



Applied BIODYNAMICS

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Biodynamics in the Dry Tropics of Baja California Sur in Mexico

Ben Nommay, JPI's New Farm Manager and Prep Maker

Favored Child/Winter Crops

From the Editor

Since its first issue, *Applied Biodynamics* and JPI have worked to live up to its mission, “That the Earth may be healed.” Rudolf Steiner first shared this purpose with Ehrenfried Pfeffer, who explained its evolution in his preface to the 1958 Adams translation of *The Agriculture Course*.

And so it went—from Steiner to Pfeffer. From Pfeffer to Josephine Porter. From Porter to Hugh Courtney. From Courtney to those continuing this legacy. Such direct lineage is described as passing from heart to hand.

We are almost a century removed from Steiner’s original 1924 directions that his instructions be practiced quickly for Earth healing. As he knew, a huge mission is not undertaken by one or two or even three individuals. Perhaps it is not even a mission for one lifetime. Indeed, as Steiner suggested, speed may be critical, but more than humans are needed for success. As anthroposophist Adriana Koulia reminds us, the hosts of the energetic realms stand ready for us to ask their help: “Elemental beings are always entering into our souls all the time unconsciously, because we are always entering into the spiritual world unconsciously with our thinking...and the elemental spirits that are enchanted into all the things of the world slip into us.”

Our relationship with the elementals and our need, as part of the mission Steiner gave us, remind me of preparations in Tolkien’s *Lord of the Rings* for the final battle. The etheric as well as the physical are needed here.

It is the little things that create the outcome—the minute beings and minute actions—the small tasks we perform mindfully whether it is the food we gather or the way we set our feet down on the earth each day. Done thoughtfully, these help us free the future and, just as importantly, ourselves, day by day, person by person, generation by generation.

In the interest of mindfulness, this issue brings you “Biodynamics in the Dry Tropics,” where farming is aided by the gestures farmers witness and amplify in the plants. We also formally introduce Ben Nommay, JPI’s farm manager and preparation maker, who is wholly dedicated to healing the Earth with the help of all of us. We also take this opportunity to share with you *Applied Biodynamics*’ change from print to digital through *Substack*, to save money and spread information further—another small change.

And so earth healing initiated by souls in the past is continued in the present, and we then breathe these forms of love and dedication into the future—for the benefit of each plant, animal, and person, each drop of rain, breath of wind, grain of earth, plume of fire, all of it consciousness ensouled and animating itself.

Mary Maruca

(On the cover)

Fall spreads its cooling temperatures and beauty along the eastern United States. Photo by Richard Grant.

Applied Biodynamics

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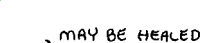
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Mission

The mission of the Josephine Porter Institute for Applied Biodynamics, Inc. is to heal the Earth through Biodynamic preparations, research and education, and to build a dynamic network so our legacy is accessible to all future generations.

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News From the Farm

Ben Nommay

It's the dog days at the end of summer. I don't know about y'all but, about this time every year, I'm spent. Everything just feels heavier. If morning resembles a microcosmic spring of every day and evening is the autumn of that day, then the dog days of the year are a macrocosmic mid-afternoon slump after lunch. Well, it's that time of the year when all anyone wants to do is take a nap in the shade!

As I observe plants during this season, I notice they reach their flowering peak, attracting all the pollinators to share the gifts the plant offers. Some plants only put on one display of flowers, while some, like the lovely chicory, continue to flower throughout the season. We have left many spaces around the farm unmowed to allow the plants to express themselves fully.

If winter is the summer of the soul as Steiner suggests, then summer must be the winter of the soul. What does this mean? It means our attention tends to be drawn out of ourselves into the sense-perceptible world beyond us, whereas in winter, when it's cold and there's not so much to titillate our senses, we draw inward. Summer is for extraversion, winter, its opposite, a time of introversion.

During summer, thinking is particularly difficult—the body is exhausted from working out in the sun, sweet fruits are ripening, and the fatigue of the year is setting in.

It's as if we've turned ourselves inside out. Most of the year has already passed, so most of our energy is now already *outside* us and the effects are also there to be seen. As autumn approaches, however, the earth has exhaled as much as it can. The soil tends to be driest now here in Virginia. The autumn equinox marks a spiritual beginning of the year as the center of gravity shifts: the Earth begins to inhale, the soil cools, rain falls, colorful leaves descend.

Chromatography at JPI

I've been practicing chromatography, which is a picture-forming method designed to make visible the unseen activities that even a microscope cannot reveal. One thing I can say about them is that chromas take patience. It takes several days for the full picture to develop clearly. During the wait, it feels like I'm witnessing a warp speed time machine that reveals the aging process of the biodynamic preparation. It looks like soil being transformed through time to the point where the substance is when we test it. These pictures are part of our quality control process at JPI. They're one way we assure our customers that they only receive the best preparations on the market.

Benefits of Barrel Compound

Ehrenfried Pfeiffer preferred to make horn manure as close as he could to the autumn equinox, so we're already thinking about manure collection here at JPI. There's something special about manure from cows fed good hay or cows feeding on dry grasses this time of year. The woody material (lignin) is only partially digested by cows, which leaves behind abundant food for fungus in the soil. As Steiner says, "we should see to it that the soil of the meadow is well-planted with such growths." If you've ever tried making Barrel Compound in spring with overrich green manure, it's a completely different creature than batches made from summer/autumn manure. If you use manure that has a low lignin content, you'll tend to get more of a bacteria-dominant product rather than a healthy fungal-dominant product. For the most part, JPI makes Barrel Compound in the fall, though Maria Thun herself says it can be made any time of year. Though brassicas are a notable exception, almost all of our garden crops rely on fungal associations.

Many ways of feeding plants can make them "stink" to the world, attracting more pests. In the case of brassicas, Maria Thun found that Barrel Compound was ideally suited as a foliar spray because it nourishes the plants without adding more odor (as fish emulsion would). The ability of every living organism to contain its own scent – to "smell inwardly" – is why it is paramount that biodynamic preparations be fully transformed humus completely free of any offensive odor if we want our fields and plants to have the



Chroma 8/3/23; Sample: 2022-2023 horn manure 1.5g in 150 mL 0.5% NaOH, from 2022 burial

same power. As Steiner says, “life itself consists in this that what is generally diffused as a scent is instead held together so that the scent is kept inside and does not stream outwards too strongly.” Use fertilizers devoid of offensive odors and you’ll tend to notice that plants attract fewer pests.

Rhizobox Experiments

JPI is developing our own rhizobox experiments, inspired by Jochen Bockemühl’s work. In short, the boxes provide a “window” into the development of roots. Each box is treated differently to reveal what is normally invisible to the naked eye. In the experiment pictured to the right, we are looking at the differences between *stirred* water (top) versus *unstirred* water (bottom) on beans.

Farming in Community

For a farm to be a living organism, it needs to be able to host other people. I’m pleased to announce JPI’s plan to expand the farm as a community center with additional housing and space for community events. As an independent organism, JPI needs to be able to host staff and workshop participants on-site, so that we can continue to grow and make biodynamic preparations to send throughout the world. Whether an advocate of climate renewal or spiritual evolution, the work here at JPI is on the frontlines. This is an area for serious growth at JPI and, if you would like to participate in our meaningful work, donations are welcome. You already do so much, but we can’t heal the Earth without you. The most important time of our year is hosting you at our farm where we make all the biodynamic preparations together as a community effort. If you’d like to get your hands into something that produces direct benefits



by regenerating the soil, fixing carbon, and improving nutrition for our fellow human beings, this is a workshop for you. The preparations you help make will travel across the globe, along with our intention, which travels with them.

JPI—Yesterday, Today, Tomorrow: President’s Report

Mike Biltonen

Biodynamic agriculture as we know it is almost 100 years old. The Josephine Porter Institute for Applied Biodynamics (JPI) itself is almost 40. Conceived by Hugh Courtney, the institute’s founder and long-time master preparation maker, JPI began life as an organization in 1985, and its transformation continues to this day. Under Hugh’s guidance, biodynamic agriculture in the United States found a foothold with farmers and gardeners, growing its presence over nearly four decades. The organization’s process of rediscovering itself continues in new and exciting ways every year.

Through inspiration and experimentation, trial-and-error, and the application of the alchemical imagination of Steiner and those who preceded him, Hugh and others paved the way

for where JPI stands today. JPI continues to investigate and discover new ways of deepening the instructions given by Rudolf Steiner to farmers in 1924 in the form of *The Agriculture Course*.

Biodynamic farming is not just another style of regenerative farming or Organic 2.0. It involves concepts and practices that go beyond the mere “doing” of something. At its core, biodynamic farming and gardening improves the health of the planet and human nutrition through soil revitalization, and provides a contemplative farming practice that, more than just improving the land, improves and deepens the nature of the farmer who practices it.

Whether applied to a backyard garden or ten thousand acres, biodynamics is scalable. As an approach, it encourages

the farmer to look deeply at his or her relationship to the farm and Earth, and to learn from it in ways that enrich and enliven the souls of both. Lest there be any confusion, biodynamics is not an instant answer to bad or destructive farming and gardening (e.g., the use of synthetic pesticides or fertilizers). Biodynamics takes time, commitment and patience, and is a balanced approach of will-force and intellect. It is the confluence of secular and esoteric sciences and thought that creates something stronger and more meaningful than that of the individual parts. A farmer who pays more attention, cares more, and does the right thing is a lot more likely to get a better result. In a way, anyone doing that is already a long way down the right path, whether or not they call it “biodynamic.”

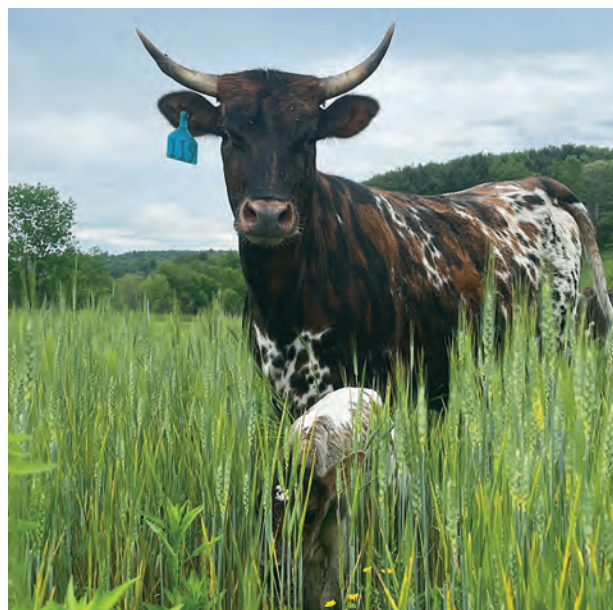
As the Earth’s matrix is healed, the farmer is also repaired. Steiner knew this when he first provided the Agriculture lectures 100 years ago next year. And Hugh Courtney knew this when he first dreamed of an organization that could help anchor biodynamic agriculture in the United States.

This does not mean that the path forward has been or necessarily will ever be easy or clear. As human evolution has been difficult, agriculture fell from relatively balanced naturalistic approaches to materialistic farming and must now undergo a rebirth by recalling the spiritual foundations of agriculture. But as winter gives the appearance of going backward as leaves fall, the decay of winter provides rich fertility for the new growth of spring. Similarly, the apparent “regression” into materialism has provided us with the scientific method, which, when put in loving service of humanity, becomes an ennobled pursuit.

When it appears that a planet in the sky goes “retrograde,” it is only because of how the Earth moves relative to the retrograde planet. In reality, every planet is only ever moving forward. Once Hugh passed responsibility for the organization on to others, as often happens, those others brought a renewed vision—renewed because it was different—and new hands to the work.

The changes in the management forms of an organization are permeable, but as a leaf leaps to a flower in an abrupt moment, organizations can suddenly express in their form latent changes long desiring to emerge. As a young child is growing, it is “thinking” itself into being. Only later does thought become liberated and more self-aware. Organizations change as our bodies do, striving toward ever-greater actualization. As with all of us, JPI is an ongoing project of human becoming. With enough time behind us, and plenty in front of us, JPI is now at a place where it can both be circumspect and can plan for the future as a mature organization.

One of the biggest changes we have made is our renewed commitment to embodying the ideal of the farm organism. In early April 2020, and for some time prior, we began talking about the need for cows on the farm. For the next few years and many prior to that we had been obtaining manure for



our 500 horn manure preparation from neighboring pastured cattle that would graze JPI land. This year we’ll get all of the manure we need for 500 and barrel compound from our own cows eating grass and pooping on-site at JPI.

Introducing cows—or any livestock—onto a farm is no small consideration. Locating and transporting suitable cows took us a year and was only possible after the hiring of our current preparation maker and farm manager, Ben Nommay. But arrive they did.

We are also in the process of migrating our preparation burial sites to more appropriate locations, expanding our biodynamic herb gardens, as well as fine-tuning the process for our Pfeiffer™ Field and Garden spray. Dusting off hundreds of pages of Pfeiffer’s hidden notes in the JPI vault, we discovered Pfeiffer’s references to things he wished he could locate to include in the Pfeiffer™ Compost Starter. Pfeiffer says that if these specific forces can be isolated, “they should be added.” JPI has brought the Pfeiffer™ products up-to-date with some of the fruitful insights of secular scientific research, allowing the further unfoldment and improvement of the biodynamic arsenal.

JPI is conducting on-farm research to continue to assess preparation quality and its effects on plant growth. We are expanding our educational opportunities in the post-COVID world, and we are finally getting to the jumping-off point for on-farm housing that we envision leading to the creation of a larger dynamic facility where we will teach, research, and house visitors, board members, staff, and enthusiastic supporters of biodynamic agriculture.

And if that isn’t enough metamorphosis, JPI is moving away from its printed format for *Applied Biodynamics*, which has been published continuously since Hugh first created it

in 1994. *Applied Biodynamics* is being reincarnated in digital form hosted on *Substack*, which allows us to reach a larger audience while at the same time significantly reducing publishing costs. See notice below for further information.

We've already developed a lineup of authors inside and outside of JPI interested in publishing pieces on biodynamic farming. Our last published issue of *Applied Biodynamics* will be in early 2024 on the eve of the 100th anniversary of Steiner's lectures. We still have plenty of back issues to sell and distribute, in case anyone is interested. We are planning a comprehensive compendium of all back issues at some point in the future. See JPI's website for more information.

At the heart of all of this has been the JPI's volunteer Board of Directors. Board members through the years have worked through thick and thin to help JPI bring the philosophy of biodynamics and biodynamic preparations to an ever-growing audience. Despite some turbulent times, we have arrived at a strategic point where we are now acting on many of the things we've been talking about for the past years while still keeping the vision of those who came before and our other biodynamic elders as a guiding light.

Almost one hundred years ago, a small group of people concerned with the decline of nutritional quality in food

convinced Steiner of their need for answers concerning how to improve their soils, crops, and food. Once again, nearly 100 years later, we have arrived at a time that begs us to think about the future we are leaving for the next generations.

The answer to the so-called food crisis is not more production, but, rather, expansive thought and innovative farming and food distribution action. Biodynamic agriculture represents the next level of farming and gardening through its connection to spirit and earth, as it involves far more than placing a seed in the ground and watching it grow. As someone a bit smarter than most of us once said, "We can't solve problems by using the same kind of thinking we used when we created them." How do we think in new ways? How do we rethink agriculture? How do we rethink biodynamics without prejudice as if encountering it for the first time? These are all things we must consider as we contemplate a healthy future for humanity.

JPI, like biodynamic preparations, is ever-transforming, asking deeper questions and taking on greater pursuits, asking how we can bring biodynamic farming and gardening to a broader audience committed to the health of humanity and the salvation of Earth. Please join us as we embark on this crazy, cosmic journey and begin to celebrate the 100th anniversary of the birth of biodynamic agriculture.

The Future of Biodynamics: *Applied Biodynamics*

In May 2023, *Applied Biodynamics* initiated an exciting new endeavor—publication on *Substack*, a digital platform, allowing us to reach a wider audience while continuing to share the work of multiple authors. Now in its 109th publication, *Applied Biodynamics* began as the inspiration of founder Hugh Courtney, who produced the first issue in Fall 1992. Just over 30 years later, various others have shared their thoughts and experiences. *Applied Biodynamics* has interviewed farmers, shared tips and tricks, and, we hope, celebrated those who have helped grow the mission of biodynamics in the world.

As printing costs skyrocket and paper publications are less convenient for readers, we decided to try a digital format to reduce costs and grow subscribers. For those who have loyally supported *Applied Biodynamics*, the paper version will continue to be mailed through the end of this year as we round out subscriptions with the winter issue. Please take a look at our *Substack* offerings by using the QR code to the right. It will take you to what is currently being offered, as well as allowing you to access what we have already published through this venue. The

website URL is also included below the code. Our new on-line platform allows us to reduce overhead costs and supply more quality content to you on a regular basis.

One thing we know for certain in biodynamics is that everything works in unfolding cycles. We hope you enjoy what you read there and also hope you may be inspired to continue this journey with us. Your support is greatly appreciated.



<https://jpibiodynamics.substack.com/>

Biodynamics in the Dry Tropics of Baja California Sur in Mexico

José Aviña with Stewart Lundy

To the ivory statues 1, 2, 3 and... freeze.

It is curious what comes to my mind when I try to describe the biodynamic activities here in the dry tropics of the peninsula of Baja California Sur in Mexico. In these parts, the practice of the biodynamic approach to agriculture is still young, almost unknown. What immediately comes to my mind is the opportunity that the macrocosmic biodynamic view provides to modulate our perspective when we interpret living Nature, who expresses herself in her varied movements and moments of growth and decomposition in this piece of land. It is from this quality of living interpretation that I intend to write.

The conditions of each piece of land and its interactions with the climate are infinitely varied combinations whose expression gives rise to the vegetation we observe growing in a given place. Plants contain active forces and processes that find material ready to take shape.

I work near the ocean which provides us with salty conditions in both soil and water, very rich in micronutrients, and especially an abundance of sodium chloride. Steiner tells us about how the ocean is like the deposit of nutrients in a “belly” where everything that has already entered through freshwater springs and rain is deposited at the end of this journey. Within the ocean, these salts find the right concentration and a suitable home as a sort of “intestinal” ecosystem. Up on the agricultural land, these mineral salts need a way to bridge to the plant world because not all species that we cultivate can tolerate carrying so much mineral salt in their veins and still properly express their archetypal form.



Diverse garden in dry tropics of Baja California Sur in Mexico.



Sodium added to water. Licensed under CC BY 2.0. To view a copy of the license for this and other Creative Commons images, visit <https://creativecommons.org/licenses/by/2.0/?ref=openverse>.

Sodium seems to have the task of antagonizing everything related to water. It is as if the reason for sodium's existence is to “use up” liquids by trapping, drying, leaving behind a solidified ash of the formerly active life process. In addition, sodium's power of attraction causes the liquids to acquire certain dynamic movements. When pure sodium is added to water, the fire bursts into flames. When a plant has too much sodium, it is as if the etheric impulse is spent by a sodium eruption into vertical growth. In conditions dominated by too much sodium, the etheric quality of the plant seeks to return all too quickly to the world, leaving very little suppleness in the plant.

When we feel into this dynamic, it is possible to see things from a new different perspective. This region of the world is generally something of a palm oasis where we are presented with a vegetative landscape with the capacity to create an exuberant production of biomass from these sodium-rich conditions. These are plants that continuously use salt water in an ostentatious way, raising it to the sky through palm leaves that commonly reach more than 10 meters (32 feet) long. A palm tree is like a magnificent firework in the plant world, a living sodium explosion.

Though obviously a different chemical reaction, in the gesture of the firework, we glimpse the kind of thing that happens in the plant world when sodium overcomes the containing influence of potassium. To put it simply, the fire of growth rushes quickly upward, spending little time



Fireworks photo taken by Kabir Bakie at Blue Ash Community Fireworks Show July 4 2005. Licensed under CC BY 2.0.

forming fleshly leaves, and all of the vital force is spent. By contrast, when potassium is able to constrain the effects of sodium, the expansive explosive tendency of sodium is *contained* within the plant itself and we see rounding-out of fleshy fruits and vegetables. Yet, if phosphorus—the main limiting factor driving plant growth—were absent, the etheric firework would fizz out and provide a rather pitiful performance.

A plant that expresses a relationship to lime “allies” such as sodium is the banana tree (*Musa acuminata*), though this tender plant’s relationship is much more with potassium than with sodium. The inner kinship between the gesture of the banana leaf and the palm leaf, though the watery trunk of the banana tree is a stark contrast.

Steiner says of the mineral salt realm, if you use “purely mineral substances as manure, you will never get at the real earthy element; you will penetrate at most to the watery element of the earth.”¹

It is in this characteristic expansiveness that one can feel



Banana Tree” by Daniel Paixão Fontes. Licensed under CC BY 2.0

a harmonic relationship between a highly concentrated element (such as sodium) in the soil and the local ecosystem’s dynamic innovations to manage what occurs when there is such an excess.

Steiner says, “the influence of mineral manures will have a kind of growth which betrays the fact that it is supported only by a quickened watery substance, not by a quickened earthy substance.”² The palm trees exhibit in their very form the habituation through evolution to the superabundance of mineral salts without quickened earthy substance.

In the agricultural literature, we learn that the excess of sodium creates a poor structure for the soil, and because of this, vegetation is scarce. With little ground cover, the clay that has been developed over eons tends to wash away, and we are left with pronounced sandy and silty areas with poor water retention. Water that falls on such sandy soil drains quickly and leaches away into the subsoil. As Steiner says, “sand is pervious and will suck in the water.”³ In light soil, techniques to darken it with shade from vegetation, organic matter from compost, and biochar and clay help improve water retention.

In a salt-rich area, the continuous intake of salty water gives obvious signs of burning in many plants. The image of salt-scalded plants reminds me of the perspective in Ayurveda where salt in excess becomes “fire in the organism.” Water retention and salt mitigation are serious concerns in the dry tropics. Ehrenfried Pfeiffer says, “For every soil which has a tendency to dry out—be it garden or farm in a temperate or tropical climate—mulching and shading create conditions under which a healthy fermentation can develop, and losses of humus be avoided.”⁴ We retain more water by providing a multi-layered agroforestry situation so that the ground is more shaded than if left exposed. Alan Chadwick says that young transplants should be watered regularly to accelerate growth until their leaves fully shade the soil around their own roots, at which point watering can be somewhat reduced.

Steiner tells us in the *Agriculture Course* how sodium belongs to the salts of the calcium pole:

“[I]n all parts of the earth, although not in such abundance as silicon, we find lime and its allied substances, (limestone, potash and sodium). If these were present in smaller proportions we would have plants whose stems were only narrow and twisted.”⁵

As I consider these lines of Steiner, I observe in the landscape the tendency of oasis plants to grow thin and tall. This, as well as my familiarity with the general conditions of the soils of this region makes me wonder if some excess of one of these elements “allied” to lime produces exaggerated vertical growth that lacks calcium to mitigate.



Morning glory flower (*Ipomoea purpurea*), left; morning glory leaf and vining tendril, right.

But this is far from true. When reviewing several soil tests of this area, it is clear that having only 250 millimeters (9.84 inches) per year of rain, the soil retains more than enough calcium, magnesium, and potassium. It is only the superabundance of sodium that generates the illusion of deficiencies of its “allied” substances, because the plants consume so much sodium, the effects of the others become muted. Were these lime “allied” elements really absent in our soil here, the evolution of native plants would look more like a narrow vining plant such as bindweed (*Convolvulus arvensis*). This is not the dominant tendency here. Instead of developing grasping tendrils to support their upward growth by clinging to surrounding plants, the native plants in our oasis show the opposite tendency with trunks that become swollen at the base.

So the question is, what is the purpose and relationship of this specialized exaggerated verticality?

As Steiner says, “The root is rich in salt, the blossom rich in light.”⁶ Minerals tend to settle downwards, and essential oils tend to rise. But in the case of evolution where the soil contains a lot of salt, the root process expresses itself above the soil as well.

Perhaps part of this imagination has to do with another passage:

“[P]lants with highly developed roots, the root-forming forces deposit potassium salts and sodium salts, the tendency will be found in them to retain root forces even in the foliage and this means a tendency to beneficial action in cases of hemorrhage as well as gravel of the kidneys.”⁷

Steiner suggests that plants that “retain root forces” above the ground have a tendency to help in cases of gravel (kidney



Aerial roots descending from tomato plant (*Solanum lycopersicum*).

stones), which is to say, the plant embodies a process that helps release excessive minerality towards the root instead of burning the leaves. He specifically mentions shepherd’s purse (*Capsella bursa-pastoris*) as a remedy, for its tendency for the leaves to cling to the earth “leaf after leaf” growing almost horizontally. There almost seems to be an aspiration within the leaves of shepherd’s purse not for heaven, but for the earth. Within the human organism, Steiner suggests that this helps dissolve kidney stones, though in this image it means directing the salt process to the head. One can call to mind other plants that have an active rooting tendency not only in their leaves but also their stems, such as tomatoes (*Solanum lycopersicum*), Japanese knotweed (*Reynoutria japonica*), devil’s backbone (*Kalanchoe daigremontian*), and the Goethe plant (*Kalanchoe pinnata*), among many others.

When opening a trunk of a native palm tree found in the aridest areas around the oasis, you can experience the strength of the tissue that supports its existence with a strong fibrous thickness, the texture of which resembles closely what you find if you cut open a thick root of a medicinal plant. As Steiner mentions, it would seem that these “root-forming forces” project up into the stems of these species. When soft living tissue presses against a crystalline surface and a callus is produced, the flow of sap



Swollen "trunk" of kohlrabi (*Brassica oleracea*). Gongylodes Group archives.

internally produces fibers almost like "calluses" in response to salt intake. As the sap rises, sodium is deposited as a rigid structure so the etheric quality of the plant has a chance to express itself above.

Life in its intelligent operation is aware that when growing on sand with little rainfall, water always departs almost as quickly as it arrives. Excessive sodium creates a kind of "high blood pressure" in the plant, driving vertical growth, whereas potassium helps contain the expansive pressure within tender growth. In the palm, we see fibrous rootlike tendrils forming as a kind of subcutaneous aerial root out of the cambium. In other palm trees, this tendency produces actual aerial roots that extend to the ground, though in our local oasis here the native palm stops at fibrous roots extending along the cambium. The hardening of the circulatory system along the trunk prevents the excessive mineral deposits from burning the leaves above. Aerial roots and rootlike fibers allow for surplus salt to be separated from the upwelling sap and permits the leaves above to be purified enough so they are not burned by excessive salt. One could almost see such rootlike filaments descending while the growth of the plant ascends as a sort of etheric flame rising from a candle while wax drips down the sides.

Unlike palms, oaks and similar trees, where calcium forces prevail, offer external protection that makes them almost impenetrable. In the case of palm trees, sodium predominates, and the tree seals itself off from the inside in an almost semi-permeable way. In normal trees, they drink water in from the roots and discharge water from the leaves. In palm trees, they drink from the roots, yes, but they also retain the "root" function of absorbing water and condensing dense rootlike filaments in their trunks. The oak absorbs mineral salts and especially calcium to create a protective bark, whereas the palm tree wrestles with surplus sodium, which displaces the



"Aerial roots, The Palm House"—geograph.org.uk—4546534" by N Chadwick is licensed under CC BY-SA 2.0.

“head forces” into the rhythmic midsection. Some species expel excessive salts as aerial roots like specialized “release valves,” sending the surplus minerality back where it belongs, with the earth.

Steiner says, “Were only the etheric body to work, then the plant would unfold endlessly leaf by leaf; this is brought to a conclusion by the astral body. The etheric body is muted by the astral.”⁸

By contrast, we might say that if the work of the mineral-salt body were to predominate in a plant, we would witness the growth of fibrous root after root. It is as if the tender etheric quality here wrestles with the sharp salty quality and, when the former “loses,” woody fibers are formed or, in some cases, true aerial roots are released downward. But where the tender etheric quality triumphs over the hardening effects of excessive salts thanks to the beneficial effects of potassium, expansive succulent green growth is witnessed. We must remember that the cambium relates to roots already, even where it is tender and green. After all, the cambium drinks up water and transports minerals from the earth to the rest of the plant. “Although the cambium does not look like roots, it is the living, growing layer, constantly forming new cells, so that the plant-life of the free grows out of it, just as the life of a herbaceous plant grows up above out of the root below.”⁹ When the cambium is too saturated by salts, it manifests as fibrous root-like structures. It is almost as if the tender green cambium dries out and becomes a clear picture of its inner rootlike quality in palm trees.

Steiner, speaking of perennial plants versus tender annual plants, says, “through the cambium, a relative poverty of ether is engendered in the tree, the root in its turn will be influenced. The roots of the tree become mineral—far more so than the roots of herbaceous plants.”¹⁰ In the example of the palm tree, this effect does not simply occur within the root itself, but above the ground in the cambium where it grows fibrous



The root-like quality of fibrous bark of palm trees.

rootlike tendrils. The cambium itself becomes mineralized in salt-dominated plants.

If there is a dominant influence of sodium as there is here in the oasis, we see mineralized cambium and exaggerated vertical growth. By contrast, if potassium prevails over sodium, we tend to see saturated swollen fleshy vegetal tissue as in the case of bananas, potatoes, and kohlrabi. Even though this is a mineral-rich area, if we do not apply ash (for the potassium salts) to corn, it grows stalks that are too dense and spindly. The application of ash helps the corn thicken properly into fleshy stalks. If our celery is too stringy and fibrous, it is likely that the soil is deficient in available potassium. While trace minerals arrive in the air and rain from the cosmos, Steiner says that “The truth is that Mother Nature will abandon us without mercy, if we do not pay proper regard to potash, limestone or phosphoric acid.”¹¹

In the palm tree, the tender quality of green leaves expresses the salty water that has become sweet; the aerial roots of the mineralized cambium striving towards the ground express the excessive mineral salts and the attempt to return them to the earth. As salt does not evaporate, the foliage is how the water leaves the plant, the extra rootlike elements how the plant compensates for and separates out too much salt.

Here we have stumbled onto a little secret. Some of the most nourishing ingredients for compost are in the air. The



The fleshy water-holding effect of potassium which helps stalks and fruiting bodies increase in size.



Too much sodium with too little of the other lime “ally” potassium, resulting in excessively narrow fibrous vertical growth.



The hardened fibrous habit of enhanced fibrous growth under the prolonged evolutionary influence of abundant sodium.

leaves of a plant that are able to overcome saline conditions can impart the same quality to other plants. If we want plants to thrive in the way that palms thrive, we should use robust wild native plants to supply what is missing in our tender garden plants. Ehrenfried Pfeiffer pointed out that primitive plants like the epiphyte Spanish moss (*Tillandsia usneoides*) are ideal compost ingredients, as they contain a healthy concentration of trace nutrients plus the ability to live directly from what they inhale from the atmosphere. By looking out at nature, we can select plants that thrive in difficult native conditions and impart their powers to the crops we introduce in our gardens.

If we hold the image of the palm tree absorbing water from its roots in the soil and discharging excessive heaviness as mineralized cambium or through new aerial roots, how is this picture reflected in our interaction with the ecosystem, and how does this inform our production of food within this ecosystem?

How do we embrace this living gesture offered to us by native plants?

In the case of aerial roots, the life of plants extends not merely into the soil but into the surrounding atmosphere. Steiner says, “The actual life [of the plant] is continued, especially from the roots of the plant, into the surrounding soil.”¹² But these plants experience as “soil” what other plants could not tolerate: their roots growing in direct sunshine. The specialized indigenous plant tells us something about how to help introduced crops thrive in the same region. Our gardens need salt-loving plants to absorb the excess so our other plants can thrive. Aerial roots are rather like living stalactites, rich mineral deposits dripping downward as an expression of an abundant hunger for the earth element. It is as if these plants must release excessive heaviness and, to do so, allow these mineralized filaments to grow downward. By releasing excessive heaviness, the rest of the plant may come to express buoyant levity in its tender etheric leafy growth.

It is worth remembering, as Steiner remarks, that, in many cases, there is “no sharp boundary between the life within the plant and that in its immediate environment.”¹³ This means that, while plants appear to be distinct above ground, below ground they are indistinguishable and interconnected. Soil science confirms this: plants trade nutrients below ground, even between different species. Though Steiner says the following about yarrow (*Achillea millefolium*), it applies to innumerable other plants, “like sympathetic people in human society, who have a favorable influence by their mere presence and not by anything they say, so.... in a district where it is plentiful, [it] works beneficially by its mere presence.”¹⁴ Merely growing salt-

loving plants near our less salt-tolerant garden plants has a beneficial influence.

The imagination of the native palms absorbing water in their roots, and excreting excessive minerality out of the cambium leads me to reflect on the ancient inhabitants and their first efforts to tend their own gardens within nature by imitating the spaces with which they coexisted.

The illusion of separation offers the opportunity to experience an image that moves inside the life of the human soul, and this gives birth to externalized action corresponding to what lives outside. The “external” thing lives in me if it becomes an internal image full of feeling, the form of which becomes the basis of new memory and later reflection. After all, what is not first felt will not even be noticed, much less experienced, and therefore cannot form the basis of reflective thought. As such, thought grows out of what has been vividly felt in the past and is then retrieved through imaginative remembrance.

This is how we try to practice a biodynamic way of agriculture, giving birth to a kind of communication without words, but rather with signs, imitating the verticalities and their spaces, heights, individual leaf gestures, all the edges that define the type and shape of spaces where sunlight, air, and moisture travel.

Oh blessed salt
that allows us to stop for an instant
making rough the dry steps of your attempt
making fiber the path of your waters
you provoke the dance that hypnotizes your impulses
tempering in each cycle your humors
so that the Divine may appear that sends you
sweetened and with all its colors.

What is very humbly intended to be expressed in the above verse is that in order to produce food of a very different kind than what is native to the site, you would first have to allow the forces at work in nature to have a new conduit by which they can become absorbed and expressed as plant growth, so that the natural polarity of green exhalation and dense fibrous filaments expresses itself in a new way.

By planting salt-loving plants, the soil is sweetened. In the specific case of this farm, we plant species that can mimic the gesture of raising “salty” water in summer and refine it into “sweet” water through photosynthesis. With the exception of purely parasitic plants, all plants are light-breathers, whether rooted in the soil or not. Once carbohydrates become part of the vital system of substances below and above ground, a new organization arises that initiates the organic oscillation between the two polarities, allowing for the possibility of planting foods that like sweeter ecosystems.

By imitating the gestures that we find in “the Other,” we

are illuminated by the inner motivation that animates the limits and expansions of the plant’s form. In doing so, we are telling it: I understand you, I follow you. We are imitating the steps to learn the dance.

Working with plants as verbs rather than with nouns—as an ongoing living process rather than dead final products—can lead us to explore activities in some cases different from those found in the biodynamic literature. In our particular case, for example, instead of being aware of fungus when there is excess humidity, we practice watering on the days when the Moon passes through a sidereal Water constellation (Pisces, Cancer, Scorpio). Better still, we water if the Moon is waxing, to support this rise of the waters and the swelling of the tissues that support it. Of course, these are not rigid rules but, with observation, we can use such opportunities to enhance the water flowing through the stems of plants.

It is clear that in addition to participating in this type of process, adding the application of biodynamic field preparations, good compost, and understanding how your farm dances can be more advantageous than just letting the oasis reach its balance alone. After all, we are here to express our individual freedom and venture into the experimentation of what we call Nature, to perhaps at some point become more flexible and graceful in our movements, trying to reflect that which moves us from the heart and that which moves not only us but the whole universe we inhabit. As Goethe says, “If we want to approach a living perception (*Anschauung*) of nature, we must become as mobile and flexible as nature herself.”¹⁵

May the next steps we dance be graceful.

Notes

- 1) Rudolf Steiner, *The Agriculture Course*, Lecture IV, GA327, (12 June, 1924 Koberwitz)
- 2) Rudolf Steiner, *The Agriculture Course*, Lecture IV, GA327, (12 June, 1924 Koberwitz)
- 3) Rudolf Steiner, *The Agriculture Course*, Lecture V, GA327, (13 June, 1924 Koberwitz)
- 4) E. Pfeiffer, *Soil Fertility: Renewal & Preservation*, pg. 101.
- 5) Steiner, Rudolf, *The Agriculture Course*, GA327 (7 June 1924, Koberwitz)
- 6) Steiner, Rudolf, *The Agriculture Course*, GA327 (12 June, 1924 Koberwitz)
- 7) Steiner, Rudolf, *Spiritual Science and Medicine*, Lecture XV, GA312 (4 April 1920, Dornach)
- 8) Steiner, Rudolf, Stuttgart, February 8, 1909, GA98
- 9) Steiner, Rudolf, *The Agriculture Course*, Lecture VII, GA327, 15 June 1924, Koberwitz
- 10) Steiner, Rudolf, *The Agriculture Course*, Lecture VII, GA327, 15 June 1924, Koberwitz

- 11) Steiner, Rudolf, *The Agriculture Course*, Lecture V, GA327, 13 June, 1924 Koberwitz
 12) Rudolf Steiner, *The Agriculture Course*, Lecture IV, GA327, (12 June, 1924 Koberwitz)
 13) Steiner, Rudolf, *The Agriculture Course*, Lecture IV, GA327, 12 June 1924, Koberwitz

- 14) Steiner, Rudolf, *The Agriculture Course*, Lecture V, GA327, 13 June, 1924 Koberwitz
 15) (Goethe, 1807; translation by CH; in Miller p. 64).

Introducing Ben Nommay, JPI's New Farm Manager

Stewart Lundy

Ben Nommay may be a relatively new arrival to JPI, but he's not new to farming or biodynamics. As a child, he grew up around his grandparents' farm and always wanted to be up on tractors. Having WOOFed (Workers On Organic Farms or WOOF) and interned at different regenerative farms incorporating permaculture principles, he eventually arrived at Against the Grain Farm in North Carolina where he became farm manager. There, Ben learned to make biodynamic preparations and experienced the benefits of their application over numerous years.

Q: Please share a little about your background and how you came to be a farmer, especially a biodynamic farmer. Where did you learn to make preps?

A: In 2020, M Mueller returned to North Carolina and joined the farm at Against the Grain after living out of town for some years. M learned from Gunther Hauk and participated in workshops with Hugh Courtney. We had been using the biodynamic preparations at Against the Grain but had purchased them from JPI. With M back in the area, we started making the preparations as he'd learned to make them with Gunther Hauk. M is a great beekeeper and has participated with Spikenard Honeybee Sanctuary for a long time. My teacher was M Mueller.

Holly, one of the farmers at Against the Grain, also traveled to Hugh Courtney's regularly for workshops to learn about biodynamics. Together with M, some of us read Steiner's *Agriculture Course*. That was my first introduction to reading Steiner. As many folks know, the *Agriculture Course* was delivered near the end of Steiner's life. All the folks who attended the lectures had some understanding of what he had been writing and talking about. Steiner expected them to be fully familiar with several of his foundational esoteric books, including *Esoteric Science*. I was not, so reading the *Agriculture Course* as my initial introduction to Steiner, felt like a mistake.

I imagined this text was going to explain how to make preps well or how to get into biodynamics. Nonetheless, it was a good starting point to get a sense of the language Steiner used and pick up on some of his deeper thoughts.

I'm very thankful for M who's read a lot of Steiner's work. I've also delved into some of the recordings of Steiner's lectures. Going through the *Agriculture Course* helped me know how to take some steps back to get a broader sense of the context of biodynamics.

Q: Are there certain preps that you find yourself drawn to more than others?

A: Barrel Compound is a great preparation for gardeners and farmers. Something that I try to communicate to gardeners is that you can grow multiple succession crops within the same seasonal year. You don't just have to watch the tomatoes end and the garden be finished by late summer. The season really shouldn't have to end with the end of tomato season.

Getting fall plantings out is a great way to continue to have fun, play in the garden, and create more food. We always want to give back to the soil after harvesting. And so the Barrel Compound I always saw as a kind of give-back, especially if you have challenges making enough compost to put on the garden.

Every time you want to flip a bed, the barrel compound gives the influence of all the biodynamic compost preparations to the soil. At Against the Grain, I was in charge of getting the fields ready for planting. We would flip some garden beds three or four times a year with different crops. Each time one crop was pulled out and the beds were going to be cultivated, I would spray out some Barrel Compound on that bed. Some beds were getting an application of Barrel Compound three or four times a year. After several years of this practice, I saw the soil structure change significantly.

Of course, it wasn't *only* the Barrel Compound. We were applying a significant amount of compost and cover crops. We had been doing those things before using the Barrel Compound regularly, but the biggest improvements came with the addition of biodynamics. Biodynamics is not meant to "replace" regenerative practices but rather to augment and supplement them. Biodynamics enhances the synergy of established regenerative systems. Biodynamics is not meant to replace good farming practices, but to make good farming even better. In a short time, I witnessed the soil structure

change so much that the entire planting process became a lot easier. Over those years, plants became markedly healthier, as well as larger and suffering from fewer pests.

Again, you can't just use biodynamic preparations and say that the horn manure (BD 500) made my garden amazing or that the Barrel Compound made my garden amazing. These elements put together in concert with a foundation of good farming practices help coordinate a new kind of harmony and balance back in the soil. When we have extracted fruits and vegetables from the soil, we have to give back to the earth. Barrel Compound is a great way to give back and help make sure that farming doesn't become too extractive.

You don't need to mix up a whole unit to use Barrel Compound if you're applying it regularly. Taking a mere tablespoon and mixing it with a half gallon of water in a jar is a great way to get the impulse out over a small area.

You can turn your jar horizontally and shake it back and forth. You don't have to be vigorous about it, but smoothly shaking it back and forth allows a vortex to be made for the stirring process. Then you can sprinkle that on your garden. That's a great way to get a little bit mixed up to put out in your garden.

Q: So what would be your bit of advice for someone interested in the *Agriculture Course* or learning more about biodynamics? I know that you've read other books, but what would be your little warning sign or suggestion if trying to grapple with the *Agriculture Course* or any of those other works?

A: Jeff Poppins put together the *Agriculture Abridged*, which is a nice little book that takes the farming components from the *Agriculture Course* in a text.

Agriculture Abridged doesn't give the full backstory of why or how Steiner presented what he presented. But if you want to look into biodynamics or to take that first bite of biodynamics from an agricultural aspect and not necessarily an Anthroposophy aspect, Jeff Poppins *Agriculture Abridged* is a really good text to learn from.

Q: Is there a part of farming that you enjoy more than other aspects? If so, what and why?

A: I enjoy all parts of farming. There are some more laborious tasks than others, but I enjoy it all. One thing that drew me to biodynamics was the extra effort in this style of agriculture to work in harmony with the Earth, not to merely produce a crop to sell. I do like working with animals a lot. The animals on a farm help enhance the fertility of the plants we grow. I believe a healthy farm has animals on the property. Even if you're keeping a bin of earthworms, you're still keeping animal life and you're still creating a connection with that animal to help provide what you need on the farm in terms of their waste. Karl Koenig sums it up well in *Earth and Man*. He says, "I don't think we should keep animals in order to have food, we should keep animals in order to be near the wellsprings of all existence."



Ben enjoying his work as preparation maker at JPI.

The animal still is very much connected to the natural rhythms of Earth, while humans have emancipated ourselves from those rhythms. I think we're seeing that a lot in the twenty-first century as we try to find ways to connect back to the natural rhythms of the Earth. I think biodynamic agriculture is one of those ways to connect more deeply with the Earth.

Q: JPI is the fortunate beneficiary of your skills with land, plants, and animals. What do you like the best about your work for JPI? What are your greatest challenges? What are the goals and plans you hope to accomplish for the future there?

A: I really think there's a lot of potential here on this piece of property. I mean, it's a beautiful piece of property. We have cultivated fields that are managed by Riverstone Organic vegetable farm to our south. We also have Spikenard Honeybee Sanctuary to the north of us where they plant acres of wildflowers and plants for pollinators and other beneficial insects.

We have the little river that borders our property, along with a wooded area protecting parts of the farm from the intense western setting sun. There are endless potential ways for humans to interact with the landscape. Something that I hope to do is create some demonstration areas to show how humans can interact with those different spots of our property and their different biomes.

I hope to increase the demonstration areas from an orchard, vineyard, and garden, as well as show how to holistically rotate your cattle through a field and plant different fodder in the pasture, like a silvopasture for the animals and for the humans who can have food there too. So, there are a lot of potential

ways to create spaces for a human to interact with different areas of land.

A challenge for me is having so many things that I'd like to do, and then finding the time and the resources to get some of these things done! I use the planting calendar to schedule out my tasks, even long-term tasks, looking months in advance of what might be an ideal time to plant something or turn a piece of pasture into a garden.

Q: Nice. Well, as JPI continues to emphasize scientific testing associated with biodynamics, is there anything that you've had in mind for unfolding this? Like, I know you're working with chromas and some rhizoboxes. Is there anything that you've learned in doing that—either about ways to avoid certain mistakes or anything else that you've noticed in the process as to things you need to pay attention to if you want these to turn out well?

A: I really enjoy working with chromatography—thinking about the process it has taken for the material to transform into what we are using as a sample. For example, if you want to make a chroma of compost, it takes that compost six to twelve months to transform. Then the material that went into that compost took months, depending on what your material is, to grow. That's the same for the preparations. It's these long processes that we're working with to be able to get a quick snapshot of what we're looking at. And so with the chromatography, the first time I made them I saw the picture and said, okay, there it is. But then after a few days of walking by them, I realized that over a four- or five-day period, they continued to develop and show more details of what they were representing. I have made chromas of compost, honey biodynamic preparations, and teas with different herbs, specifically the biodynamic herbs that we use in the preparations. Working with chromas has slowed me down to realize all these processes are not as immediate as some wish they would be, especially within biodynamics.

It's working with the land to bring balance to a piece that has been cultivated or has been changed by humans, trying to bring it to a harmonious balance that it once had without human interaction. I think using the preparations kind of helps get to that point. Realizing that chromatography takes time to be able to get that full assessment is something that has been a joy to learn.

As for the rhizoboxes, I think everybody should create one and hang it on their wall just to show others what is happening below the surface of the earth. We're always able to see what the plant is doing, but what the plant can form is dictated by what the root has access to. Seeing a healthy root structure develop and then seeing a healthy plant on top of that versus a stunted root structure with a stunted plant on top of that has made me even more curious as a gardener to pay

attention to what the plant is doing. With the rhizoboxes, I can treat the different boxes with different prep growing mediums to see how the root and the plant perform.

Q: Various biodynamic farmers continue to read and study, deepening their appreciation and developing a deeper understanding of the intricacies of biodynamics. Is this part of your practice and, if so, which books currently interest you and what are some of the awarenesses that may have come from such study?

A: Dennis Kloeck just republished a book called *A Biodynamic Book of Moons*. Not a big book, but very packed full of alchemical knowledge and how all the processes that we do within biodynamics or the garden are alchemical processes. And there's a language that people have used for thousands of years to explain some of those processes.

Another book that I'm always going back to is *A Biodynamic Manual* by Pierre Masson. That's a great book that gives lots of recipes, lots of descriptions of how to use fermented plant juices, and how to use the preparations. In that book, he talks about orchards, vineyards, and vegetable production. He had a good section on using the biodynamic pest peppers. So that's a great manual for biodynamic gardening and farming.

There's another book called *Growing Biodynamic Crops* by Frederick Sattler. That book talks about growing crops on a large scale. It is about a farm in Europe and I can't think of the exact name off the top of my head. But that book talks about how biodynamics can be used to grow



Whether outside or inside, Ben is on the job, managing the farm and making preparations.

large acres of grains or row crops like potatoes and carrots. There are some really good insights in there. I used Sattler's method to grow my potatoes this year and had the best yield of potatoes that I've ever had.

Another book that is kind of an advanced read but gets into the nitty-gritty of it all at the quantum level is *Quantum Agriculture* by Hugh Lovel. It's a harder book to find now that it is out of print, but it is still out there for sale in different areas. Hugh Lovel was one of the people I looked up to in the biodynamic movement. He touches on a lot of topics that go deeper into how these workings of the rhythms unfold. Kind of like Dennis's book.

Dennis does a good job talking about the alchemy of it all, but that quantum side of it, I think, is even more micro than the alchemy.

Q: Besides biodynamics, what activities feed your spirit? What do you like to do when you're not working?

A: Being in the woods, in uncultivated areas, nature is what charges me back up. I've had lots of people say like, "Oh, you're so lucky you're outside all the time working on farms!" And I am very fortunate for that.

There's a huge difference between working with an area that's cultivated land versus just a forest. And to me, nature is the ideal biodynamic place. It is full of life systems or life processes. And while being out in nature, I like foraging.

I like looking at plants and how they interact with the landscape, trying to make assimilation with where something is growing and how that might work within the human body if it's food or medicine.

Then I also take note of where these plants might be naturally growing and wonder how we can create a space within our garden or farm that can have those types of plants growing there as well, rather than just having a cultivated field where these plants are growing. So I try to find its most suitable habitat, you could say.

From foraging or gathering plants from the garden, I also enjoy taking that food and cooking it and preserving it. I think working with food is that artistic touch from the human that can honor what nature has provided us.

It's wonderful to just look at a flower and look at a vegetable, but then I ask how does the human take that vegetable and alter it to nourish our bodies or to create art out of it? So I enjoy working with food.

Q: Well, I've had some of your food. It's pretty good. You make good kimchi too. From some things you've written, I am wondering if you may also have a broad knowledge of wild plants. Is herbalism a part of how you use your time when not working?

A: I've never been formally trained in herbalism. I have a handful of friends who have been and have shared knowl-

edge with me. I have always been curious about how to form a connection with a plant and if we can figure out what that plant might do for us. I think that most of us know that humans have used plants for food and medicine far longer than we've used modern-day medicine to help heal ourselves.

And I think finding a way to connect humans back to those roots that we all come from is quite important for the healing of individuals and for the healing of our planet. Having respect for the plants that can help us because they have respect for us is quite important.

So then looking at the biodynamic preparations, you could say they are herbal remedies for the Earth. Biodynamics uses plants that are widely known throughout the world, but some of them are not. I think looking within your local area to see what plants are similar to those plants that Steiner initially talked about is very important. I know there are people in different parts of the world who are finding substitutes for Steiner's plants and trialing how they work within the preps. I think that's great; again, it's getting humans working more closely with what's in the local area to create remedies for themselves and the Earth.

Q: Also are there other parts of agricultural practices that you draw on? Permaculture, for example? Korean Natural Farming? Others? If so, please explain more.

A: There's a farmer, Bryan O'Hara in Connecticut with Tobacco Road Farm, who is using all three—permaculture, Korean Natural Farming, and biodynamics. He has a book called *No-Till Intensive Vegetable Production* in which he talks about the steps that he uses with those three types of agricultural practices in order to have a successful market garden. Korean Natural Farming and biodynamics are creating living products or solutions from plants and from animals to fertilize other plants and animals.

So using those two different types of agriculture to create what the earth needs after humans have taken it out through food and medicine-making by harvesting plants is very important. Hopefully, you create a well-balanced, healthy ecosystem by using permaculture practices, as well as biodynamic and Korean Natural Farming processes that can generate these nutritionally rich plants. Steiner said it in the agricultural course: don't stop farming the way you're already farming. Just add these preparations to your already well-thought-out agricultural practices.

There are some not-well-thought-out agricultural practices out there right now. I think, as we're moving forward in the next hundred years of biodynamics, that we need to continue to share these preparations and also educate people about good farming practices to incorporate into their farm production.

Q: I've heard that some farmers have their morning rituals they follow before starting work. For some, it's coffee first. For others, it might be meditation or a purposeful walk before breakfast and preparation for the day. The JPI farm appears so lovely in all seasons that I wonder if you have a morning ritual that includes contemplatively observing the farm before you start your work day. If so, could you share some of the awarenesses that may have come from this quiet time?

A: I'm a morning person. Morning has always given me that opportunity to wake up as the earth is waking up around me. Getting up and being immersed in the fog that

might be sitting here in the valley, hearing the first of the birds, or watching the sun as it comes over the horizon is a great way for me to start my day. To tune into nature as it is waking up allows me to feel a part of this ecosystem that I'm living in. My dog, Hank, and I go for a little walk, checking out what might be happening at Riverstone, or we walk up towards Spikenard and watch the honeybees coming and going from their hives. We'll harvest some vegetables out of the garden or walk through the woods and find something. Being touched by the morning as it wakes up is a good way for me to start my day.

Thank you, Ben. It's good working together.

Favored Child—By Suzanne O'Rourke

An early summer's morning, fresh and green, holding all the promise of enfolding flowers, drew me to the back porch, teacup in hand, to gaze at my beloved gardens—towering adenophoras, annual poppies, yellow phlomis, early pink roses.

Moving about in the flowers was a little child.

Baffled and slightly irritated at the early morning intrusion, I approached him. "Can I help you with something?" I asked in my most adult tone of voice. Completely oblivious to my apparent annoyance he stated, "Oh, I'm just looking at all the flowers." Was it the early morning lighting? Memory is hazy, but the memory I draw from depicts him bathed in a pale soft yellow light. He and the flowers seemed to glow. As he touched and stroked the plants, lost in the flower world, I felt that I had been given a glimpse into the true nature of humanity.

I looked again. The illusion was gone. Yet I recognized that here indeed was a special child, completely open to the natural world, and so was one with it.

We became friends that summer, and on his visits we talked of many things—dandelions, sunflowers, and fun weeds that explode their seeds when touched. We talked about the pine forest near my home that was being cut down. We shared sorrow for the many frantic crows forced to abandon their nests in the pine trees. Weeks of bulldozers leveled not only the trees but the rare wildflowers that grew at the forest's edge.

It was at this point that I realized the depth of this child's commitment to the natural world. One day he told me with conviction, "When I grow up I'm going to

be president, and I won't let these things happen." And though I cannot remember his features or even the color of his hair, his declaration has stayed with me over the years.

The mulberry tree fruited, and he ate the berries, sat in them, and brought his older sister and their friends to share in eating and squashing the berries under their bare feet.

One evening his mother came to pick him up, and I attempted to speak to her about his wonderful sensitivities. She conveyed that she recognized them, but she was reluctant to discuss this—as if it was an uncomfortable subject.

At summer's end the family moved, but his mother brought him to visit at Christmas time. He came with gifts of sunflower seeds that he had collected and a little brooch.

I was very touched by his visit, but the years passed. The garden where he manifested the light is long gone, vanquished by neglect and advancing paw-paw trees. This morning I stood at the spot where I first saw him. Amazingly, some of the purple adenophoras had crept away and established themselves amongst the weeds and poison ivy. Their delicate purple spines rise triumphantly four feet about an unkempt bed.

On this early June morning, I think of him fondly and with great hope. He would be a grown man by now, and I wonder: does he remember the influences? Do the elementals draw him in? Does the light within him still fuse with Nature's light?

Suzanne O'Rourke is a retired nurse and life-long gardener, as well as a long-time user of biodynamic preparations

Winter Crops

Suzanne O'Rourke

First frosts that blacken summer flowers and tender vegetables are always sobering, foreshadowing the end of summer, but certainly not the end of the gardening season. Here in Zone 6 in Southeastern Pennsylvania, many flower and vegetable seeds that withstand cold temperatures and shorter days can be started now.

I will address vegetables only. For the beginner who is somewhat timid about trying winter crops, consider planting any of the following: spinach, kale, red and cos lettuces, red and green mizuna and mustard greens, and mache.

Reputable seed houses also offer winter lettuce blends. These will not only survive the cold, but flourish. Moderate protection is advised, using row covers when temperatures fall below 32 degrees Fahrenheit. For added protection, cold frames with lids may be used. And for severely cold nights, we layer the inside of the cold frames with row covers. There are many elaborate approaches to winter protection as well, including hoop houses and grow houses.

We find that providing a southern exposure on an embankment, slope or raised bed is most helpful. Also try growing plantings of kale, collards and tatsoi around your house, bringing food close by for harvesting. A western exposure is adequate, too, especially if plants are positioned near the walls of a chimney or basement heating system. Avoid northern exposures.

Surprisingly, plants located under deciduous trees in the winter produce hardy crops. The roots of the trees prevent moisture build up. Large trees are best, but stay at least 30 feet away from the trunk. Prepare the bed for planting. Before direct seeding and before planting starter plants, dress your soil with biodynamic compost if possible.

Biodynamic Preparations Legend

BD 500—Horn Manure

BD 501—Horn Silica

COMPOST PREPARATIONS

BD 502—Yarrow (*Achillea millefolium*)

BD 503—German Chamomile (*Matricaria chamomilla*)

BD 504—Stinging Nettle (*Urtica dioica*)

BD 505—Oak Bark (*Quercus alba*)

BD 506—Dandelion (*Taraxacum officinale*)

BD 507—Valerian (*Valeriana officinalis*)

BD 508—Horsetail (*Equisetum arvense*)

Direct sow: spinach, arugula, mizuna (red and green) turnips, radish (French Breakfast), turnip greens (Seven Top), mustard greens, mache, tatsoi, endive, escarole, chicory, land cress, lettuce (leaf), lettuce (cos or red), and chard.

Purchase as starter plants: celery, cauliflower, cabbage, broccoli, Chinese cabbage, bok choy, and collards.



Winter crop of mixed greens. (Suzanne O'Rourke)

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“In all these matters, I can only give indications, but as you see, these indications are capable of direct practical application... If you do the experiments rightly, you will soon see them confirmed.”

Rudolf Steiner, *The Agriculture Course* (Adams translation), p. III



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