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Saving Seeds for Security and Vitality: Three Perspectives from Harald Hoven, Beth and Nathan Corymb, and Steven Adams

Abigail Porter

Have you ever wondered why weeds seem stronger and grow faster than crops you have planted? Most weeds have been adapting and mutating for hundreds of generations to ensure their survival in their local environment, giving them an edge on disease and pest resistance, as well as better ability to use soil resources. Maybe you've noticed that volunteer squash or tomato seedlings that show up in your compost pile seem healthier and more resilient than seeds grown from off-farm sources? In just one generation, these young plants have started to adapt to the local environment. One of the benefits of saving your own seeds is just this—you have vital biodynamic seeds from your favorite crops that have adapted to your particular soils, climate, and changing weather patterns.

Each year, new information from the environment is transmitted to future generations (epigenetic inheritance) through the seeds a plant produces. With consistent use of biodynamic preparations, your seeds can become increasingly attuned to and nourished by earthly and cosmic influences. To save and develop your own seed line, you need to use non-hybrid, open-pollinated varieties. And since we have lost 94 percent of our vegetable varieties in the last century (according to the video *Seed: the Untold Story*) saving unique, rare, and hard-to-find seeds helps to preserve the genetic diversity we have left.

In this article, three seed savers share their perspectives on using the calendar and biodynamic preparations specific to saving seeds. Harald Hoven uses primarily the moon as a guide. Steven Adams does also, but with an unconventional twist in the way he combines preparations. The Corymbes at Meadowlark Hearth Farm focus on the constellations and their associated element. A fourth perspective, also offering a focus on the constellations, is shared in a separate article generously contributed by Marjory House.

Each of these seed savers have heeded Rudolf Steiner's advice. They have done their own research, observed, and come to their own knowing. They have all found approaches based on their own perceptions, understanding, research, and experience with what works well for them on their land and with their particular bioregion climate. Although they take different approaches, they all stress the importance of more frequent use of horn silica (BD 501) when growing crops for seed, especially during seed formation and the ripening phase.

The seemingly contradictory approaches to using the calendar that they share may seem confusing to beginners, so it may be best to start with getting to know the various rhythms of the moon first, then gradually add working with



Best specimens of carrots chosen to replant the following spring

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From the Editor

Dear Reader,

Seeds—small, beautiful, powerful, the source of support for our human lives. They connect us to histories lodged in the ancient times that our ancestors lived. They are part of the river of life surging toward us, sometimes from as far away as the great ages of the first plants. They are the promise of a fertile future. Eat a watermelon filled with seeds and you know the promise of future food that a healthy seed offers. Seeds come in many forms—sometimes collected from a fruit you eat, but more often sold in colorful sleeves by commercial nurseries to those who have forgotten that carefully sourced seeds have the power to change everything. If a seed is vital, it offers food not only for one season but for generations. The founder of Seeds of Change mentioned that during his twenties when he had no income, he discovered he could buy a vegetable, eat it, and return its seeds to the soil, then harvest more food essentially for free.

This issue looks at a very special category of seed—seeds that have been collected from plants grown biodynamically. It addresses how to begin to save such seeds ourselves and how also to find some of the companies from which such healthy seeds are available. It mentions seed swaps where you can exchange seeds with other like-

minded people and the food plants from which you can begin collecting your first seeds most easily.

In the articles that follow, we feature the dedicated work of your biodynamic seed saving and growing colleagues, some of whom will be speaking at the upcoming BDA conference in Portland, Oregon. Check out Marjory House's article, as well as articles on the work of Harald Hoven, Beth and Nathan Corymb (Meadowlark Hearth) and Steven Adams, which, taken together, provide a larger sense of the importance of seed security and vitality.

A healthy seed is like a healthy newborn, filled with potent life and ready to take on the weighty tasks of Earth. A healthy seed is sacred.

—Mary Maruca

Farewell and Best Wishes

Congratulations to Karen Moneymaker on her new full-time job as editor for *Wine and Spirits* magazine. With the added responsibilities of this full-time job, along with raising her young daughter, Karen has determined that she does not have adequate time to devote to writing for JPI. We will miss her and wish her well with her new career path.

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Saving Seeds for Security and Vitality

the constellations, observing any plant growth change this brings. Some people have observed that the longer the biodynamic preparations are applied, the more sensitive the plants and soil life become to the influence of the more distant constellations. It may be that the approach you most resonate with and that you focus your intention and love on is the approach that will produce the best results for you.

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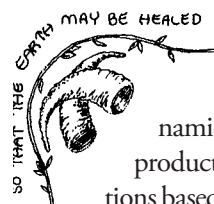
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Mission

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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Seed Saving with Harald Hoven

“Seed Saving for Crops that Suit You Best” with Harald Hoven was one of the webinars offered by the Biodynamic Association this spring. Since the focus of this issue is on seed saving, and since I didn’t know anything about saving seeds, I thought I better learn a little before I started writing. I was both inspired and surprised by Harald’s presentation—specifically surprised by the number of plants needed from which to save seeds in order to have the genetic diversity required to improve resilience and vitality over many generations. Depending on the variety, the seed saver might need as few as ten plants or more than 200 plants! If you only save seeds from one plant, the plants will become weaker and more susceptible to disease by the third generation, much like human in-breeding. Through the years, I have casually saved some seeds from plants that happened to go to seed. More frequently, I have grown plants like mache, tomatoes, and squash that self-seeded from last year’s crop. Although tasty and more disease resistant, the squash sometimes produce unfamiliar shapes, indicating they have cross-pollinated or reverted to one of their hybrid parents.

I was also surprised that Harald prefers to work with the moon phases rather than the elements (earth, water, air, fire) of the constellations. I wanted to learn more about that choice. Although somewhat daunting, his work inspired me to start saving seeds from one or two of the easiest plant varieties that don’t require as much space or as many plants.

A Foundation of Healthy Soil

A foundation of vibrant, humus-rich soil full of microlife is needed for strong, healthy seeds that are disease and pest resistant. When Harald started Raphael Garden, he had virtually



Harald Hoven checking yarrow at Rudolf Steiner College

Harald Hoven has a long history with biodynamic agriculture, and has been saving seeds for more than thirty years. Educated in Germany and apprenticed on biodynamic farms and gardens throughout Europe, he became founder and director of the biodynamic agriculture program at Rudolf Steiner College in Fair Oaks, California, a post he held from 1987 until his retirement in 2017. At the college, he created Raphael Garden, which began with one acre and then expanded to make room for ducks, sheep, an orchard, grape vines, and eventually cows. Under Harald’s guidance, the garden supplied a 70-family CSA (Community Supported Agriculture) and offered apprentice training, community courses, and workshops. Harald also founded the Biodynamic Association of Northern California (BDANC), a member-run organization that studies and makes biodynamic preparations together, then provides them to others in the region.

It was during Harald’s tenure at Rudolf Steiner College that he became serious about saving seeds. In 1993, he started a seed-saving initiative that grew to supply 50 percent of the seeds used in the garden. He also provided seeds to Turtle Tree Seeds, including a new variety of summer squash bred and stabilized by Harald over the course of fifteen generations. He named it “Raphael’s Gold Zucchini,” a cross between the flavorful Italian Costata Romanesco zucchini, a yellow summer squash, and a green zucchini. He also developed “Year Long Bronze Oak” from hard to obtain seeds of “Lingue de Canarino,” an oak leaf head lettuce that is

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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*)



Seed display at Organic World Congress in New Dehli, India

no soil capable of growing healthy crops. In the early years, he brought in a lot of manure to make biodynamic compost. Fertility was built with cover and green manure crops, crop rotation, and, of course, consistent use of biodynamic preparations: horn manure (BD 500), horn silica (BD 501), Barrel Compost (BC), along with the compost made with preparations (BD 502–507). When needed, *Equisetum arvense* tea (BD 508) and fermented Valerian blossoms (BD 507) were used. After seven years, Harald noted that “things really took off.” When he was able to use manure from his own cows, he noticed a big improvement in the quality of the horn manure he was making. What started as a half-acre grew to one acre of year-round intensive growing on raised beds with 5 percent of the area devoted to seed crops.

Working with the Moon Phases

Harald Hoven works primarily with moon and planetary influences when planting his crops, citing Lilli Kolisko’s 1930s research in *Moon and Plant Growth*, Helmut Spiess’s research, and Steiner’s *Agriculture Course* (Lectures One, Two, and especially Lecture Six) as the basis for his practice. He has experimented with Maria Thun’s approach to working with the constellations but has not experienced the results she obtained. Trying to understand how different researchers could have such varying results, he speculates that radically different growing conditions and timings for planting, and the need for irrigation in his part of California, as well as

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slow to bolt in intense summer heat and also does well in winter, surviving light frost. He had selected odd red seeds from the original packet to save seeds from annually over the course of almost twenty years. Another remarkable offering is “Canasta,” a slow-bolting, sweet, red and green lettuce that over the course of nineteen years has adapted well to the regional dry, hot summer California climate.

Although retired, Harald has not slowed down. He continues to offer workshops and trainings regionally, nationally, and more recently internationally. In 2017, he was part of the American contingent of biodynamic practitioners that traveled to India for the 19th Organic Congress where he presented on the importance of seed saving, “Creating a Healthy Marriage between Seeds and Soil.” This spring, for the second year, Harald went to Taiwan to work with farmers and Waldorf schools that support biodynamic education.

While in that part of the world, he also visited Changdu in Mainland China, where he agreed to give four biodynamic training modules, one in spring and one in fall for two years. The first module—spring 2018—had eighty attendees. The focus of the two-year program is on making and using the preparations, as well as making compost. It also includes studies in biodynamics and anthroposophy. In Spring 2018, horn silica (501) and stinging nettle (BD 504) were made. In Fall 2018, horn manure (BD 500), and barrel compost will be made. Harald mentioned that four biodynamic impulses are coming into China with educators coming from Europe, India, Australia and the United States. The Australian Demeter association certifies farms in China and brings preparations with them. Harald’s aim is to help the Chinese become self-sufficient with the preparations by learning what native plants they can use to make all of their own preparations.

Thun’s special relationship with the elementals could provide an explanation. Apparently, when questioned at one point, Thun responded that the observable influence of the constellations would be diminished if irrigation was used (she only watered plants when they were transplanted). Harald encourages us to do our own experiments and observe the results rather than following others’ recommendations without question. Beyond using a calendar, he asks us to look at what is happening in the sky, in the soil, and with the plants, then work with the approach that calls to us.

With his planting schedule and biodynamic sprays, Harald



Over ripe "Raphael's Gold" zucchini for seed

strives to create balance between the growth and reproduction stimulating influence of the inner planets (Earth, Moon, Venus, Mercury) and the silica stimulating influence from the outer planets (Mars, Jupiter, and Saturn). The earthly forces are enhanced with sprays of horn manure (500) and the outer cosmic forces that bring form, structure, taste and nutritional quality are augmented by the use of horn silica (501). Plants started in the greenhouse are seeded in very mature plant compost and sand. In the garden, Harald uses manure-based compost. For crops from which he collects seed, he goes lighter on earthly fertility by applying less compost (very well aged) than he does for crops intended for food. While excess fertility can lead to delayed seed formation and fungal problems as the plant ages, holding back fertility and emphasizing the cosmic influences of air, light and warmth with the silica sprays results in faster and better seed formation. Harald likes to spray silica when there is a Moon-Saturn opposition, bringing a harmonizing influence from both the inner and outer planets beneficial to seed crops.

To ensure enough time for seed ripening, especially for long season crops, Harald plants as early in the spring as possible when there is a growth spurt. He has observed that the best germination and the strongest growth and vitality come in the first month after spring equinox, starting with the first full moon. This vitality increases with the following new moon, and then becomes strongest at the second full

moon. It is much decreased after summer solstice. Harald tries to plant two days before the full moon. He does not avoid planting during perigee unless there is also a full moon during a wet season. Transplanting is done in the afternoon and, when possible, during the descending moon.

Biodynamic Sprays

Harald sprays more 500 than 501 to balance the hot, dry California summers. The land itself receives four to six applications of 500 during the twelve-month growing season, with individual beds getting varying amounts. And crops will get one to four sprays of 501 depending on the length of their growth cycle. Silica (501) is especially beneficial to seed crops, both as the crop is growing and during seed formation and ripening. Harald waits at least four weeks after transplanting before spraying silica to ensure that young plants are well rooted and growing. Flowering time is avoided except for plants like tomato, cucumber, and squash that flower continually. He sprays storage crops and seed crops like cucumber and squash again after harvest. Harald mentioned that in Europe spraying grain crops with horn silica after harvest has been found to be beneficial. Harald does not use as much horn silica in the cooler months but he does use fermented equisetum (horsetail) BD 508 (plant silica) frequently on both the soil and plants during the rainy winter season. In the dry summers, 508 is rarely needed. For optimal harvest, Harald pays attention to seed development and weather rather than the calendar. He harvests seeds when they are fully ripe but before they start to shatter.

Although seed-saving is challenging in the small space of a backyard garden, Harald encourages us to just start saving a few of the easiest seeds that require less space and fewer plants. Organic open-pollinated lettuce, tomato, and beans or peas, which are self-pollinating, are good plants to begin with. Of the varieties that you most enjoy eating, observe which ones grow best in your garden. Start with those by setting aside an undisturbed corner of the garden or the end of a row. Saving our own seeds increases our independence from outside sources, contributes to our farm or garden's individuality, and helps us develop an intimate relationship with the entire cycle of the plant's life.

For more information, Harald Hoven recommends:

- *Seed to Seed: Seed Saving and Growing Techniques for Vegetable Gardeners* by Suzanne Ashworth
- *The Seed Garden: The Art and Practice of Seed Saving* by Jared Zystro and Micaela Colley
- *Organic Seed Production and Saving—The Wisdom of Plant Heritage* by Bryan Connolly
- *The Organic Seed Grower—A Farmer's Guide to Vegetable Seed Production* by John Navazio (for large scale production)

Beth and Nathan Corymb: Turtle Tree Biodynamic Seed Initiative

In the early 1980s, Beth and Nathan Corymb began their training in biodynamic agriculture as Kimberton Hills Camphill Village interns and spent a total of twenty-five years after that living, learning and working at several Camphill Villages for people with special needs. Inspired to grow seeds that were becoming harder to find, they also became lifetime members of the Seed Savers Exchange. They then went to Europe where Nathan studied biodynamic seed growing at Sativa Seed in Switzerland and Bingenheim Seed in Germany. Seeing a need in the United States for biodynamic seeds and their distribution, the couple founded the Turtle Tree Biodynamic Seed Initiative in 1994 while living and working at the Camphill Village in Minnesota. After three years at a Camphill in Colorado, they moved to Camphill Village in Copake, New York, in 1998. There they developed and expanded Turtle Tree into a viable seed company, gifting it to Camphill Village USA, where it continues providing productive and therapeutic work for special-needs members of the Camphill community.

The year 2010 brought the Corymb back to the Midwest to Beth's family homestead in western Nebraska



Nathan cleaning seed

where they created Meadowlark Hearth. Beth “always held the dream and long-term goal of returning to bring organic and biodynamic agriculture to this special piece of Mother Earth.” At 4000-foot elevation, the 500-acre farm provides good growing conditions for seed production. It has a warm, dry climate and high water table for irrigation of the 140 acres of cropland necessary to supplement the annual average rainfall of only sixteen inches. The land is certified both Organic and Demeter Biodynamic for seed growing. The farm also includes a CSA (Community Supported Agriculture), bedding plants, grass-fed cows and Berkshire pigs. In addition to its online seed catalog, Meadowlark Hearth contract-grows seeds for Turtle Tree Seed and several other seed companies.

Education is a priority for Meadowlark. The Corymb conduct educational activities through their non-profit, Living Environment Foundation, whose mission is “Cultivating Diversity in Soil, Seed and Community through ecological stewardship and biodynamic agriculture” with a “two-fold focus on biodiversity and serving vulnerable populations.” Through the Foundation, they offer seed internships, beginner and professional seed-saving workshops, and educational farm tours, classes and festivals. They have been “working to develop a demonstration biodynamic farm combining seed growing, Community Supported Agriculture, biodynamic training, and social work... They are committed to reintegrate seed growing into everyday agriculture on diverse, sustainable, human-scale farms, and developing a welcoming and nourishing farm environment that includes people from many walks of life, ages, and abilities.” As the Corymb approach retirement, they are seeking younger farmers interested in taking on the biodynamic seed work at Meadowlark Hearth.

Despite being in the midst of their busy planting time this spring, Beth graciously shared how they work with the rhythms of the moon and constellations, and how they use preparations specific to growing for seed production. She emphasized that because of the short growing season, with a lot needing to be accomplished in a very short time in the spring, they prioritize what they focus on. They strive to plant according to the appropriate constellations, but if they must plant or transplant on a less than ideal time, they try to come back and cultivate a time or two to open the earth intentionally on the appropriate constellation days.

What follows is a discussion of how Meadowlark uses the calendar and the constellations, as Beth shares their biodynamic practice in her own words.

Planting and Transplanting

I was trained to look mainly at the phases of the moon, and the moon phases are definitely a background of “sound” in the way that the phases obviously affect plant growth, but I



Carrots flowering for seed

now pay more attention to the rhythm of the moon's location as a "lens" in front of a constellation in planning the garden. In the spring, there is a powerful uplift two days before the full moon that becomes evident in growth and germination two days after the full moon, with a slight uplift before the new moon that decreases after summer solstice.

Our first priority is to sow according to what constellation the moon is in; root crops are planted when the moon is in an earth constellation, leaf crops in water, flower crops in air and fruit crops in fire constellation, noting that Maria Thun found that broccoli is flower, and cauliflower and leek are considered leaf. For planting vegetable biennials such as carrots, beets, onions, and cabbage in a climate where they must be stored over the winter for seed, we choose fire signs first if possible, but if we cannot manage that, we do what we can to choose what part of the plant is used, for example, onion, carrot and other root vegetables on earth days, and leeks and cabbage on leaf days.

For transplanting or pricking out, if possible, we consider the moon constellation, but timing to get the plants in the ground, relative to spring, is the goal, so if we miss the right time slot in

relation to the moon and zodiac placement, then we go ahead and plant when we can and then try to cultivate ("stir") the earth at the right time for it sometime during its growth cycle. We follow the reasoning of "stirring" (cultivating) the earth as motivation for our attention to where the moon is "lensing" the cosmos. Dennis Klocek notes that it is important to consider the moon constellation when the earth is stirred.

We never sow, transplant, or apply preparations during detrimental black out times, during a solar eclipse, or crossings of Mercury or moon nodes. However, we do NOT avoid perigee as recommended by Maria Thun since that has been shown in tests in Europe by Dr. Spiess as a time that can enhance germination.



Emerald Queen

Seeking Younger Farmers

To take on Biodynamic seed work at Meadowlark Hearth
Biodynamic Seed Initiative in Western Nebraska
Living Environment Foundation
Contact Beth and Nathan at 308-631-5877 or e-mail
meadowlarkhearth.com; www.meadowlarkhearth.org



Threshing peas at Meadowlark Hearth

Harvesting

Since we are not “stirring” the earth when we harvest, we pay more attention to the weather rather than placement of the moon in a constellation. If there is a problem with weather such as wetness, I look to the moon, since the phases can give an indication of how the weather may change in relation to moisture.”

Biodynamic Preparations

When possible, we make compost during descending moon. Once in a while when needed, I will put one of the individual BD compost preps into a stirring of the BD 500 or BD 501; oak bark (BD 505) for disease resistance, or valerian (BD 507) to prevent frost damage. Humidity is a danger for the ripening of seed so if there is a particular danger of that, we spray 501 more times. In a year where there was constant rain in New York, we sprayed the 501 nine times! We use regular fermented stinging nettles, milk, and sometimes honey to help support the brassicas against the cabbage worm. I approach it more as an artistic way, not scientific. Given that we are very few people farming 500 acres with three businesses, when we spray, we do over-arch spraying on as much of the garden as is appropriate instead of spraying something specific on a particular day.

It gives me a tremendous amount of reverence when I experience the growth each month from Pisces Sun through the summer into the fall. I note the slowing down of the growth after the solstice; even though the full moon gives a push to the sowings, it is slowed down after the solstice. So “using the phases” is not so much the way, but more of experiencing or swimming in the phases as a gardener and participating artist with the Creation.

References:

<http://www.meadowlarkhearth.org/aboutus.html>
<https://www.biodynamics.com/2018-biodynamic-conference/>

Nathan and Beth will be presenting a full day pre-conference workshop at the Biodynamic Conference in November: “Biodynamic Seed for North America: How to Build International Cooperation to Strengthen a Co-ordinated North American Biodynamic Seed Movement” <https://www.biodynamics.com/conference/2018/workshops>

For information about Meadowlark Hearth Seed Internships and Educational programs contact Beth Corymb (bcorymb@gmail.com, 308-631-5877, <http://www.meadowlarkhearth.org/>)

Steven Adams – An Unorthodox Approach

Steven and Marcia Adams' 80-acre farm, Chrysalis, is located in southwestern Wisconsin, close to where Minnesota, Iowa and Wisconsin meet. The climate of the region has become increasingly wetter and more humid during the past thirty years. Part of Steven's growing area lies along the river, which, as far back as the 1930s, essentially as far back as the old timers can remember, has never flooded. In the last ten years, however, that same river has flooded four times. For Steven, 2018 was the third really wet spring in a row, making planting difficult and necessitating the bottomland growing area to be moved to higher ground. Despite these difficulties, Steven has continued to make good use of his unorthodox approach to using the preparations and the planting calendar. This approach has helped his crops to thrive in the face of challenging high moisture in his bioregion. Growing his own seeds that are continuously adapting to the changing conditions on his farm further improves the resilience of his crops. Steven has been a member of Seed Savers Exchange since the 1980s, and although he has recently cut back on intense seed production, he has grown a variety of seeds for Turtle Tree Seed, Meadowlark Hearth, and Fedco Seeds through the years.

Upon hearing about biodynamics (BD) in 1996, Steven attended his first BD conference, the Biodynamic Association's conference in Minneapolis, Minnesota, that same year. Here he met Beth and Nathan Corymb and learned of their seed saving initiative. This conference also marked Peter Proctor's first trip to the United States. Peter remained a continuing influence on Steven's approach to using the BD preparations from that first meeting. Steven also counts Walter Goldstein and Ruth Zinniker as his mentors—Walter Goldstein for a scientific understanding of the effect that the preparations have on plants and the soil, based on Goldstein's research, and Ruth Zinniker for his education in biodynamics and the making of the preparations. What follows are Steven's biodynamic practices. He stressed that although he has an ideal he strives for, ultimately, weather and time constraints determine what is possible in the daily work on his farm.

Preparation Spray Combinations

Steven has developed an unconventional, yet practical way of working with both the preparations and the moon rhythms that yields good results for him. In addition to applying his biodynamic compost, he uses all of the spray preparations frequently and in larger volume than is the usual practice. Influenced by Peter Proctor's work in New Zealand and India, where BD 500 (horn manure) and Barrel Compost (BC) are combined and sprayed out together every two to four weeks, Steven started combining 500 and BC. To the



Steven Adams and his team of horses

500 and BC mix, which he sprays in the evening when the earth is breathing in, he always adds fermented Equisetum tea (BD 508) to moderate moisture and Valerian (BD 507). Valerian is Steven's favorite preparation and he adds it to all of his sprays including the early morning BD 501 (horn silica) spray. He feels that that the warmth generated by the valerian belongs with the light of the silica. Because of silica's relationship to light and warmth, and the light bearing qualities of the sulphur and phosphorous in valerian, the two "really work well together in a balancing way... those two belong together."

He perceives that valerian has a moderating, balancing effect on all preps, that it helps things to be more "appropriate" overall, softening the harshness of the horn silica and moderating the leafy growth impulse of the horn manure when conditions warrant. Mixing the preps together may be at odds with the way many traditional BD practitioners use the preps; however, Steven feels the mix creates synergy, with each prep enhancing and balancing the effects of the other.

Steven applies all of the spray preparations at least monthly, having observed, "the preparations have a different effect at different stages of plant growth" and that, by using all of the preparations often, one is less likely to have problems. He has also observed that the full effect of the preps last for approximately one month. The frequent sprays stimulate processes that give the plants what they need, when they need it,

depending on their growth stage and weather conditions.

Steven follows his evening application of the 500 mix with a sunrise 501/Valerian spray; he tries to do this the next morning, but if he doesn't get to it then, he sprays within a couple days. Steven stressed the importance of following 500 with the 501 spray, citing Lecture Four of *Agriculture* as the motivation—*“Thus you can follow up the measure I've just explained [horn manure] with another one... If you apply this [horn silica] as a fine spray on the plants themselves... you will soon notice how its effect complements and supports the influence coming from the other side, from the soil, as a result of the cow-horn manure.”* (p. 74, Creeger/Gardner trans.)

The monthly sprays serve mainly to strengthen and as a preventative. He uses more frequent sunrise 501 mix sprays to remediate when conditions are not ideal—for example when conditions have been too wet for a prolonged time or when there has been a week of cloud cover. The mix is also sprayed out three mornings in a row to stimulate blossom formation if lush plants are slow to blossom or to stimulate ripening if fruit like tomatoes are staying green. The evening 500 spray mix is used more frequently if the weather is really hot and dry with equisetum in the mix “playing a very important role in mediating moisture. We are like an orchestra conductor, responding to the weather and bringing in what is needed in the moment, to bring balance and harmony to our garden symphony.”

gallons of water containing all of the evening preps (one to two units of 500 and BC, as well as generous amounts of fermented horsetail tea and valerian) for one hour. The larger crock enables him to apply extra volume of evening spray to both the soil and the plants. He explains that “what the plant receives is communicated to the soil” and vice versa.

This evening spray provides for more than the physical health of the plant, as Steven illustrates with a story told by Peter Proctor on his first 1996 trip to the United States, when the two men met at the biodynamic conference. Since spraying 500 and BC on open soil is the generally recommended practice, a farmer asked Proctor how effective it would be to spray the mix onto a hayfield offering little direct contact with the soil. Peter responded by sharing an anecdote shared by a clairvoyant friend watching a hayfield being sprayed in the evening. The friend saw the droplets create small vortexes that spiraled down into the earth. After the whole field was sprayed, all the little vortexes formed one large vortex covering the whole field, with its center in the middle of the field.

As Proctor's anecdote demonstrates, the preparations work on many levels, and using them in a mix enables the land and plants to take what they need.

The silica (BD 501) and valerian mix is applied for the first time only after the first true leaves have formed, either in the greenhouse or in the garden and, thereafter, will be used

“We are like an orchestra conductor, responding to the weather and bringing in what is needed in the moment, to bring balance and harmony to our garden symphony.”

Planting with the Preparations

The spray schedule starts in the greenhouse when the seeds are planted. The seeds, planted in flats, are sprayed heavily, literally soaked with the 500 spray mix. Each time Steven seeds, he stirs up enough to treat everything he has previously planted as well. Ideally, each flat would be treated twice, except allium, which may be treated three to four times since they are in the greenhouse much longer (from February until May). Seeds sown directly in garden soil are drench-sprayed with the 500 spray mix before the furrow is closed. Flats with plants ready to transplant are watered with the spray mix right before they are set out. “If I'm going to give moisture, I might as well give it with the preps” says Steven. He will spray the whole garden at the same time.

Once the weather has warmed to enable spraying outside, Steven stirs up enough when seeding to treat his one-acre growing area at the same time. Using a ten-gallon crock, he stirs five

following every 500 mix application. Steven tries to time silica sprays during seed formation and again, ideally, several times in the last month before harvest to enhance ripening. Storage crops like onions, garlic, and winter squash are also sprayed in the month before harvest to improve flavor and keeping quality. He will even spray the day of harvest, or right after harvest if he hasn't been able to get to it before hand.

Using the Planting Calendar

Steven Adams, like Harold Hoven, works with the rhythms of the moon rather than the constellations. Contrary to Maria Thun's recommendations, he plants during perigee (when the moon is closest to the earth in her elliptical path around the earth), and when the moon is ascending higher in the sky, close to peak ascension. Perigee (when the moon is closest to the earth in its elliptical path) is his favorite time to plant for the best results, and he won't plant at apogee, having experienced poor results.

Steven sees perigee as a perfect gesture of the germinating seed, based on Dennis Klocek's *Climate: Soul of the Earth*, where Dennis gives a meteorological description of North America during perigee of the moon. At perigee, the weather systems contract and become small, then three to four days later they expand. "Fitting into this image, the seed is a condensed, contracted form of itself and at germination becomes expansive," Steven explains.

He also prefers to plant two to four days before the full moon to take advantage of increased and quicker germination. Having all three of these aspects line up at the same time is pretty rare, so he chooses one or the other of them, based on weather and soil conditions, as well as the need for timely planting. In addition to apogee, Steven also avoids nodes of the Moon, Mercury and Venus, eclipses, and other detrimental or chaotic influences indicated by the grayed-out time frames in the planting calendar.

One may wonder how farmers and researchers can have such different results while using the same planting times such as perigee. Steven sees the individual farmer or gardener as the human mediator in whatever approach is taken. He says, "What you develop a relationship with, connect with, and work with, using your intention, is what will work best for you."

Steven highly recommends *Laws of Life in Agriculture* by Nicolaus Remer. "Nicolas Remer, a pioneer in the biodynamic movement, has been inspiring and helping farmers for several decades in Germany. He has a unique way of bringing the spirit into the daily activities of the farm, making the spirit, the idea, the true means of production. He considers here such fundamental issues as: humus in the soil, silica and homeopathic silica, feeding according to the laws of nature, and dynamic fertility in the farm organism."

How I Came to Save Seeds and the Tools I Use

Marjory House

As long as I have gardened I have saved seeds. My grandparents and my parents saved seeds, everything from zinnias and sunflowers to tomato and lettuce seeds. The first seeds I saved were calendula seeds from a patch planted by my front door in college. One day a neighbor, who was both an astrologer and literature professor, requested some flowers for salve. I told her she could pick as many as she wanted that day, but she insisted on coming back when the moon had moved into Libra. She gave me my first introduction to gardening by the moon and constellations as they relate to elements (i.e., earth/root, water/leaf, air/flower, fire/fruit). I knew my grandparents did certain things according to the moon—they would not castrate or band lambs near the full moon or sow seeds when the moon began to wax, but this encounter in college helped me recognize the benefits of this practice. About the same time, a friend introduced me to the *Stella Natura* biodynamic planting calendar.

Learning how to use the moon calendar efficiently has been a huge learning curve for me. It has taken me some time to develop a useful rhythm with the calendar. I have found that if you don't pre-plan, the calendar will not be as practical. There are certainly busier times when I am not able to do things on appropriate days. On those days, I only pay attention to whether the calendar says it is a blackout day or not. I avoid those times for cultivating, propagating, or planting. If you have to plant on a day that does not align with what you want to enhance, then you can cultivate and harvest if possible on the day where

the element does line up. Doing so will still add benefit, though often those benefits are subtle.

Some of the things I adhere to with the help of the calendar include sowing seed at the waxing moon and trying to do so on element days appropriate for what I am growing, such as sowing roots on earth days and flowers on air days. For planting perennials, I think it is even more important to pay attention to the calendar. For fruiting perennials, such as apples, I consider Jupiter's position to see if it is beneficial, as Jupiter influences fruiting. Descending Jupiter is a beneficial time to plant fruiting trees, but since Jupiter ascends for six years before descending for six years, it is not always possible to plant within that time frame. Other beneficial aspects occur



when Jupiter is trined with Venus or in another beneficial position to Venus, and when Jupiter is in a fruit (fire) sign.

Also, when planting perennials, I do it when the moon is descending, because that is when the sap flow is moving toward the root. When harvesting seeds, I harvest fruit seed on a fruit day and lettuce seed on leaf days, preferably when the moon is waxing in the second quarter. For harvesting storage crops, I avoid leaf days, as this seems to lead to more rot in storage.

Beyond the use of all the preparations specific for seed growing, I have found that the silica preparations enhance ripening, seed formation, and general vitality for seed germination. Since there are times when I haven't used the preparations, or used them less, I have been able to notice the differences in seed health with their use. When a plant looks like it is beginning to form seed, I spray 501 (horn silica) to enhance ripening, preferably around the full moon. By the following full moon, the seeds are ready for harvest.

[Sero branded biodynamic seeds are currently only available from the retail outlets listed on their website, seroseed.com.]

I also grow and exchange seeds because, for a lot of reasons, I enjoy this. For the last two years a group of us from Cottage Grove, Oregon (where I live), have held a local seed swap and propagation fair. This is where many folks get together to share seeds and fruit tree cuttings for grafting. We do this not only to share the abundance, but to preserve and save varieties for the future!

For personal use I grow most of my own lettuce seed, arugula, kale, and beets, alternating years with chard, flowering sweet peas, magnolia snap peas, parsnip, radish, leeks, green onion, cauliflower, basil, tomatillo, some zinnia, and sunflower. For more than seventeen years I have been growing Whipple beans, a dry bush bean somewhat like a cranberry bean. I found these beans in the back of a seed drawer while caretaking the biodynamic farm of Lee and

“So in the seed we get an image of the Universe”

—Rudolf Steiner

Our farm, located in the southern Willamette valley of western Oregon, has an annual rainfall around 48 inches. We have very wet winters and mildly hot, dry summers. Some years, tilling the ground in spring can be tricky, and timing is crucial. Due to the moisture, we are susceptible to fungus and mildew. In spring, we use BD 508 (*Equisetum arvense*/horsetail) tea to balance moisture and help reflect light to deter fungus and mold. The tea also helps to strengthen cell wall structure, making plants more resilient to pests and disease. The growing window in the Willamette Valley can often be quite short as well, so we plant as early as possible to allow a long enough season for seeds to develop.

Our farm's relationship with Territorial Seed Company* began when I kept running into Tom Johns, the owner. He was just starting his biodynamic “Sero” seed line around 2011, so whenever we met up in town, we had a lot to talk about. Later he hired me to consult with his employees. I helped with everything from identifying preparation plants on their farm to talking to sales employees about what biodynamics is and how to explain it to customers.

I grew backstock seed for Territorial the past two years but will not be growing seed this year due to space constraints and a change in our certification from organic and Demeter certified to only organic. We plan to recertify with Demeter in the future. Territorial's biodynamic seeds will be available next year under the Territorial label in their catalogues, certified as both organic and biodynamic.

Dana Whipple of Yoncalla, Oregon. At that time Mrs. Whipple was still alive and living on the farm. She could not recall the seed name but had been growing the beans for fifteen years. So I named them Whipple beans, a prolific, short-day variety dry bean acclimated to the Willamette valley. Since then I have given them away to friends and at seed swaps such as our local one. They have become quite popular.

Through the years, I have found that growing seeds biodynamically is basically the same as growing them any other way. However, using the preparations and working with the moon calendar do noticeably enhance seeds, making them sturdier and increasing their germination rate. Of course, these tools do not make anyone a better farmer or gardener, but, when combined with good farming practices, they can cause all crops to benefit.

*When Tom and Julie Johns, owners of Territorial Seed Company, observed that seed coming from their biodynamic growers germinated and grew better than other seed in their field trials, Tom traveled to Europe to visit biodynamic seed growers and learn from them. Seeing the advantage of biodynamically grown seed, he and Julie formed Sero Biodynamic Seed to provide seed and to promote biodynamic farming practices.

Marjory House has been gardening and farming in the Willamette valley of Oregon for more than twenty years. She received a degree in ethno-

botany from the University of Idaho, a certificate in herbology and nutrition from the Center for Herbal studies, and a permaculture certificate from Cascadia Permaculture Institute. She currently owns and operates a seven-acre farm with more than 450 apple trees, and more than an acre of vegetables grown for restaurants, farmers markets, and Serro biodynamic seed company. She has maintained a fruit tree pruning

business for fifteen years and a biodynamic consulting business for the last seven years. She is a member of the Oregon biodynamic group, and can be reached through her website, www.gobiodynamic.com. If you are attending the Biodynamic Association's national conference in November (<https://www.biodynamics.com>), note that Marjory will be a co-presenter, speaking on "Permaculture and Biodynamics" and "Biodynamic Cannabis."

Understanding Moon Rhythms

By Abigail Porter

The easiest way to visualize and use the moon rhythms is to compare the monthly cycles of the moon to the annual progression of the sun through the twelve months of the year. What the sun does in the course of a year, the moon does in approximately four weeks. Just as the earth breathes out daily at sunrise and breathes in at sunset, and exhales from spring into summer and inhales from summer into winter, so to, there is an upward and downward flow of energy during the monthly cycle of the moon.

Ascending and Descending Moon – Over the course of approximately 27 days, the moon ascends and descends in the arc it travels across the night sky. This corresponds to the arc the sun makes rising higher in the sky each day from winter to summer solstice and descending lower in the sky from summer into winter. When the spring-summer moon is ascending for 13.65 days, the earth is breathing out and there is more sap and vitality flowing to the upper part of plants. It is a good time to harvest fruit and vegetables for storage and take cuttings for propagation and grafting. Peak ascension could be considered high noon or high summer of the month. During the next almost 14 days, the moon descends and the earth breathes in. More pull or flow of energy goes into the earth and roots. Prune trees at this time for less loss of sap. Also transplant, plant cuttings, graft to rootstock, and harvest root crops for storage. This is a good time to stimulate root and soil activity by applying compost or earth preparations BD 500 (horn manure) or Barrel Compost.

Apogee and Perigee – It takes 27 to 28 days for the moon to complete its elliptical orbit around the earth. At apogee, the moon is farthest from the earth (like the summer sun) and offers a good time to harvest fruits and storage crops. When the moon is closest to the earth at perigee, the moon's watery influence is stronger (tides are stronger). Produce harvested during this time, especially if during a full moon, is watery, less sweet, and prone to fungus or rot during storage. To moderate moisture and prevent fungal disease, apply *Equisetum arvense* (horsetail) tea, BD 508. Maria Thun recommends avoiding perigee for planting

seeds, but other researchers have found it to be a beneficial time for germination and growth.

Constellations of the Sideral Zodiac – Just as the sun moves through the twelve constellations of the zodiac during the year, the moon spends 2 to 4 days in front of each constellation in its 27.3 day orbit around the earth. Each sign or constellation of the zodiac is associated with one of the four elements. Planting, cultivating and harvesting according to the type of crop being grown has been shown by Maria Thun's research to augment the growth and vitality of that particular crop (earth/root, air/leaf, air/flower, and fire/fruit). Refer to one of the biodynamic planting calendars for more detailed information.

Moon Phases – Full moon to new moon and then back to full moon in 29.5 days is the most obvious cycle of the moon. Planting seeds 2 to 3 days before the full moon results in better and faster germination, with plants generally giving better yields. It frequently rains near the full moon, enhancing the moon's effect on germination. There is a stronger upward flow of energy during the waxing moon and more downward flow during the waning moon. Avoid harvesting any storage crops during the full moon when the water element is strongest. Likewise, avoid pruning trees during full moon.

Moon-Saturn Opposition – The Moon and Saturn are on opposite sides of the Earth (at 180 degrees) every 27.5 days. This is considered an especially beneficial time to plant seed crops for the balance of the inner planet's (Moon) watery influence on germination, fertility, and yield, and outer planet's (Saturn) warmth influence (reflected from the sun) on structure, form, flavor, ripening, and longevity. Avoid times when the moon stands between Earth and Saturn, and blocks Saturn's influence (conjunction), which can be detrimental to quality and ripening.

Nodes and Eclipses – A node occurs when the moon or a planet crosses Earth's ecliptic path. Nodes and eclipses have a detrimental effect – avoid planting, harvesting, or working with the soil during these times.

More about moon rhythms can be found in *Biodynamic Gardening* by Monty Waldin and *Gardening for Life* by Maria Thun.

Increasing Tomato Seed Viability with Valerian (BD 507): L.A. Rotheraine's Approach

Renowned Pennsylvania biodynamic gardener L.A. Rotheraine has tomato seeds from his famous, hardy Selke cherry tomato that have remained viable for more than twenty years and that germinate, grow, and produce at the same success rate as seeds from the previous year's crop. He attributes this exceptional vitality to fermented Valerian blossom juice (BD 507) that he uses when processing the seeds, a practice he started in the early 1990s. However, L.A. also waters the tomato transplants at least daily for a week with Pfeiffer BD Field Spray, then sprays plants and soil weekly with the spray during the growing season (twenty applications). His Selke variety, grown in a compost pile, reaches more than ten feet tall and produces over 2,000 cherry tomatoes, almost unheard in Bradford, Pennsylvania (PA), known as the "ice-box of PA" with a short growing season and only 90 days between hard frosts. L.A. miraculously extends the producing season well into October with frequent sprays of Valerian and BD 501 (horn silica). He has grown the Selke tomato for 33 generations from a volunteer that came up in an old compost pile.

Protocol for Fermenting Seeds with Valerian

To enhance the seed's quality, start the fermentation process when both the sun and moon are in the fire sign of Leo. Only use seeds from ripe or overly ripe tomatoes. Cut tomatoes from stem to blossom end and pop out the seed pocket into a glass jar until it is about 80 percent full. Add 15 percent clean, non-chlorinated water. Place a couple drops of valerian in the jar and stir seven times in each direction in the usual biodynamic way.

Leave the uncovered jar in a warm, dry, dark location to ferment for 1½ to 4 days. Stir twice a day, seven times in each direction, to enhance the fermentation process and to clean the residue from the seeds. Fermentation is complete as soon as a fine, grey mold forms on the top.

As soon as the mold forms, the seeds are ready to be screened. Pour off the mold and the dead seeds that have floated to the top. Refill the jar with water. Stir. Then after the good seeds have settled to the bottom, pour off the water. Repeat until the water is clear and seeds are free of residue. Pour the clear water and good seeds onto a nylon screen positioned in the sun to dry. Separate the seeds as much as you can, taking care not to damage the soft seeds.

Let them sun-dry three to ten hours until they are thoroughly dry and hard—approximately three to four hours on a sunny day. Seeds need to become thoroughly dry in a



Valerian patch

short time, since they can germinate in 12 hours if left in a humid area. If seeds need to be moved inside due to changing weather, a fan can speed the drying process.

For more information on L.A. Rotheraine's Selke tomato, Evergreen Elm garden therapy program, and biodynamic practices see back issues of *Applied Biodynamics* no. 4, 7, 51, and 59; and L.A.'s website (rotheraine.com) and YouTube videos.

Available from JPI

- BD Sequential Spray Kit 1 (use for drought or excessive moisture) \$24 (1 unit each BC, 500, 501, and 508)
- BD Sequential Spray Kit 2 Pre-potentized. \$26 (1 unit each BC, 500(X), 501(5X), and 508)
- BD Barrel Compost (BC) Kits (include biodynamic compost preparations, and basalt)
 - BC Kit 1 (single batch \$31)
 - BC Kit 2 (double batch \$62)
- Valerian (frost protection) \$3.25
- Biodynamic Tree Paste Concentrate (recommended after pruning) quart—\$30/ gallon—\$100/ five gallon—\$350

See our product catalog for preparations: <https://jpi-biodynamics.org/wp-content/uploads/2018/05/JPI-Catalog-2017.pdf>

In Memory of Peter Proctor: August 28, 1928–June 8, 2018

One Man, One Cow, One Planet

Mary Maruca

*Kua hinga he totara i te wao nui a Tane –
“A mighty totora has fallen in the forest of Tane.”*

Peter Proctor, 89, was remembered this way in a recent social media post referring to him as one of the mighty trees of New Zealand—essentially, as a tree that grew to maturity in the forest of the gods. Described as the father of modern biodynamic agriculture, Peter Proctor is recognized not only as a key educator who broadened awareness of biodynamics in New Zealand but also as a visionary who helped bring biodynamics to the global stage.

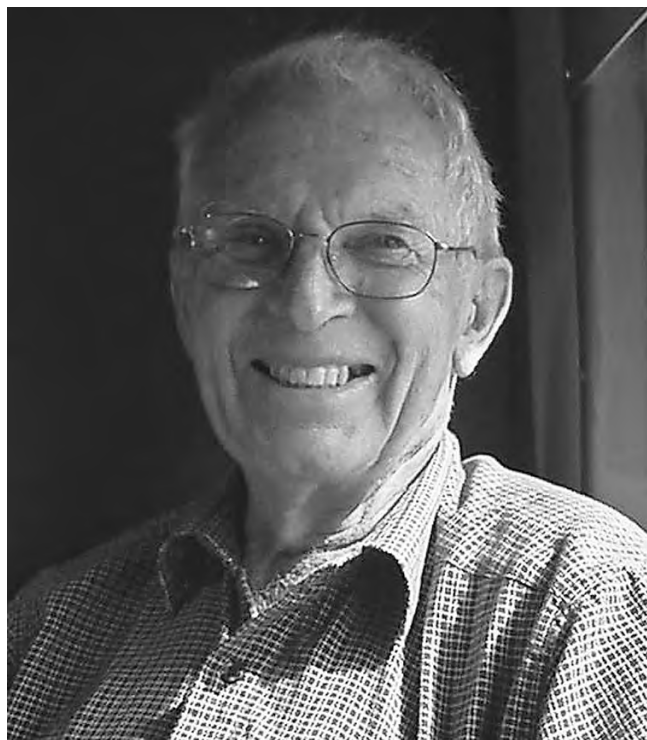
The *New Zealand Herald*, June 11, 2018, summarizes his early contributions as follows:

Proctor had a secure job as farm manager at Hohepa Farm, Clive, when he decided to take up an uncertain role as field adviser for the Bio Dynamic Farming and Gardening Association. That was in the mid 1980s, and for many years he was probably the only full time adviser to organic farmers in New Zealand.

Proctor sometimes would say, after visiting a well-established organic or biodynamic farm, that “they know what they are doing, and don’t really need me.” But when he telephoned to say that he was coming to the district and asked if they wanted a visit from him, the answer was usually “yes.”

Those who knew Proctor ascribed his good nature and enthusiasm as critical to the growth of biodynamic farming in New Zealand. Proctor made as many as 100 trips a year, crisscrossing the North and South Island, visiting farms and farmers who always welcomed him as a learned teacher and advisor, and who valued him enough to pay for his travel. His commitment to biodynamics eventually brought him and partner Rachel Pomeroy to India for teaching seminars in 1996. He considered India the last bastion of hope for the world. If biodynamics couldn’t restore healthy soil in India, then it could not succeed anywhere. In India, he received a warm welcome, where the cow and the cosmos were already an important part of the culture, and where the people recognized the chemical agriculture trap that their farms had fallen into.

It was his accomplishments in India that the 2007 film, *One Man, One Cow, One Planet*, made popular, resulting in many calling him the new Gandhi. The Green Revolution, which recycled World War II chemicals intended to kill into agricultural products advertised as improving crop yield, actually led to deadening the soil of what was once



India’s breadbasket. The film shows the impact of chemical warfare on plants and soil, as well as the restorative results of biodynamic treatment championed by Proctor. The film notes that Proctor is a new kind of hero: “Rather than battling the problem, he lives the solution.” Indeed, at the time of the film, approximately 40,000 biodynamic farms had come into being, and now there are more than 100,000.

To his friend, Monty Waldin, a biodynamic vintner, he wrote: “I think in New Zealand, Australia and India we use the preparations more frequently than in Europe. Four times 500, 501 and Barrel Compost. In India even more times. There is no reason why people in the northern hemisphere cannot use the preps more frequently. I would suggest that they could be used at the warmer time of the year. It would be worth trying say early summer and late summer and always at the descending phase of the moon for the 500 and Cow Pat Prep and the ascending phase for the 501.” Like all those who make the greatest contributions to the life of the Earth, Proctor was always thinking, evaluating, and living biodynamic processes.

In a personal essay written for the Biodynamic Association in remembrance of Proctor, Ted Lemon, owner of Littoral Wines in Sebastopol, California, cites Proctor’s

IN MEMORY OF PETER PROCTOR

“personality, precision, and well-grounded approach” as the key to his huge influence. Lemon says, “I like to think that Rudolf Steiner would have had him sitting in the front row of the Ag Course” (read the remainder of this heartfelt essay at <https://www.biodynamics.com/blog/memory-peter-proctor>).

Historic records indicate that the tallest, straightest totara trees often would be hollowed out by the Maori to carry their warriors from island to island. Such canoes often could hold as many as 100 Maori warriors. It is interesting to note that more than 100 people attended the New Zealand Biodynamic Conference in June, the month Proctor crossed over. And so as a warrior for healthy soil and healthy food and healthy people, Peter leaves a rich legacy of hearts connected to the Earth.



An example of a mature totara tree in New Zealand

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Did You Know?

- The Svalbard Seed Vault—aka Doomsday Vault—intended to hold the world's seed archive for food crops, flooded in 2017 due to melting permafrost. In 2008 when the vault was built, it was expected that the location would protect the world's crops and other plant seed supplies. But rapidly raising temperatures were not anticipated. Fortunately, the permafrost melting that produced the flooding did not reach the seeds (<http://time.com/5177165/climate-change-threatens-norway-seed-vault/>).
- The value of seed collection was seen first hand when Hurricane Sandy ravaged the East Coast in 2012. In order to restore native habitats, the Bureau of Land Management received a \$3.5 million grant for seed collection in coastal habitats. The federal bureau partnered with various groups to collect seeds from more than 350 different plant species across 11 states. As of 2018, more than 125 of these collections have been used for Hurricane Sandy restoration projects (<https://www.blm.gov/programs/natural-resources/native-plant-communities/national-seed-strategy/pca>).
- The U.S. Department of Agriculture operates more than 20 seed banks in the United States to preserve the plant genetics of major grain crops. Hundreds of thousands of wild, modern, and historical seeds are maintained at proper temperatures to ensure their viability. For example, the University of Illinois Agriculture Research Service maintains 22,000 kinds of soybeans. Similarly, the Ames, Iowa, bank, has corn seed that is 50 years old and will germinate at 85 percent (<https://www.agprofessional.com/article/us-governments-20-seed-banks>).
- In 2012, *Mother Earth News* carried a story about Carl's Glass Gems rainbow corn and how this old Cherokee corn managed to be renewed. Although 2012 may seem long ago, the story of how this ancient seed was retrieved bears repeating. Carl Barnes of Oklahoma, part Cherokee and part Scottish ancestry, had searched out enough of his heritage, chiefly around the corn ceremonies, that he began to receive older corn from tribal elders and to notice when more ancestral kernels sprouted in his field. Through careful collection, selection, and planting, the corn "remembered itself" as Carl suggested, revealing the lovely rainbow corn described in this article. Some of the seeds ultimately were shared with Native Seeds/SEARCH in Tucson, Arizona (<https://www.mother-earthnews.com/homesteading-and-livestock/sustainable-farming/glass-gem-corn-seed-zwfz1212zrob>).
- "The last 50 kernels of Eagle Corn were kept in a mayonnaise jar, the last seeds of a mother corn that had nurtured the Pawnee people for generations and was taken with them when they were exiled from Nebraska to Oklahoma in the 1870s. But the corn wouldn't grow in Oklahoma. Deb Echo-Hawk, the "Keeper of the Seed," was worried her people would never eat the beautiful Eagle Corn again—a brand so unique that its pure white kernels sport a purple spot that expands as the corn grows, eventually looking like the spreading wings of an Eagle."—So begins the amazing story of how a partnership between an educational non-government organization in Nebraska reached out and was trusted by the Pawnee of Oklahoma, with the result of saving traditional seeds (<https://truewestmagazine.com/eagle-corn-keepers-of-the-seed/>).

Seed Savers Resources

As climate changes, strong bioregional seeds become critical resources. As biodynamic farmers grow food to heal environments, families, and communities, many farmers either save their own seed or work with organizations that make bioregional and biodynamic seeds available. A few such organizations follow.

Baker Creek Heirloom Seeds, located in Missouri, has evolved since 1998 into a company that offers one of the largest selections of seeds from the 19th century. The owners have successfully called attention to the importance of seed saving through several books and ongoing annual festivals. They also supply free seeds to countries worldwide and are GMO-free. www.rareseeds.com

High Mowing Seeds, founded in 1996, grows many of their own seed varieties on their 40-acre farm. Seeds are certified organic by the U.S. Department of Agriculture and non-GMO certified by the Non-GMO project since 2014. Some seeds come from biodynamic sources but are not so labeled. www.highmowingseeds.com

Fedco Seeds, a co-op seed source, supplies cold hardy seeds for the Northeast climate. In business since 1978, it gives workers a voice in company actions. www.fedcoseeds.com/about_fedco.htm

Meadowlark Hearth, Demeter biodynamically grown seeds and garlic (see pg. 6 for article in this issue). www.meadowlarkhearth.org

Native Seeds/SEARCH (Tucson, Arizona) originated with writer and activist Gary Nabhan's and co-founder Mahina

Drees' program for food security for the Tohono O'odham Nation, whose elders requested seeds for the plants of their ancestors. The result was seedbanking more than 2,000 varieties of plants, now either rare or endangered in the southwestern U.S. As a co-founder pointed out, "If we went out today to gather the seeds in our collection, we couldn't do it. They're not there"—due to ongoing loss of genetic diversity. www.nativeseeds.org

Rocky Mountain Seed Alliance was initiated in 2014 by Bill McDorman and Belle Starr, along with good friend John Caccia. They wanted to develop a Mountain West network of local farmers and communities linked to the seeds that sustained them by renewing seed saving and stewardship. The alliance is working to preserve ancient grains. www.rockymountainseeds.org

Seeds of Change is a large organization founded in 1989 to make organically grown seeds available to farmers and gardeners. Seeds are certified organic, come from U.S. growers, and are certified GMO-free. The brand has evolved to offer seed-to-table experiences, with pre-made food. One percent of sales go to communities for garden and farm-based programs. www.seedsofchange.com

Seed Savers Exchange was founded in 1975 by Diane and Kent Whealy after Diane received seeds brought by her great grandparents when they immigrated from Bavaria to Iowa. The exchange maintains more than 20,000 varieties of heirloom and open-pollinated plants. A seed-bank manager oversees the exchange's more than 25,000 open-pollinated varieties. The organization describes itself as a "community of gardeners and seed stewards, sharing and swapping rare seeds." <https://exchange.seedsavers.org>

Sierra Seeds is a small regional seed company based in Nevada County, California, whose mission is to cultivate stewardship based on service to life and to the seeds that sustain it— "every seed we plant is a tiny loving pray in action." <http://sierraseeds.org>

Sero Biodynamic Seed, an offshoot of Territorial Seed Com-

pany, developed out of growing awareness of the increased viability of biodynamic seeds. Sero seeds are available at U.S. locations listed at www.seroseed.com

Siskiyou Seeds is a source of non-GMO, open source, organic seeds, most of which are grown on the family farm in northern California. Plants useful for permaculture are also available. www.siskiyouseeds.com

Southern Exposure Seed Exchange is a source for bioregional seeds, emphasizing seeds that grow well in the Mid-Atlantic and Southeastern United States. As of 2017, 60 percent of the varieties offered is certified organic, and the same percentage is grown by local farmers that the owners know and regularly connect with. A worker-run cooperative with a non-GMO policy, the company is located in central Virginia. In 2011, it put its non-GMO beliefs to the test and joined with others to sue Monsanto because of potential cross-pollination by GMO plants. www.southernexposure.com

Turtle Tree Seeds is a source of Demeter certified biodynamic seed, with some dually certified organic seed. Turtle Tree grows about 60 percent of its seeds on its Camphill farm. <http://turtletreeseed.org>

Wild Garden Seed offers organic seed from the Pacific Northwest. All seed comes from one source, and is provided as part of the Open Seed Initiative. www.wildgardenseed.com

Seed Regeneration by Georg Schmidt

Our ancestors knew to plant food crops by the moon's phases. Theirs was a loose science often based on anecdotal knowledge from those who preceded them. Now twenty years of research on seed regeneration by Georg Schmidt is available for free with an easy download at <https://earth-havenlearning.ca/seed-regeneration.php>. Schmidt's research suggests that the critical seed sowing moment occurs when seed and soil connect. At that point, planetary alignments impact the characteristics of the seed, determining its health and harmonious balance.

What's New at JPI? Take a Look...

Pat Frazier

Staff Changes

JPI is proud to introduce our new staff members, even though we also have said goodbye to other staff members and old friends this year. First, we are pleased and grateful to introduce Alexandra (Alee) Epperly, our new administrative director as of late February 2018. Since assuming this role, Alee has quickly become the backbone of many JPI transformations. Initially stepping into the office manager

position, then assuming her new role, Alee has shepherded our move to the farm; overseen our new office remodel; refined and updated our financial accounting systems with the help of our new bookkeeper, Jodie Norton; and guided and worked collaboratively with new office manager Lisa Thompson, new farm manager Adam Fisher, and long-term employee and preparation maker Larry Mabe. Alee's calm, wise demeanor is well suited to building a strong team, as well as developing the abilities of individual staff. Her



JPI Team, L to R: Adam Fisher, Lisa Thompson, Alee Epperly, Larry Mabe

Alexandra Epperly, Administrative Director

Passionate about food justice, Alexandra (Alee) Epperly worked with Food Not Bombs (an anti-poverty food redistribution agency) for four years in Oakland, California, and managed a small organic vegetable and fruit farm in the state before moving to Floyd, Virginia. She is now active with the Food Access Hub in the New River Valley and is the vice president of the Board of Environmental Scavengers, an environmental cleanup agency based in Floyd County. She has assisted nonprofits with strategic planning, program development, facilitation, grant writing, fundraising, and other administrative tasks. Alexandra is driven to lead JPI into the future through strong organization and leadership.

Adam Fisher, Farm Manager

Adam grew up on a small family farm in rural North Carolina. He has worked with plants his entire life. In 2012, he received an associate degree in sustainable agriculture from Central Carolina Community College. Adam has

managed an organic vegetable production farm, served as a production coordinator for the Appalachian Herb Growers Consortium, and worked as a caretaker with Spikenard Honey Bee Sanctuary. He continues to be a student of biodynamics, permaculture, mycology, and beekeeping. Adam is committed to developing and contributing to a loving, safe community that encourages availability of local products, especially food products.

Lisa Thompson, Office Manager

With more than twenty years of administrative experience, Lisa Thompson specializes in educational coordination and nonprofit program development. After living on large farms in the Midwest, she moved to Floyd, Virginia, six years ago. As JPI's office manager, she ensures that daily operations run smoothly. Lisa is passionate about community outreach that supports Earth-based sustainability. She loves to connect with JPI's customers and works to ensure a better future for our children and the planet.

communication skills with customers and the JPI Board are excellent. We welcome her to our team.

In early spring, we hired Adam Fisher to be our farm manager and to develop the JPI farm in collaboration with Larry Mabe, our preparation maker for close to twenty years. We look forward to the exciting process of implementing our long-range farm development plan at JPI. With Adam assisting us on the ground, many new developments are now within reach. Welcome aboard Adam!

In late spring, we welcomed Lisa Thompson as our office manager. Lisa has greatly improved our organizational efforts since JPI moved to the farm. She provides Alee with customer service support, timely order processing, and data entry, too.

In early 2018, we said goodbye to bookkeeper Laurie Mollin, who has been part of JPI for almost twenty years. We are grateful for her dedicated service and wise financial counsel. We wish her well on her life's journey. Jodie Norton stepped in as our new bookkeeper in late winter and has

helped us shift to a new accounting software, while carrying out the usual bookkeeping responsibilities. Welcome Jodie!

Executive Director Agatha Grimsley and office manager Bethany Mulligan also left JPI this year. Blessings on the paths they take.

Change Continues with Board Transitions

The JPI board has experienced many changes this year also. After more than three years of service, Christopher Hammon and Joseph Brinkley have resigned their board positions with the completion of their one-term plus commitment. JPI thanks you both for your guidance these past few years. Pamela Sophiajohn joined the JPI board in October 2017, but declined to complete her term and so resigned this summer. We also wish her well as she continues to assist others in the nonprofit world. Her contributions are a unique gift and reflect her deep knowledge of anthroposophy. Our remaining board consists of Patricia Frazier, Bill McCranie, and Clay Wesson, guiding JPI as it fulfills its mission.

Should you be inclined toward service in support of biodynamic agriculture and have skills in nonprofit financial management, biodynamic preparation work, marketing and education in sustainable and regenerative agriculture, or legal support for nonprofit organizations, we would welcome your interest in the JPI Board of Directors. Please contact our administrative director, Alea Epperly at alea@jpibiodynamics.org for more information or visit our website at www.jpibiodynamics.org.

Home on the Farm

This spring marks a major transition in our organization's growth. During the past five years we have moved from the Courtney Farm, created an office space in town, purchased our permanent farm home on the banks of the Little River, and remodeled the barn and built a root cellar. Finally, we felt ready to consolidate our operations on our farm.

The amount of change and transformation JPI has undergone these last five years is remarkable. But with a steady hand and a vision for the future, the board and staff have worked through our many transitions to reach this meaningful moment. WE ARE HOME! Our deepest thanks goes to our many supporters, customers, and, most importantly, the spiritual world for the support and love we have received. We are now poised to deepen our mission of healing the earth with the biodynamic preparations as we educate, make, distribute, and, at last, create a farm organism dedicated to the work of the preparations for the North American continent and beyond.

Fellowship of Preparation Makers Conference

The Fellowship of Preparation Makers (FOPM) dedicates

itself to ensuring sufficient quantity and quality of biodynamic preparations for North America now and in years to come. One of the more important parts of that mission is the continuing education of biodynamic preparation makers and the education of newly aspiring preparation makers at an annual conference where they discuss a topic specific to biodynamic preparation making. The conference is held in late winter at rotating sites throughout North America.

This year's conference was held in Red Boiling Springs in Tennessee, near the farm of Jeff Poppen, who has been making biodynamic preparations since the late 1980s. Jeff is well known as a biodynamic educator and as the author of two books, *The Best of the Barefoot Farmer*, volumes I and II. His farm, about two hours outside of Nashville, is a model of a biodynamic farm organism. It supports a traditional CSA (Community Supported Agriculture) model, with beef and dairy cattle. Also, scores of interns have been educated there during the past three decades.

The theme of this year's conference was *The Compost Preparations—Creating the Organs of the Farm Individuality*. Attendance included speakers Jeff Poppen, Hugh Courtney, Dewane Morgan, and Lloyd Nelson, as well as facilitators Coree Entwistle, Pat Frazier, Karen Davis-Brown, and Brian Wickert. People from more than a dozen states attended, demonstrating skills that ranged from novice to expert preparation making and biodynamic farming. The conference provided numerous hands-on activities from direct sensorial observation of and reflection on the compost preparations to farm tours of Jeff's farm, as well as building and prepping a compost pile.

Hugh Courtney and Lloyd Nelson used a multimedia presentation to offer a conceptual framework of the organs of the farm organism, using the compost preparations. Dewane Morgan provided an inspiring presentation, titled *Using the Biodynamic Preparations In A Changing Climate*. He accompanied his presentation with imagery from his farm in Minnesota. Dewane also talked about and provided instruction on his experiences making chromatograms of BD 500. This spontaneous presentation, complete with chromatograms, sparked a new study group within the FOPM on quality evaluation, using the chromatogram methodology. A poster presentation on the study group's work will be available at the November BDA conference in Portland, Oregon.

Thanks to our hosts, Jeff and Coree, for a wonderful, collegial weekend. Thanks also to the Armour Hotel for our lodging. And thanks to our fine staff members, Larry Mabe and Bethany Mulligan, who represented JPI, providing both preparation and educational materials for sale.

The 2019 FOPM conference will be in Hotchkiss, CO, February 28 to March 3.

The Invisible Power Within Foods:

A Comparison of Organic and Nonorganic by A.A. Danzer

Reviewed by Mary Maruca

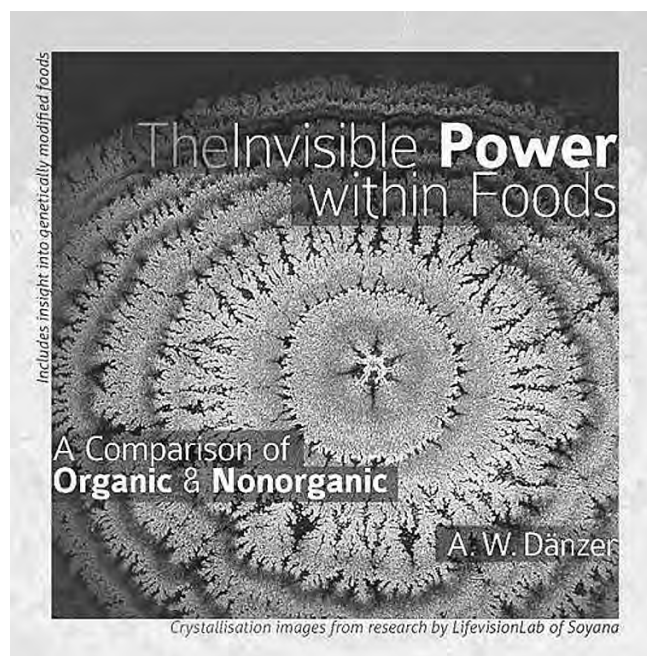
How often have you had conversations in which you have tried to prove that your organic fruits and vegetables score more nutrition than non-organic fare? Especially in the United States, where consumers are only just starting to question the safety and nutrition of their food, such discussions tend to run down rabbit holes.

With his remarkable large-format visuals, A.W. Danzer's book, published in 2016, provides a convincing pictorial justification for organic foods. Danzer, a long-time mediator and founder of the family-owned Swiss company, Soyana, a line of fermented organic products, indicates that he has been contemplating the question, "What is the true value of food," for more than 30 years.

Generally, nutritional consultants in the West focus on the chemical components of food, noting their vitamins and minerals rather than their overall vitality. Nutritionists tell clients to eat more vegetables, but they do not question—or perhaps do not have the science to question—whether the vegetables they recommend carry the life energy necessary to truly heal.

The research institution, LifevisionLab, associated with Danzer's company, developed a consistent protocol to crystallize and then photograph the entirety of food at a micro level. The research method (see www.LifevisionLab.org) evolved from Ehrenfried Pfeiffer's work crystalizing droplets on a metallic matrix such as copper chloride, as well as the work of others who studied food, water, and other fluids for healing purposes. It did not include a metallic component, however, but adapted an ancient process of fermentation, distillation, and extraction of mineral components from the ash of plants—the spagyric method. The lab extracted a liquid from the plant/product, placed it in a test tube, and dried it under replicable conditions. The final crystalized product then could be viewed under a microscope and photographed. The lab's former director writes that the analysis studied various parameters, expressed in absolute values from 1 to 10, in which the higher scores related to higher bioenergetics linked back to the manner in which the food or product was cultivated and then processed.

The end result is an image of the whole food or product so self-evidently organized (if organic), or not (if conventionally raised), that any viewer of any age can understand and identify differences. LifevisionLab did not consider differences in more subtle cultivation methods, for example, organic versus biodynamic or versus Japanese natural cultivation. Instead,



the book aims to start a dialogue with consumers and raise awareness of the differences in food based on environmental vitality.

The result is 262 pages offering a glimpse into the secret lives of healthy carrots, persimmons, apples, rice, and even organic white sugar, to name a few images. It also lets us glimpse at what, using human terms, must be the painful existence of these same plants, fed with chemicals and raised in soils that no longer sustain life essence. One has only to consider the slide of green tea, which opens the early pages of the book, to see how conventional non-organic green tea has lost much of its organizing principles.

To view the images in Danzer's book is to renew a vision of the world in its perfection, the microcosm mirroring the macrocosm, which the ancients knew to be the true order of life.

Subscription Information

Annual subscription for *Applied Biodynamics*: \$30.00 (Print)
\$20.00 (PDF)

Collection of back issues for your library: 1992–2015 (Nos. 1–86), \$265 plus shipping

JPI Recommends

Consider the following for your library and holiday gift list: *The Invisible Power Within Foods*, A. W. Danzer \$29.00
Read review on page 21 in this issue, and for more: <https://anthropopper.wordpress.com/2017/11/13/this-is-a-problem-of-nutrition/>

Soil: Notes Toward the Theory and Practice of Nurture Capital, Woody Tasch, \$24.95

Nurture capital as a vision of finance that can create a new way to reconnect us to each other and the Earth—trillions of dollars in the global economy and trillions of microbes in healthy, fertile soil. Tasch's book identifies the best of regenerative agriculture and community resilience. It is *Walden* for the 21st century.

School of the Elemental Beings, Karsten Massei, \$18.00

In this lovely slim volume, the author attributes his learning to spiritual scientists Rudolf Steiner, Emma Kunz and Edward Bach. Like them, he followed the path of self-education, beginning with the question: what are the healing effects of plants? From there, he did his own research, and gradually, respectfully, made contact with the elemental world from whom, he discovered, all life as we know it comes. The book notes that “as beings of the living Earth, we have certain responsibilities, too long neglected.” Recognizing how these elementals suffer from our neglect is part of our work. Originally published in German in 2011, the book was translated and made available by SteinerBooks in 2017.

Human Heart, Cosmic Heart, A Doctor's Quest to Understand, Treat, and Prevent Cardiovascular Disease, Thomas Cowan, MD, \$19.95

Dr. Cowan has spent his life investigating Steiner's statement that “the heart is not a pump.” The long-time medical approach to the heart as a pump comes from the writings of English physician William Harvey dating to 1628. However, Cowan explains that blood circulates in the body much like sap does, overcoming gravity to rise 200 to 300 feet or more upward. His work connects readers to Schauberger's and Pollack's work with water (structured water, vortexes, the fourth stage of water—and, although Cowan doesn't say it, to what happens when we stir the preps). Cowan goes on to describe the various types of heart disease occurring in veins, arteries, or capillaries, as well as his successful treatments. Finally, he discusses the Cosmic Heart—how the heart is much more than a physical organ. He theorizes that the heart creates cosmic gold, ORMUS, and relates this concept to the current social and political situation.

The Mystery of Arthur at Tintagel: An Esoteric Study, Richard Seddon, \$22.00

The Cornish coast long has been linked with the legends of

Merlin, King Arthur, and his Knights of the Round Table. In this well-researched book, Richard Seddon offers new insights into the spiritual influences from Taliesin, as well as the legends of Parsifal and the Holy Grail where these legendary individuals appear.

The Temple Legend: Free Masonry and Related Occult Movements, Rudolf Steiner, \$35.00

Unique lectures by Rudolf Steiner, given to members of his Esoteric School (1904–14). He seeks to reveal the content hidden in the pictures associated with myths, sagas, and legends.

In Gratitude

JPI extends special thanks to all the volunteers and to everyone who collected and sent dandelions and other preparation plants this year to support JPI's preparation work.

Reminders

- For timely delivery, order Three Kings preps by December 12.
- Associative Contracts are due by or before March 31, 2018, to qualify for a discount. A free PDF of *Applied Biodynamics* is now included when you sign up for an Associative Contract (www.jpibiodynamics.org/applied-biodynamics-jpi-periodical/) For more information and to access the contract, go to: www.jpibiodynamics.org/associative-contracts/.
- JPI will closed for Thanksgiving and the following Friday (November 22–23). Christmas Eve, we close at 1:00 P.M., then are closed on Christmas day through January 2.



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Save the Date

October 26 – 28: Back to the Heart of Biodynamic Preparations

At JPI, Floyd, VA, www.jpibiodynamics.org

October 31–November 2: Regenerate, Nurture Diversity, Build Resilience

Albuquerque, NM. <https://quiviracoalition.org/regenerate/>

November 1: Making Herbal Medicines to Enhance Their Spiritual Properties

With Enzo Nastati, Paonia, CO. <http://www.vivalavida-foundation.org>

November 2–4: Astrosophy

With Enzo Nastati, Paonia, CO. <http://www.vivalavida-foundation.org>

November 8–11: Basic Trinium Agriculture

With Enzo Nastati, Valle de Bravo, Mexico. E-mail Natalia at nderit@hotmail.com

November 8–11: Bridging Natural Science and Spiritual Science

Chestnut Ridge, NY, <https://www.biodynamics.com>

November 14–18, 2018: North American Biodynamic Conference – Transforming the Heart of Agriculture

Portland, OR. (visit JPI booth) <https://biodynamics.com/conference>

November 17, 2018, Community Seed Systems: Connecting Soil to Table and Vase Through Seed

Red Lion Hotel on the River at Jantzen Beach, Portland, OR. <https://www.biodynamics.com/2018-biodynamic-conference>

December 4–7, 2018: Acres U.S.A. Eco-Ag Conference

Louisville, KY. (visit JPI booth) <https://www.acresusa.com/events/2018conference>

February 6–9, 2019: PASA 2019 Sustainable Agriculture Conference

Lancaster, PA. (visit JPI booth) <https://pasafarming.org/conference/>

ONGOING

Biodynamic Association Webinar Series

For a small fee, the Biodynamic Association offers ongoing webinars on pertinent topics. <https://www.biodynamics.com/webinars>

The Pfeiffer Center, Chestnut Ridge, New York

Workshops and trainings. <http://www.pfeiffercenter.org>

Spikenard Farm Honeybee Sanctuary, Floyd, VA

Classes in sustainable beekeeping and biodynamics. Apprenticeship/internship opportunities. Please visit www.spikenardfarm.org



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“When the complexity of structure has been enhanced to the highest degree, it all disintegrates again, and eventually, where we first had the highest complexity attained within the Earth-domain, we now have a tiny realm of chaos. It all disintegrates, as we might say, into cosmic dust. Then, when the seed—having been raised to the highest complexity—has fallen asunder into cosmic dust and the tiny realm of chaos is there, then the entire surrounding Universe begins to work and stamps itself upon the seed, thus building up out of the tiny chaos that which can only be built in it by forces pouring in from the great Universe from all sides. So in the seed we get an image of the Universe”.

Rudolf Steiner, *Agriculture Course*, (Adams translation), p. 35



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