

Class 7

Talk on Biodynamics 2/11/02

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When I was in high school and trying to find meaning in life I kept being drawn to spending time in nature. I was awed by what I observed around me and I was curious to explore my relationship with it. What was it in nature that allowed such beauty and harmony to flourish? How could such an amazingly intricate yet perfectly balanced, ever changing system develop? What was humanity's ideal relationship with nature? After high school, I moved to the country to pursue these questions. I read voraciously every thing I could about agriculture looking for insights into these mysteries. All I could find was practical details from a materialistic perspective. There were no references to the spiritual dimension of our relationship with nature and agricultural work. Finally I ran across a book on bio-dynamics and some of my questions began to be addressed. I didn't understand all that I read, but I had discovered others that were exploring this realm deeply. That was in 1976. Now a quarter of a century later, I am only filled with further questions.

Some of what I will be speaking about today will be new to you; some of it may even seem foreign or strange. Biodynamics requires one to look again, at what is seemingly apparent; to explore with one's senses and an open mind. My intention is not to try to convince you of a way of perceiving, or to preach a dogma, but rather to pique your curiosity. Pursuing our curiosity

inevitably leads us to discovering more questions. And it is in the experience of this quest that one can find great fulfillment in life.

Biodynamics, or as it is often referred to BD, can be approached in a wide-variety of manners, from an intensely practical results oriented perspective, to being a foundation for spiritual growth and insight. As a farmer operating in a tough economy, I have taken a middle road. My biodynamic practice must be practical and show results, yet it is founded on this spiritual perspective.

Biodynamics is based on Rudolf Steiner's Agricultural Course, which he gave in 1924. Steiner was a scientist and philosopher, who brought clairvoyant insight into his work. This course was inspired by questions asked by farmers as to why their seed didn't stay viable for as long as it once had and why they were experiencing fertility problems in their animals. His answer was that the earth was losing its vitality or life force. The Agriculture Course was his attempt to show ways that farmers could re-enliven their farms and help heal the earth. The end result would be farm products that also were imbued with these life-giving forces which would help further the spiritual development of those that consumed it. The farmers and scientists to who he spoke took his indications and have worked with them to develop what we know as biodynamics today.

The root of the word biodynamic means life force. As BD practitioners, this is where our attention lies. We are concerned with the forces and processes of life that lie behind matter. This is in sharp contrast to today's scientific paradigm, which is focussed primarily on matter. Modern science looks for answers by looking at the smaller and smaller building blocks of matter. It is a microscopic approach. Yet, so often in this methodology, the very life, which is being explored, is killed in the process of the research. Scientists seem to be able to take life apart but still don't understand what it is!

The biodynamic approach is quite different. In BD, we take a macrocosmic perspective, a systems approach. For instance, rather than seeing the plant as ill, we see that the environment is out of balance and the plant is a reflection of that imbalanced state. If, for instance, a broccoli plant has aphids, conventional thinking is to spray something to kill the aphids. A BD farmer's approach is to ask the question, "Why are these aphids here? What is their purpose? Is something out of balance in the plant's environment? Perhaps the farmer or gardener has planted the broccoli too close to an oak tree and the shade cast by the oak has caused a type of growth that is soft and weak. The aphids are coming in to clean up this plant in distress. So, the

solution to problems, lie in understanding how the whole works and adjusting the environment accordingly.

This leads us to thinking about the farm in a completely different way. One could say that the farm is viewed as an ecosystem that needs to be carefully managed by the farmer. In Steiner's time, ecosystem was not yet part of the vocabulary, and although he may have used it if it had been available, I suspect he was taking the notion of ecosystem a step further. He called the farm a farm organism or individuality. This gives the sense that the farm is a living being in its own right. A being, like all other beings, that deserves the respect and consideration. It has a life of its own. From this perspective, one views the various aspects of the farm as organs of this farm organism. For instance the animals, the riparian areas, the fields, the forests, all need to be considered in light of each other, in balance with each other.

So, what does this mean in practical terms? One way to observe relationship between the organs of the farm is to follow how fertility is cycled through the farm. Steiner said that any fertility brought into the farm should be considered as medicine for an ailing organism. This means that the ideal is that the farm should be nearly able to cycle its fertility within the boundaries of the farm with little outside fertility inputs.

Let's see how this works on our farm. Winter Green Farm is comprised of several different soil types. One soil grows excellent vegetables, herbs, fruits, and pasture. Another soil type has poor drainage and can not grow row crops but grows very fine permanent pasture. In viewing our farm as a living organism, it is important that fields in these two distinct soil types are integrated in some significant way. We have found that one way this can be accomplished is through compost. From the permanent pasture we make hay which is fed to our cattle during the winter. We collect this manure and it becomes an important ingredient in our compost, which we use on the fields that are growing vegetables and herbs. So, the fertility from the permanent pastures is being transferred to the fields in rotation, by means of the compost. Reciprocally, the vegetable and herb trimmings and soil from root washing, from the fields in rotation, are composted in separate piles that will be spread onto the permanent pastures. So, you see the farm is linked by means of the compost. (Show compost slides.)

It is necessary to determine the right number and type of animals for a farm in order to be able to provide ample fertility for the crops grown. And it is necessary to grow enough feed for those animals from the farm. You see, importing hay is the same as importing fertility. So creating a farm organism is a very complicated puzzle that is forever changing. In rough terms, on our farm

we need one cow for every acre of off-farm market production and we need approximately two acres of forage production to sustain each cow.

We tend to think of our farms as existing a few feet above and below the surface of the soil. But this is not inclusive enough. For the rock that lies below the soil determines, in large part what the soil is capable of becoming, and the heavens above the farm have a direct impact upon the growth of plants and the interworkings of life. These heavenly or cosmic influences are most easily observed as rhythms. This is a large subject that we only have time to scratch the surface of, but it is important. The primary rhythms are the annual and daily solar rhythms, the phases of the moon, and the rhythms of the zodiac. Activities such as planting, cultivating, pruning, harvesting, and applying special BD preparations show best results when coordinated with these rhythms.

For instance, it is well known that the moon's gravity is a huge factor in the swing of the tides. However, we rarely consider that anything that has water in it is affected by this pull. So, practice has shown that planting seeds 2 days prior to the full moon will germinate more quickly than those that are not will.

It is also helpful to note where the force of life is concentrated during certain seasons of the annual solar rhythm. During the spring, we see that nature's focus is around ground level, with the germinating of seeds. From Steiner's perspective, he views the trunks of trees as "earth mounded up" so even the leafing out of deciduous trees can be viewed as the life force being focused at ground level. Then in the summer, nature is busy with flowering and fruiting above the ground. In the autumn, with the falling of the leaves, increased microbiological soil activity, and in the newly sprouting grasses and clovers, we see a return to the life force being focussed at the ground level. Then in winter, the life force penetrates into the earth. For this reason, it is no wonder that nature provides roots and native temperate cultures ate those root crops during the winter months. This seasonal cycle is much like an in and out breathing of the earth.

This same ebb and flow can be seen in the daily rhythm of the sun, with sunrise corresponding to the spring, noon to summer, evening to autumn, and night to winter. We can get a sense of this by watching the fog as it hovers over the ground in the early morning and lifts in the course of the day and then reforms in the evening settling into the earth. In applying certain biodynamic preparations, we make use of this daily solar rhythm.

So it is through careful observation that life's secrets are revealed. Steiner noted, that there are two complimentary forces that need to be in balance for the growth of a healthy plant. He referred to these as the calcium process and the silica process. It is important to understand that Steiner is not talking about the dead physical matter of calcium and silica as we usually think about these elements, but he is talking about the living processes that work through these elements. This stretches our normal way of thinking about things, but is fundamental to gaining a biodynamic perspective.

If we observe a plant, we discover that these forces come into play at different times during the growth of the plant. When a seed is planted, it is necessary that the calcium forces be encouraged. This force is characterized by a radial growth pattern that we see as the seed sends down roots into the ground and leaves upward. The plant is concentrated on becoming firmly connected to the earth and beginning the photosynthesis process. The growth it puts on during this time tends to be softer and fleshier. And in accordance with how much it grows during this time yield will be determined. The plant is sucking greedily at nutrients and water to increase its size.

As the plant continues to develop, we see another force begins to exert an influence, the silica force. We watch as the leaves of the plant become successively smaller and eventually a bud is formed. It is as if something from the periphery is pushing in on the plant and limiting its previous expansive growth pattern. Steiner refers to this as the cosmic influence. The silica force is related to light and warmth. And it is through this process that qualitative aspects of a plant are influenced. For instance, it is this light and warmth, that effect flavor, aroma, and storage quality. The plant tends to become more fibrous at this stage as well. As opposed to sucking greedily at the environment, one senses that the plant is giving something back as it moves to flower and seed formation.

Modern agriculture has been yield focused and therefore has developed techniques that primarily deal with the first of these two forces, the calcium force. Over emphasis in this direction leads to soft fleshy tissues that are prone to fungal attack and are easier for the beaks of insects to penetrate. Hence, chemical agriculture has been prone to all sorts of problems that have led to increased pesticide usage. Even organic agriculture frequently has had the tendency to simply replace chemical inputs with organic ones while leaving the same thinking in tact. The calcium forces are similarly over emphasized when fertilizing with unripened chicken manure. Chicken manure grows a plant that is very similar in appearance to ones fertilized with ammonia fertilizers, because the nitrogen in chicken manure is also in the form of ammonia.

Biodynamics, on the other hand, strives to achieve a balance between the calcium and silica processes which leads to higher quality plants. Experiments in Europe have shown that if carrots grown conventionally out yield those grown organically, which in turn out yield those grown biodynamically. However once in storage, the weights of the conventionally grown and organically grown carrots start to diminish, as water weight is lost. By the end of the storage period the BD carrots have a higher yield than the other carrots, because of their superior keeping quality.

Steiner indicated two preparations to help enhance each of these two forces. The first preparation is known as horn manure or Preparation 500. It is made by stuffing cow manure into a cow's horn and burying it in the ground in late September. When it is unearthed in the spring, the manure is transformed into the preparation. One takes about 1/4 cup of this horn manure and stirs it in a gallon or more of water for an hour. The water is then sprayed onto the soil prior to planting in the evening. This dose is able to treat up to an acre of land. Using the preparations requires a different way of thinking. One cannot think in materialistic terms, for the quantities being applied are quite insignificant from that vantage point. So, we have to think again in terms of life force. Preparation 500 works as a catalyst to allow the calcium forces to function in a full yet balanced way.

The preparation that catalyzes the silica process is called horn silica, or Preparation 501. It is made by grinding quartz very finely and putting it in a cow's horn and burying during the summer. Only 1/4 teaspoon is needed to treat an acre. It is stirred for an hour like the 500 and is applied in the morning as a foliar spray as a very fine mist. It is applied at the stage of the plant's growth that you wish to encourage. For instance with a carrot one would apply it when the roots begin to turn orange, with tomatoes right after fruit set and during ripening. There have been instances where very dramatic affects have been seen when using this preparation. A friend of mine, who has a large BD cut flower operation, once had a field of Godesia that was in bud but just wouldn't bloom. His accounts were all hounding him for the Godesia he had promised so he decided to spray some 501. The next morning the entire field was in bloom all at once and he was swamped trying to get it all harvested and shipped. Both of these preparations are made and sprayed in accordance to the rhythms we have already touched upon.

Although I know Alexandria Stone has already spoken to you about the wonders of compost, one cannot really talk about biodynamics without discussing compost. Truly well-ripened compost provides a source of fertility that is available to plants much in the same way as it would be found in nature, as a stabilized humus. In this form plants have the choice to take up nutrients, as they need them, as opposed to a force fed chemical diet. But beyond viewing compost as a nutrient source, I see compost as a bio-activator. Our compost has tested out to have over 1 1/2 billion bacteria per gram and over 19,000 cm of fungal hyphae Such a rich and complex

population of microlife stimulates the soil to be able to digest organic matter much more efficiently. Contemplating compost brings to mind the William Blake poem:

"To see the world in a grain of sand,

And heaven in a wildflower.

To hold infinity in the palm of your hand,

And infinity in an hour."

There are six more biodynamic preparations that are inserted into the compost pile. They are made from the following plant parts: yarrow blossoms, chamomile blossoms, the whole herb of stinging nettle, oak bark, dandelion blossoms, and valerian flowers. All of these herbs are prepared in a special way within the rhythms of the season, to make the preparations. Again only small amounts are needed. When the compost is spread upon the land, the effect is that additional cosmic forces are allowed full access to the soil and in return to the plants. The compost preparations help create an environment that is conducive to making the spray preparations, 500 and 501, more effective. The type of compost a farmer put onto the fields is his/her opportunity to communicate to the soil what he/she would like it to be like.

Biodynamic methods are not a panacea for a farmer who doesn't observe good husbandry of the land. One must start with the basic precepts to be found in organic agriculture including crop rotation, green manuring, proper tillage, and the like. Biodynamic crops comply fully with organic law but to be certified as biodynamic, under the Demeter label, further requirements need to be met. These include the use of the biodynamic preparations and working to achieve a balanced farm organism. Although there are specific BD techniques, I view BD not so much as a method as

an approach. It is the training of the farmer to be sensitive to what is happening around him/her and the ability to respond accordingly that is paramount.

Returning to the point of looking at the farm as an organism it is important to look at what the farmer's relationship is in the organism. Is he/she separate from it, or is he/she a part of it? I see the farmer as being the will of the farm organism. This gives us an incredible responsibility to the whole farm and all of the different parts within it. It is incumbent upon us to approach our work with great sensitivity and dedication.

We live in a time when short-term profits are too often the motivating force in agriculture. In biodynamics, we have to view the long run health of the farm, the farmer, and the community. As perhaps a preview to your next topic, I would like to say that I now have come to consider the community as an intrinsic part of the farm organism. I would like you to keep this in mind when Kevin Jones from Full Circle Farm speaks next week on Community Supported Agriculture.

I would like to close with a meditation that Steiner authored, which gives great insight into the biodynamic farmer's mission.

Seek the truly practical material life, but seek it in such a way

that it does not numb you to the spirit that works within it.

Seek the spirit, but not out of spiritual lust or spiritual egoism;

seek it rather because you wish to become selfless in the practical life of the material world.

Turn to the ancient principle:

“Spirit never without matter, matter never without spirit!”

And say to yourselves:

We will do everything material in the light of the spirit,

and we will seek the light of the spirit in such a way

that it enkindles warmth in us for our practical deeds.