



Applied BIODYNAMICS



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THE SEASON OF MICHAELMAS

by Gisela Franceschelli

In fall we experience Nature's death. Trees and plants transform the color of their garments from the vigorous green of summer to hues that are golden, yellow, red, and pale-green. Wind and rain help the plants and trees shed their leaves. The visible outer changes of the fruit-bearing, seed-forming, but dying nature enable man to develop an awareness of transformation. Man's conscious experience of the year's cycle raises the awareness of the multiple demands and occupations that man is being confronted with from the outside world. This experience can motivate the inner will forces to encounter these demands and accomplish tasks with fiery energies.

May this season of Michaelmas be transformational for all of us. And with these thoughts in mind, the staff of the Josephine Porter Institute wishes each of you a wonderful autumn experience.

In the course of the year

*Summer's abounding growth alternates
with Winter's Earth-repose.*

*And in the human's course of life there is
this constant interchanging of the power of being
awake with the peacefully prevailing sleep.*

Yet in the sleeping and waking lives the spirit-filled soul.

So the Earth's soul lives spiritually in

Summer's and Winter's transformation.

— Rudolf Steiner, VERSES AND MEDITATIONS





To L. A. Rotheraine and The Evergreen Elm biodynamic garden — *NEWS FLASH*: The Evergreen Elm biodynamic gardeners continued their winning streak at the McKean County Fair, PA. Of the 27 entries from Evergreen Elm, 25 received ribbons including 17 for first place! (See June '93 issue of *Applied Biodynamics*).

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It serves as a living memorial to Josephine Porter, a biodynamic pioneer for this work in America.

The mission of JPI also includes education and research in biodynamic agriculture.

JPI undertakes these tasks so that the Earth may be healed.

A MICHAELMAS COMMITMENT

An article in the July/August 1993 magazine *Biodynamics* referred to Hugh Courtney's proposal for a fundraising project to support biodynamic education and provide biodynamic preparations for farms in Russia and elsewhere. The project has been launched and we hope that those of you who are able will send donations to:

The Michaelmas Commitment
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Applied BIODYNAMICS

Applied Biodynamics is a quarterly newsletter of the Josephine Porter Institute for Applied Bio-Dynamics, Inc.

The subscription price of \$35/yr. helps subsidize JPI research and development.

Editor: Candace Coffin

INTERVIEW WITH STEVE MOORE

by Nicholas Franceschelli
transcribed by Gisela Franceschelli

Editor's Note: Steve Moore operates a 60-acre lemon, avocado, and vegetable farm in Carpinteria, CA (90 miles north of Los Angeles). Steve received a B.S. from Cal Poly in 1967 in agricultural engineering and a Ph.D. in environmental systems analysis from UC Davis. He taught at MIT in the Department of Civil Engineering, Water-Resources Division; then he enrolled at JFK University and received a degree in counseling. At this time the family farm opportunity arose and Steve entered the 'hands on' world of farming. A BD practitioner now for over 10 years, he operates a CSA, and is Secretary of the Board of Directors of the Biodynamic Farming and Gardening Association. After reading an in depth article on Steve and his farm, written by Naomi Glauberman, in the February 18, 1993, LA WEEKLY, and listening to a Pacifica tape of a radio interview, Nick Franceschelli, staff member at JPI, contacted Steve for a telephone interview to produce the following article.

- N.: "I want to look, at least informally, at what you do biodynamically. To back up a bit, it said in the newspaper article that you began conversion to biodynamics back in 1981. Is that correct?"
- S.: "I really think it was '83. We started thinking about it in '82. In terms of practice, it would have been in early 1983."
- N.: "Was it really through Deborah Hawkins that you actually met biodynamics sort of head on? Was that your first solid encounter?"
- S.: "Oh, actually, Deborah was kind of the trigger for the CSA. That was just two years ago, after the freeze severely damaged our avocado trees and we were looking for another income source. The biodynamic stream began with Tim Smith. Do you know Tim Smith?"
- N.: "Yes, he used to be in the *DEMETER Association*, didn't he?"
- S.: "He started the *DEMETER Association*. We were reaching the point where we wanted to market our own produce. We were looking for ways to distinguish ourselves in the organic marketplace... Well, I need to back up even more."
- "We had recognized that we could not continue using chemicals and following the conventional path, it was not working. The farm was basically dying, culturally and economically. It was not just myself. I've got two brothers (and two sisters for that matter), but my two brothers and I, the three of us were the ones here on the farm. We had come back to the farm in 1981 and had taken over the management and were also working it. We just recognized that it was not working."
- "One of my brothers, Web, decided that he was going to go back to his previous employment, that staying with the farm was not going to work out for him. And frankly, financially, I don't know if it could have supported the three of us for that time. It was really meager. Ben, my other brother, and I decided we would stay on a shoe-

string. Ben had worked with Alan Chadwick. He brought with him an 'Alan Chadwick' type of experience in so far as it relates to biodynamics. I don't recall that he openly talked about biodynamics per se, or that he viewed biodynamics as a goal, or a path at that point. We both recognized that what we were presently doing would not work, and that we had to get off the chemicals and move towards organic methods. That was really the way we were thinking initially, back in the winter of 1982/83."

"As we made that transition, it seemed clear to us that it was going to be successful. We felt very much like we were jumping off an abyss, but it was not nearly as dramatic as that in retrospect. It felt like it at the time, because there was no conventional guidance locally that would suggest that what we were going to do, on the scale that we were going to do it, would be successful. The literature said that it would be successful, but we couldn't find anybody who could back that up. Until then, we had been marketing conventionally. Once we transitioned to not using chemicals there was no point in sending our fruit through the normal channels, which meant picking the fruit and sending it to a big cooperative packing house where our fruit was just lumped in with every other over-chemicalized piece of fruit. So we thought: Wow! we have something we could market here, as there was a growing interest in organics. So we started selling some fruit locally, and we were calling it 'pesticide free' which was the best we could do at that time, although now I would consider this bogus labeling. What we meant was that it was not sprayed with anything toxic. We had not really gotten totally off chemical fertilizer, but we were moving that way. And, somewhere I read about the *DEMETER Association*."

"I had a very vague knowledge of biodynamics and I knew of Steiner, primarily (again an extremely vague notion) that he had written about education. I contacted Tim Smith when I saw this reference to the *DEMETER Association* as an organization that would certify organic and biodynamic farms. This was just what we were looking for. At that time CCOF (California Certified Organic Farmers) was just starting a chapter here in our area. So we contacted both organizations to inquire about being certified so we could put that on our box and sell our produce in the marketplace. Well, Tim was very helpful and offered to include us in the (Bio-Dynamic Association's) road show in 1983. As I recall, that included Bob Steffen, Maria Linder, Tim Smith, and Walter Goldstein; Joe Tooker may also have been in that group. But a whole carload of people showed up here, probably in June of '83."

"We had just tilled our orchard that Spring; the first time the orchard had been tilled in probably 30 years. It had been a no till, herbicide orchard farm management for at

INTERVIEW (continued on page 4)

least 30 years. Basically the only fertilizer that was added was urea, which had most often been flown on by helicopter. We started the Spring of 1983. Ben and I went in with chain saws and cut down half the trees, because it was way overcrowded, due to decisions that had been based on maximized production ideas. We cut down half of the trees, and we started cultivating."

"So this carload of biodynamic people showed up, and it was a tremendous experience. They came to the farm with an attitude of 'What can we learn?' What could they learn from us? I was floored. I wanted to know what I could learn from them. So, it was just a great contact! And from there, without going through any more details, it was as if we had stepped into a stream that was flowing through our farm. In retrospect that was my feeling then, and it's the way I think about it now. That is the best way I can say it. By that I mean, there was a biodynamic current flowing, present there, and it was a matter of us recognizing it and making the decision to go with that stream. There have been so many situations, little anecdotes, that I may or may not be able to recall now, and it may or may not be worth recalling, but things happened, and at certain points you could say they were luck, you could say they were synchronous. But there were clearly other guides greasing the tracks to make all this happen. The first thing was the timing associated with my call to Tim, and Tim's immediate reaction to include us in the road show that was being put together; and the success and value that visit represented to us in terms of getting started. It was after that visit and after connecting with Peter Dukich and Tim Smith, and having that group here, that we started with biodynamics."

(Editor's note: Steve explains how he met Peter and Charlotte Dukich through his brother Ben. The Dukiches had attended a conference given by Herbert Koepf and Peter Dukich came to the Moore farm and talked to Steve and Ben about biodynamics.)

"We began with the Pfeiffer starter, and that was probably our first specifically biodynamic practice. We put the Pfeiffer starter into the piles of horse manure that we were composting. It was after that visit, connecting with Peter and Tim Smith, and having that group here, that we started with biodynamics. The very first time we used the Pfeiffer starter could have been Spring '83."

N.: "When you met the road show people there were obviously some practical people in there. Did you have the impression that these people could put their money where their mouths were, as opposed to just reading a book that this could be done?"

S.: "Oh, no question about that, especially Bob Steffen. He was, and I presume is, a great advisor, because he approached our situation as, 'What could he learn from being here?' He had never been here before; he clearly gave us a feeling that we knew what we were doing when we didn't. He trusted our judgment, and if he trusted it certainly we could trust it. So it was just a very uplifting kind of experience. We asked him questions, and though he was not familiar with our climate and our crop (he is

from the Midwest), he brought a sense about the quality of soils. It was obvious that our soil was in bad shape. When we turned it over for the first time and went through and cultivated, it came up in big slabs like concrete. That was still evident in the condition of the soil when that group was here, because there had not been anything grown on it yet."

"I'll tell you the thing that crossed my mind: I knew nothing about biodynamics other than there was this word out there and that it was apparently some type of off-beat, cultish, alternative hippie-type farming. We wondered if it was really practical to get into it. On the scale that we were talking about, we didn't know if there were any 60 acre organic farms much less biodynamic farms out here in California. So we were really winging it."

"That was the beginning of my understanding that biodynamics was first of all good sound farming practice. That it was the real Pfeiffer kind of thing which I think is so clearly seen through Pfeiffer's work, and that is that first of all you have to be a good farmer. Then biodynamics comes to that and deepens the whole effort in a lot of different ways. However, it does not substitute for good farming practice nor does it run contrary to good sound fundamental farming."

N.: "Well, that was something worth hearing, what your early impressions were. So basically, at that point, you had to learn not only what the esoteric biodynamic practices were, but you had to also learn good farming practices at the same time."

S.: "An implication of your statement is, and I think it is true, that what we were doing was not good farming. Even though we were following conventional practice, conventional practice is not good farming. It is application of some chemical technology to plants, and it's just a distortion."

N.: "It is now ten years later, and I am thinking that it was probably a pretty breathless ten years from the way you spoke in the newspaper article and on the tape. You have a different perspective now I'm sure. Could you share just a little bit of how you evolved from adding Pfeiffer starter to your brought-in manure? How have your biodynamic practices evolved; what sort of things did you start to implement as you went along?"

S.: "I am trying to see what are the dominant threads here in my mind. I think we moved fairly quickly from the Pfeiffer starter to the biodynamic preparations themselves. And as I think about that, it was not just the compost preparations (BD#502-507), but also the BD#500 and BD#501; and now,



Horsetail Herb
(*Equisetum arvense*)
BD #508

most recently, the BD#508, which has come along in the last couple of years; especially because of encouragements from Hugh (Courtney) and from seeing what an impact it can have. If I look back, we have been reasonably, what should I say, faithful, consistent, in our use of the preparations, and what has changed for sure is my understanding, my personal relationship to the preparations. There is no question that in the beginning it is a giant mystery. It was for me. I did it because somewhere, however you want to word it, in my psyche, my intuition, my intellect, even though I couldn't understand it, what I did read rang true in a lot of ways. It 'made sense' to do it. For me there has always been a certain compelling sense that this was a correct way to proceed. The results of the compost just speak for themselves. And that's really true for the sprays too. In terms of the compost, for a while, when we were hauling in all that horse manure and using it to make compost, we began to sell the compost because we had extra. It was one thing for me to look at it and say, 'Oh, this is good compost and our crops are doing well,' and so on, but I had people who came back over and over again wanting to buy our compost because they couldn't get compost anywhere else that was of comparable quality. That's not a statement about my ability in making compost, because I still question that."

N.: "You mean you are still working on your composting techniques?"

S.: "Oh yes, and shifting from horse manure to cow manure has been quite an experience. That is another story. But I think it is a statement about the biodynamic preparations because adequate water, adequate moisture, adequate mixing and just some common sense things about how to make compost will produce a reasonable product without the preparations. But if you add the preparations there is something different. It is like eating the food. With the CSA we have really learned a lot, because I am in touch with the people who eat our produce. These are people who have been eating organic and the so-called biodynamic food and have experience with it. They are effusive in their compliments about how good it is. Right now I am not that good a farmer, but it is a statement about the consistent use of the preparations."

N.: "When you say consistent use, and this is what I wanted to get back to, did you from the beginning onward use the BD#500 and BD#501 every year and make biodynamic compost piles every year?"



S.: "Yes. We did use field sprays at the same time we were using the Pfeiffer starter, and then we shifted over from the Pfeiffer starter to the compost preparations. I am sure that by '84 we were using the BD#500 and were probably using it in the fall of '83."

N.: "I am really interested in the fact that you have been using the biodynamic preparations consistently

for ten years. This puts you in the big leagues biodynamically in this country. You know, ten years makes you an old timer, a veteran of biodynamics in this country. You can probably tick off on ten fingers the other farms that are also veterans, certainly the Zinniker and Harlemlville farms."

S.: "Sometimes I think 'Wow, we've been doing this for ten years.' I am very aware of two things: how much my understanding has deepened and how much I have learned over the years; and secondly, I am in awe of how little I understand. It is as if it is truly an infinite universe and no matter how much I explore it and recognize it, and how I've covered a lot of territory, all it has been is a few grains of sand. It is very humbling."

N.: "Surely a flood of important impressions have come to you as you were recalling the conversion to biodynamics. Would you share some of these?"

S.: "Initially there were a lot more pest problems growing vegetables on this ground than I think we have now growing vegetables biodynamically on this same ground. It has generally been my experience that there is a sense of balance, a sense of health in the plant world, in the environment, which is reflected in a reduction in insect pests. We rarely see aphids, and if we have aphids it is a very short-term kind of thing. We might have aphids if I plant a leafy vegetable right after a pea crop or something like that, but it is not consistent. So we have not fully nailed down what's going on. That can happen. We have flea beetles, and that is probably the single biggest problem. I think my intuition about that is that it is related to sulfur-calcium balance in the soil, because it shows up all the time in the plants that I associate with sulfur, the brassicas, mustard, and so on. But that problem, by the way, seems to have been, if not eliminated, reduced since we have greatly cut back our use of the rototiller and adopted a more Podolinsky-type way of cultivation. That is to cultivate with tines as opposed to beating the soil with the rototiller. On the other hand, we continue to have a horrific problem with gophers. It is becoming somewhat less and we still work with the peppers. (See *Lecture VI of AGRICULTURE, for Steiner's indications on the use of peppers.*) My optimism about the gophers goes up and down. Right now, because we've come out of a very wet winter here and have a real warm spring, the stupid things are multiplying like crazy. They are in my face a lot and I'm just kind of bummed out about it."

N.: "Podolinsky was complaining that the mammalian pests were really doing the biodynamic farmers in over there (Australia), and he seemed to think that a lot of pests are just waiting on the fence line for the farmers to switch over to biodynamics and then they all come rushing in."

S.: "It is almost as if it enhances the environment for them."

N.: "Well, it depends on the particular pest. But if you are not going to take a violent, a more toxic approach to eliminate

INTERVIEW (continued from page 5)

mammalian pests, then I think certain kinds of mammals, and this is not an excuse for the presence of gophers, are going to come in because they are desperate for a place to be, to come to expression. They are not going to find that place in a hostile environment."

S.: "Well, I keep reminding myself about that in the sense that, as long as I keep growing all this food for them what can I expect? Every time I get totally exasperated and say that I am not going to do anything, I find that is a route to disaster. We keep following the dual strategy here, which I sometimes think is a mistake. We have adopted a warfare position and a biodynamic position. We continue to do both and the problem is less than it used to be, but as we speak I am having a real hard time with them."

N.: I also remember in the *AGRICULTURE* course that Steiner said for certain pests, and Podolinsky had the same suspicion, though I don't think he was ever able to prove it, that you really had to work with other farmers on some pests, you couldn't just do it yourself."

"Now you had a field day at your farm in March. Did you have a good turn out?"

S.: "Yes, we had over twenty people."

N.: "You also had some other growers come up to your ranch. Have they been sensitive to the fact that things are going well there or have they been callous to the fact that some things are different there? Did you find that they intuited that you are doing something right? Podolinsky said that a lot of the organic people ignored what he was doing. Did you have that response or did growers seem to tune into what you were doing?"

S.: "My impression was that the folks who came in March and other growers who have visited, and the consumers, are effusive in their compliments. That group of growers

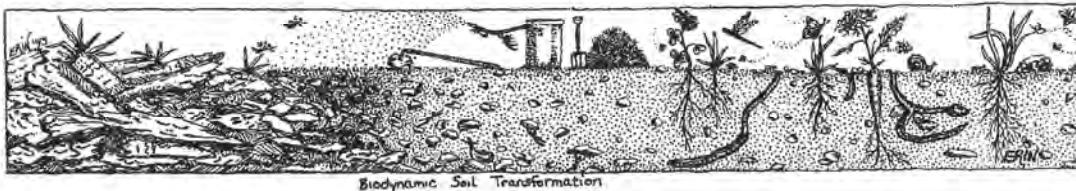
N.: "What are the recommended practices for controlling gophers? There must be something that's done that eliminates them."

S.: "Strychnine poison, placed with a burrow-builder dragging behind the tractor, is probably the most effective organically accepted method. We use this gopher-blaster device where you inject propane and oxygen mix into the burrow and then spark it off with a spark plug, and it sets off an explosion. I call it the Desert Storm approach, and it is quite effective. It is much more labor intensive than the strychnine. However, the strychnine is very effective, especially where the population density is very high. But you have to keep using it. Our growing food here is like a magnet, and I just don't want to keep using strychnine like that. I decided about a year ago that I wasn't going to use it anymore. I get kind of stubborn sometimes about things and I say 'Well, that is just so totally inconsistent with whatever else I'm doing that I'm not going to do it.' When people asked about gophers I used to get so flustered to explain, to rationalize, my use of strychnine, and so I decided I'm not going to use it anymore."

N.: "I'm glad you brought this out because I can see that there is a reality that even the better farmers have to deal with."

S.: "I think we are getting it under control as we replant the orchard. The new orchard I am proud to point to. It is just that the overall impression is of an orchard that is on the downside, not the upside. I am trying to work my way back to how that group in March and other farmers, perceived this place. I think they must go away with a mixed response. Obviously they have a mixed response because I talk about it."

N.: "Do you point out the condition of the soil? Do you have any spots where the soil is still in slabs the way it was when you took it over?"



was very complimentary about the field day, what they got out of it and what they saw on the farm. I have a personal goal that by the year 2000 our farm will stand as a showcase. When farmers come here they won't be able to dismiss the fact that there is something going on here that is worth doing. Right now, probably the single biggest thing that stands in the way of that is the gophers. Maybe I'm putting too much emphasis on them, but they have done so much damage here that a good farmer will come and say, 'Yeah, but how come the tree density is so low? How come these trees don't look so good?' It's almost all devastated by the gophers."

S.: "Oh, well, we sneak over to my neighbors', and he continues to manage his lemon orchard the way we did for years before we adopted biodynamics. The difference is evident, if you can get your shovel into his soil."

N.: "If over ten years ago you came to the conclusion that it was not possible to survive along the lines that your neighbor is, how is it that these people are still producing boxes full of stuff?"

S.: "There are almost no lemon orchards left in Carpinteria."

N.: "So historically you are actually right? What are they

INTERVIEW (continued on page 7)

INTERVIEW (continued from page 6)

following them with? What is taking their place, second homes or . . . ?”

S.: “Nurseries. And flowers. My neighbor replanted his lemon orchard about the same time we started our conversion to biodynamics. That orchard is now ten years old and it is clear that it is declining. It is going to be gone... Here is my vision: by the end of this decade our farm will be rejuvenated totally. I mean it is already there but it carries this scar and the problems associated with the gophers and the age of the trees. That is a transitory thing, and the direction is one of health and enlivenment. My neighbor's orchard, which he replanted about the same time, is going to be in need of replanting again. But he is not going to have anything to replant into. His soil is dead.”

N.: “Can you, in a nutshell, tell about your spray program, let us say on a garden bed or in the orchard?”

S.: “Well, the spray program is always evolving. Basically we spray the entire orchard, the entire farm, twice a year, in fall and spring, with the BD#500 (Horn manure), and the BD#501 (Horn silica). Now, what that means is it is fairly late in the fall, unless we are very fortunate to have an early rainfall, otherwise we are spraying on ground that is much too dry. I like to try to catch it in the fall if we are lucky. During the drought it was hard because we had so little rainfall, but the last couple of years we are back into a more normal pattern. So, if we get a rain in October we'll jump right out and spray the BD#500. Now, because we have the spray rig right on the tractor and everything is geared up, I will often times just go into spray mode. And we will do the BD#500 in the evening and the BD#501 in the morning and it takes us (to cover everything), two or three sprayings. So it will take two or three days to spray everything. Fifty gallons at a whack.”

N.: “And do you use one unit of the spray preparation to three gallons?”

S.: “It varies a little bit, but it is about 1:3. I try to get the volume application down as much as I can in order to cover more ground, because we have only 50 gallons. I tried putting out two sprayings in a day, but there is just not enough time to stir it, spray it and then have to do another one. We start too early or end up too late. But it does work pretty well to just crank up and do BD#500 and BD#501. Now that lends itself to the sequential spraying.”

N.: “It does. Do you actually use the Barrel Compost (BC: Maria Thun's recipe that includes cow manure and the compost preparations BD#502-507), at all in your program?”



S.: “Oh yes.”

N.: “And when would you apply that?”

S.: “We tend to use the BC more in the vegetable garden than in the orchard. I can't give you a consistency on that in the orchard. We have used BC from time to time in the orchard. We did the sequential spraying this year and last year and, of course, we've been flooded with water.”

N.: “Did you actually see a fairly immediate result?”

S.: (Laughing) “Yes. It just poured rain down here like crazy. I'm a great believer in Hugh's intuition or understanding about all of this. I'm a skeptic that it can really be true, but experience tells me it is.”

N.: “We certainly have to take the anecdotal evidence very seriously. And I don't think it is a joke.”



Horsetail Herb
(*Equisetum arvense*)
BD #508

S.: “Let me finish the spray program. In the vegetable garden, during the winter and in early spring, when it has been wet, we've been using a lot of BD#508 (*Equisetum arvense*). Now that is strictly on the vegetables.”

N.: “Is that a foliar or is that a soil spray?”

S.: “It's a foliar. Well, it goes wherever it goes. We do it once a week. We spray once a week on about two acres of vegetables with the fermented BD#508.”

N.: “And do you feel like you are getting reduction in the mold problem? In the slime problem, and so forth?”

S.: “Well, I have to say yes, because the first time we used the BD#508 we were having a problem with fungus growing in the onions and limiting their growth. We just had a terrible problem with fungus growing in the onions and it gave me the idea of using BD#508. Last year we used it and it definitely delayed the onset of the problem though it didn't eliminate it. We are doing it again this year and again it seems to have delayed and slowed down the fungus, but it certainly hasn't eliminated it. We don't get mildew on anything; we don't get mildew on our peas or our squash, and all that. I attribute that to the BD#508. There isn't a section left unsprayed.”

“So we have two rhythms of spraying: we have the orchard rhythm, which is the whole place twice a year with BD#500 and BD#501; and then we have this high frequency spraying that is more intensive in the late winter and spring in the vegetable garden with the Barrel Compost and the BD#508. The BC we use especially when we have a bed that is in a winter cover crop; we turn that under and then we spray the BC on the bed. That process happens on a smaller scale than the whole orchard because of the way beds are. We don't go out and turn under all our winter cover crops all at once. We do

INTERVIEW (continued on page 8)

INTERVIEW (continued from page 7)

it bit by bit. As we are bringing beds into production we try to get the BC out. This year, we also used some 'Prepared 500'.[‡] We put that on all the bare ground."

N.: "Is it too early to say anything about that?"

S.: "Yes, I don't have any observation."

N.: "Then do you spray BD#500 and BD#501 selectively in the garden?"

S.: "No. The BD#500 and BD#501 pretty much go out only when we are doing the orchard."

N.: "Okay, so you go over to the garden and spray that as well?"

S.: "Oh yes. It gets out in the garden, but it doesn't get out on every crop on every rotation."

N.: "Do you follow at all a planting calendar?"

S.: "Yes."

N.: "Fairly consistently?"

S.: "It is pretty hard to do in the winter when it is wet. If I have to get something in the ground I do it. I try to avoid gray days (blanked out). If the soil is in workable condition and there is no end to the rain in sight and it is a 'fruit' day, but I need to do lettuce, then I do lettuce. But now that we are into the dry season, I am following the planting calendar. It is a 'leaf' day today and tomorrow, and we are doing 'leaf' stuff. We won't do 'fruit' stuff. We did that on a 'fruit' day. And I try to follow that pretty closely in terms of planting, not in terms of any other activities. I have not been able to figure out how to make it work, because harvesting is Monday and Thursday, hell or high water. If it happens to be a 'bad' day, well, so be it. We can't stop weeding. We have to cultivate."

N.: "For how many years have you been working with the planting calendar?"

S.: "Since we started doing vegetables. In 1986 or '87, we began with a few vegetables that I call cash cover crops, like green beans and sugar peas. We didn't really start doing a lot of different vegetables until 1990. Throughout the period of planting a lot of vegetables for the CSA, I pretty much tried to follow the calendar. When the weather, meaning the rain, the wet season, isn't conducive, we just can't do it. I tell you what my view of it is: I'm not convinced the model is right. There is definitely something going on in the sense that I can sow the same crop on ground that I perceive to be the same and one time it works and another time it doesn't. Either the production is less or a pest comes in. Something happens that it just doesn't grow as well. The only thing I have a sense about is it could be tied to planetary rhythms, but I have not taken the time to study it. That is something that takes a particular amount of time to follow and really keep track of and to do right. Let us say we sow lettuce today, on a 'leaf' day. By my understanding of Maria Thun we need to come back and cultivate on a 'leaf' day and maybe do the sprays on a 'leaf' day, the whole works. Well, I just

have not figured out how to manage the farm practically in doing that."

N.: "Other people who are in your situation have said the same thing."

S.: "So we come back and cultivate when I have time to get somebody in there to cultivate. I don't have the habit of looking at the calendar and saying 'Oops, is that the right day?' I just do it. I had the feeling that it would probably be worth while monitoring that, so that I could go back and see if there is a pattern; that if we cultivate or do some other cultural activity that we could relate it back to planetary rhythms."

N.: "Could you walk us through, supposing it was an auspicious day, of how you do the BD#500?"

S.: "First of all I want to get moist soil conditions, so we are usually talking about late winter, before the spring equinox; or in the fall it is almost certainly after the fall equinox. We are talking about February and October, typically. The sun angle is still on the low side, but we are not in the dead of winter. The soil is moist but not sloppy wet. Hopefully there is no forecast of immediate rain, and if it is foggy, so much the better. I don't mind that at all,



Horn Manure
BD #500

and it is very possible that we would have fog. I would get out at about 2:30 p.m. and fill the stirring machine. We have a 500 gallon storage tank that either collects rain water off of our barn roof, or I can fill it with a hose from a well. So it is either well water or rain water, and which gravity feeds into a passive solar heated tank that holds 60 gallons, so I have 60 gallons of lukewarm water sitting there. I fill the stirring machine with 50 gallons of water and then put 12 to 15 units of

BD#500 in the tank of the stirring machine and use the machine to stir for an hour. And while that is going on I'm getting the tractor ready, putting the spray rig on it and doing all that kind of stuff. So by 4:30 p.m. the stirring is finished, the sprayer is full, and I head out on the tractor. We are talking about days when daylight is done between 5:00 and 6:00 p.m."

"The sprayer we use is an *Automatic* mist sprayer, of which they now make an orchard version. We have an earlier version which was supposedly designed for use in feed lots, which we have modified. And for spraying the BD#500 we added a little boom on the back. It just has a little fan jet on the back. It has a PTO-driven roller pump which pumps the liquid to the fan and jet sprays it out when we drive up and down, either over the beds (the beds are all tractor tire width) or in the orchard middles, and put it out. It takes an hour to an hour and a half, because we have hilly terrain which is a little slower going than flat terrain. Anyway, we put that out, and then that's it on the #500."

INTERVIEW (continued on page 9)

INTERVIEW (continued from page 8)

N.: "So it is actually misted out. Am I understanding you correctly?"

S.: "Not the BD#500. The BD#500 goes out just a regular fan jet, single nozzle fan jet. It spreads it out in a wide arc, it throws it out."

N.: "What pump pressure do you use with the BD#500?"

S.: "Anywhere between 12 and 15 pounds, certainly less than 20."

N.: "With the BD #501, how would you adjust your program?"



Horn Silica
BD #501

S.: "BD #501 almost always means up early, 5:00 am in the morning, in the dark. From a personal point of view it is a different experience, because I am out there getting everything set up with a flashlight and it is early morning. It is still the same time of the year, typically. It doesn't have to be: it is just convenient. I go through the same process, although I often try to have the tractor ready so that I don't have to get that ready in the dark. I do that the day before. And the BD #501 definitely goes out as a mist. The *Automatic* mist sprayer is designed with a squirrel cage fan that produces an air stream into which a small amount of the liquid is injected, and we direct this mist air stream in a straight up vertical position. And so it blows up about 20 feet in the air, and then it comes back down like a very light mist on everything. That is how we apply the BD#501. If I am out stirring by 5:00 a.m., I try to get done by 8:00 a.m.. I have to admit that sometimes we are still out there at 9:00 a.m. spraying the BD#501, and I don't particularly like that, but that is the practical reality. It goes out much slower than the BD#500, but that means that we only have to go out once. We can cover the bulk of our productive ground with BD#501 in one go."

N.: "That is valuable."

S.: "Yes, but it takes longer to put it out. We can definitely get it down to three gallons per acre. It's a sixty acre farm, but we only have 35 acres of ground that have any crops on them at all. Really only 30 acres I consider to be under any kind of intense management."

N.: "The other acreage is sort of wildlife?"

S.: "It is a mixture of wildlife and abandoned orchard. It is orchard that has been converted to pasture, that sort of thing."

N.: "Do you make your own preparations?"

S.: "We make BD#500, and we make BD#501, although we didn't make any last year. I'd like to get back to some. We make Barrel Compost."

N.: "Do you crush your own quartz?"

S.: "Yes."

N.: "Have you got a device for it?"

S.: "Well, we start with a hammer, and then I use a mortar and pestle, and then I have two glass plates with a handle attached to the mobile plate. One of the reasons I kind of cringe about making that is that it is such an irritating experience to grind it."

N.: "You mean fingernails-on-blackboard kind of thing?"

S.: "Yes. We try to have it as a kind of social event, but the noise is so irritating."

N.: "Have you worked at all on the compost preparations?"

S.: "Only at workshops at the BD conferences. We have not made any of our own. I would like to. Just haven't integrated that in."

N.: "I have seen yarrow growing wild out there." (*Yarrow is used to make BD#502, one of the compost preparations.*)



Yarrow
BD #502

S.: "We have yarrow growing. I think we could do it. We can do all those plants. We don't have in the immediate vicinity the correct oak. (*Oak bark is used to make BD#505, one of the compost preparations.*) But it has been suggested that we use the oak we have and see how it does."



Oak Bark
BD #505

(*Hugh Courtney continues the interview.*)

H.: "How do you handle pasture sprays, differently from the orchard?"

S.: "No difference, because all our pastures are the orchard middles."

H.: "How do you keep the stock off the trees?"

S.: "We use electric fencing."

H.: "So the middles are wide enough that you can pasture them with cows?"

S.: "Just barely. We originally tried enclosing blocks of orchard and putting the cows up there. That worked great for 8 or 10 months. Then the cows gradually developed a liking for the lemon trees, and once they did that it was all over as far as being able to pasture them like that. After that I finally ended up putting them way in the back where we did have pasture, and that we did for about a year. This was not the point of having cows. They were supposed to be in the orchard. Now we are back to running them in the orchard and fencing the middles, but they still reach over the wire..."

H.: "... Doing a little pruning... Are there any comments regarding whether or not the Associative Contract serves you well?"

INTERVIEW (continued on page 10)

INTERVIEW (continued from page 9)

S.: "Oh, I feel very positive about it. Do you remember the first round of compost preps you sent me this year? They needed to be replaced because we put our storage in the wrong place and they got flooded out. And you very promptly replaced them without any additional cost. Actually I didn't know if there was going to be any additional cost. And then I said, 'Wow, this is great!'"

H.: "Well, we charged you mailing cost."

S.: "Yes, but you didn't charge me for the preps. Right now I feel very good about the Associative Contract. It creates a different relationship, just the way the CSA is supposed to, because I feel like I'm supporting your work. I feel like I'm benefiting from it. I used to have a very strong sense that I need to make my own preps here on the farm, we are working towards that, and I am trying to add one at a time each year. After listening to Podolinsky I haven't flip-flopped on that, but I recognize that there is a value in obtaining the preps from someone like yourself who does this very specifically."

H.: "That is our focus here, just as your focus is on your lemon grove and your CSA."

S.: "I don't feel quite as strongly as I used to that the preps really need to come from our farm per se."

H.: "We certainly seek to encourage anyone to make their own preparations as they are able. We also seek to support and encourage a greater community of biodynamic users, which is the virtue of the Associative Contract."

†Sequential spraying: The sequential spraying technique involves the application of all nine of the biodynamic preparations, usually within a two day period in sequence. The purpose is to maximize the possibility for plants/soils to attract to themselves from their environment what is needed for best growth. Recent experiments with this spraying technique have revealed some interesting data, and thus a more in depth article is warranted. This information will be forthcoming in a future issue of *Applied Biodynamics*.

‡'PREPARED 500': This is a JPI preparation based on Alex Podolinsky's recipe. It includes the Biodynamic Compost Preparations #502-507.

RECIPE FOR MAKING BD #500

by Hugh Courtney

INGREDIENTS:

COW HORNS 1-2000 as appropriate for needs of the "agricultural individuality"

COW MANURE in sufficient quantity to fill above number of cow horns

- Bury in good soil during the winter months
- Dig up in spring when manure in the horn is no longer "green".

Each horn can be expected to yield approximately 2½ units of finished BD # 500 on average.

If one were to take a "cook book" approach to the making of BD #500 the recipe above might be all one need to say on the subject. But as anyone who has ever experienced making BD #500 knows, such a recipe is deceptively simple and the end product may not necessarily turn out to be "decent" #500.

To include all the possible nuances and variations involved in making "good" #500 would perhaps require volumes, so I shall attempt here to cover some of what my own experience suggests may be the most important considerations to take into account.

The first and foremost lesson I learned from Josephine Porter, who served as my mentor in making the biodynamic preparations, was to "return to the source." So, the first step in making BD #500 each year is to reread what Rudolf Steiner had to say:

"We take manure, such as we have available. We stuff it into the horn of a cow, and bury the horn a certain depth into the earth say about 18 in. to 2 ft. 6 in., provided the soil below is not too clayey or too sandy. (We can choose a good soil for the purpose. It should not be too sandy.) You see, by burying the

horn with its filling of manure, we preserve in the horn the forces it was accustomed to exert within the cow itself, namely the property of raying back whatever is life-giving and astral. Through the fact that it is outwardly surrounded by the earth, all the radiations that tend to etherealise and astralise are poured into the inner hollow of the horn. And the manure inside the horn is inwardly quickened with these forces, which thus gather up and attract from the surrounding earth all that is ethereal and life-giving.

*And so, throughout the winter in the season when the Earth is most alive the entire content of the horn becomes inwardly alive. For the Earth is most inwardly alive in winter-time. All that is living is stored up in this manure. Thus in the content of the horn we get a highly concentrated, life-giving manuring force. Thereafter we can dig out the horn. We take out the manure it contains."*¹

Aside from responses to certain questions pertaining to specific facets on the making of BD #500 which are very interesting in themselves, Rudolf Steiner limits his description to the above two paragraphs. Once again, that description is deceptively simple.

We prefer to gather fresh cow manure from the pasture at a time of the year when the cows are receiving at least half of their forage as hay. We prefer to use only cow manure and attempt to avoid any bull, heifer, steer or calf manure even to the point of segregating the cows concerned in their own separate pasture. Ideally the manure should also be from lactating cows. We subsequently screen the manure through ½ inch mesh hardware cloth screening packed tightly into buckets or wash

RECIPE (continued on page 11)

rubs and then fill the horns. This is, of course, rather different than taking "manure, such as we have available."

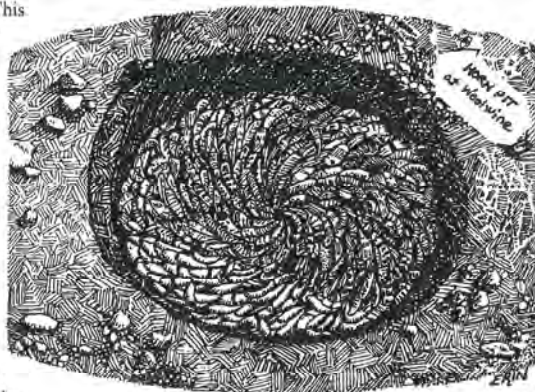
When filling the horns, we use large spoons, usually stainless steel serving spoons or wooden cooking spoons, and attempt to press the manure as tightly as is possible into the horn. For this, of course, a drier manure is more appropriate and this is the reason for having hay as a large portion of the cow's diet. Our justification for packing so tightly is based on Steiner's answer to one of the interesting questions mentioned above:

"Question: Where can you get the cow-horns?..."

"Answer: It makes no difference where you get them from only not from the refuse yard. They must be as fresh as possible. However, strange as it may sound, it is a fact that Western life — in the Western hemisphere — is quite a different thing from life in the Eastern hemisphere. Life in Africa, Asia or Europe has quite another significance than life in America. Possibly, therefore, horns from American cattle would have to be made effective in a rather different way. Thus it might prove necessary to tighten the manure rather more in these horns to make it denser, hammer it more tightly."²

Another technique for packing tightly is to tap the tip of the cow horn firmly against a hard surface (say a concrete floor) several times during the filling process. Use the technique that is most comfortable and effective for you.

We have also come to believe that the spot where the horns are buried needs to be carefully chosen, with particular emphasis on "good" soil. The site for the horn pit definitely needs to receive generous treatment with the biodynamic preparations and if the soil is of poorer quality, some well aged biodynamic compost needs to be incorporated. We have also begun to protect the cow horns from any possible detrimental effects due to radioactivity † by using a 2-6" layer of milled peat moss as an immediate covering followed by the fertile soil dug from the pit. Repeated use of the same site seems to produce an improvement of the final BD#500 product in each successive year.



The digging up of the horns is a much debated question, with times ranging from the very first moment after the Spring Equinox all the way to digging it up when you are ready to use it, even if that is the Fall of the year (as is covered in another Question and Answer exchange with Steiner and the audience at the Agriculture Course). Our own preference on timing is to bury the #500 horns before Advent, if possible, but certainly before Winter Solstice, and to dig them up

on Ascension Day or shortly thereafter. Every year has its own requirements.

The reader should also study what well-qualified preparation makers have had to say on the subject. Among those people one can commend to your attention are: Evelyn Speiden Gregg, Lilly Kolisko, Maria Thun, and Alex Podolinsky.

Even though the Josephine Porter Institute for Applied Biodynamics, Inc., derives a fair portion of its financial support from the sale of units of BD #500, we can only encourage everyone to begin learning to make their own preparations. (If you have difficulty obtaining cow horns, the Josephine Porter Institute has a plentiful supply for sale. Call or write for prices.) The "recipe" for making BD #500 is a gift from spiritual worlds through the agency of Rudolf Steiner and the knowledge of how to make "proper" #500 needs to be widely shared as a spiritual necessity in the world today. Besides the spiritual dimension involved, one's understanding of the various preparations and how they should be used somehow seems to increase substantially the more one makes the preparations. Understanding and awareness of BD #500 is acquired not through the intellect but through the will in the act of stuffing manure into the cow horn. Try it, you'll like it!

1 Steiner, Rudolf. *AGRICULTURE*, p. 74.

2 Ibid., p.79.

† Use of peat moss suggested in studying the work of E. Pfeiffer.



“We must gain new knowledge in order to enter again into the whole Nature-relationship . . . Mankind has no other choice. Either we must learn once more, in all domains of life learn from the whole nexus of Nature and the Universe or else we must see Nature and withal the life of Man himself degenerate and die.”

Rudolf Steiner, *Agriculture*, p. 39



SO THAT THE EARTH MAY BE HEALED

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