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We will be exhibiting
Virtually this year:
Stop By Our Booth!

ACRES
Eco-Ag Conference
Dec 1-4, 2020
Anywhere, USA

BFA
Soil and Nutrition
Conference
Feb 4-7, 2020
Anywhere, USA

Grower—Grazier Newsletter

Fall 2020
\$19.95

What's Happening During These Times

Thank you for connecting as a reader, browser, customer, client, consultant, or educator with Crop Services International. We appreciate your business, your desire to build healthy soil and grow healthy food, and how you support CSI in whatever capacity you do.

In this newsletter, we are proud to claim we are not announcing and address change...at least not yet!

All is well on the “home office” front. We (Dane, Ron, and Nancy) have a system in place to make soil testing, consulting, orders and accounting function very smoothly. Given the recent challenges with “stay at home orders” in Michigan and many other states over the last seven months...learning to

work remotely (from a home office) for the thirteen months prior to Covid was a blessing in disguise.

Since this year is radically different and unprecedented, we chose to do the same with the Grower-Grazier Newsletter. Past newsletters have focused on specific concepts or topics. This newsletter is focused on specific farms and growing operations that work with CSI throughout the US. The underlying theme in all articles is Soil Health and Plant Health, but through these interviews the reader will hopefully gain some insight into the how and why.

I had the good fortune to interview some of our clients over the phone, some in-

person, and even spent hours in combines during harvest in IL and OH over the last month.

A special shout out to those farmers: Claybrook Acres, George, Jan and Thad Holsapple, Witzig Organic Farm, Shannon and Roger Witzig, Seibert Brother Farm, Kenny Seibert, Glover Farms, Ray Glover, AK Family Farms, Alvin King and sons.

In order to please a diverse reading audience, we have articles about a variety of growing operations, from large scale conventional and organic row crops, to very small-scale gardening, and everything in between. Hopefully, each of you will pick up a new idea or two to implement on your growing operation. Enjoy!

What's Not Happening during these times?

Due to the Covid Pandemic all the conferences and seminars where we regularly exhibit at have gone “Virtual”!

What is a virtual conference and how does it work? The hosts of these conferences ACRES, OEFFA, BFA etc. are utilizing on-line platforms where they can host, broadcast and share presentations as if you were physically sitting in the audience. Similar to the

now very popular Zoom, Skype, & Facetime platforms, a registered attendee can watch, listen and ask questions in real time. This does require a computer and internet connection, and the skill. For those without either, there may be options to call in and listen to the speakers via a telephone connection.

We will host a “booth” at both the ACRES and the BFA

(Bio-Nutrient Food Assn.) Conferences. The dates are on the left.

CSI is also hosting an Eco-Ag Innovation Room during the ACRES conference. During these set times we will be online for Q & A. You are NOT required to be registered for the ACRES conference to join in the discussion. See Back Page (page 14) for details and links to our “room”.

Covid19 Pandemic– Our Connectedness

That title may encourage readers to skip this section and move on to the next, as very few would enjoy reading yet another article about this pandemic. Hang in there, this is not coming from a writer who has a political agenda, masks or sanitizers to sell, or an argument of “who was right and who was wrong” in the handling of this. But rather in our Connectedness.

Reflecting on the last seven months talking to farmers, growers and gardeners from all over North America, the obvious conversations revolved around issues stemming from the pandemic: food shortages, toilet paper shortages, and a scrapyard full of returnables in the states that have bottle deposits. There was also endless discussion of improving immunity to the virus with minerals like Selenium and Zinc, Vitamins A, C and E, and Proteins. No, I am not trying to sell a supplement, but rather focusing on where the natural forms of these

come from...if you haven't guessed, it's FOOD!

Each one of you connected with CSI because you produce, raise, and most likely consume food. Foods rich in Selenium like Brazil Nuts, Pork, Shellfish and Shitake Mushrooms; Vitamin-A rich foods like carrots, spinach, and broccoli; Citrus fruits, bell peppers, and strawberries loaded with Vitamin-C; Zinc from red meat, poultry, beans, nuts and blueberries; Proteins from nuts, beans, eggs, and red meat. Other natural immune boosters include raw honey and garlic and good ol' sunshine. Hopefully “you're picking up what I am throwing down!”

Here is what all of us have heard: “These are unprecedented and radically different times!” The writer suggests perhaps it is a wake-up call for change. Although unprecedented and radically different, certainly we have come to the realization of how connected we are when it comes to the spread of a virus, flu, common cold or

bad news, not to mention the desire to scream at each other on social media. The other side of that realization should be the connection of your garden, your farm, and your livestock to your family, your community, and your customers. The connection each of us has is far more important in providing the immunity boosters, and it is your hard work and dedication to building healthy soil and growing healthy nutrient-dense crops that become medicine.

It is obvious everyone is susceptible to this and any virus, but it's clear those with compromised immune systems are more likely to express mild symptoms to severe illness, and this is not grounds for an argument. I have a point, just let me get to it! From a consulting perspective in the healthy soil/healthy plant world, we recommend growers take calculated steps balancing minerals and bio-activating microbes to build healthy soil and grow healthy plants that protects them from

disease, insect and viral attacks. Science has solidified the connection between plants grown in healthy soil with optimal nutrition levels and their ability to better fight off the “pests” that would otherwise cause damage to the plant. This healthy soil that has a magnificent network of microbial beings that fight off insect and disease attacks, solubilize minerals into plant nutrition, connect synergistically with the plants above, and ultimately provide nourishment to your consumer. It is the microbes that ultimately govern life and death on this Earth.

As producers, we have the ability to produce healthy nutrient dense crops full of minerals like Selenium and Zinc, Vitamins like A and C, proteins, phenolics, terpenes, etc. Simply put: Healthy Soils= Healthy Crops= Healthy People.

We have learned how connected we are, let's use our connections to heal!

Kiss the Ground-Netflix Documentary

Perhaps a bit later than needed but as the old saying goes “better late than never!” The Netflix Documentary “Kiss the Ground” is precisely what we need and desire during these critical times. By critical I am not talking about the Pandemic, but more about our soils.

Woody Harrelson, the TV/Movie actor, is the narrator and he takes the viewer on

a journey of how regenerative management of soils can help alleviate some of the environmental challenges we are facing. This call to action educates the viewer about basic plant photosynthesis and soil respiration and the process of sequestering carbon through farming practices.

A smattering of proponents of the regenerative movement including Kris

Nichols, Ph.D., Ecologist Dr John Liu, and Conservation Agronomist Ray Archuleta are interviewed throughout the film. Collectively they agree; the culprits that have led to unhealthy soil and the consequential damage to our environment, health and climate are excessive tillage and pesticides, but are optimistic that changing practices can rebuild our soils. To that

point, the ongoing interview with author of “Dirt to Soil” and rancher Gabe Brown, who is best known for his regenerative practices on his ranch in Bismarck, ND., and it is clear implementing these practices do work.

The message throughout is quite simple: 1) Increase diversity with crops and cover crops, 2) Minimize soil disturbance,

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An Urban Farm in St. Pete, Starting Seeds and Transplants!

15th St farm is a 1/2-acre urban farm in the heart of downtown St Petersburg, Florida. Aptly named the 15th Street Agrihood, the land is positioned in the midst of a typical urban neighborhood.

Growing up on a family farm in Tunisia and then on to France, Emmanuel Roux, studied hotel management, sailed the world with the French Navy, and then began a career in the food business. In Savannah, GA he founded Gaston Dupre, a high-end flavored gourmet pasta company, and since then owned several restaurants in St. Petersburg, FL. He has come full circle back to his roots...food production! His passion for food: growing, cooking and distribution has led him down this pathway of creating an educational farm to reconnect people with nature. From the Facebook Page of 15th St. Agrihood:

“The farm focus is on vegetables and fruit. Being in Florida we grow bananas, pineapples, papayas, star fruit, passion fruit, mulberries, avocados and we also have nectarines and peaches adapted to Florida’s subtropical climate. We grow all the traditional vegetables and herbs with the addition of some more exotic/tropical produce. We grow about 120 different vegetables, herbs, trees and vines.”

They are growing on 9000 sq. ft. beds. The only tillage used is to aerate the soil with pitchforks. In order to maxim-

ize usage of the growing space seeds are started in 72-cell trays and transfer the seedlings in 4-inch pots; they are kept on growing nursery tables before being transplanted into the beds.

15th St. farm is not certified organic but adhere to regenerative agriculture principles with organic and biodynamic methods. The main



growing season for vegetables is from September to June. In the Summer, cover crops (sunn-hemp and hairy vetch) are planted to add nitrogen, reduce root knot nematodes, minimize weeds and increase organic matter.

This is the current program they have been using when transplanting seedlings (from Emmanuel):

“We are now in the middle of our planting season and it is too early to get a sense of the results. So far nothing has died ... so I am continuing and

refining the process and recipe which you will find below:

- 1 gal compost tea
 - 1 Tbsp unsulfured molasses
 - 1 oz. fish emulsion
 - 1 oz. seaweed concentrate
 - 1/2 cup Azomite
 - 1 Tbsp K-35
 - 1 Tbsp Complete
 - 1 tsp Bioplin
 - 1 lb. dry organic fertilizer.
- Mix well all the liquids and

minerals. To this liquid add 1 gal. of very finely powdered biochar. Mix well until it forms a thick slurry. Let sit overnight to allow the multiplication of the microbes and to allow them to check in their new digs.

Add 1.5 gal or more of vermiculite to obtain a moist powdery mixture. Use within 24 hrs.”

A cordless electric drill with an auger is used to make holes, then a tablespoon of the mixture is added to each hole and then the seedling is dropped in. If this is not possi-

ble, then the mixture is added into the soil before and lightly incorporated.

“My idea is to create an appropriate microbial environment by providing very comfortable microbial condos with a fully stocked gourmet pantry, bar and refrigerator.”

“By adding the mixture to the seedlings holes I figured we are introducing the microbial life where it is most useful, directly at the roots zone and deeper than by doing a surface application.”

This fall the plan is to begin construction of an event space with seating for 60 in a barn type building. A commercial kitchen will be attached to the event space and will be used for lunches, dinners and cooking classes. Bread will be baked in an outdoor wood fired bread oven and some dishes will be cooked in the oven. They will also grind ancient grains to make flour.

“We are about to become part of a research program with the University of South Florida’s (Tampa) Microbiome Institute. The research will be focused on the connection between soil and human microbiomes. “

Emmanuel, (aka De Monsieur Roux) perfected a recipe for French flour-less chocolate cakes and started GateauOChocolat®, a company that produces these Heavenly Cakes for purchase online. Check them out at

<https://flourfreecakes.com/>

Interview with Claybrook Acres: Profitability in Conventional Row Crops, Jewett, IL

Claybrook Acres Farm is in Jewett, IL owned by George, Jan and their son Thad Holsapple. The farm is 2300 acres of corn, beans, seed beans, and starting this fall they have put wheat into their rotation. The Holsapple's have been focusing on soil health for the last seven years, starting with cover cropping in 2013 and every year since when possible. George and Thad have taken every opportunity to learn more about how soil health can improve their farming operation and bottom line. In addition to cover crops, they have gone from reduced tillage, to strip till, and starting this season strict no-till. This required a systems shift, and changing all of their equipment to accommodate no-till farming. Their website shows the direction the Holsapple's are moving in:

“Our farming operation is primarily corn and beans, but the real focus is on our soil livestock; specifically managing and promoting our soil life herd of bacteria, fungi, protozoa and nematodes. Through our conservation practices (reduced tillage) and implementation of a cover crop program we have observed a significant increase in the health of our soils including reduced weed pressure (less pesticides) and erosion (nutrient leaching) coupled with better soil tilth and water holding capacity all of which are a direct result of soil life. Managing our

soil life keeps our production economically and environmentally sound and ultimately has led to better than average profit margins.”

CSI: What is the number one thing that you had to change?

George: Our mindset! We had spent years slicing and dicing soil, and as we have learned we were destroying what were building up by using cover crops...and that is soil biology and carbon. We started cover cropping in 2013 and after 2 years we could see drastic changes on our farm.

CSI: What are some of those changes you observed?

George: The first change was how fast our crop residues break down...that is recycling nutrients and carbon! We don't have a bunch of trash to deal with in the Spring!

CSI: How are you managing Nitrogen now vs how you managed it prior?

George: For the last five years we were strip-tilling all of our N up front with our strip-till rig. What we have learned is that our soils cannot hold onto all the N we were applying. Considering the excessive amounts of rain Central Illinois has been receiving annually in the Spring the last four years, we lost most of that N before the crop really needed it. Now we are broadcasting N (AMS) pre-plant, planting seed with a biological seed inoculum (MicroMax), and then using our Hagie with a tool bar to side-dress N with carbon



(ZincAcid) at V-3—V5 and again at V-7—V-9. At this point, we switch to foliar 1-2 times depending on our SAP results.

CSI: You have been using SAP analysis, how has it helped your management decisions?

Thad: When introduced to SAP analysis, we didn't just learn about the importance of levels of nutrients but also balance, and the balance part alone has been eye-opening! We came to understand some of our input costs were simply not making a difference in the plant or yield. The two prime examples were early Nitrogen needs and Phosphorus.

George: With 7 years of continuous cover cropping, Phosphorus on our soil tests has moved up every year. Coupled with optimum P levels in our SAP results, we have discontinued use of applied P unless our soil temps are really low and even then I am not convinced we need it. Using cover crops, carbon and biology, P has not been a limiting factor. Why spend money when it is not needed! Our biggest

mistake has been trying to outwit Mother Nature. For the last 4 years, the Spring rains have been overwhelming, we have had to do replants multiple times, and it is what justified us moving away from all our Nitrogen up front, and now applying less more often throughout the season. Today our target for N application is around 165 units, but as the season progresses SAP results ultimately determines how much we actually apply.

CSI: How has that benefited Claybrook Acres?

George: Well Dane, believe it or not, we do this to make a profit! We aren't looking to be the largest farm, we are just looking for economies of scale. What are the most acres we can effectively manage given there are 24-hours in a day, with the tools we have? There are two of us, an occasional summer part-time employee, and Jan jumping in the driver's seat of the semi hauling crops to the elevator during harvest season. Collectively our

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Witzig Organic Farm and Witzig Meats, Gridley, IL

Witzig Organic Farm is a Centennial Farm located in Gridley, IL. Crops include organic corn, soybeans, seed beans and forages where they raise and graze about 100 head of Red Angus/Red Devon cross Grass-Fed Beef. They also raise 500 Purebred Yorkshire (their own genetics) Hogs. These are antibiotic-free hogs fed with all Non-GMO grains. Their grain crops are contracted to specific buyers that they have developed relationships with over the years. Witzig Farm Meats are sold direct to customers that visit the farm store, through two farm markets, and through local grocery stores.

Roger and Elaine Witzig are the fourth generation to farm this land, and their son Shannon (5th generation) and his wife Sharon along with their 3 children (6th generation) all pitch in the family farm. Shannon is an electrician by trade, but farming is what he loves. His farming roots were also handed to his boys (14 and 12) who run the grain carts, drive the tractor for field prep, and even run the combine when needed, and his daughter (age 7) who is learning her way around the equipment as well.

During my visit, Roger said he was so proud to sit up on the porch and see his grandsons (14 and 12) out in the tractors during harvest running the grain cart and combine. Sharon takes care of marketing through social media outlets and the farm markets. Farm-

ing roots run deep in the Witzig Family as they have been farming this land for over 130 years.

They began organic certification in 2005 one field at a time to make sure they could make it work. By 2009 all of their nearly 500 acres were and still are certified organic.

When asked how the soil has changed over the years, Shannon said that prior to being organic they never used Anhydrous, opting for 28 and 32%, and occasionally AMS, so the soil wasn't dead to begin with. We do use a fair amount of tillage passes for weed control, but it has become more mellow over time. He also noted each time sulfur/sulfates have been added there is a noticeable change. "During cultivation passes, the soil just flows up onto the row." So every couple of years, Gypsum or Potassium Sulfate is applied.

CSI: What tools are you using to control weeds?

Shannon: There are four concepts that we have success with: 1) Planting time: we have a strict schedule on planting time...and that schedule is to "Wait"! Usually in May, never before the 10th, and always when the soil is "right"! This process virtually eliminates any Lambsquarters pressure on our farm. 2) Cover Crops: we utilize cover crops (Clover and Triticale) to build soil and provide fertility. These are bailed for the livestock, grazed, or turned under as a green manure. 3) Crop rotation: we plant oats



with clover as our third crop because the oats do a great job keeping down grass pressure. We even use an oat cover crop in the Spring prior to beans to help control grasses. After about a month (4-8 inches), we terminate them with a field cultivator and then plant the beans. 4) Mechanical weed suppression: Depending on soil conditions we are making five passes for both corn and beans. For beans: tine weeder, rotary hoe (2X) and cultivator (2X). The last two seasons we contracted a local farmer with a weed zapper that "electrocutes" any weeds above the soybean canopy. Giant Ragweed is our target weed, and the zapper does a good job! For corn, we rotary hoe (2X), and make three passes with two different cultivators.

CSI: How are you addressing fertility?

Shannon: Our main source of fertility is application of cattle and hog manure from the barns they Winter in. The home farm fields get the most manure (applied manure and from grazing) and are normally

the most productive. We also utilize applications of biologicals inoculums in-furrow (MicroSpark) and (MicroLeaf) foliar along with other liquid biostimulants and nutritional products.

My last stop on the farm was meeting Elaine in the Farm Store. She oversees Witzig meat sales. I asked her about how the Covid19 Pandemic has affected the business. She said "it was crazy at times, we had to stop supplying the local grocery outlets due to the increasing demand from our own customers along with many new customers. Currently we have a 25-person waiting list to purchase beef quarters."

Growing up a meat cutter, the marbling on the Rib Eyes would grade Choice or above, and that is rare for "Grass Fed" (no pun intended). The pork chops looked fabulous. I bought a cooler full of both along with some other cuts, everything was tender and the flavor delicious! #YUM

<https://www.witzigfarmmeats.com/>

CSI's— Connected Network

As the old saying goes, “It’s not what you know, but who you know!” CSI is proud to introduce some consultants connected to us who have started their own businesses focused on soil health concepts.

Chuck Holman in Missoula, MT owns and operates Earth in Hand, LLC. He provides Sustainable Landscaping and Soil Health Services for landscapes, gardens and farmers using mineral balancing, compost, compost teas and other regenerative practices. Chuck is also a co-founder of the Montana Hemp Coop that are developing a Hemp Fiber and Seed Processing facility in the state of Montana, the largest producer of hemp in the USA. Chuck consults with many acres of hemp production for CBD oil, and soon fiber and seed. His website is www.earthinhand.net and he may be reached at 406-529-4119.

Brad Turner from Lithia, Florida is developing his citrus consulting business Sand to

Soil Services using soil health concepts under the umbrella of CSI.

Brad spent nearly forty years as a grove caretaker and owner, focused on “strictly chemical” based management practices which were failing on the farms he was caretaking along with his own farm. Educating himself on the benefits of healthy soil, he “took a leap of faith” and purchased five acres of land he calls a “Self-funded Trial Plot” for proof of concept.

In 2017, he began growing citrus using regenerative concepts trying to mimic wild citrus that grows naturally in the hammock. Trees that aren’t subject to citrus greening and the host of other pest pressures common in commercial



citrus. His practices include multiple plantings of wall to wall cover crops, soil mineral balancing, applications of compost, compost teas and biological stimulants with good to great success. So successful, he and one of



his colleagues, following the same protocol, have been featured in Citrus Grower News multiple times, as well as received acknowledgements from Citrus researchers. Brad is monitoring trees for nutritional balance and integrity using Tissue and SAP analysis, and monitoring his fruit by Brix testing with a refractometer.

His suitably named website www.santosoilsservices.com is

up and running and if you know of someone in the citrus industry that needs a nudge on promoting soil health in their own operations, Brad will say “I ain’t afraid of anything with a trunk that grows in rows!” Contact Brad at 813-478-1349.

Brian Paxson from Kalamazoo, MI has taken over Flowerfield Enterprises’ (Sister company of CSI) organic lawn care business. Clean Air Lawn Care is serving customers in SW Michigan. Brian is utilizing the concepts of healthy soil by applying compost and compost teas to his customers lawns and landscapes. His business also provides maintenance services (mowing, trimming, and leaf wrangling) using only electric motors on all his equipment. Even his compost tea application pump is running off electricity from his truck. Brian may be contacted at 269-501-6322.



Sowing Diamonds– “Feed the Soil”– Diamond Sow Gardens, NM



Diamond Sow Gardens website says:

“Diamond Sow Garden was once the famous hippie commune known as the ‘Hog Farm’ featuring Wavy Gravy. “

(Editor’s note: This “Hog Farm” was the group that organized the original Woodstock.)

Located in Llano, NM about 35 miles SE of Taos, Diamond Sow Garden is a farm perched at 8,000 ft in the Rocky Mountains locally known as Sangre De Cristo. Today it is farmed and managed by of Sam Starsiak and his family.

The website sums up the goals of the operation:

“We grow diamonds...well



not literally. Our produce is packed with nutrients. We use a variety of regenerative practices to consistently build our soil, tree, animal and plant life.”

There are thirteen acres in production, three in orchard production with different varieties of apples, 1/2 acre of field crops and greenhouses, and the rest is pasture.

When they started ten years ago they were growing forty different crops, but over time they have whittled that down significantly. The plan this season was to grow just five crops, but when the pandemic hit they reacted quickly to expand their crop variety and started a CSA. Their current crops include carrots, radish, radicchio, endive, eggplant, potato, corn, beets, cabbage, bok choy and the apples from the orchard.

CSI: What is the market you sell to?

Sam: The small local farmers markets are saturated with vendors. Unfortunately, the majority of product is average with a few standouts. We specialize in nutrient dense vegetables, so a majority of our crops are directly sold to restaurants and a couple of grocery stores.

CSI: What practices are you currently using to improve soil health?

Sam: We apply off-farm compost, utilize green manures, and use mulches including composted hay and wood chips. We always make sure the soil is covered with residues or tarps. We also rest our crop

fields on a rotation to allow them to heal using cover crops and grazing livestock (chickens).

CSI: How have these practices benefitted your soil?

Sam: Our goal is to build humus (sow diamonds) and we have made tremendous progress over the years. The Orchard is at about 6%, and our greenhouse is around 8% organic matter.

CSI: Being that tillage is a sure fire way to lose carbon (humus) what types of tillage practices do you engage in ?

Sam: For areas in continual usage (e.g. Greenhouse), we use minimal tillage. The most we till is one inch deep, if any is needed at all.

CSI: What is your biggest challenge?

Sam: In our neck of the woods, we only get about 11 inches of rainfall on a good year, so maintaining good moisture levels is critical. Depending on the season we may use flood irrigation and overhead sprinklers, but drip irrigation is our main source. Our soil is heavy clay, so another challenge is the amounts of minerals that need to be applied for remineralization.

CSI: What are your favorite tools?

Sam: For the market garden my go-to tools are the Tilther designed by Elliot Coleman, and the Paperpot Transplanter. The tilther is basically a 15-inch small scale rototiller. It is “human” powered except for the tillage part which is



operated by a cordless drill. It is our go-to tool when we are incorporating compost, minerals and residues, and serves as the final prep for our seedbed. With the heavy amounts of clay, it is the one and only time where tillage (for seed bed preparation) is necessary in our operation. We start the seeds in the Paperpot seed starting trays in the greenhouse. With the seedbed prepared, we use the Paperpot transplanter to put the plants in the ground. We can transplant 264 plants in under five minutes. Both are available from Johnny’s Seeds and make a world of difference when it comes to efficiency.

What is a piece of advice for people using soil to grow food?

Sam: Feed the soil! While you can work without animals, Mother Nature has engineered them to be integral in building soil. Enhance and accelerate that process with biological inputs for intensive production and outstanding shelf life.

Salts to Substrate to Living Soil: The Growth and Development of an Indoor Cannabis Grower -Mark Bezdek

Sitting in front of my future boss, he asked me a simple question; “Mark, do you know what we do here? We play with dirt...” Little did I know that that little exchange would lead me on a journey to where I’m writing to you now.

It was during the late 2000’s that I was at Michigan State in the graduate program. My area of study was chemicals and their interaction with soil particles. The majority of research in the early years was basically scouring for any information related to study. Hundreds of articles later, a common theme was becoming apparent. Biochar was a material that was getting a lot of attention. The focus on this common soil particle had been pushed to the forefront of research due to it being a by-product in the production of biofuels. Those articles on biochar led to articles on use of biochar as a soil amendment to improve soil fertility. Articles on how biochar possibly plays a vital role in providing structure for soil fungal and biological communities. Many of those such articles were referenced in studies done in regard to the sustainability of organic agriculture.

I knew that I was getting an education at a top agricultural university in the country, so I started searching for someone in academia who could answer some of my questions on this soil material. There is a

saying that goes” When the student is ready, the teacher will appear”... My teacher was



Dr. John Biernbaum. Dr. Biernbaum was researching how worms were able to digest various materials to produce some very fine vermi-compost. He, as did I, had an interest in how biochar could be included to improve the vermi-compost. We set about building different kilns to see how we could produce biochar cheaply in a small farm or garden setting.

At the same time, medical marijuana was now becoming legal to grow in certain situations and I had started a small grow in my house. As much of

my experience with soil was theory based, it was great to have someone like Dr. Biern-

baum. Dr. Biernbaum thought we could achieve similar results from blends of locally sourced materials such as leaves, wood chips and compost. We set about testing these ideas.

I started my indoor growing experience with salt based nutrients; growing in inert materials like growstones and hydroton clay. I then switched to salt nutrients in store bought soils. The learning curve with these types of agriculture was relatively shallow. It is in the interests of these big companies for you to get it “right” pretty quickly.

Now comes one of my most important lessons. Mainly for those who are growing with the use of salts; or possibly those that are slowly transitioning to a more natural or sustainable method of cultivation. It is to throw away all your bottles! One of the best rules I picked up from a site called buildasoil.com. With no safety net as I call it, you were forced to learn your garden. Observe more! Continue being the student!

It was at this point that I threw away my bottles. I started mixing my own soil blends. Observing what my garden was doing. Learning mostly through conversations with Dr. Biernbaum, finally getting our soil idea made into fruition. It was also at this time, Dr. Biernbaum introduced me to the

baum to answer my questions. Many of these discussions, over a warm biochar kiln, would be about sustainable, organic indoor agriculture. Would it be possible to grow marijuana organically inside while still trying to keep things sustainable and maintain organic integrity?

In and around 2013, there were some blogs online discussing the use of various soilless media combinations to grow marijuana inside. These formulations shared many common ingredients: peat, Perlite and

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ACRES Eco-Ag Conference & Trade Show Dec. 1-4, 2020

Crop Services International

“Virtual” Booth Link:

<https://eventhub.shop/2020-eco-ag-trade-show/crop-services-international>

You do not have to be registered to visit our booth, or attend one of our Q&A sessions.

Schedule on Page 14.

800-260-7933

Claybrook Acres– continued

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farm goal is to be profitable. We do this by: (1) managing our livestock: bacteria, fungi, protozoa and nematodes; (2) sequestering carbon in our soils with our cash crops, cover-crops, and adoption of no-till practices; (3) Reducing pesticide applications at all cost; and (4) being open-minded!

CSI: When you talk of reduced pesticide applications, what are you referring to?

George: Our goal is to eliminate pesticides because of the problems associated with these pesticides and the effect on soil health! We aren't there yet but we have been able to drastically reduce amounts. Since we have been cover cropping, our fields have less and less weed pressures each year. The last two years we have elim-

inated all residual herbicides. The weeds like Marestalk that do emerge are weak and as such we reduce the amount of actual herbicides applied.

Thad: Every year farmers are faced with a decision of whether or not to apply fungicides, and although it can be a big gamble, we are very selective of which years to use them. We have greatly improved soil and plant health, and this alone is a major factor in our decision. If weather conditions are conducive to fungal problems we are more apt to apply, but most of the time despite all of those around us applying them, we choose not to. So far the profits gained by not applying have far outweighed the losses incurred.

Having visited this farm multiple times over the last

three years, this writer believes George, Jan and Thad are light years ahead in soil health concepts. In this area of Illinois, they are pioneers in their practices, and their neighboring farmers began scratch their heads in disbelief in 2013 when they began cover cropping and again in 2020 when they brought in 250 bee hives for their soybean pollination. In August 2020, they rolled down a water-logged section of a soybean field and planted buckwheat. Regardless of who is scratching their head, the Holsapple's have open minds and will make every effort and use “out of the box” thinking to improve soil health and be more profitable.

On a side note, some of their farm ponds are fantastic fisheries. On my most recent

visit in October during harvest, I got “lost” on one of their ponds with my fishing rod. With a spinnerbait on my rod, in sixteen casts, I pulled in 11 largemouth bass, with two in the 4 lb. class. #NICE



Gardening 101– Soil Testing + Recommendations = Results

Many growers call in and say, you probably don't want to deal with me as I have such a small garden. To which we say "we do not discriminate", for anyone producing food, flowers or fodder we want to help in whatever capacity we can. In addition, we treat you just like any other farm, before we will recommend a product, we need to see soil test results to review the historical dynamics.

Ideally we would like to see both the CEC (Cation Exchange Capacity) and the Saturated Paste test for us to do a recommendation. The CEC test identifies the exchangeable minerals in the soil and the Saturated Paste tests for water soluble minerals. The Saturated Paste Results indicate how well the biological system is functioning, and will provide insight into what specific plant nutrition is needed in the short run to fill in any voids. From these results we make recommendations on how to balance minerals and biologically activate soils, as well as grow your crop.

Balancing Minerals includes dry applications of products like Gypsum, HI-Cal lime, Potassium Sulfate, Tenn. Brown Rock Phosphate and specific trace minerals to the soil to bring levels up to the target levels.

Improving biological systems requires diverse populations, shelter and food. Balancing Microbes is to increase biological diversity in the soil (bacteria, fungi, protozoa and

nematodes) through inoculation with compost, compost teas and/or packaged biological products. For shelter for these microbes, application of compost, biochar and/or humates will be encouraged. Adding food to support biological function is necessary. Ideally, healthy plants will support microbes through the root exudates as a food source. Until our plants reach optimal photosynthesis and producing large quantities of exudates to feed the microbes, adding fish, seaweed/kelp, molasses, organic acids, etc. becomes their life-line. From here on we focus on growing a crop and will include recommendation for applications organic fertilizers, foliar applications of minerals, microbes and biostimulants. The rationale for these are Saturated Paste results, if any of those soluble minerals are low, they should be supplied so the plants can achieve optimal photosynthesis.

The following is a section of an email Deb sent, after we came up with a recommendation from her soil test and her observations of what was happening with her spearmint plants:

"Been meaning to write for a while . . . and say a BIG THANK YOU! I did your protocol with the 3 stages each a couple days apart: 1) Epsom salt foliar, 2) Compost Tea, and 3) Double Dose of MicroPlenty foliar. If you recall, ALL my plant foliage in my pots and media were lacking in green. They were growing but

the leaves were a khaki yellowish green and plants looked weak. It took a few days following your protocol that I started to see green coming in. It was gradual and by 3 weeks later - all my plants are now a nice green and actually look lush. After that, I kept up with the weekly Tea (which included Fish Alive in the brewing), as well as added Fish Alive and Complete to the finished tea when foliar spraying (and MicroPlenty every 3 weeks). D Hardin, Spearmint Grower, California.



J. Modesitt in CA sent this picture of his cabbage.

It is not all huge harvests and beautiful crops, there are challenges. In the world we live in, there are stresses that come from outside what we see on soil tests. Weather conditions (wet, dry, hot, cold), lack of sunshine, insect pressures, can wreak havoc on an otherwise beautiful crop. We encourage our customers to call and ask questions based on what you are observing. With our experiences perhaps we may have a "fix" that will reduce whatever problem is leading you to call us. In many cases a foliar feed



Strawberry Tomato (Heirloom) cluster from our garden.

with a stress reliever like kelp/seaweed will make a huge impact.

Beyond observation other ways to monitor crops are Tissue Testing, SAP analysis, and Brix testing. The former are a bit expensive unless you are growing food for a living, however the Brix testing with a refractometer is a wonderful tool that you can gauge success (comparing to Brix charts available on the internet), or by taking a reading before and after a foliar feed to determine the success of what was applied from the foliar feed.

We will include a Brix article in the January Newsletter. Happy Gardening!



R Alvater, Hutchinson, KS

Subtle Frequencies...Healy- Dr Phil

It is time to revive the concept of subtle energy use in Agriculture. In doing my Ph.D. research in bio-physics with Dr. Phil Callahan years back, I showed that when fertilizer (I used MAP) was placed in the soil, the earth's vibration called the Schumann Resonance caused the MAP to give off frequencies that were the right size to interact with plant root hairs and provide information/energy to a plant for its benefit. During the nineties and early 2000s many farmers all over the world were using Radionics to produce similar energies to help livestock, standing crops, and stored crops in a variety of ways. The use of these concepts and tools continues today using several new methods including broadcasting towers and homeopathic frequency producers which I installed all over the Western Hemisphere, Australia and New Zealand.

(If you have attended the CSI Soil Health Seminar in the

last four years, this is precisely what Ron was talking about in his session!)

Examples of farmers I worked with: a farmer in Iowa successfully treated moldy silage: Dairy farmers in PA and IA treated E Coli Mastitis: Crop farmers broadcast frequencies to eliminate disease and insect pressure, a 10K hectare property in Queensland, Australia was able to convert to Organic in one year after installing a tower and had almost zero insect or disease problems.

Those who have used radionics, a radionic machine, broadcast tower or any other frequency device understand that they require human interactions and choices.

The "Holy Grail" of subtle energy devices has been developed in Germany and is now being utilized throughout the World. This device can analyze a living subject whether it be human, animal or plant, pet, etc. and then the operator can

choose pre-programmed frequencies based on resonance the user identifies with most.

As most of you know, since I retired in 2014, I have not had much contact with growers, but I would like to relate to you what happened when we recently purchased a Healy Microcurrent device for our own use. At age 81, I have a few health problems...but nothing serious. I have had several years of dealing with squamous cell skin cancer related to severe sunburns as a child, and now a passed bout of a rare lymphoma that makes me more susceptible to skin problems. Without any input from me, except for identifying my whole body frequency, the Healy unit identified 4 skin frequencies that needed treating as my most serious health problem. When my wife Louisa entered her ID frequency, the Healy picked up on her lifelong problem of poor sleep as her most important problem as

needing subtle energy work which the Healy device proceeded to broadcast. We were Blown Away! The Healy is capable of analyzing the frequencies needed to assume optimum health of any living thing and produce those needed frequencies. WOW!

Being a douser and operator of radionics in the past, I see the benefit of energies and frequencies and how they have helped humans, livestock, and crops. The Healy is what I consider a personal radionic device with most groups of frequencies already programmed in the machine.

I can't wait to hear what is going to happen to crops, livestock and other living things when the Healy spreads to agricultural uses. Please contact Ron Ward at CSI to find out more information at

livingsoil@gmail.com

616-915-5266

-Yours, Dr. Phil

SEED POTENTIAL "TALK About Energy"

Elmer Miller, a farmer in North Dakota called in to tell me about his barley plant. This barley plant was growing on a pile of "dirt" that was intended to be used as "fill" dirt. In Mid-September this magnificent Barley plant had sixteen, yes 16, fully developed heads. To put things into perspective, their area had a seven-week drought and two 28-degree frosts, yet this plant was not only surviving, but still lush

green with two of the heads starting to dry down. Ponder that?

I listened and asked questions; he sent me this picture. Definitely something amazing going on here. And while I can't put my finger on the "WHY", I do know Elmer uses Source Identified Radionics on his 800-acre farm, AND Elmer and his son understand energies come from more than just fertilizer.



Indoor Cannabis-Continued

(Continued from page 8)

idea of sub irrigation. Sub irrigation taught me the important but delicate balance of watering soils. As my learning and understanding progressed, I found water, or lack thereof, to be vital in not only my plants health but vital in soil health as well.

Along the way, through various designs and pot sizes, I was also experimenting with the idea of making vermi-compost in-situ. This is to say that I was taking the basic food wastes used with commercial scale vermi-compost production and scaling it down. Having each container be used for growing and production of compost. Over time, I found out that this combination worked almost too well. The worms, living in their optimum habitat, were turning all of the grow medium into complete vermi-compost rapidly. Over a few grow cycles, the once light and airy media would turn into a dense, albeit nutritious grow media. This avenue, using the larger sub irrigated planters, would show me, through failure, the next iteration of using natural living soils.

As my own experimenting continued in my basement, so too were many hobby indoor cannabis growers who were trying to understand the same concepts as I was. A collective thought was that rather than one plant in a pot, larger beds with multiple plants in each bed would benefit the “soil”



system greatly. In these beds, the soil biology would act in concert with cover crops to start small ecosystems, capable of sustaining themselves through multiple cultivation cycles, often improving with time. Dr. Biernbaum and I thought it would be a perfect time to use the soil we had been building in such a system. I know you are all waiting for the juicy details on the soil we put together, but that is what we call a teaser for my next article!

The next leg of the journey was when Dr. Biernbaum suggested I attend a seminar presented by Dane Terrill from Crop Services International.

Up to this point, I had been focused on testing and numbers. This was just the scientist in me. The seminar made those numbers and tests relevant, but more so laid a foundation of understanding and using my intuition. Dane and other presenters gave me the tools to understand on a basic level what my plants were going through nutritionally and how the soil and biology were affecting my living soil system.

Although many of the retailers and suppliers in the cannabis industry act like they are reinventing the wheel, the truth is we use the same methods as farmers for generations before us. Maybe the indoor

lighting technology has changed, but living soil farming itself has not. I suppose this is true all along the scope of modern agriculture, not just in the cannabis industry.

Historically, cannabis cultivation in America had to be very clandestine due to even the cultivation of the plant being illegal. With cooler heads prevailing recently, more than 35 states have adopted laws enabling not only the use but also the cultivation of marijuana for many Americans. Many of those newly able to grow marijuana have little to no growing experience. Large corporations made this transition from hobby grower to something much more very easy. They made starting with salt based nutrients and peat based soilless media a very reasonable entry point to indoor horticulture especially. Using their bags and bottles gets you a big plant! This initial step leads some to the use of bags and bottles labeled “organic”. John Biernbaum would suggest to those people that we are really trying to cultivate secondary plant metabolites and that larger plants does not often mean better buds or flowers. Both new and seasoned growers alike, as they progress towards a more ecologically diverse organic or more natural systems, are finding that plants grown in a living soil with diverse biology might lead to plants being not only healthier and nutrient dense, but also rammed full of

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Can Minerals Protect Against Covid19 - Ron Ward

Recently I drove 240 miles to meet with Dr. Rich Olree, D.C. B.S. to have him work on my foot. While there, the topic of Covid-19 came up. He explained to us that Covid-19 is a virus that attacks telomeres. Telomeres are segments of DNA located at the end of our chromosomes. They compensate for incomplete semi-conservative DNA replication at chromosomal ends. They are crucial to our health and decrease dramatically as we age.

Dr. Olree says we can strengthen our defenses against this virus via a diet rich in hydrochloric acid (HCL), Sulfur, Zinc and Selenium. Today it's best to supplement these minerals:

- ◆ If you're over 60 your hydrochloric acid stomach acid content is diminishing. Purchase a HCL prod-

uct and take at the start of each meal. Add a digestive enzyme too. Salt is one source of the "Cl" needed to produce hydrochloric acid.

- ◆ Sulfur comes in many forms you may already be taking such as Glucosamine Sulfate or Methylsulfonylmethane (MSM)
- ◆ Zinc comes in many vitamin formulations
- ◆ Selenium, often in the form of Selenomethionine, is a key in this group of mineral defense against Covid. Selenium is needed for the body to utilize Zinc. Although Selenium is not considered a required nutrient in agriculture, we will die without it!

In *The Invisible Rainbow: A History of Electricity and*

Life author Arthur Firstenberg goes back in history to show what happened when a new (at that time) electromagnetic frequency was introduced to the planet. Each frequency introduction was accompanied by a pandemic of health challenges. Those with better diets often didn't have the severity of effects as those 'not so healthy'. The new 5G cell tower introduction has apparently been a stimulus for this nasty virus to wreak havoc.

In short, mineralizing ourselves with mineral/vitamin rich foods and a good source of supplement is what's called for. Several years ago Dr. Olree showed the importance of Boron, Iodine, Magnesium, Selenium, & Vitamin D formulated in his Grand Unified Mineral Complex (Google Dr. Olree Grand Unified Complex)

Who is Dr. Olree? He's the author of:

- ◆ *The (updated) Minerals for the Genetic Code*
- ◆ *Amishman's Handy Guide to Minerals, Vitamins and Food Supplements*
- ◆ *Minerals, Hair and the Human Genome*
- ◆ *Chiropractors Metabolic Handbook of Cerebral Spinal Fluid*
- ◆ *Acupuncture Meridians*

Dr Olree practices is in Hillman, MI. He may be contacted at 989-742-4242.

Ron Ward came out of retirement in 2014 and continues to work with growers around the country. He and Dorothy reside in MI, except for the Winters as they travel south. You can get in touch with Ron at 616-915-5266 or email him at livingsoil@gmail.com

Indoor Cannabis- Cont

(Continued from page 12)

those secondary compounds vital for human health...and quite possibly our enjoyment too!

With a little time and similar amount of effort, locally sourced materials can be combined to make a root media/substrate through composting; followed by vermicompost providing the nutrient/biology backbone to help sustain any plant. Taking this vision into reality can show that it is possi-

ble to achieve through indoor container gardening the same principles as with traditional outdoor gardens. I have enjoyed researching this topic and ideas on my own and continue to do so. I look forward to sharing more experiences with you in the future.

Mark Bezdek is working as a Cannabis Consultant with CSI and he may be contacted by email at bezdekma@gmail.com or by calling him at 517-243-2279.

Kiss the Ground- Cont.

(Continued from page 2)

3) Reduce/Eliminate pesticides, and 4) keep the soil covered with a green plant at all times.

These messages are not new to those in the regenerative agricultural world. A small fraction of farmers and consultants have talked about this for the last twenty years, however producer Joshua Tickell who wrote a book with the same title, does a great job of dispersing the message to the public

using famous actors, athletes and musicians to encourage the consumer to support those using regenerative practices.

Regardless of your management practices, the Netflix documentary *Kiss the Ground* is definitely worth the watch!



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Virtual Booths and ACRES Eco-Ag Innovation Room

We will be exhibiting in a “Virtual” booth for the ACRES (Dec. 1-4, 2020) and BFA (Feb. 4-7, 2021) conferences.

As a registered attendee at either conference, there will be links to click on through CSI’s ad in the conference flyer.

For those that are not registered and would like to visit our ACRES booth, or attend one of our Q & A sessions, just click on the link in the middle of the page.

We includes myself, Ron Ward, Brad Turner (Citrus), Chuck Holman (Landscaping and Hemp), Mark Bezdek (Cannabis) and other specialists in their respective field of work.

Each day the overall focus is Soil Health and Plant Health, but we will drill down on specific crops during these specific times.

Tentative Schedule

Tuesday, Dec. 1st

11:00am-12:30pm

Soil Testing/Interpretation

1:00-2:30pm

Small Scale Home Gardens

3:15-5:15pm

Exhibit Booth Live

Thursday, Dec. 3rd

11:00am-12:30pm

Row Crops

1:00pm-2:30pm

Pasture & Pasture Crops

3:15-5:15pm

Exhibit Booth Live

<https://eventhub.shop/2020-eco-ag-trade-show/crop-services-international>

All Times are Eastern Standard Time

Wednesday, Dec. 2nd

11:00am- 12:30pm

Lawns & Landscapes

1:00-2:30pm

Compost Teas/Extracts

3:15-5:15pm

Exhibit Booth Live

Friday, Dec 4th

11:00am-12:30pm

Cannabis/Hemp

1:00-2:30pm

Blueberries/Raspberries

3:15-5:15pm

Exhibit Booth Live

Our virtual booth and the Eco-Ag Innovation Room links are open from Dec 1st- Dec 30, and we are happy to schedule other sessions based on interest. We will need to have time to get the word out to others who may be interested through our social media channels. There will not be a cost to attend. They will be a webinar of sorts focusing on topics based on interest.

Please contact us for potential topics, as this is a opportune platform to have these meetings.

Wishing everyone a Merry Christmas and Happy New Year! Stay Safe and get Connected! Next newsletter due out in January.