have 3 turnips and a radish with different maturity dates that range from 50-90 days. Ideally these should be planted 45-50 days before the average frost date in your area. There is some leeway with Just Bulbs in case you need to plant a few weeks early or if the average frost is a few weeks late, there will be something that is still palatable to deer. Selecting different turnip varieties will also give a lot more top growth which in turn gives your deer more food.

The Lot's O'leaf mix is unique being for an early season plot with four forage brassicas and one turnip. Once again we are using new and improved seeds that offer up to 4 times the grazing capacity on a single plant not just taking a bite of one leaf. This blend can be eaten to the ground and it will regrow! That provides a lot of tonnage even in a small food plot. These plants will grow until the soil temperature hits 25 degrees and remain green down to 10 degrees. With the one turnip and the growing power of the forage brassicas you have a plot that will last into late Winter.

Grain Bin and Overtime are bagged separate (seed size) but are planted in the same plot. Grain Bin's base is winter rye and other grains and peas. Overtime is Mammoth red clover and Radish. This is our rotation plot mix with the brassicas and should be planted 20-30 days before the first frost. With the oats and peas deer hit them early and hard then you have the rye and wheat to last into spring. When you add Overtime you will have the deer eat the radish tops and browse on the clover going into

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Forage Plots...(Continued from page 6)

winter. Come spring the radish tubers will rot and add nitrogen back to the soil along with breaking up any compaction in the soil. The winter rye will be the first thing to green up and provide a food source before anything else. We mow the Rye/wheat in May leaving a bed of clover going thru the summer until we work the ground for the brassica plots. With this combination you will add Nitrogen and Organic matter to the soil.

Black Gold is a soil building mix that includes Buckwheat, Lentils, Vetch and 3 annual clovers. This mix was designed to add much needed nutrients back in the soil. This should be Spring planted and should be planted following any monoculture annual crop, but also is a diverse blend to follow a brassica plot.

Daily Meal and Cluck n Grunt have multiple types of clover in the mixes that have different life spans and these will grow in lower PH soils and different types of soils. Along with alfalfa and chicory they provide a lot of food and diversity.

Full House is another Spring planting that I believe has it all! By that I mean it supplies Food, Cover, Weed Suppression and Soil building. This is where you need enough food to survive browse pressure that will allow the plants to do their job in building the soil. From Cowpeas, Buckwheat, grain sorghum, triticale, Vetch and Sugar beets you will be feeding the deer and helping your soil. If your deer smash this plot you can till it in and plant a fall plot. We always have options!

Lot's O'Leaf (brassicas and turnips) plot

Magician is a mix to create a "screen", or a wall of biomass. This doesn't include forage value but rather four distinct plants that range from 5'-12' tall. There are shorter plants included to build a foundation to help the taller plants stay upright throughout winter. The idea of this is to plant a strip 8-10' wide along your entrance perimeter so your able to get to and from your stand location without letting the local deer know you are there.

Dark Alley is 100% food as is used to separate plots or can be planted as a food plot itself. With grain and forage sorghum, and spring barley it will provide food and give the deer security while grazing. Adding Vetch to this blend will provide more forage and will put back nitrogen to the soil.

One thing we recommend at Five 2 Outdoors is we love frost seeding. Broadcasting seed during the freezing and thawing action of the soil works to increase germination. Our Frosty mix works perfect for this as it is a medium red clover that will frost seed along with winter rye into monoculture food plots. The Winter rye has natural herbicides that suppress weeds, plus it can germinate at 37 degrees and will grow if any of the plant is above the snow and the air temp is above 33 degrees. After you mow the rye you will have Frosty that will be adding nitrogen back into the soil. We also will frost seed Daily Meal into a multi species clover plot, at least every two years or as needed.

By working with CSI, I have learned that implementing the same strategies and products used in agricultural production makes sense in trying to grow "our crops", forages in this case. Most of these plots that my clients are purchasing are worn out agricultural soils and as such need a boost. With all of our seed blends we recommend putting a biological seed treatment on the seed. MicroMax (from CSI) along with a liquid biological application of MicroSpark on the soil to inoculant beneficial microbes and give it a jump start.

Over the last year, growers have been applying some other products foliarly to improve the nutrient density and taste. CalAcid applied to soil and/or foliage will stimulate much needed Calcium uptake which drives Brix. With most of these worn out soils, it is imperative to supply nutrition along with the biology, so I am also carrying a Nitrogen product (14-0-0-1S) as well as a more well rounded fertilizer in the 5/2 Juice."

For more information on establishing forage plots to attract the big bucks and clucks, contact Dale Wallace (574) 214-3506 or visit his website:

www.five2outdoors.com

Product Trials Continued

Product Trials (Continued from page 4)

crease. Water soluble Ca (117% increase), the gypsum product decreased soluble Ca by 71%??? Potassium (K) levels in ppm (24% increase) and water soluble K (37% increase), Magnesium (Mg) levels in ppm (23% increase), and water soluble Mg (76% increase). In addition, Electrical Conductivity increased 96% and Nitrogen holding capacity increased 12%.

Tissue testing data was also compared to measure any changes over the control. Interestingly Aluminum, Chlorides and Sodium were at toxic levels according to the tissue test in the control group. When compared to the trials, CalAcid reduced the ppm Aluminum toxicity levels the most a 46.5% reduction. That was 30% more than the other products trialed. Also the CalAcid increased Ca concentration in the leaves by 8%.

The final set of data that was compiled was Soil Respiration data. Soil respiration is a measurement of CO2 release from the soil. This measurement is an indication of microbial activity. Many labs refer to this as the Haney respiration test and it is measured over a 24-hour period. Denele uses the 24-hour test as well, but also measures the CO2 release at the 7-day mark. Why? The 24-hour test will indicate microbial activity based on the carbon (food sources) available. Taking the 7-day test also and comparing those results, will indicate how much carbon is available as a food source to support microbial activity for the longer term. This is a case where applying high amounts of sugars (molasses for instance) can be detrimental. The 24-hour test will show a significant increase in CO2 after the molasses application. However, when that soil is tested again at the 7-day mark, the number will crash as the food has been used up. From a biological standpoint it is not beneficial to have peaks and valleys, but rather to provide longer-chained sugars (food for microbes) and have consistent CO2 release throughout the growing season. This points to the value of achieving optimal photosynthesis and using cover crops, microbes get fed year-round! I digress!

How does CalAcid fit into this equation and more importantly this article? (Answer: Be patient, keep reading, "Equip your mind"!)

In addition to CalAcid supplying Calcium and Boron in an available form, it's makeup is primarily organic acids (citric, lactic and gluconic acids). These organic acids are what 90% of all living plants excrete from the roots to attract and stimulate biological activity. CalAcid provides calories to feed microbes, long term.

Back to the respiration test and data to validate the point. Denele Respiration Report (DRR): comparing the data where CalAcid was applied vs the control and the other products:

CalAcid showed a 50% increase in CO2 respiration for 24-hours and 48% increase for the 7-day test. The other products showed very little change in either test vs the control. This would be expected as none of those products are touted as microbial foods. In fact polymers are known to be somewhat antimicrobial indicating applications do kill microbes, hence there likely wouldn't be an increase.

In both soil and tissue testing CalAcid showed remarkable results against the control plot as well as in comparison to the other products tested.

Answer: Be patient, keep reading, "Equip your mind"!

Additional data analysis is being compiled using CalAcid on blueberries, strawberries, citrus, and pastures over the next growing season. These are comparing data from CalAcid soil and foliar applications against side by side control plots. Once more data has been gathered, findings will be reported at the next gathering and/or in the next newsletter.

NStar 14-0-0 is a urea based nitrogen that has been processed through a microbial fermentation. The value of the fermentation is the ability to add nutrition (in this case Nitrogen) during the process that enables microbes to "digest" these fertilizers and poop them out to increase availability but decrease volatility as they are now attached to a carbon molecule. In addition to the Nitrogen, Sulfur and a suite of trace minerals (S, Zn, Mn, Fe, Cu, B and very small amounts of Co, Ni, and Tin), this product was developed primarily for use in corn to fill in Nitrogen deficiencies after tassel. With good to great results on corn, a few growers have been applying to their soybeans and other crops as well. The old theory was that soybeans don't respond to Nitrogen applications as they are a legume and make their own Nitrogen. Farmers that ignore old information and try new ideas disagree with some of these antiquated theories. In most cases, they will tell you a shot of Nitrogen on soybeans almost always pays off.

I spoke with Brian Market in Canada who has been applying NStar on corn, soybeans and just started applying on wheat this Fall. He farms a corn, soybean, wheat rotation integrating cover-crops every Spring. He likes a a 3-6 way cover-crop blend that includes Hairy Vetch. He pointed out Vetch provides 2X the Nitrogen of clover or alfalfa, and he counts those units as a portion of his fertility. He plants "green" directly into the standing cover crop, and then terminates the cover crop 2-3 weeks after planting. The terminated vetch produces a nice mat to reduce weed pressure.

His soybean fertility program consists of: a combination of 2 quarts of MicroSpark with 2 oz. of MicroMax seed treatment per acre on the seed in-furrow. "I started with lower

(Continued on page 9)

Product Trials Continued

Product Trials (Continued from page 8)

rates because "it's gotta pay", now I always use 2-quarts...if you get what I am saying!" He side dresses his soybeans with 5g of 28% Nitrogen with 2 qts of ZincAcid, and then foliar feeds with two quarts of NStar at the first blossom and then again at the first pod. Beyond that he said "it depends on the weather conditions. Some years that is all, and other years like this one he adds one or two more foliar feeds." 2022 was extremely dry, and he foliar fed NStar two more times. Like all good farmers he even left a check strip where the sprayer was turned off. Also like every good farmer, he did not take any pictures. So this is how it goes with many growers, we must dig for experiences and anecdotal observations.

Yields were average for Brian in 2022, but he emphasized that average was very good considering the lack of rain. His neighbor planted the same day same variety, and got the same yield. The difference is Brian's fertility program described in it's entirety in the previous paragraphs. Fifty-six bushels with half the input cost of his neighbor.

In the early season, a friend that also uses these products got hit with a hail storm that decimated his corn. Prior to filing a crop insurance claim, he foliar feed MicroSpark with NStar, the crop responded and he harvested a respectable 175 bushels.

For his corn program goals, Brian's goals are to increase test weight, yield and benefit the next season's crop. He feels every year, it keeps getting better. He is now down to 125 units of applied Nitrogen fertilizer in the row for corn. The balance of the fertility is foliar feeding 2 qts of NStar at 3-4 leaf stage and again at V-7. Depending on the weather for the year, he occasionally applies a late season NStar with added Potassium, Boron and Sulfur to increase test weight.

To recap, these products have their place in annual and/or perennial cropping system production. They are not "magical" in any way, however they were designed to accomplish multiple functions, a "stacked' product if you will. By stacked I am referring to the points I wrote about in the article: 1) supplying nutrient(s) in a chelated but bio-available form, 2)providing a big dose of organic acids to etch the soil to release more nutrition, and 3) providing a high-calorie energy source to stimulate biological activity. Other products on the market could be combined together and achieve similar results. These products mentioned were formulated to take the "chemistry experiment" issues of mixing multiple products out of the equation to make applications more simplified for the grower/applicator.

These products are manufactured in California and warehoused in Grand Haven, MI. Most growers purchase these in totes and tankers. Getting your orders in early guarantees the price and assures it will be at your farm when you need it.

We are offering a 5% discount for orders placed and paid for by December 31st.

Borrowing Fertility...Continued from pg. 3

biological inoculum, that includes phosphate solubilizers, with a food source (MicroSpark plus Zinc Acid for conventional producers, MicroSpark plus liquid fish for organic producers) will provide enough Phosphate release so that it will not be a limiting factor in the cold soils. If liquid options aren't available on the planter, applying a biological seed inoculant MicroMax is the best substitute. The same concept applies in perennial production, banding of biostimulants to support the early season root flush with a soluble Phosphorus and/or microbial inoculant.

How much energy is needed? "It depends!" The analogy that I have learned from one of my mentors, RJ Rant, is this: In a healthy soil the total weight of microbes: bacteria, yeast, fungi, protozoa and nematodes is around 27,000 lbs. per acre. To put that into perspective that is equivalent to approximately 18 cattle feeding on each acre of soil. When feeding 18 cattle, large amounts of biomass are required to achieve ideal weight gain or milk production. The microbes are no different, if we need them to go the extra mile they need more calories. Cattle nor microbes can be supported with pints and quarts, it requires gallons especially in heavier soils.

To clarify, it is not recommended to depend on Total Nutrient Digestion (despite the recent Acres article) as your guide for short term fertility. However, knowing this resource is there for times like these is helpful in the long run. Use common sense approaches to fertility supplying smaller shots where needed, include carbon to support the system and then monitor the crop with tissue or SAP analysis. There are quality soluble products on the market in case the biological energy is not solubilizing enough to meet the crop demand in which case a quick foliar can be applied to fill in any nutritional gaps.

In closing, in order to withdraw from your soil savings account, carbon must be increased in the system, the higher the CEC the more energy is needed. The implementation of Regenerative concepts of applying compost and planting cover-crops are basic soil building tools and will add some carbon to the system. However, in order to access and withdraw large sums from the soil, gallons per acre will be necessary to "feed the herd!"

(Subtle Energies Continued from page 5)

connected to my laptop. We added eleven pictures comprised of almost sixty fields total, covering about 2500 acres. We grouped the fields as corn and beans and then separated those groupings according to similar soil types. Next, we analyzed each grouping of corn and bean field pictures, and using dowsing techniques, as shown above, selected the tunings *called for* in our dowsing. In other words, we selected those tunings which raised the energy of the field and crop. This is how the SE5 was displayed: my laptop, situated next to the SE5, with the resulting image shown on the monitor behind. Except for the times I updated the programs required for each set of fields, this program basically ran 24-7 from mid-May to the end of harvest which in this southern IL county meant late-October.

Let's get specifics as to how this was done.

I started this project at planting, so I did *no balancing work* to the field prior to planting. I had a picture of the corn and bean seeds being planted so I matched the *energies* of these seeds with other substances I had either a picture of or known frequencies (tunings) for. Because of the way *energy can be captured* by a quality photo, having a picture of a product e.g., tote or container of beneficial microbes, humic acid, seaweed, ocean water, etc, can allow the radionic device to send that *pictures' energy* to the subject, in this case to the seeds in the fields we were balancing.

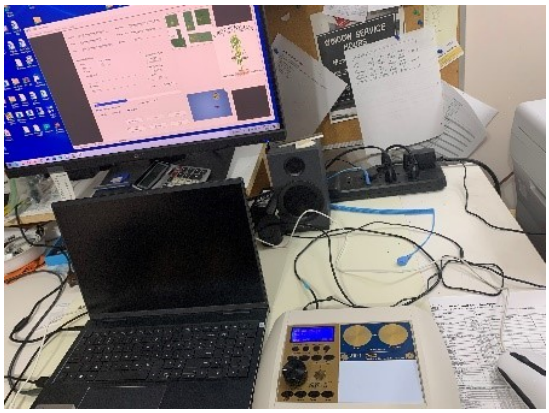
SE 5 Subtle energy instrument

Obviously, it would be best for these products to be applied in row with the starter fertilizer. This would be CSI's approach. In our case, this was not done. So, the question was, would sending out an *energy signal* accomplish anything? O*bviously*, that question will wait until yields are known.

Once seed was planted, was there something the SE5 could do to stimulate rapid germination or prevent soil crusting thus encouraging seed emergence? What about something to inhibit, if not prevent, pathogens from eating or damaging the young rootlets? Could something be done to discourage racoons and turkeys from foraging on young bean and corn plants? What about white grubs, bean leaf beetles and other common pathogen-attack issues?

What could the SE5 do if pesticides were applied? Could it lessen common, expected crop damaging side-effects from pesticides normally applied? And what could be done to remedy excessive or deficient soil moisture or temperature pressures?

We know, from the work of Carey Reams as found in *The Nontoxic Farming Handbook* and other publications, that plants can be *nudged* from *growth to fruiting* as well as from *fruiting to growth* using specific minerals or fertilizers. Would it be possible for the SE5 to *do this* as well? These and other questions were considered in this year's work.



SE 5 connected to my lap top.

Because radionic intervention is considered *subtle energy* its not really possible to quantify its effects at any given time. Considering the vast complexity of sunlight, rain, drought, wind, and other weather conditions, all that could be done would be for the grower to observe daily conditions, report back to me and see what I could do about them.

I had many images (pictures) of commonly used ag products. Some dry like gypsum, potassium sulfate, boron, manganese, etc. Some liquid like trace minerals, fish, seaweed, and such. Some of the products are sold by CSI but many are not. My nitrogen sources included: Baicor Microplenty, ammonium sulfate, Fish Alive, and NStar 14-0-0 (one of RJ's microbially brewed products), all products sold by CSI. I had many additional fertilizer product images as well. I had twelve colors to choose from, thirty some biodynamic products created by Greg Willis, and thus it was my job to dowse out which of these images were *called for* by each of the fields being balanced. I found the color yellow tested positive when field drying was needed. Other colors were chosen during the growing season. Humic products most always tested positive for soil balancing and many of our biological products were chosen during seed germination and root development periods. We know that phosphate *nudges towards fruiting* and thus these were

(Continued on page 11)

(Subtle energies Continued from page 10)

always present during that stage of crop life. Once flowering was finished, *growth and seed filling* energies were selected. Later crop dry-down programs were chosen. Thus, it was how I spent my summer.

Now that crops have been removed, what next? Is it possible to continue this radionic balancing through the winter and continue into a next growing season? The answer depends upon the grower. Obviously, the answer is yes.

To take the next step myself, and just to see what looking at just the soil would show, I selected the four corn field images (20 fields total) to see where these fields were at harvest. I looked at five (5) tunings: Blockages, Deficiencies, Overstimulate, Soil Overwork and Chemical toxin. The results for Home Good Ground (5 fields) are documented in table 1. (See table 1)

Tuning	10/25	10/27	11/11
General Vitality	79.6	81	??
Blockages	43.8	17.8	1.5
Deficiencies	38.8	15.5	1.5
Overstimulate	33.7	13.5	1.1
Soil Overwork	39.1	8.7	6.3
Chemical Toxin	30.6	8.5	4.3

Table 1, Before and after Tunings on corn fields after harvest

My commentary: General Vitality (GV) is a term used in radionic work to measure the "general vitality" of something, in this case the fields as one unit (the vitality of the five-field composite). Although we'd like that vitality to be 100%, seldom is this the case, especially at this time of year. This vitality number is quite fine.

The other five tuning are all negative numbers "energies" highlighted in red on the table, meaning we'd prefer them to be "0". The higher the number the worse for the field. Generally speaking for the negative numbers, if the number is 15 or higher, balancing should be done to effectively reduce this negative energy.

I balanced these fields from 10/25 to 10/27 and then reanalyzed the numbers. To balance I used the tunings shown (e.g. Blockage) plus I selected five energy images, three colors, copper sulfate crystals, a humic product and a mined rare earth image called Black Earth Magnetite to balance all 5 corn fields.

Balancing for two days didn't substantially modify the GV but it did move the numbers down for the negative tunings. By balancing down negatives while balancing up positives we would expect to see the general vitality increase. The GV number is always floating so there isn't a given number you want. This is a good number for these fields at this time of year.

This is my first quest utilizing the SE 5. What's next for this grower? We'll just have to wait to see where we go next.

Having said all this, here are customer comments throughout the season and post harvest:

"Our soybean rootlets were 4" in length at day four. We've not seen that before!" (May '22)

"If you are doing something to keep the deer out of the soybeans, please take that off as the hunter that leases this property to hunt will be angry no deer are around. We always have had abundant deer damage along the woods in this field!, but not this year!" (July '22)

"Dane, with what you and Ron are doing, I really like what we are seeing, great germination, very little pest pressure, and when compared to the neighbors, our crops look better!" (Aug '22)

"Yields are fantastic, this is fun! Our seed sales rep sells a lot of seed around our area and hasn't heard of these kinds of yield numbers" Oct '22

Note: To keep things in perspective, this grower also noted that the environmental conditions (weather) were excellent this year, timely rains, and enough heat degree days to take the crops to maturity. Prime weather conditions haven't been the case over the last three years. I am not insinuating we were manipulating weather, but just pointing out that no where in agriculture is there a silver bullet...including the SE-5. This farmer has implemented numerous practices over the last ten years to improve soil health. They are using a sound fertility program based on their soils and the crop. The value of this tool is/was not to replace any of those good agronomic principles, but rather to enhance the entire system.

If you would like to consider this type of radionic approach on your farm please call Dane at 800-260-7933.

Look at equipping your farm in a different context. Equip your farm by equipping yourself and your farm manager with the knowledge of the most important equipment of your operation...your soil! *Author-CSI Author*

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FL Citrus
(Continued from page 2)

under his belt, Brad started Sand to Soil Services as a consulting business to assist growers on their own journeys to save their own farms and the FL Citrus industry.

The industry has seen a decline in production and quality to the point the juice buyers have attempted to lower the Brix requirements of the oranges grown. Growers get paid on pound solids (of sugar), a direct result of Brix. These trees are not photosynthesizing at full potential causing the low Brix. In this writers opinion, this is due to multiple factors: improper mineral nutrition, lack of soluble carbon, lack of biological diversity and function, and most importantly, the lack of a leader in the industry touting how these tenets of soil and plant health will improve Brix and can reverse or "save" the industry.

In May of this year, Brad and Ed hosted a half day seminar with myself, RJ Rant and Joe Mullanix presenting some of these topics on how they would benefit their operations. Over forty growers were in attendance hosted at Ed's grove...the real proof in the pudding. Comments from those in attendance centered around a main theme of "Why don't I know these concepts?"

Through no fault of their own, citrus growers are desperately grasping at ways to keep their groves alive. Unfortunately, their leaders are the university researchers attempting to find the proverbial "silver bullet"! Time is of the essence and in spite of Brad and Ed's own research, the researchers are still asking:

- Will cover crops help with greening?
- Does reducing herbicides improve tree health?

To fully comprehend the challenges these growers are faced with, this writer read a soil test report that said if Organic Matter levels are "below" the target..."Deal with It!" Add to this the lack of soil health concepts promoted by industry researchers in either of the two annual citrus publications. There are over 350 pages in these guides and there are only 2-3 sentences referencing soil health, plant health, microbes or carbon. And here lies the reason citrus growers are not focused on the system and practices that promotes soil and tree health.

Saving an industry is perhaps too lofty of a goal, but having been in the citrus industry his entire life, Brad Turner isn't about to let it smolder out without a fight.

Brad and Ed are hosting a two-day soil health seminar Jan. 30-31, 2023 in Sebring, FL. I, along with consultant/ agronomist RJ Rant (Terraform Ag), Joe Mullanix plant pathologist and owner of Denele Analytical Labs, Alexis Ulloa of Mullinax Sheep station in California, and Herb Young of Squeeze Citrus in Georgia, will present soil health, plant health and ruminant health principles and concepts. See Flyer above or for more information visit: www.sandtosoilservices.com/conference to view speaker bios, itinerary and to register!

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Soil Testing: New Packages, Pricing, and Submission Form

In order to stay current with the soil testing options from Logan Labs, CSI is now offering two new soil testing packages: Complete Soil and Complete + Extras.

The soil testing protocols recommended for most growers (gardeners and large acreage alike) are the Standard CEC and Saturated Paste test for their annual soil test. Some growers add on the Nitrates/Ammonium test, and others add on one or more of the extra micronutrients (Co, Mo, Se, Si and Ni) tests. Each additional test significantly increased the cost. To be more cost effective to the grower and to follow the lead of the testing lab, CSI's customers can select a package that best fits their needs.

The Complete Soil package includes the Standard CEC, Saturated Paste analysis, and Nitrates and Ammonium. In the past, selecting those a la carte, if you will, would have cost $72. The cost for this package is $55.

The Complete Soil + Extras is the Complete package from above with these extras: Cobalt, Molybdenum, Selenium, Silica, Nickel, Electrical Conductivity and Estimated Nitrogen Release. This package adds five dollars to the cost of the Complete Soil for a total of $60. Comparatively those choices in the past would have cost in excess of $100.

The stand alone tests are still available and may be useful in specific situations.

The cost for recommendations is increasing to $30, due to the time spent interpreting AND the time spent on the phone with the growers over the course of the year.

The website has been updated to reflect these changes and a new Soil Submission Form is available on the website for download. This form should be downloaded, printed and filled out to submit with the samples.

The new Soil Submission form includes an area to indicate the form of payment. For those who pay by check or money order submit that payment with the sample. For those that would rather pay by credit/debit card, indicate that on the form by selecting the box. Once the sample has been received in the office, an invoice will be emailed from our QuickBooks account with a link to pay online, or you can call the office with your credit card number. DO NOT include credit card number on the form.

Also to clear up confusion, the website no longer allows payment for soil testing through the Shopping Cart, that option has been disabled.

Download the new Soil Submission form here: https://www.cropservicesintl.com/soil-testing/

Wishing everyone a Merry Christmas and Happy New Year!