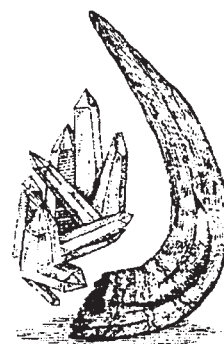


Applied BIODYNAMICS[®]



Spring/Summer 2015

Newsletter of the Josephine Porter Institute • Floyd, Virginia

Issue No. 87

Towards a Wholeness of Nature with Composting and Chromatography

An Interview with Bruno Follador by Hunter Francis

Bruno Follador is a geographer and biodynamic researcher with a deep commitment to the Goethean approach to science and to the fostering of a more qualitative approach to understanding nature. Specifically, Bruno's work has led him to develop expertise in biodynamic composting methods and Ehrenfried Pfeiffer's round filter chromatography, a picture-forming method useful for the qualitative analysis of an array of substances, such as compost. Originally from Brazil, Bruno has worked with farmers and organizations in Brazil, Europe and North America including Hofgut Rengoldshausen, Hawthorne Valley Farm and Benziger Family Winery. He currently serves as the Director of the Living Soils Project at The Nature Institute in upstate New York. The Nature Institute, founded in 1998, is a small, independent not-for-profit organization dedicated to the development of new qualitative and holistic approaches to seeing and understanding nature and technology through incisive and thoughtful research studies, publications and educational programs. The Institute serves as a local, national and international forum for research, education and the exchange of ideas about the re-visioning of science and technology in an effort to realign humanity with nature.

HF: Bruno, your work at The Nature Institute sounds fascinating. How long have you been there and what does your role as the Director of the Living Soils Project entail?

BF: I've been at The Nature Institute since October of 2014. I'm still in the process of developing the program here, and I'm excited about it, because it is allowing me to further explore questions that I've been carrying for a long time and that I still carry – such as: How does our way of speaking, seeing and thinking contribute to creating our agricultural reality? I think these are central questions that are at the core of The Living Soils Project.



Bruno Follador

One aspect of my work involves integrated consulting services, with a special emphasis on farm scale composting, for farmers and gardeners, including qualitative compost/

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From the Editor

Dear Friends of JPI,

I hope you are enjoying your summer months, wherever you may be. We are now in our new semi-annual newsletter format, with this being the Spring/Summer issue. In the future, the plan is to release this issue in the springtime. At the moment, we are still in somewhat of a transition and apologize for the delay in getting this out to you. It was a busy spring at JPI, with a highlight being the 2015 Spring Workshop held in May. This year, Bruno Follador served as guest speaker and gave fascinating lectures on his work in composting and the qualitative assessment of that process. I had the honor and pleasure of interviewing Bruno in March and, in the event you missed the workshop, I think the enclosed interview will give you a good sense of his work. It is a tribute to the importance of observation, also eloquently alluded to in an article by Karen Davis-Brown, and to the importance of cultivating a relationship with what we observe in the development of a more holistic understanding of phenomena in nature, which includes the qualitative and not just quantitative elements. This is a significant challenge for our time, as we increasingly witness and pay the consequences for a science that focuses solely on the material aspects of life. Nonetheless, when it

comes to compost, there is plenty of good advice to be had from conventional science. That, along with some practical commonsense, is shared here too in the hope of shedding light on a process that is so vital to maintaining a healthy farm organism. A special thank you goes to co-editor, Abby Porter, for her informative re-cap on the biodynamic basics for beginning gardeners. It is actually a good review for all of us. Please feel free to share your stories with us as your own practice unfolds, and better yet, come visit JPI when you are able. Our next gatherings are planned for September (see calendar below), when we will be hosting two volunteer days to stuff several thousand horns in our annual making of the BD #500 (horn manure preparation).

All our best wishes for a fruitful close to summer!

Hunter Francis

Applied Biodynamics

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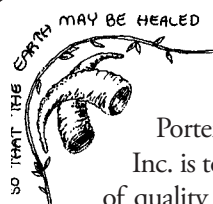
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Mission

The mission of the Josephine Porter Institute for Applied Biodynamics, Inc. is to heal the earth through production of quality biodynamic preparations based on the spiritual scientific discoveries of Rudolf Steiner and to advance education and research in biodynamic agriculture.

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Towards a Wholeness of Nature with Composting and Chromatography
soil assessment, with a focus on Ehrenfried Pfeiffer's chromatography. Along side this, I'm doing research on composting and striving to refine and to further develop qualitative testing methods for compost and soil through on-farm research. My hope is to be able to collaborate and design projects with different farms that want to develop or improve their composting practices, such as I'm now doing with Hawthorne Valley Farm. Our Living Soils Project addresses the need to develop qualitative ways of understanding that recognize and focus on dynamic processes. Soil health is bound up with the dynamics of the whole farm organism, which includes the inner perspectives of the farmers. In short, our goal is to support farmers and others committed to biodynamics and agroecology cultivate dynamic ways of seeing and understanding that then find concrete, on-farm applications, especially in composting and in quality assessments of compost and soils.

HF: *And you will be teaching others how to do all of this?*

BF: Yes, I'm glad you mentioned that. Through the Living Soils Project, we'll provide training to help farmers further develop their skills in perceiving, comprehending and interacting wisely with the complex, interwoven flow of living processes at work on their particular farms. We'll offer hands-on workshops and courses on topics such as: holistic ways of knowing in agriculture, farm scale composting based on Ehrenfried Pfeiffer's work and its integration into the whole-farm organism.

HF: *Have the classes begun yet?*

BF: Yes, I gave a few workshops this spring. In May, I offered a workshop at The Nature Institute entitled "The Art and Science of Composting and Ehrenfried Pfeiffer's Chro-

matography." At the end of that month, I gave a workshop at JPI on "The Qualitative Language of Ehrenfried Pfeiffer's Chromatography: A Phenomenological Approach to Soil and Compost Analysis." I also gave a workshop in Canada with the same title.

HF: *I heard it was a great workshop. I'm sorry I missed it. How long do you expect you will be at The Nature Institute?*

BF: I've made a two-year commitment. I moved here with my wife, Bruna, who is also from Brazil. Hopefully, if things go well, we'll be able to stay longer.

HF: *What is your own personal history with agriculture? How did you come to be involved with it?*

BF: I think I specifically began to turn towards agriculture, as a teenager, when I started to become more conscious of the importance of nutrition and the social, political and environmental consequences of industrial agriculture. São Paulo is a city of an intense social contrast, with one of the largest economic disparities in the world. I began to realize that so many of our social and environmental issues are rooted in an agricultural crisis. But instead of studying agronomy, I decided to study geography, with a focus on agrarian geography. At the University of São Paulo (USP), I had the opportunity to study the relationship between man and nature, which is the object of study of the geography department at USP. There, the physical sciences are offered alongside philosophy and the humanities, so I was able to explore agriculture through the lenses of a very broad science.

During my freshmen year, I founded a study group that later grew into quite a large student movement called EP-ARREH, which is an acronym for "Studies and Practices in Agriculture and the Re-enchantment of the Human Being." We were a very diverse group of people and together we studied the agricultural course given by Rudolf Steiner. We also developed a gardening project at a public school, in a very poor neighborhood on the outskirts of São Paulo. However, after almost two years, I became frustrated with the limitations of the academic world. So I wrote to Gunther Hauk, in Spring Valley, whom I had met earlier, and asked him if I could spend a month at the Pfeiffer Center. Luckily, he invited me for a one-year internship. Before that, during one of the strikes at the university, I had also spent some time working on a biodynamic farm not far from the city. So as much as I could, I tried to have practical experiences while still being in school.

HF: *And how was it that you had come across biodynamics specifically?*

BF: When I was eighteen, I met anthroposophy. One night, I picked up *How to Know Higher Worlds* by Rudolf Steiner from my mom's bookshelf. That was a powerful

Biodynamic Preparations Legend

BD #500 – Horn Manure

BD #501 – Horn Silica

BD #502 – Yarrow

BD #503 – Chamomile

BD #504 – Stinging Nettle

BD #505 – Oak Bark

BD #506 – Dandelion

BD #507 – Valerian

} Compost
Preparations

BD #508 – Horsetail (*Equisetum arvense*)

experience. I felt, for the first time, someone was actually speaking the truth about the world and humanity. After that, it was not very long until I found my way to a copy of the agricultural course.

HF: *Are there many anthroposophical initiatives in Brazil?*

BF: It's growing. The medical movement is quite strong in Brazil, much stronger than here in the U.S. We do have biodynamic farms, but I don't think the agricultural movement is as present as in the US. But we do have a lot of Waldorf schools, eurythmy training, anthroposophical clinics, rhythmic massage, art therapy and so on.

HF: *Was it through Gunther that you got involved with the composting?*

BF: No, not really. I was actually quite unhappy with the compost I worked with during my internship at the Pfeiffer Center. I would say it was even a very unpleasant experience. It smelled awful! It was anaerobic and full of rodents. One day, we had to kill eighteen rodents with pitchforks and it just didn't feel right. I was given a new perspective when I met Roland Ulrich, who was giving a talk about his work in East Africa on soil erosion and water sanitation at the Fellowship Community. I was very impressed and fascinated by his work and at the end of his talk I asked if he would be willing to meet me for a conversation. So, he was the one who introduced me to the idea of cultivating a deeper relationship with composting and to Ehrenfried Pfeiffer's work and chromatography.

HF: *Is Roland from Germany?*

BF: Yes. At the time, he was visiting Spring Valley, and a few months later he moved to the Fellowship Community, where he lived for two years or so. After my internship, I moved back to Brazil with the impulse to engage more with compost and chromatography. I began to work with banana growers in the Atlantic forest trying to establish a biodynamic cooperative. I worked with these farmers for two years while finishing my studies in geography. We made compost by hand. I also introduced them to the preparations and we made most of the preps there. That was also the time that I had my first introduction to Goethean Science, through a Dutch Goetheanist, named Clara Passchier. I think that these two encounters, with Roland and with Clara, significantly contributed to the deepening of my relationship with anthroposophy, biodynamic agriculture and the world of composting as a whole.

HF: *Was it at Spring Valley where you learned to do the chromatography?*

BF: Right before I left Spring Valley, Roland was just beginning to settle in at the Fellowship Community and he took me into a lab at the Fellowship that contained

a lot of the original lab equipment of Ehrenfried Pfeiffer. I remember he told me to take a notebook out and write down everything that I saw and what he said. It was a wonderful experience. I still have two original chromatograms from that day.

HF: *Will you teach chromatography at The Nature Institute?*

BF: Yes. There is nothing official scheduled yet, but I plan to offer courses and workshops on chromatography.

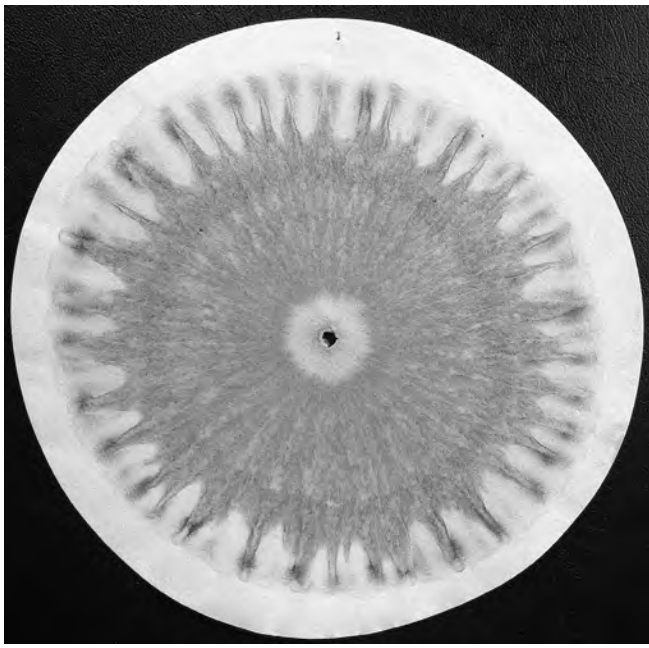
HF: *It doesn't seem that complicated a procedure to perform.*

BF: The procedure itself is not complicated at all. I would say it is a very robust method. You don't need any fancy equipment. I think the challenge begins with how we are relating to, reading and interpreting the pictures. One can approach the whole processes very mechanically since there are many tables indicating what each color and zone represent in the picture. One can be very passive by looking at the pictures in this way. I feel so much of what chromatography can reveal is missed that way. One should not explain the pictures in terms of cause and effect, but should *portray* the process being shown through color and form. I think that's the challenge – to learn to see these pictures in a qualitative and imaginative way. That was actually the original intention of Ehrenfried Pfeiffer regarding his work with Sensitive Crystallization and it is how I also view my work with chromatography. He expressed that very clearly in a Soliloquy that he wrote not long before he passed away. The picture forming methods can be a great school for developing imaginative cognition.

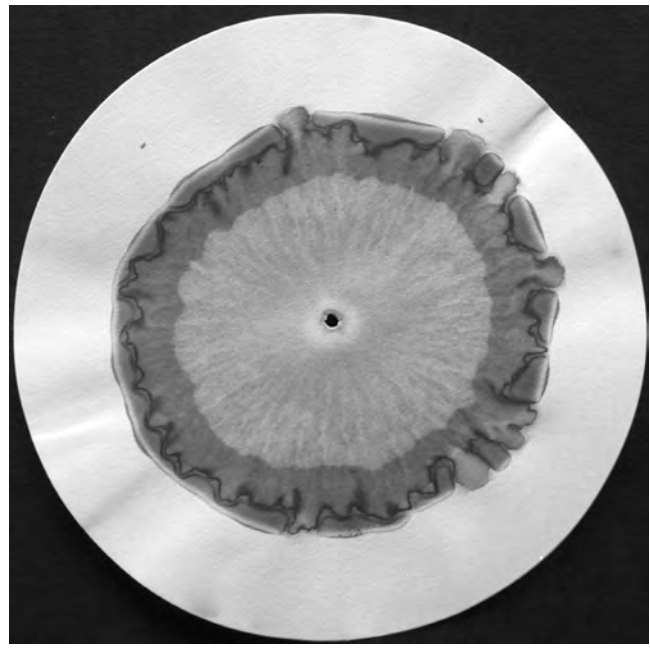
HF: *I get the sense that you have a natural capacity for these types of things. What would you say have been important experiences in your development, or traits inherent in yourself that have helped you to cultivate the sensitivity you have towards composting and chromatography. Is there any way you can characterize that?*

BF: I think that my studies with Clara Passchier were very important. She was the first one to introduce me to Goethean Science and it was thanks to that that I began to deepen my understanding of the epistemological foundation of anthroposophy. I dove right into the earlier works of Rudolf Steiner: especially, *The Philosophy of Freedom*, and *The Science of Knowing*. And I started to inquire how it is that I understand and perceive the world. How do I participate in the unfolding of the world? And I became extremely interested in the process of how our current science came into being and the hindrance it is causing in the development of a qualitative approach to the world.

It was when I began to ask these questions that things started shifting for me. So much of the work of Goethean Science relates to exploring how we can engage in an honest conversation with nature, and this applies to how one can



Chromatogram of a six month old compost pile of excellent quality made from cow manure and straw of excellent quality which went through a very healthy process of decomposition and humification (up building process).



Chromatogram of a six month old compost pile of very poor quality (cow manure and straw) that is in anaerobic condition and has gone into putrefaction.

engage in an honest and creative conversation with a compost pile and with farming as a whole. That “conversation” has helped me in my work with chromatography because instead of wanting just to explain the pictures, instead of falling into the conventional dichotomy between subject and object, I began to free myself from that dilemma and to start to understand and portray the picture in a more living way. I feel I have entered a path that is only beginning.

HF: *Since the meeting with Roland, you’ve been involved in applying the chromatography to compost and soils?*

BF: It’s a bit of a longer story, because after he taught me the procedure in 2006, I went back to Brazil to finish my degree in geography. At the time, I was actively working with the banana growers. I was also very involved with Clara, organizing Goethean courses at the university. Clara gave open public courses on the metamorphosis of plants, Goethe’s theory of color and on art and science. After I graduated, I moved back to the U.S and worked as the gardener at a Camphill Community in Vermont. I brought along my proof box – used to develop the pictures – thinking I could do chromatography there, but there was so much work that I never had any time to get to it. During that summer, Roland called me. He was then farming in Wisconsin. He asked me if I was still interested in continuing to work with chromatography and I said yes. So, during my vacations, I flew twice to Wisconsin where I had intensive trainings in chromatography. After my second visit, he gave me all of his lab equipment as a gift.

At the end of that year, I left Vermont and moved to Germany. I worked for three years at the Ludolf Andreas Lab, a not-for-profit research laboratory, located on a biodynamic farm specialized in the growth of light root, called Andreashof. Two months after I arrived, Roland joined me at the farm to become head of the chromatography lab and compost research. And so, we worked very intensely with composting, chromatography and consulting in southern Germany, Italy, France and other places.

HF: *So you’ve gotten a lot of exposure and seen a lot of composting.*

BF: Yes, I have been lucky enough to visit many farms and to see many compost piles in very different conditions, made very differently, with different machinery and with different materials.

HF: *And in the end, you feel the composting process is not receiving the proper attention?*

BF: From my experience and from what I’ve seen so far, I feel this is an urgent issue. I’ve noticed that there are two polar opposite gestures that commonly predominate in composting. At the one pole, the compost site functions like a dump site where “waste” materials are heaped together. Once enough matter is piled up, it is roughly shaped into a bulky rectangle and covered with straw. The farmer then completely forgets about it and will only come back to it a year later to see what has happened. Unfortunately, even among biodynamic practitioners, I have seen this type of relationship. It is quite common. The

only difference is that the piles are “inoculated” with the biodynamic preparations. In both cases, the gesture and relationship is one of neglect and omission, filled with the hope that Nature will somehow take care of things. The other pole – the opposite of mere neglect – is when the guidance itself becomes so overpowering that the life of the compost pile falls under the spell of total manipulation and control. Often this type of composting is found in large industrial composting operations. The piles are monitored from beginning to end. Moisture content, carbon/nitrogen (C/N) ratio, temperature, odor, oxygen and pathogens are all strictly kept in check. Large, self-propelled turning machines can turn the same windrow three to five times within a week, guaranteeing aerobic conditions and accelerating the process of decomposition. Within a period of two months, it is possible to obtain a “finished” compost, black in its coloring, powdery and loose in its consistency, and often very light and without much structure. Although no putrefaction takes place, because the decomposition process was fully controlled from beginning to end, what often predominates is just a process of literally breaking down, where there isn’t necessarily any up-building process in which humus can be created. The process itself is too fast and numerous beneficial microorganisms and fungal hyphae cannot properly develop or survive with the constant turning of the windrows.

So, how I see it is that it’s not just about turning piles, finding the perfect recipe or adding the preparations. There is personal engagement and quality of attention that is central to this whole process. I’ve realized that besides the actual process of the compost (how to improve its quality and quantity) there is a key component which is how the farm staff and farm community develops a conscious responsibility and relationship with this process. In light of this, the composting process is intimately tied to the social process of the farm staff and farm community.

HF: *I would think that the need to “have a conversation” would make it difficult to give people an exact recipe for compost making because a lot will depend on conditions and what is going on with the pile. And, yet, there are nonetheless good composting practices that one can recommend.*

BF: Yes, that’s right. There is absolutely no single recipe, no absolute formula. Yet, there are indeed certain principles in terms of temperature, moisture, oxygen content, C/N ratio and turning cycles that need to be considered. But each single farm is embedded in its own micro-climate, its own farmscape, with its own individual population of plants, animals and people. Ultimately, each farm is its own living being, on its way to becoming a being, always unfolding,

always in process. So each farm has different needs and the farmer should be sensitive to all the subtle nuances of the whole context as he is making a compost pile.

HF: *How, briefly, would you guide people to have that conversation? What would you stress?*

BF: Perhaps one of the most important things is for us to learn to trust and to further develop our senses. So very often we mistrust what we see and smell, and end up changing everything, just because “the book” is saying something else. I think it helps to think of bread baking or wine making, except compost is something we are making for the Earth.

I find it helpful in the beginning of the process, as we receive or gather the organic matter, to ask who was this being when it was still living? Meaning, what was this plant like, how was the environment it grew in? How did it grow? Or, if one is working with animal manures: How does this animal behave? What are its gestures and characteristics? Cow manure is a very different from horse dung, not only because of its chemical composition, but specifically because they come from completely different beings. Clover and other legumes have different qualities and are very different from grass clippings. By asking such questions, you may begin to have a picture and inkling of how the material will behave as it begins to breakdown and decompose. The other thing, and perhaps this is one of the most important things one can strive for, is to truly take Rudolf Steiner seriously when he said that we should develop a personal relationship with the manure and with the methods of working with it. As he said it in 1924, without this personal relationship, it really won’t do.

To become aware of the four elements is also central (air, water, fire, earth). They are great teachers and helpers. One could ask what element predominates in the pile or in a particular feedstock. Is it more on the moist or on the drier side? If its horse dung, for example, we know that the pile could rapidly get much hotter than when we are only working with cow dung. These animals have very different digestive organs, temperament and behavior. The amount of fluids present in the cow is incredible. The volume of her salivary glands is bigger than the volume of her brain. All these qualities will be reflected in her manure. The temperament of the horse is of a much more choleric nature than the cow, which feels more like a “monk-like being.” We can’t imagine a cow galloping like a stallion. That would never happen! If we begin to look for these relationships, as we look at the manure, we’ll begin to understand that the part can illuminate the whole.

We should pay attention to the qualities of the material, rather than getting stuck with a recipe, of carbon/nitrogen

ratios, for instance. I know this is somewhat superficial, but if one begins to pay attention and relate to this things we'll begin to have insights on how to balance and best mix and guide our compost piles. It is a conversation that needs to be creative and active.

HF: *So, if you are composting mostly horse manure, which is hotter, how would you adjust the pile?*

BF: I would water it right away as I mix and begin to make the pile. It is a very dry substance. As with any manure compost, I have to bring in some form of carbonaceous material into the mix, but I would water it right away, as opposed to when I'm working with fresh cow manure and straw. There, in most cases, we don't need to add any water. Also, I always add 10% soil (regardless of the material I'm working with). If soil is not available, I use mature compost instead. By mixing everything, I guarantee a homogenous mixture, and I'm assured that I have brought enough moisture to everything. There is more to it, but I think you can at least get an idea.

HF: *It seems there is a lot to be learned even from traditional quantitative science in the development of good composting practice.*

BF: Absolutely. We don't need to reinvent the wheel. The problem is only if we get stuck on a certain recipe or dogma on our farm, and lose sight of our particular context. It could be as simple as accounting for the weather; one might have a wet season. There is a lot of common sense that one can bring to bear on decision making in composting.

HF: *And practice makes perfect. It also seems that as you see what works and what doesn't over time, you develop a qualitative feel for it naturally.*

BF: Yes, with time, one begins to read the different phases and gestures of the compost process. You start to anticipate and become able to attend to the needs of each compost pile, *guiding* the process from a breaking down phase to an up-building one.

HF: *Now, in terms of using chromatography in your qualitative assessments, at what point in the composting process do you employ it? And how often? Do you look at various stages of the process?*

BF: That depends on the agreement with the farmer. But I like to take the first sample after four or five weeks, and then throughout the life of the pile, approximately once a month. That way, one can have a have a very detailed reading of the transformation and metamorphosis of the compost pile.

HF: *Would you even apply chromatography to feedstocks [raw materials]?*

BF: Usually not. If you do it on raw manure, the picture won't really develop. But I have done it and it is great

to illustrate what raw manure looks like, but it is not something that I would usually do.

HF: *For people who are familiar with chromatography, is there anything that you would say you would be looking for at the end of the process, in an image taken from a finished pile? Is there anything that you would look for that would characterize a good compost?*

BF: Ehrenfried Pfeiffer left standard pictures demonstrating the color and pattern of what a healthy compost, or an anaerobic compost, should look like. [See two pictures on page 5 contrasting a chromatogram of a healthy compost with one of poor quality.] But I suggest that one pay attention and find a relationship to the whole process, not only the final picture. Every detail – from the color of the solution, to how the solution flowed out onto the paper – is telling you something about the compost or soil you are looking at.

HF: *So, chromatography is an example of something you can use to get a qualitative assessment of things, and yet we live at a time when the focus on the quantitative is so strong, especially within the scientific establishment. What other methods do you see as valuable in the development of a more qualitative understanding?*

BF: I think all the picture forming methods are valuable in the development of a more qualitative understanding of substances: chromatography, Pfeiffer's sensitive crystallization, Lily Kolisko's capillary dynamolysis and the drop method picture of Theodore Schwenk, where one looks into the quality of water. They are all very promising qualitative analyses.

HF: *What is your feeling about doing qualitative analysis of the preparations themselves (as by chromatography)? Have you ever done that and do you feel it's helpful in determining the quality of a biodynamic preparation?*

BF: Ehrenfried Pfeiffer himself, along with his co-workers, used chromatography to research the quality of the biodynamic preparations. While I was working in Germany, I did some work with the horn-manure preparation and with barrel compost. I only did a little bit with the compost preparations. It is still a field that needs to be further researched, but as of now, especially for the horn-manure and barrel compost, chromatography can be substantially helpful in helping farmers assess the quality of their preparations. But again, what I find extremely important is how one will work with this. If this approach is used to develop our senses further, to be a schooling path for development of imaginative cognition and further contribute to the development of a science of qualities, then from my experience, Pfeiffer's chromatography can be a great process and way of analyzing that helps

biodynamic practitioners better understand the quality of their preparations.

HF: *In interviews I've read, I really have liked a lot of the questions you pose on the relationship of the natural and human worlds (for example, the relationship between soil erosion and social conflicts, and between healthy culture and healthy agriculture). What is it about our way of seeing that has created our agricultural reality and how is it that you would say we need to change our way of seeing to develop a healthier agriculture?*

BF: Our industrialized agriculture is not only the fruit of the political interests and economic power of agro-business. It is also the result of our own way of seeing, thinking and speaking about the world. A factory farm is not only a particularly "efficient system" but, decisively, an expression of human consciousness. That particular system has lost sight of the cultural and ecological context within which agriculture is embedded.

Regarding the question of what we can do to change, I would say that we can begin to pay more attention to our language, to the way we speak about Nature and ourselves. So much of our world – both the cultural and ecological context – will be perceived and expressed, in part, through the quality and richness of our language. So it makes a difference, and there are consequences, if we refer to a farm as an "operation," "a living system," "a living organ-

ism" or "an individuality." This is also true of how we speak of our domestic animals. If we keep referring to chickens only as "meat birds" or "broilers," our language will have failed them, binding them to a narrow scope of possibility and treatment. The cow is not a machine, but it can become so when we lose sight of its ruminant nature and its relationship with the landscape. Similarly, its manure is not a "waste" in need of "better management," but is a vital extension of the herd as a member of the agricultural landscape. That is something we need to understand and adequately characterize.

HF: *I think more people are open to what you are doing and to seeing the limitations of the reductionist, materialist paradigm that we've been in. What's your sense for the future and the next generation? Are you hopeful? Do you see big changes coming?*

BF: Although at times I can become quite discouraged with the state of things, I'm very hopeful because I think we are realizing that we are responsible for our participation in the world. And I think more and more people are willing to engage in the world through responsible and creative action, not being passive, but also not trying to impose our vision onto the world. More than ever, I see people wanting to engage in this co-creative conversation with the world.

HF: *Thank you, Bruno.*

Nature's Life and Flow: The Farmer as Observer

Karen Davis-Brown

Nature's life and flow are so fine and subtle that in the end they slip right through the coarse mesh of our rational concepts."

Rudolf Steiner

If you've "worked" a piece of land for any length of time, you know the places. The places that stay wet the longest after a hard rain. The places where the soil has a little too much sand or clay to grow the best crops. The pasture that the cows like best, and why. The place where the sun casts the first shadow, on a winter morning.

A good farmer/gardener/landscaper/arborist is, first and foremost, a good observer – an observer of time and place, and how the two come together in an infinite number of creative and vital combinations. Often we are not even aware at an intellectual level of how we come to "see" and "know" these things; they develop from an ongoing semi-conscious gathering, assimilation and analysis of information that, over time, leads to the intuitions that often guide our decision-making.

Facts and figures that have been observed by others – and the tools and methods they have developed to generate the information they offer – greatly contribute to our decision-making process. As a farmer, I check the weather every day. What are the predicted temperatures? What is the chance of rain? What have the trends been in past years, during this part of the growing season? I consider a compost thermometer the most useful of tools, and a 30+ foot tape measure a necessity. Soil type and regular tests every couple years help me to strategize regarding my growing practices and the use of possible amendments. A calendar showing the movements of heavenly bodies and constellations are an integral part of my planning at every stage of my soil preparation, starting seeds, planting and harvesting. The information in the fine print on the seed packet... I could go on, as could you, I am sure. I depend on all of this information to some extent, but I also remind myself that they are only facets of reality and that they,

too, are based on human perception. They are useful only to the extent that they help me understand the qualitative reality – the “spirit in matter” and “matter in spirit” that is my farm. As Rudolf Steiner noted in the 1924 *Agriculture* lectures: “The way current science deals with the realities of agriculture is equivalent to trying to reconstruct the totality of a human being from just a little finger and an earlobe... as a rule, what science says about experiments is true, and they’re very useful. It is the theorizing after the fact that’s so bad...” (Lecture Four, pp. 61, 63–4, Gardner translation.)

The findings of conventional science are useful, as long as we remember that they were documented by human beings and only provide facts and figures which we, ourselves, need to understand and interpret out of what we know from biodynamic agriculture. To be simultaneously open and skeptical regarding what we read and hear seems to be paradoxical, but is, in reality, a balance that is important, and usually possible to achieve, if we are aware that we need to do so.

Openness and skepticism are not the only paradox/balance in the everyday practice of biodynamic agriculture. The balancing and integrating of intellectual rigor and creativity, and of logical discipline and intuition, are also important goals toward which to work on a daily basis.

I once saw some wise advice on a bumper sticker: “Don’t believe everything you think.” In other words, examine your own thoughts with the same openness/skepticism, rigor/creativity, discipline/intuition with which we test what we read and hear from conventional science and media. A related caution is, “Don’t believe everything you feel.” In other words, as Rudolf Steiner explained in his book *Theosophy*: “...the more a man develops the capacity to refrain from allowing each feeling of a sympathy and antipathy to be followed immediately by a judgment, an action, the finer will his sensitivity become.... To the seeker, pleasure and displeasure, joy and pain, must be opportunities for learning about things.” (p. 162–4, Monges translation)

In other words, feelings are information. They are real in that they tell us something about ourselves, and they are useful to the extent that we can separate ourselves from our “gut reactions,” and examine them in a detached way for the reasons behind our response. When I walk into the garden in the morning and my stomach sinks at the sight of unwanted pools of water, what does that tell me? When I get angry or fearful at the latticed leaves of the broccoli or green beans because they have been chewed by insects, how do I use what I am observing to be a better biodynamic practitioner? I take a step back, consider what I have learned from my study, experience and colleagues,

and THEN I act. To the extent that conventional science is helpful in redressing soil structure and insect control – and complements and supports what I have learned through spiritual science – it is useful. I take information from outside sources, past experience, my own observations and that of my colleagues, and get beyond my feelings to determine the best course of action to address the challenge.

Collegiality and community are crucial for anyone involved in agriculture, as a source of information and support, and as a reality check for our personal thinking and feeling. The practice of biodynamic agriculture in the twenty-first century is largely based on oral tradition, and rightly so. We are four generations strong worldwide, and the fifth generation is coming right along in our adolescents and “twenty-somethings.” And, we have diverse traditions in different parts of this continent alone that add a richness and complexity to our work together, as well as keeping us humble and open if we value and tap into that diversity. This is another opportunity for the balance of rigor/creativity and discipline/intuition to come into play – with a healthy dose of respectful skepticism that allows clarifying questions and agreements to disagree.

When we work to become more consciously aware of how our personal and communal agricultural knowledge and intuition develops and can be balanced with rigor and creativity, discipline and intuition, the rewards are exponential at every level. In essence, we are reclaiming old knowledge in ways that make it relevant and applicable for the future. All of us who have invested the time, energy, resources and humility in learning and practicing biodynamic agriculture – and in honing our powers of observation and developing capacities for spiritual perception – create individual and communal forces that make a powerful contribution to the future of the Earth and humanity. Regardless of what one reads in the newspaper or online, or what one thinks and feels as we move through the everyday “human weaving of souls,”* the future is a better place for our “earnest, heartfelt striving.”**

* From the Foundation Stone Meditation that Rudolf Steiner gave at the Christmas Conference of the Anthroposophical Society, 1923–24, Ernst Schwartz translation.

** From Rudolf Steiner’s “America Verse.”

JPI Spring Workshop

Abigail Porter

Beautiful spring weather with sunny blue skies and a breeze prevailed during the workshop held May 19–22. Spring preparations were made, followed by the highlight of the workshop, sessions with biodynamic compost consultant and Pfeiffer chromatography researcher, Bruno Follador, on “The Qualitative Language of Ehrenfried Pfeiffer’s Chromatography: A Phenomenological Approach to Soil and Compost Analysis.” Enthusiastic and dedicated participants came from as far as Japan, Arizona, Colorado and Florida and as close by as New York, North Carolina, Virginia, West Virginia and Maryland, and ranged from beginners to those with years of experience. About half had attended previous JPI workshops. One met his future wife at a workshop several years ago and later moved to Japan with her. The most notable attendee was highly motivated sixteen-year-old Sean Sato from Japan. He started with an apprenticeship on a biodynamic farm in Japan (owned by the previous workshop attendee) and came to the US to further his experience to help his father farm biodynamically in Japan when he returns. Sean received a partial scholarship from the Biodynamic Association (BDA) to

attend the workshop. Another BDA scholarship recipient was Jane Weaver, teacher and consultant who has studied the “soil food web” with Elaine Ingham.

The preparation making session started on Tuesday afternoon (earth/root day) with the making of barrel compost (BC) followed by stirring and spraying of previously made barrel compost. After dinner, board president Pat Frazier presented on the use of the preparations and working with the rhythms of the year. The following morning began with crushing the prevalent milky quartz found on the farm in a special tool built by staff member Larry Mabe from junkyard finds. The quartz was then ground with a mortar and pestle and followed by grinding between two sheets of glass with a little water to obtain a finer grind and to reduce silica dust exposure. The best-shaped and -sized horns were selected and filled with the finely pre-ground silica that JPI usually uses.

We were fortunate that the valerian had just started to bloom so we were able to add making BD #508 into the workshop schedule the same morning (flower/air day, according to Thun). The one hundred plants that were started for us by White Rose Farm the previous spring had been planted after last year’s workshop. We watered the holes with BD #500 and Pfeiffer Field Spray as well as around the 4–5” plants after they were planted. This year, they were bushy



Grinding the valerian blossoms in a meat grinder



The ground valerian pulp is ready to wrap in cloth and place on the press tray (hydraulic press in background)



The juice is pressed out using the hydraulic hand press

and six feet tall and loaded with blossoms. The afternoon was spent inflating deer bladders that had been harvested and frozen the previous fall. They were hung to dry, and previously inflated, dried and rehydrated bladders were stuffed with moistened yarrow blossoms to make the compost preparation BD #502. All of the attendees had their own bladder or two or three to work with.

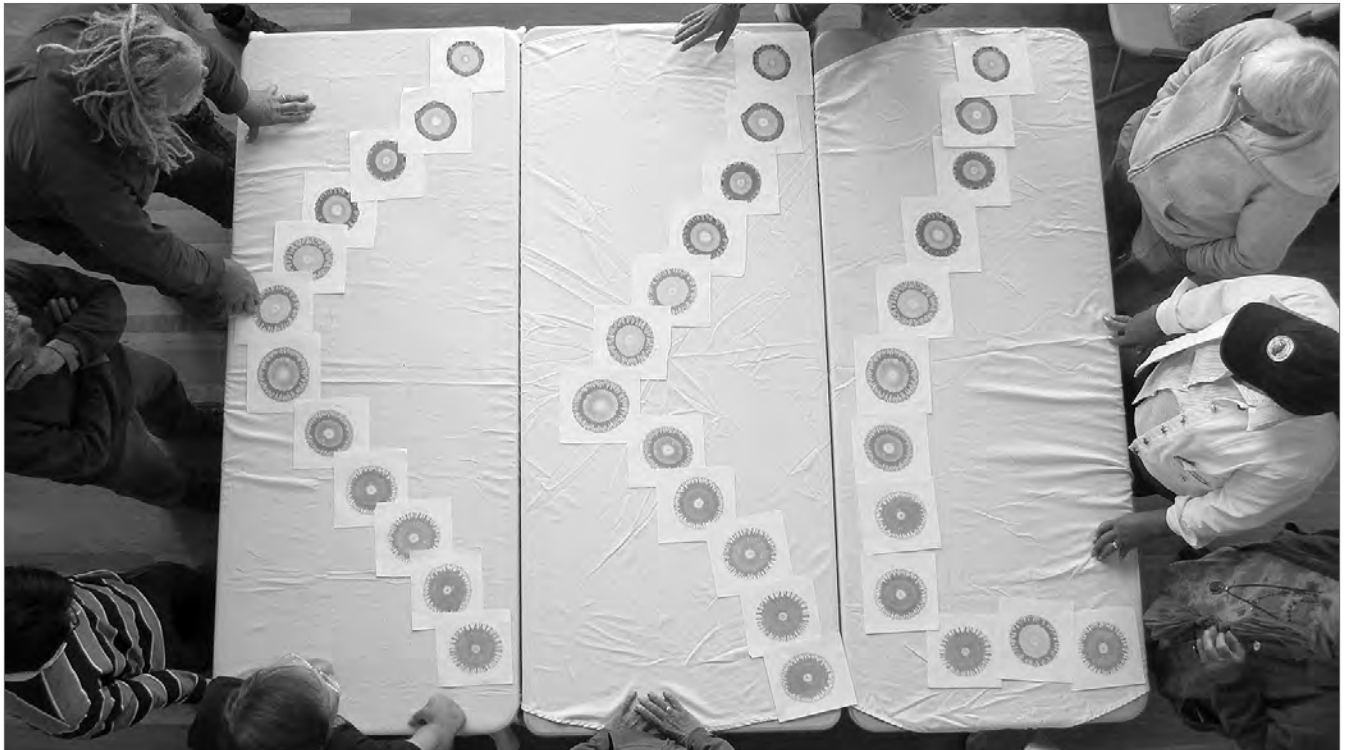
Bruno Follador started off Wednesday evening with “Goethean Phenomenology: A Qualitative Approach to Science.” He encouraged us to observe beyond the usual approach of science, which takes the object observed out of the whole context that it lives or functions in. The following day was focused on “The Qualitative Language of the Compost Pile” and included a lecture with slides of chromatograms of active compost and stagnant compost corresponding to photos of well-managed compost and neglected, poorly made compost. In the afternoon, we went out to the field to look at JPI’s compost (see photo next page). The less than ideal piles gave all of us the opportunity to learn from Bruno’s remediation recommendations, primarily to add

more green material and moisture in the form of nettle and freshly cut hay or grass to the dry pile that had not started to work yet. To make good compost, one needs to develop an ongoing relationship with the pile and the materials that go into the pile. What is the pile telling you by what you see, feel, smell and sense as it goes through the breakdown and rebuilding process? Is it on its way to stabilized humus formation or is it stagnant? Is it too dry, too hot, too wet? Is it rotting and stinky, or moldy? What does it need to bring it to health? Bruno demonstrated how to slice through the pile so a cross-section of the pile can be seen when it is routinely checked. Afterwards we had the opportunity to see some of the bacteria and fungi in compost under magnification since Jane had her microscope with her.

On Friday, we saw slides on the process of making chromatograms, which takes several days, followed by approximately two more weeks for the pictures to develop fully. Then, we were split into three groups with twelve chromatograms of compost in various stages. We had the task of putting them in the order of the transformation



Bruno Follador stressing the need to develop a relationship with the compost pile and monitor it frequently.



Putting the chromatograms in the order of activity and transformation in the compost pile

process as it occurs in a healthy pile. It was fascinating to see in a visual way the usually unseen activity occurring in

the pile. The first pictures were quite static, and then there was increasing activity as the breakdown process reached a

crescendo before the re-creating or rebuilding into its new form. The breakdown pictures expressed a very different activity than the rebuilding and stabilized humus pictures and really helped give a feel for what was happening in the pile. Bruno's presentations were interspersed with experiential exercises to get us to think, sense and perceive differently, to get our brains working differently and out of our usual patterns and habits.

As a result of this workshop, Bruno will be doing chromatograms of soil and a few of the preparations for JPI. Jane Weaver will also analyze material from the same samples under the microscope for bacteria, fungi and other micro-organisms. These are the beginning baby-steps in our efforts towards researching the quality of the preparations, something we hope to expand on as much as we are able. It would also be helpful to be able to use sensitive crystallization and rising pictures, as well as conventional analysis to see what, if any, correlations can be made between the various quality assessment methods.

I highly recommend Bruno's workshops for anyone wanting to develop a more sensitive approach to observation of nature in general and more specifically for developing a relationship with the living compost organism to nurture the creation of healthy compost for improving soils. Next year, JPI hopes to bring Bruno back for a longer workshop on chromatography and composting.

Bruno Follador's Recommended Reading List

- *Goethe's Theory of Knowledge: An Outline of the Epistemology of His Worldview* by Rudolf Steiner
- *The Wholeness of Nature* by Henri Bortoft
- *Ehrenfried Pfeiffer: A Modern Quest for the Spirit*, compiled and intro by Thomas Meyer

- *The Rediscovery of Meaning* by Owen Barfield
- *Thinking Like a Plant: A Living Science for Life* by Craig Holdrege

Some comments from participants

"I enjoyed... the hands-on experience, the comradery, the love and sharing... visiting the land and meeting the people involved with the work and making more personal relationships... the company and cohesion of the learning as well as the special subjects... communing with like-minded people... lots of Ah-ha moments... loved the harmony of the staff and the group... people connections... Bruno's pace and gentle guidance, staff receptivity... fascinating man, marvelous presenter, stimulating message... I enjoyed meeting Bruno and the depth, exactitude and exploration of his language and the challenges of our tendency to analytical dissection..."

"I love composting! Through experience, education, and reading, I am familiar with many recipes for composting, many reasons for composting, and many ways to ruin compost, but rather few methods for determining compost quality. The notion that chromatography can picture otherwise invisible processes and energies contained in compost and soil is a dramatically exciting one. Production of high-quality composts comes closer to hand. While the amazing Bruno Follador did not actually make chromatograms at this meeting, he pre-paved the way for the participants' comprehension and mastery of the process with chromas from various projects at varying stages of maturity. He led exercises in imaginative thinking, thereby stretching our ability to relate to composting processes and increasing our intimacy with them..." Jane Weaver

The Light Root (*Dioscorea batatas*, or Chinese yam): Human Consciousness and Health

Barbara Scott

"It will not be sufficient even in the most favorable circumstances. What should be done is to cultivate the Dioscorea batatas in Europe so that it can take over from the potato as the staple diet. This plant is the only one, which is in a position to store light ether; this will become indispensable for people in the future. It grows in China..."

Rudolf Steiner

Over the past several years there has been a deepening interest in the light root, which Rudolf Steiner first spoke of

in the last century at the time of his 1924 series of lectures, the Agriculture Course. He perceived it to be indispensable in the future to transform and absorb the nutritional forces in our food, which continues to be increasingly devoid of the nutrients necessary to nourish us in body, mind and spirit. Steiner also noted that it would be wise to replace the potato, which he linked to materialism, in the European diet with the light root.

The Chinese yam is indigenous to China where it is known as *shan yao* and "fairy food." In Traditional Chi-

nese Medicine, its vital functions are known to tonify the spleen, to nourish the lung, to strengthen the kidney and to benefit essence.

Steiner tells us of the importance of the spleen – long a mystery in allopathic medicine – and how it is the most spiritual of the human organs. It is known in anthroposophical medicine to compensate for our irregular eating habits and to rhythmically transform and transport the nutritional forces of the digestive and respiratory system into the blood in the correct form and amounts. Raw foodstuffs are treated as foreign material by the spleen, and it aids us by transforming them into familiar substances and forces.

Taken internally, the Chinese yam is not for everyone as there can be side effects and contraindications. Because of its estrogen content, it ought not be used where over stimulation of this hormone could cause problems. The alkaloid in its mucilage can cause allergic reactions, while the saporin in the mucilage is eliminated only by high temperature. Further, it shouldn't be used in any excess syndrome, and it may aggravate constipation. How these consequences may apply to homeopathic remedies is not yet fully known. For example, some health care providers consider that certain illnesses may involve an excess of light ether, in which case the properties of light root will need further study.

Regarding the unique, subtle qualities of the light root, it is thought to hold the highest amount of light ether of any plant. Light ether, which works through the element of air, is one of the four ethers that make up the unseen, formative forces—earth, water, air and fire. As it weaves into our light bodies, it allows us to perceive and remember with inner light-to-light communication. This yam is thus akin to a “being” of goodwill, a presence that has come to help us become stewards of our consciousness and the soul of Earth through both practical and meditative work.

It has long been known that light is vital to life, and there has been much research on the significance of light as it pertains to healing, consciousness and human health. Light is taken in through the eyes and via the skin, which is the largest organ of the body. Saints and sages of all religions have suggested that we are light-bearing spiritual beings having a human earthly experience.

Those who are working with various aspects and modalities of light as it applies to human health and consciousness include the late Dr. David Bohm, Dr. Peter Mandel, the biophysicist Dr. Fritz Albert Popp, Dr. Jacob Liberman, Ralf Roessner and others. In describing the workings of light, these researchers all speak of it as nutrition and medicine, the medium whereby cells communicate. It is also mentioned as partially responsible for the manifestation of form through the formless etheric realm. Illness is the absence of

coherent light and the inability of the cells to communicate effectively. Various forms of light therapy often bring about a restored cellular communication. It has been demonstrated that light is involved in every aspect of metabolism, and it is now thought that animals and birds migrate and move in synchrony through light communication.

The experiential qualities of the light root include the possibility of countless benefits: an increased feeling of peace and calmness; a restored and revitalizing sleep rhythm; a heartfelt sense of unity consciousness; a certain immunity from the subnatural, degenerate and fallen light ether of the invisible sea of electromagnetic frequencies to which we are exposed and vulnerable; and a finer quality of absorption of the vital nutritional forces in food. A partial testimonial reports, “Since using *Dioscorea batatas*, I have noticed a subtle and consistent response of the client becoming more peaceful and relaxed after applying the cream to the following areas: radial artery, carotid artery, between and slightly above the eyebrows (energetic pineal gland point).”

Upon first taking the homeopathic light root remedy (pellets, taken orally), the author experienced going through a mild earthquake, swaying slightly to both sides of the body and then into alignment with a sense of unity throughout the body and mind. Over time, this changed into a witnessing perspective as the internal light communication in the DNA allowed life, with all its various adversities, to be perceived from a calm, peaceful and non-reactive position. This included times of crises, allowing a balance of humor and humility to ride out the storm.

Through the redeeming aspect of human consciousness, we can serve as light bearers to bring about benevolent collaboration for the true advancement of humankind. It is my premise that the light root is tantamount to a kind “being” that assists us during the immense changes upon us. The honeybee is another such friend, as are the blessed seeds of our food plants that the bees gift to us through their unity consciousness of selflessness and love.

Much like the presence of coherent light-to-light connections in and between healthy cells, we can each—through the essence of our individual light—communicate with kindness, empathy and respect. Such qualities co-create safe, unified ground upon the playing field of consciousness. The true renewable resources we share with our brothers and sisters are, therefore, precious particles that foster an emerging global village. Our times are urging us to grow up, become spiritually mature, occupy our light body and shine.

“Love starts when we push aside our ego and make room for someone else.” Rudolf Steiner

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Resources:

Light root nodules, products and roots are available through the following sources:

- 1) Mountain Garden Herbs seeds. mg@gmail.com (nodules only)
- 2) www.imton.info
- 3) www.soulmedicinejourney.com/articles/unity

Beginning Biodynamics for the Backyard Gardener

Abigail Porter

Nearly one hundred years ago, some farmers asked Rudolf Steiner for help in reversing the declining health of their crops, seeds and animals. These attentive farmers were observing increasing problems not only with crops and pests, but also with animal diseases and sterility. Steiner pointed out that it was the overall health of the soil that determined the health of the plants, animals and ultimately humans. Through his insights into the forces and processes at work behind natural phenomenon, Steiner gave instructions for making remedies from specific plant, mineral and animal materials to enliven the soil and restore the vitality of crops, animals, and humans. These remedies are now called biodynamic preparations. They include the compost preparations (BD #502-507), and three field sprays: BD #500 (horn manure), BD #501 (horn silica) and BD #508 (*Equisetum avense*). They are special inoculants and stimulants, which augment the benefits of good gardening practices such as organic, ecological and sustainable methods.

The preparations may be thought of as homeopathic-type remedies because they are potentized and used in very high dilution in a way that is similar to homeopathy; and they work on an energetic or frequency level, in addition to a material or physical way. The quickest and easiest way for a backyard gardener to get started with biodynamics is with the Pfeiffer Biodynamic Field and Garden Spray and the Pfeiffer Biodynamic Compost Starter. The Pfeiffer products were developed

in the 1940's by biochemist Ehrenfried Pfeiffer, one of Steiner's foremost students and a close associate. They contain all of the biodynamic compost preparations plus BD #500 (horn manure), as well as a concentrated mixture of cultivated beneficial soil bacteria, enzymes, fungi and plant growth hormones.

Applying Pfeiffer Biodynamic Field and Garden Spray

The Field and Garden Spray is a good way to get all of the biodynamic compost preparations and the horn manure into the soil efficiently. In the spring, it is sprayed over the garden area before planting to stimulate seed germination and strong root development. In the fall, it is sprayed to aid in the breakdown of plant residues when they are turned under. The Field and Garden Spray may also be used as a seed soak, or as a root soak before transplanting. Through the season, it may be used on the soil or as a foliar spray, particularly to the underside of leaves, to promote growth and to help alleviate stress from adverse weather conditions. When applied to a green manure or cover crop right before it is turned into the ground, the bacteria and other micro-organisms dramatically decrease the decomposition time, allowing for replanting in as little as two weeks.

One unit of the Field and Garden Spray (two ounces of dry powder) mixed with three to five gallons of water will treat up to one acre. Portions of the unit may be used to treat smaller areas, for instance one teaspoon could be

used to treat a 1,000 square foot area. Although one may be tempted to treat only the garden area, it is beneficial to treat as much of the surrounding area as is practical so that a larger biodynamic energetic field is created. The spray is applied in the late afternoon or evening and out of the full sun, when the earth is breathing in and dew is falling. If one does not have a garden sprayer, a whiskbroom, wallpaper paste brush, or a brush made by tying together a bunch of flexible twigs may be used as well. Maximum soil contact is desired but complete coverage is not necessary as the droplets will resonate with each other and create an energetic field effect. For open garden soil, the area sprayed may be raked to bring the effect into the top three to four inches of soil more quickly. The spray should not be applied to dry, parched soil as the effect will be lost. Moisture is needed to hold the energy and keep the micro-organisms alive; on the other hand, the spray should not be applied immediately before a rain.

Pfeiffer Biodynamic Compost Starter

The Compost Starter is applied with each layer as you build your compost pile. The breakdown process is accelerated and aided by the beneficial micro-organisms which direct the decomposition and transformation in a healthy way. More of the nutrients are retained; leaching into the ground and loss of nitrogen/ammonia to the air is reduced, resulting in a better-quality finished colloidal humus. The starter is mixed with water and applied to the layers with a sprayer or watering can. If the heap is already built, holes about a foot apart can be poked half way or more into the heap and the liquid poured into the holes. The dry starter, mixed with very dry sand, can also be put into a shaker with small holes and sprinkled into the kitchen garbage pail before it is dumped onto the compost pile. It is important to keep the starter dry until it is used, because moisture activates the bacteria; when they do not have anything to feed on, they will die. One unit of the Compost Starter (one ounce) treats up to one and a half tons of compost, or a 4' x 4' x 8' pile. A four-foot square pile, with a height of three to four feet is considered the minimum size needed to retain moisture and heat for beneficial decomposition. Half an ounce or about one tablespoon of compost starter would be used for this size heap.

Barrel Compost

Another preparation that you may like to use is barrel compost (BC – or Biodynamic Compound Preparation), especially considering the ongoing problems at the nuclear power plant in Japan, and other sources of radioactive contamination. This preparation was created in Germany

by biodynamic pioneer Maria Thun, in collaboration with Ehrenfried Pfeiffer, to mitigate the effects of radioactive fallout from the above ground atomic bomb testing in the 1940s and 50s. It is mixed with water and stirred in a rhythmic manner to activate and potentize it. It is stirred until a deep vortex is created, drawing in oxygen and other elements from the air. When the vortex reaches the bottom of the container, the direction of stirring is rapidly reversed, creating chaos until a new vortex is formed. This process is repeated for twenty minutes and then the mixture is sprayed or sprinkled over the soil in the evening. One unit of the BC will treat up to an acre. The whole amount must be used no matter how small the area to be treated, to generate enough of a force field to be effective. Now more than ever, biodynamics has a role to play in the healing of the earth and the spiritual evolution of humanity.

Recommended Reading

Grow a Garden and Be Self-Sufficient by Ehrenfried Pfeiffer and E. Riese is a classic guide for crop rotation, companion planting, making compost and using the biodynamic preparations in the home garden. Ehrenfried Pfeiffer's *Introduction to Biodynamics* contains a more scientific overview of the preparations and their benefits, as well as some background on biodynamics and Pfeiffer.

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Beginning Biodynamic Kits Now Available

There are four new beginner kits to treat up to one acre. Kits include Pfeiffer BD Compost Starter, the Pfeiffer Field and Garden Spray, BD #501 (horn silica), BD #508 (*Equisetum avense*), and the *Thun Planting Calendar*. Optional additions include the book, *Gardening for Life* by Maria Thun and BC (barrel compost). See our website for description: www.jpibiodynamics.org/product-category/biodynamic-kits/

Anecdotes: Pfeiffer Biodynamic Field and Garden Spray

Compiled by Abigail Porter

Pfeiffer Biodynamics on Cover Crops in the Vineyard

Joseph Brinkley, biodynamic vineyard consultant, has been recommending the use of the Pfeiffer BD Field and Garden Spray as a “user friendly,” convenient and cost effective way to start transitioning to biodynamics. Since the Pfeiffer spray does not require stirring, it saves on additional expense for stirring equipment and labor. It allows vineyards and farmers to experience the benefits within a year and without major additional investments. Once the improvements in crops are noted, the addition of other biodynamic preparations frequently becomes more possible and appealing.

For successful fermentation of grapes into wine, an adequate amount of yeast assimilable nitrogen or YAN is needed for the yeast. After the grapes are harvested and crushed, the must (freshly squeezed juice containing skins, seeds and stems) is tested for YAN. Depending on the grapes and the type of wine, the suggested range of YAN is 150-500 mg/l for proper fermentation. In the conventional world, diammonium phosphate (DAP) is used to provide needed nitrogen if the YAN is too low.¹

When Brinkley was managing biodynamic applications at Grgich Hill Estate Winery in Napa Valley, trials were conducted on the use of the Pfeiffer BD Field and Garden Spray on the cover crop between the rows of grapes. The Pfeiffer spray was applied to fifty acres and there was a fifty-acre control, with each having six blocks. After the cover crop was mowed, the Pfeiffer field spray was applied and disked in right afterwards. In the first year, there was a 50 mg increase in YAN in five of the treated blocks. There was no explanation why the sixth block did not show an increase. The untreated blocks showed no increase. Each year, there were increases in five of the treated plots except in unusually dry years when there was not enough moisture for good decomposition, growth of micro-organisms, and assimilation. Although moisture dependent, the Pfeiffer BD Field and Garden Spray proved very effective for decomposition and assimilation processes needed to raise the levels of YAN. Over the years, the YAN increased to the point where it became too high for the type of wine they were making and they had to back off the annual application.

Brinkley also recommends the Pfeiffer BD Compost Starter for larger composting operations, both in the vineyard and in commercial operations, because of the ease of applying the starter to the material to be composted during the usual application of water when building the pile, or during grinding or turning.

As a Seed Inoculant

In the spring of 2014, Joseph Brinkley was motivated to experiment with Pfeiffer BD Field and Garden Spray as a seed inoculant so he conducted an informal experiment using the dry Pfeiffer concentrate in the same way one would use the usual commercial inoculant. In addition to black beans he also planted okra to see if there was any difference in growth with the non-legume. Half of the bean and okra seeds were coated with the dry field spray and planted in pots in a tray with a commercial potting mix. The untreated seeds were put in the same size pots in the other half of the tray. The tray was rotated every couple days to compensate for possible differences of environment influences. After ten days, the treated seeds had twice the germination rate of the untreated seeds. This seems to be an area worthy of further experimentation. Let us know if you try this and what your results are so we can share them with our readers.

1) www.en.wikipedia.org/wiki/Yeast_assimilable_nitrogen

Gratitude for Dandelion Blossoms

Thank you to all who harvested, dried and contributed dandelion blossoms in the 2015 season. Your efforts allow JPI to produce the amount of BD #506 (dandelion) necessary to meet the growing demands of the farmers, gardeners and vineyards we serve.

Our heartfelt thanks to:

Helen Belcher – Woolwine, VA

Muriel Brigouleix – Lancaster, PA

Lee Brown – Lisbon, OH

Richard Dyer – Mission, TX

Earle Family Farm – Center Conway, NH

Michael Griffin – Memphis, TN

George Milowe – Salem, MS

Abby Porter – Berkeley Springs, WV

Larry Smith – Gamaliel, KY

Susan Stewart – Flint, MI

White Rose Farm – Taneytown, MD

Terry Williams – Woolwine, VA

JPI Recommends

Abigail Porter

The Sun, Venus, the Honeybee, and the Light Root

What do the Sun, Venus, honeybees, and the light root have in common? The Sun is an intimate and integral part of the honeybee's activity and "beingness." During mating, the queen flies as high as she can towards the sun to rid herself of the weaker drones, and the sun determines the timing of the gathering of honey and other activities in the hive. Honey is, in a way, concentrated sunshine and warmth. *Dioscorea batatas*, the Chinese yam, (light root), gathers light and stores it deep in its roots that can reach down six feet into the earth. Both have a profound connection to Venus (the planet of love) and are not only ruled by Venus but are Venus 'beings,' setting them apart, on a different plane, from all other animals and plants (p. 2–3, *The Light Root*). The beehive organism and the Great Bee are referred to as female. Curiously, only the male light root plants have the unique ability to store the particular quality of light or 'light ether.'

The Light Root: Nutrition of the Future, A Spiritual-Scientific Study

Ralf Roessner and Clemens Hildebrandt, \$16.00

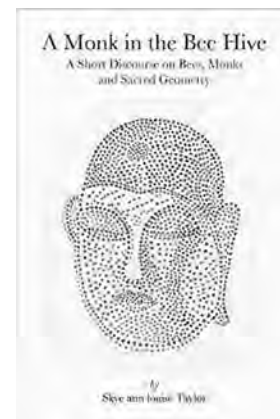
When Ralf Roessner could no longer get a sufficient quantity of *Dioscorea batatas* for his research purposes, he search around the world where it was being grown. He found that through various horticultural practices, the plants had changed and no longer had the quality of light as did the plants he had previously obtained. When he went to the region in China where this type of yam had originated, he found it still had its original 'light ether' bearing qualities.

This booklet of less than forty pages covers methods of cultivation, harvest, storage and propagation as well as historical medicinal uses and spiritual scientific research as a plant with a mission for our time. After Rudolf Steiner gave the agriculture course, he was asked if his recommendations for soils and plants were followed, whether that would provide the necessary nutrition for the development of the spirit in humanity and the earth. He responded by saying that it would not be enough, that "in the future," *Dioscorea batatas* (Chinese yam) would be needed to overcome materialism. He also said in one of his lectures that if the honeybee disappeared, humanity would only survive another five years on Earth. Are both needed for our future evolution into spirit beings?

A Monk in the Bee Hive: A Short Discourse on Bees, Monks and Sacred Geometry

Skye Ann Louise Taylor, \$16.00

This is a delightful and profound little book, not only for beekeepers but for anyone who is interested in observing and learning from the bee organism and the Great Bee; how that wisdom and perception can be applied to our relationship with nature, ourselves, and with the world as a whole; and how to "be." Skye quiets us as she takes us into the hive to meet the players in this grand play with all of the members playing their part on cue: the queen, the drones and the worker bees. As we observe all of the intricately specific and timed activity performed by the community, we see there is an infinite intelligence at work. Not only is everything perfectly timed in response to cosmic rhythms – like the weather and the abundance of nectar (or lack of it) – but adaptations are made quickly, communicated and coordinated in response to crises which threaten the hive, such as a sterile queen or damage to the hive. Through Skye's Zen Buddhist training and her deep connection, love and respect for the Great Bee, she gives us a heartfelt and intimate experience of the bee organism and Great Bee's significance as our teacher.



New Additions to the JPI Bookshelf

Goethe's Theory of Knowledge: An Outline of the Epistemology of His Worldview – Rudolf Steiner, \$20.00

The Wholeness of Nature – Henri Bortoft, \$35.00

Ehrenfried Pfeiffer: A Modern Quest for the Spirit – Compiled with intro by Thomas Meyer, \$18.00

A Biodynamic Manual, 2nd Edition – Pierre Masson, \$30.00

Growing Biodynamic Crops: Sowing, Cultivation, and Rotation – Friedrich Sattler and Eckard von Wistinghasen, \$19.95

What Are We Really Eating? Otto Wolff, \$15.00

Quantum Agriculture Biodynamics and Beyond – Hugh Lovel, \$29.95

Save the Date

September 4: Volunteer Day at JPI

Making horn manure (BD #500). Contact: 540-745-7030 or www.jpibiodynamics.org

September 5: Workshop for Successful Overwintering of Bees

A look at what needs to be done in the fall in order to let colonies go into the winter as strong and healthy as possible, as well as a look at the winter and early spring months, probably the most difficult time of the year for the bees. Spikenard Farm Honeybee Sanctuary, Floyd VA.

September 12: One-Year Part-Time Training in Biodynamics (on-going)

A series of thirteen full-day weekend workshops from September to June in the Pfeiffer Center's biodynamic garden. Each workshop day features an engaging mix of classroom talks and activities. A thorough introduction to the principles underlying biodynamics, plus ample opportunities to experience how those principles come to life in the field. Mac Mead, Director of the Pfeiffer Center, is the principal instructor. Participants in the full course will receive a certificate of completion and are eligible for classroom study credit in the North American Biodynamic Apprenticeship Program. www.pfeiffercenter.org/one_year_training.aspx

September 17: Volunteer Day at JPI

Making horn manure (BD #500). Contact: 540-745-7030 or www.jpibiodynamics.org

September 18–20: Comprehensive Introduction to Biodynamic Principles and Practice (on-going)

This comprehensive workshop will give you a solid basis for understanding the major ideas and principles of biodynamic agriculture for a thriving farm or garden organism. Topics covered: the self-sustaining farm individuality, the plant in relation to the inner and outer planets, as well as to silica, lime and clay, the logic in and behind the nine biodynamic preparations, their enlivening and invigoration for soil, plant, animal and the human being, Rhythms of life in their daily, weekly, monthly and yearly practical application, and BD pest management. Practical activities will include: Compost from start to finish, and making horn-manure, chamomile, nettle, and dandelion preparations. Spikenard Farm Honeybee Sanctuary, Floyd, VA.

September 24–26: Biodynamic Preparation Making Intensive

An on-ranch biodynamic workshop with experienced preparation makers covering the making of all nine biodynamic preparations and how to apply them to enhance the quality and quantity of life in/on your garden and farm. \$500. This workshop is part of the Biodynamic Intensive

Workshop Series in Colorado and Nebraska. With Lloyd Nelson and Brook LeVan at Sustainable Settings in Carbondale, CO. www.sustainablesettings.org

Oct 2–4: Biodynamic Weekend Overnight Intensive

Learn biodynamics in a weekend retreat setting on a working biodynamic farm at Buttermilk Falls, a CSA farm located an hour from the Twin Cities in Osceola, WI. Topics will include an introduction to biodynamic concepts, biodynamic preparations, composting, cosmic rhythms, using a planting calendar, and garden planning. \$250 plus \$15 for supplies. For more information, contact Tal Simchoni, tsimchoni@yahoo.com or 320-429-2145.

October 9–11: Biodynamic Principles for Regenerative Agriculture

Explore the regenerative principles of biodynamics. Topics will include innovative principles for building healthy economic and community relationships around your farm, the threefold social organism, the inner development of the farmer through Goethean observation and meditation, biodynamic perspectives on co-evolution and more. \$300–150 sliding scale for full weekend. With Beth and Nathan Corymb, JonRay Gardner, Cameron Genter, Lloyd Nelson and Dennis Stenson at Shining Mountain Waldorf School in Boulder, CO.

Volunteer Days at JPI: BD #500

Friday, September 4 and 18

JPI has scheduled two volunteer days for making horn manure (BD #500). If you would like to help stuff some of the several thousand cow horns that JPI buries annually, we would be most grateful for your help. For details, contact Cynthia in the office-540-745-7030, or cbowman@jpibiodynamics.org

Newsletter Available On-Line!

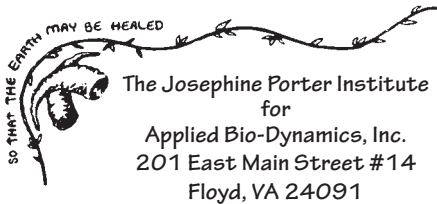
We offer an annual on-line only subscription for \$20.00 or for \$15 if you have an Associative Contract. A subscription for two printed issues remains at \$30.00.

The set of printed back issues, up through Issue #83, is available for \$260.00 plus shipping. A valuable resource for your library!

Contact the office to order yours at (540)745-7030.

“Modern chemistry talks only about the corpses of the substance, not about the real substances. We have to get to know their living, sensitive aspect.”

Rudolf Steiner, *Spiritual Foundations for the Renewal of Agriculture*, p. 54.



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