The Effects of Biodynamic Farming on the Environment and Food Quality:
A Special Interview With Elizabeth Candelario

By Dr. Joseph Mercola

JM: Dr. Joseph Mercola
EC: Elizabeth Candelario

JM: Eating real, non-processed food is the key to sustaining good health, but how do you do it? Hi, this is Dr. Mercola, helping you take control of your health. Today I'm joined by Elizabeth Candelario, who is from Demeter, which is the Biodynamic certification agency worldwide. We're going to go into the history – which, of course, is Rudolf Steiner – of what that is. Welcome and thank you for joining us today.

EC: Thank you. It's nice to be here.

JM: Okay. Why don't you expand and enlighten us about Biodynamic farming?

EC: That's a big topic.

JM: Yeah. It's a big topic. You're really one of the experts in the United States on that. Actually, before we go there, why don't we go into your history? Because I always find it's useful to understand the person's perspective and how they got into this. Why don't you share with us how you got interested in this? Because it's nothing that's commonly heard of, even in the United States.

EC: That's right.

JM: I'm sure you've got some interesting experiences on that.

EC: I spent most of my career in the wine industry. I always say that the wine industry's a little bit like eating sweets for dinner. It's really fun, but not very filling. Once in a while, I would jump out of the wine industry and focus on non-profit and projects that had a lot of strong social mission. Then I'd have to go back to the wine industry, because I'd have to get insurance for my children or whatever. I live right in the middle of wine country so –

JM: Up in Napa Valley?

EC: Up in Sonoma County. Yeah.

JM: Okay.

EC: I was working as marketing director for a winery in Sonoma County. We transitioned from conventional to Biodynamic farming.

JM: A lot of the wineries do that, because it works.

EC: That's right.

JM: I mean it's not because they have some prejudice or bias. They do whatever works.

EC: Well, you know, it's interesting. Here in the United States, the wine industry was the early adopter in Biodynamic. The reason for that was really two-fold. One is winemakers couldn't help but notice that the best wines in the world were coming from Biodynamic vineyards, wineries like Domaine de la Romanée-Conti and Zind-Humbrecht. Another reason is that a lot of wineries, at least back in the day, were family-owned. That's changing a lot right now.

JM: Just like the traditional farming community.

EC: Exactly. You had winery families that were interested in passing that winery down from one generation to the next. I mean the best example of that is the Frey Vineyards up in Mendocino County, where they literally have four generations of family living [there].

JM: So some long-term orientation. Not short-term, "maximize the profits for this quarter."

EC: Absolutely. That's right. They were really thinking about the ecological aspect of what they were doing and how they were farming. The wine industry is the early adopter. It wasn't unique that the winery that I was working at chose [Biodynamic].

But we were doing a creek restoration on our property to restore the salmon and steelhead habitat. We decided that there was a bit of a philosophical disconnect between that and not getting an organic certification. We hired a consultant. That consultant said to us, "Well, don't stop at organic. You should be Biodynamic." Our response was, "Bio-what?" We didn't even know what it was.

JM: What year was that?

EC: That was about 15 years ago.

JM: Okay. Not that long ago.

EC: Not that long ago.

JM: This century.

EC: Yeah. Exactly. That experience – I not only witnessed the transformation of the estate, but I also witnessed a transformation in the people that we're working with. It was, for me, emerging between my career and the wine industry and my interest in social mission.

JM: I didn't realize that you could apply Biodynamic principles to creek restorations.

EC: Well, watershed conservation is one of the core principles of Biodynamics.

JM: I never knew that. Thank you for that framework on how you came to this. When did you start actually going into and being involved formally with Demeter?

EC: Demeter. It's "De-meter" in Europe and "Deme-ter" mostly here in the U.S.

JM: Okay. So, they're both correct.

EC: Yes. They both are. I joined Demeter about almost 10 years ago.

JM: Okay. After you had real world experience for –

EC: Five years on the farm.

JM: Five years.

EC: Yup.

JM: How big was your farm?

EC: The wine estate was about 90 acres.

JM: Okay. It's a substantial amount of land to implement. With that personal history, why don't we start to explain what Demeter is?

EC: I'd be happy to.

JM: Biodynamic principles. However you want to do it, because there's a lot there.

EC: It's a lifetime of study.

JM: Yes.

EC: But we'll try to condense it down. When I speak to people about Biodynamic who aren't that familiar with it, I always like to start with a little history lesson. Organic is well-known in the U.S. market. Biodynamic is a new concept. But if you trace both back, you'll understand that they started at the same point in time, as a response to the industrialization of agriculture.

Rudolf Steiner was a polyglot. He was a very smart man. He was interested in economics and social systems. He's most known here in the U.S. as the founder of Waldorf education. Towards the end of his life, he was approached by a group of farmers that were very concerned about what they were seeing on their farms. This was back in the 1920s.

JM: Okay. So not even 100 years.

EC: No. A little over 90 years ago. Yup. Actually, the 100th anniversary will be in nine years.

JM: Okay.

EC: What was happening was, really, after World War I, chemical companies got very crafty repurposing nitrogen that had been used to make bombs as fertilizer and nerve gas as synthetic pesticides. They had these stockpiles of these chemicals. They realized that they had application on farms.

Now, this was around the time of the industrialization of the manufacturing model, where the idea was that you wanted to produce the highest output at the lowest cost. It's not surprising that that kind of industrial view also influenced the way people started thinking about their farms. This idea of importing things from the outside, these natural resources, to increase production really mirrored that industrial model.

But what was happening was that farmers were really beginning to notice that their seeds weren't germinating. Their animals weren't as healthy. The food wasn't as good. Because of that, they approached Steiner and asked him for his perspective on what was happening on their farms. He answered them in what is now referred to as *The Agriculture Course* or *The Foundations for a Renewal of Agriculture*. What he basically said –

JM: Was that the course that he created?

EC: Yeah. It was a series of lectures he delivered on a farm.

JM: Interesting.

EC: They turned those lectures now. You can read *The Agriculture Course*. They transcribed those lectures. I mean, they're available now in English.

JM: You mean there's no YouTube video?

EC: There's not a YouTube video. There are a couple of movies. But what he said was really simple and quite revolutionary. He said, "You need to stop thinking of your farms as factories and envision them as living organisms – self-contained, self-sustaining, following the cycles of nature, and able to create their own health and vitality out of the living dynamics of the farm."

An interesting notice, 17 years later, there was a gentleman in England named Lord Northbourne, who wrote a beautiful book called *Look to the Land*. In that book, he talked about chemical farming versus organic farming, coining the term "organic" from Steiner's view of the farm as an organism. Again, if you go back in time far enough, you'll find that Biodynamic is really the origin of organic farming.

JM: Terrific. Yes. It's all about bringing back the life to the soil and avoiding the decimation of the topsoil with these synthetic fertilizers, these salts, which are toxic to microbial life. They do work the first time you use them, but it's just a progressive downhill decline after that.

EC: Yeah. Absolutely.

JM: Why don't you tell me how Demeter got started?

EC: Well, that group of farmers who were lucky enough to be at Steiner's lecture –

JM: How many farmers were there?

EC: Boy, that's a good question. I don't think I can tell you that off the top of my head.

JM: Probably under 100. Maybe a dozen.

EC: I think there were maybe 20. I think there weren't a lot.

JM: I remember one of the most instrumental presentations I ever attended in 1995 – Dr. Ron Rosedale – inspired and helped me understand the importance of insulin in basic physiology. There were literally 20 physicians there. It was crazy. It's these key landmark presentations, interestingly, that are not attended by many people.

EC: I think so. He died prematurely a year later.

JM: Wow. I didn't know. So it was right before the end of his life.

EC: It was one of the last subjects that he really tackled before he died.

JM: Wow. Did he study it quite a bit or because he was a polyglot, it just rolled off the tip of his tongue and he kind of understood it?

EC: He was a leading expert on Goethe. He understood natural systems and biological systems. He really applied that perspective to agriculture. I don't think it was a big leap. I think he was very influenced by peasant agriculture and thinking from other people in India and other places around the world.

JM: He traveled to India?

EC: I don't know that he traveled there, but I know that he was influenced.

JM: Okay.

EC: But that group of farmers actually got together after the agriculture course. They decided that what he had talked about was so important that they wanted to codify it in an agricultural standard.

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What's really remarkable is they wanted to ensure that that standard maintained its integrity in the marketplace by developing a strict certification program. Demeter was formed in 1928 and remains the oldest ecological certification organization in the world.

JM: It was formed in Europe, I assume.

EC: It was formed in Europe, in Central Europe.

JM: In Germany?

EC: In Germany. Yeah. Isn't that remarkable? Imagine an eco-label back in 1928.

JM: Yes. They actually had a formal certification process with a label that they could stamp if they wanted to on their product.

EC: Absolutely.

JM: Wow. Demeter – "De-meter" in Europe, the way it's pronounced – Is that certification well-recognized within the European population?

EC: Certainly, especially in Central Europe. In Germany, 10 percent of the organic farmland is Biodynamic.

JM: Wow.

EC: There are thousands of products in the marketplace. There are even Demeter stores.

JM: Yeah. Just to let you know – you probably know, but to let our viewers know – it's that we fully embrace this concept. We are in the process of converting most of our products from organic to Biodynamic certified and locating the sources of the raw materials to do that, because they do exist. A lot of them aren't in the United States yet, but we're in the slow process of conversion.

EC: We're so happy to have Dr. Mercola products. We're so excited about it. Also, you have such a great following. To be able to really help educate the folks that follow you to know what Biodynamic is, why they should care about it and why they should support these products and ultimately these farmers by purchasing them.

I just want to say that one of the products that you're going to be releasing in the fall comes from an Egyptian farm called SEKEM. SEKEM just celebrated their 40th anniversary. Their commitment to social mission is incredible. We're really excited to share more about that product.

JM: Is that a common trait among Biodynamically certified organizations? That they have a social purpose, so it's not just about selling a product? There's an underlying motivation for them.

EC: You know, there isn't a fair trade type of requirement built into the Demeter standard yet, although with our colleagues around the world, that's definitely in discussion. But you find that because of the values that are just implicit in Biodynamic agriculture, you see lots of examples of projects that have a huge social mission component.

JM: Let's make the transition to help our viewers understand why they should be excited. We've given them the history, but we never really told them what that results in. I mean they can kind of guess it's going to be higher quality, more nutrient-dense food, but maybe you can expand on that.

EC: I'd love to. I think the easy way to talk to people about what biodynamic is is to kind of think of it in the context of organic. What we really focus in on is the standard itself, what is required by the NOP, the National Organic Program, for a product or farm to be labeled organic, versus what's required from Demeter to label a farm or product as Biodynamic. I want to emphasize there are many, many farmers that go above and beyond what's the basic requirements for them to be labeled organic.

But really, organic is really about what you don't do. In organic, you don't use synthetic fertilizers or pesticides. You don't use genetically modified organism (GMO) seed. You do everything you can to avoid GMO contamination, no sewer sludge on the farm and no irradiation of products.

What's happening with the burgeoning interest in organic, which is a really good thing, is there's a lot of pressure on that standard, so that you'll have products coming into the market that do the base minimum of what is required, sitting right next to another product that's also labeled organic that does much, much more.

JM: Yeah. It's almost become meaningless because of the perversion and the degradation of the quality. Some of these companies or farms are just finding loopholes, essentially. They actually make it just as bad as conventionally grown food.

EC: I think there's a lot of pressure on the organic standard because of the huge interest in the marketplace and brands that want to do the base minimum to be able to label organic.

JM: Yeah. Because they could get more income for it, more revenue.

EC: Right. Biodynamics fundamentally maintains that core principle that the farm is a living organism. We start by saying that the organic standard is the base to the Demeter standard. If a farm is Demeter certified, it means that it's met the organic standard, even if it's not certified organic. But then, the standard is much broader, maintaining that idea of the farm as a closed system. You look for solutions to disease, pest and weed control to come out of the farm systems itself.

In organic, you can have a 1,000-acre conventional farm and not use those prohibited materials in 10,000 acres and get that 10,000 acres certified organic. In Biodynamic, again, the farm is an

integrated living organism. The entire farm needs to be certified. Ten percent of that farmland needs to be set aside in biodiversity. That can be naturally occurring, like oak groves or waterways, or it could be created through insectaries and hedgerows.

As I said, if a farmer or a Biodynamic farmer, when they're having a fertility issue, in conventional farming, a conventional farmer might say, "Okay. Let's just bring in those synthetic fertilizers." An organic farmer might say, "Well, let me look and see what organic fertilizers I can bring into the farm." That's a step better, but you're still mining a natural resource and importing it to the farm. A biodynamic farmer's going to say, "What is it about my farm system that isn't capable of delivering the fertility that my crops need?" They answer that from a biodynamic toolbox, which may be green manures, composting, cover cropping and incorporating animals. The mindset is quite different.

There are eight Biodynamic preparations. They're made from materials that a farmer can find on the farm. They're used as compost amendments, foliar sprays and soil amendments. In organic, there's just one processing standard for all products. In Biodynamic, there are 16 processing standards. The intention is to allow the integrity of the agricultural ingredients to define the finished product, so you have high content of Biodynamic ingredients with minimal processing. It's a real foodie standard.

JM: I just got back from Gabe Brown's farm in Bismarck, North Dakota, who is one of the leading pioneers in the United States of regenerative agriculture in helping motivate and catalyze transformation of conventional farmers to what he's doing, which is quite magnificent. It sounds very similar to the Biodynamic standards.

He uses the green manure, cover crops and wide diversities. He integrates holistic herd management into the system. He has about a 1,000-herd cattle, sheep, chickens and hogs. I'm wondering is integration of the animals into – Is it part of the standard that if you don't have the animal integration, you can't become Biodynamically certified?

EC: Having animals on a farm is core to the principle of a Biodynamic farm, but also core to the principle of a Biodynamic farm is animal welfare. While there is a requirement for farms to have animals, we do create exemptions for farms that don't have the wherewithal for whatever reason to have animals. What we do find in Biodynamic, because it's really about a path of continual improvement towards this ideal of a closed system that's never really met, is that farms that start out without having animals often, over a period of time, will gain the confidence and the infrastructure that will allow them to bring animals into the farms.

JM: Especially for large parcels of property, it seems to be the wisest strategy. It becomes very, very difficult to achieve that optimized soil structure without the integration of herbivores into the system. It's such a dramatic difference. I just got back a few days ago to witness it and see areas where the animals weren't integrated and see what happens to the property when they are. It's almost a magical transformation.

EC: It really is.

JM: Yeah.

EC: Above the ground and below the ground.

JM: Yes. Of course. Because you can see it in the life. It's interesting because Gabe's farm was in the middle of a lot of other conventional farms. He would tell me that the deer would only come to his property to eat. They would avoid all the GMO corn. He could see 60 to 70 deer walking across his property. They just stay away from the other properties, which is a problem.

EC: Sure.

JM: They have to take – But, you know, it's okay to feed some deer. How difficult is the certification process? Is it very costly? What does it involve for people who are interested? Is there a minimum amount of property that's required?

EC: Nope. In fact, our little house in downtown Hillsborough, California, we have just a typical little lot. If we wanted to get our house certified, we could, because we definitely meet the standard in our own little backyard.

JM: Good.

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EC: There is no size. That goes the other way. Some of the largest biodynamic farms in the world are these massive tea plantations in India. Scale is not an issue either, even though some people will say that.

JM: How many acres? Ten thousand? Twenty thousand?

EC: Yeah.

JM: Excellent.

EC: The largest Biodynamic farm in the U.S. at this point is almost – We have two or three farms that I can think off the top my head that are over 1,000 acres.

The certification process itself is very similar to organic. There is a base standard that needs to be met. A farm or a brand that wants to get a certified product submits an application. There is an inspection of the farm or the processing facility that takes place to ensure that the standard was met. That takes place every year. The cost is very similar to organic.

JM: Approximate what other costs are there?

EC: Well, there is the certification or application cost, which can be 250 to 750 dollars.

JM: Relatively minor.

EC: Yeah. And then the inspection, again, we try to pool multiple inspections in one geographic area, so that the members can take advantage of sharing the cost of an inspector coming to visit.

JM: Good. The reason I'm asking and I'm particularly curious is because I recently purchased a vacant lot next door to me. Especially after coming back from Gabe's farm, I was absolutely inspired to create the highest quality possible piece of land as an experiment. I've got the resources to do it and the network in the community. I'm definitely going to get it certified.

EC: We would be so honored to have your farm certified.

JM: Well, it's not a farm. It's my house. It's an acre next to mine. It's just part of the property.

EC: Yeah. The Demeter standard is a beautiful agronomic document that can teach anybody who wants to farm better and how to go about doing that. Whether one ultimately chooses to get certified or not, that's a beautiful resource that's been basically given to humanity by Dr. Steiner.

JM: How could one review this if they were interested?

EC: They just go to the Demeter website. It's Demeter-USA.org. We have a section called "For Farmers." The standards are listed there.

JM: For those who might be phonetically challenged, Demeter is D-E-M-E-T-E-R, hyphen, USA – no periods, no dots – dot org.

EC: Correct.

JM: Alright. Good. I'm sure there are some other good resources there.

EC: There sure are.

JM: Would there be a list of the farms that are certified?

EC: Thank you so much for asking. We have a directory of every certified Biodynamic farm and brand in the U.S. That's on our website. You can also find that at BiodynamicFood.org.

JM: You have two. That's great. What has been the interest in Biodynamic? Has it been exploding exponentially? What's the status? If it's been increasing, what do you believe is responsible for that?

EC: Well, I wish I could say that it's exploding. But I will tell you that it's really hard when you're a small agricultural non-profit to really do the work of educating the entire marketplace of the United States. We actually have a sister organization, the Biodynamic Association. They do a lot of education as well.

JM: Are they U.S.-based too?

EC: Yeah. U.S.-based, but it's also an international organization, Biodynamic Association. What happened was, as I mentioned, the wine industry was the early adopter. Over the course of 15 years, we have now over 80 certified vineyards and wineries in the U.S., third in the world, after France and Italy. But there weren't products in the national marketplace. The most of our other members were small family farms selling locally and regionally. The Community Supported Agriculture (CSA) Movement, in large part, in the U.S., grew out on the Biodynamic movement here.

JM: I didn't know that.

EC: But, really, there weren't products in the national marketplace. That was a real challenge for us, because we had media contacting us saying, "Elizabeth, I'd love to write a story about Biodynamic, but what other products in the national marketplace are out there?" There weren't any. We realized that we really needed to focus on getting some national brands to get products in the market so that we could use those products to educate consumers. Therein lies a bit of a Catch-22, because I like to say it took the organic industry 35 years to get where we are today.

We're not nearly that patient at Demeter. We worked in tandem with Whole Foods starting five years ago to really choose companies and brands that were values aligned – ecological farming, philanthropic in their communities, really intimately concerned about product quality – and approach them to say, "Would you consider bringing these Biodynamic products into the market before consumers even know what it is?"

It's a wonderful story because we now have 25, some of the leading national brands, soon to be joined by you as well, like Lundberg Family Farms, Lakewood Juice, The Republic of Tea, that have worked really hard and invested a lot to bring these products into the market.

I would say that the supply chain understands Biodynamic, the brands that we've talked to, the retailers and other important players. But we're just on the verge of really doing the consumer education that we need to do.

JM: The key and the intention of this interview is to help you understand and recognize the importance of that seal or that certification label, which we'll put on this article. That's going to be the new gold or actually platinum standard for high-quality, nutrient-dense food. That's what you're going to be seeking to find. We're absolutely committed to informing the public about this. I think we can catalyze and accelerate the adoption process.

Now, I'm wondering if one of the strategies is to target specific producers who are already organic and convince them. What's going on in that area? Because it would seem that that would be a critical part of the process of increasing the number of products.

EC: It's so critical, Dr. Mercola. Actually, you referenced it earlier. A lot of the products that are in the market right now are using ingredients that we've sourced from around the world, because, as we said, the European market is a much more mature market. You have communities like SEKEM in Egypt that have been there for a long time, where we're able to source ingredients.

But ultimately, we want a lot of these ingredients to come right from the U.S., because at the end of the day, that's the notion.

Our vision at Demeter is to heal the planet through agriculture. We do that through transitioning agriculture from conventional to organic and ultimately to Biodynamics. The beautiful strategy here is that we're really using the marketplace to drive the adoption of Biodynamics on the farm. That's where our big challenge is right now. How do we get to talk with farmers that really want to keep moving the needle towards a more regenerative standard like Biodynamic?

JM: I think part of the process is clear. From my perspective, it's to connect and network with the resources out there that have been doing this for a while, like Acres, Gabe Brown and a lot of the other leaders who are actually doing this already, even though they're not formally certified. I'm actually quite surprised that there aren't much larger farms. Because 1,000 acres is certainly a big piece of property, but it's a relatively small farm as farms go. Most of the farms I visited are several thousand acres. Gabe was farming 5,000.

You know what strikes me too, because I'm flying home from Gabe's, from Bismarck to Chicago, you look out the window – I happened to be on one of those rare conditions where I had a window seat, because I typically take the aisle – you just look down and it's just like all farmland from there to Chicago. Every one of those or almost 99 percent of them are farming the wrong way, destroying the topsoil, ruining the potential to grow anything close to food that would sustain us as a species. It brings a tear to your eye when you think about it and all the potential there.

We are just on the beginning cusp of starting to catalyze this necessary transformation. He started 91 years ago, but we've got a lot of work to do.

EC: We really do. If you don't mind me getting on my soap box right now.

JM: Yeah. Please do.

EC: Paul Hawkin just wrote a book called *Drawdown: The Most Comprehensive Plan Ever Proposed to Reverse Global Warming*. I really recommend it. In that book, he really –

JM: How do you spell his last name?

EC: Hawkin, H-A-W-K-I-N.

JM: Just like it sounds.

EC: In that book, he talks about in order to address climate change, we need to do two things. We need to address emissions. That is the burning of fossil fuels, the agricultural activities that actually release carbon into the air. But the other half of the equation is we have to sequester. We have to pull that excess carbon that's in the air back down and into the soil.

JM: Which is probably a more important variable in the equation.

EC: It absolutely is.

JM: It's really not the burning of fossil fuels. A lot of people, probably the majority of the population get annoyed thinking that the media is pointing the finger at them because they're using a combustion engine to burn gas, when actually that's part of the problem, but it's relatively a minor part. It's commercial agriculture that's doing the damage.

EC: And there's so much focus on emissions. You saw that after Trump pulled us out of Paris, where all these companies – it's quite heartening actually – states, cities and industry leaders came out and said, "You know, we're going to double down." But all the conversation was around emissions, which is important. It's very, very important, but the other half of the equation is we need to sequester carbon.

Guess what happens when we pull carbon out of the air. It happens every day when the sun is shining. That's what photosynthesis does. It takes that carbon from the air and pushes it down into the soil. Not only are we sequestering carbon, we're making more healthy and nutritious food.

JM: But not when it's done through conventional methods, at least not heartily at all. I mean it's just like an order or two of magnitude below what the potential could be if you integrate these principles.

EC: That's what I'm saying. In conventional, sequestering carbon doesn't happen because conventional fertilizers stop that process where the plant is basically rewarded by the microbiota in the soil to pull that carbon out of the air. Synthetic fertilizers kill the microbiota in the soil. You don't have that carbon drawdown that you're looking for in conventional agriculture.

By definition, the more carbon you put in the soil, the more you're building your soil, the more you're building a resilient soil. You're building a water conservative soil. You're building the potential to have incredibly healthy food.

JM: The typical measurement of that – because you can actually measure this in the lab, you can send your soil out to be analyzed – is the organic content. Most farms are running organic contents below 2 percent, whereas the ideal in a virgin Midwestern prairie, with all the bison and the buffalo going around, and having tens of thousands of years of grasses growing and being trampled in and doing this holistic herd management – Actually, it's not management, it's done naturally – was about 7 to 8 percent.

EC: Right.

JM: You could get that done in a lab, or you could look at the soil and break it up. If it's dark, deep black, rich and smells good, that's good soil. It's probably close to 8 percent if it's that dark black, because carbon's black.

EC: There's a wonderful initiative that started in France at the same time the Paris talks were going on. They did the math and they found that if we increased the carbon, in other words the organic matter in soil, in all the agricultural land around the world by just 0.4 percent, four-tenths percent, climate change or global warming would stop, because so much carbon would be drawn out.

JM: Yeah. I had no idea.

EC: It's called the 0.4 Percent Initiative (4 Per 1,000 Initiative).

JM: That's crazy. Because it's so easy to do. And literally, relatively and rapidly, you can do this if you just stop tilling the soil. There's a pretty good movement against that now, but they're still using these synthetic fertilizers that's killing the life in the soil.

Wow. That's encouraging. That's definitely encouraging. Still, I'm not really well-versed in all the principles of Biodynamic. I definitely want to review that course. How many pages is it?

EC: The Demeters?

JM: Like 1,000?

EC: No. It's not at all.

JM: The course that he did.

EC: *The Agriculture Course*?

JM: Yes.

EC: Yes. It's very heady reading. I've read it twice now, almost three times. I've done it with a reading group.

JM: But how many pages?

EC: Hundreds.

JM: It's under 1,000?

EC: Yes. It's definitely under 1,000.

JM: Okay. Yeah. Because I read about 200 books a year or so.

EC: Wow. That's impressive.

JM: I could digest that. A lot of them are easy. When you're reading health books, the sad reality of life – I think it's just not related to health field, but certainly in the health field because

that's the one I concentrate on and focus – there are very few innovators. Very few. Most of these people are just rewriting what other people have done.

Steiner was an innovator. It's hard to read innovators' materials because it's all new. You kind of have to wrap your head around it. But these other people's books, you can read them in an hour or an hour and a half and it's done. Because there's nothing new there. I mean there are a few little twists, but hardly anything new.

Anyway, I look forward to digesting that and embracing it. Definitely, my property's going to be Demeter-certified. But I'm confused about some of these amendments. It looks kind of mystical and almost woo-woo. I think we should address that, because I would suspect many people have heard of these. Is this an absolute requirement to integrate this? How do you do that? I know a lot of these involve animal products. The ones that come to mind and I think that many people heard of is the cow dung and the bull's horn and to bury them in some phase of the moon.

EC: Right.

JM: That sounds pretty woo-woo.

EC: Yes.

JM: There's no way you can dispute that, but obviously, there are some support. It seems to work. But why don't you comment on those types of amendments?

EC: Sure. Yeah. First of all, the use of Biodynamic preparations is a requirement of the Demeter standard. I often say that if one reads the Demeter standard, there's no place in that standard that reasonable people would disagree about, because it's such a strong agronomic standard, except potentially around the efficacy of the use of the preparations, which is a very important conversation to have.

JM: It's a cost-benefit argument also, because these preparations take a significant amount of time, as I understand – obviously, I'm a novice at this – to prepare until you get the reward, that amplification of that investment of time and resource.

EC: We could do a whole day just on talking about the Biodynamic preparations, but I'm going to try to talk about it in a really simple way, because you can understand the preparations on a very practical level. The more you learn about them, the more you can understand them on a more esoteric level, let's say that. But I'm going to just talk about them on a very practical level.

There is preparation 500, which is taking cow manure, putting it in a cow horn, burying it over the winter. There is preparation 501, which is taking silica, putting that in a cow horn, burying it over the summer. And then preparation 502 through 508, which are basically herbs – chamomile and valerian – those are used as composed amendment. Let me start by saying –

JM: Excuse me for interrupting. But what is the density? If you've got 1,000 acres, how many of these horns would you need to put in?

EC: One cow horn's worth of manure per acre.

JM: Wow. Relatively small. I thought it was like every 10 feet or something. That is quite extraordinary, even from a regenerative agricultural perspective, because you wouldn't anticipate that would have much of an impact in an acre. I mean just rationally.

EC: Exactly. But you know what analogy I'd like to use for people is to think about a sourdough starter. How much tiny dot of sourdough starter will ultimately create endless loaves of bread? Or an inoculant for Kombucha, how much of that? Or yeast in wine.

JM: That makes sense. It's a catalyst.

EC: It's a catalyst. Exactly. I just want to say that when you think about the idea of the farmer not being dependent on these chemicals that the chemical companies are trying to save and saying, "How can I affect the fertility of my farm, the health of my compost pile, just from the materials I can find on my farm?" These materials were things that farmers already had on their farms.

I would say, to just talk about the 500 – First of all, putting it under the ground in the winter creates a constant temperature. It's the refrigerator where that cow manure can age. When you pull it up and you pull that out on the counter, it smells like chocolate. It's this beautiful material. It's put in water. It's dynamitized by creating a vortex with it and really stirring it, and then spread on soil.

JM: It doesn't stay there. It's sort of baked, so to speak, in the oven or frozen in the oven over the winter.

EC: Then add it to water.

JM: Yeah. Ideally vortexed and spread in some compost tea over the property.

EC: Sprayed as a tea. We have research on our website that shows increased microbial life in the soil based on that. That's really not surprising when you think about it.

JM: Is that used in a foliar spray too?

EC: That's the silica.

JM: The silica is in the foliar spray.

EC: The silica is used as a foliar spray.

JM: Okay.

EC: I'm getting ready in my own mind to think that this is how conditioned we are. We're so used to it. It might not be okay, but we accept the notion of these synthetic fertilizers and pesticides, and think, "Huh. Synthetic fertilizer pesticides. It's nerve gas. It was materials used to make bombs." But the notion that a farmer would take a cow horn and put cow manure in it, put it under the ground in the winter when the temperature's consistent and use it. That, somehow, is this woo-woo notion.

JM: Well, it is because, I don't think – At least I was never exposed to the second part of the step, which is to actually put it in a foliar spray. Now, that makes sense. Because if it was just stuck in the soil – I mean those microbes travel, but it's hard to travel hundreds of feet and yards. That would be a challenge. But now, that makes perfect sense. Now, another pragmatic issue is – Is there a company that makes these preparations where you can buy this or does it have to be made locally?

EC: There is one wonderful company called Josephine Porter Institute (JPI) and a second that just started called Biodynamic Source. They make beautiful preparations.

[-----40:00-----]

JM: Perfect. The actual practical challenge of implementing these amendments is relatively minor. You just have to pick up these –

EC: Yes. What we found in the path of Biodynamic is continual improvement. What we find is that Biodynamic farmers over a period of time gain confidence using the preparations. Often, they'll join a group where they make them together, and ultimately start making them themselves.

JM: Okay.

EC: But there are lots of resources out there.

JM: Yeah. It's not as time-intensive as I was thinking. I was thinking, you know, making hundreds of these cow horns and filling them with cow manure. If you have an acre, it's two and then it's spread. There are resources for it.

I'm wondering about another foliar spray, which would be minerals extracted from the ocean. In what would appear to be somewhat a Biodynamic principle, from a vortex, where it actually extracts out the salt, sodium chloride. High amounts of sodium chloride can be toxic to most plants. They're used to kill them sometimes. I'm wondering. Is that something that's integrated?

EC: Again, the notion is self-sufficiency. That would be a material that – unless you had a farm that was near an ocean, I would say –

JM: I do.

EC: Yeah.

JM: I'm half a mile away.

EC: That's right. You do. It's something that the standard itself would ask why are you importing that material and is there a way that we can address that need out of the farm system itself?

JM: That's a good point. But I could probably make some good arguments on why it's useful, because most of the life came from the sea. Almost all the minerals are there. They seem to be a bottleneck in many of the biochemical reactions. You don't know which one it is. It's hard, unless you do an extensive analysis. Even then, you're playing god because we don't know the whole picture. So if you spray them and you give them in abundance, especially in the leaves at the right time, when the stoma are open, I mean they can take what they need and the rest is non-toxic. It's just about as natural as it can be.

EC: Maybe we can do a field study on your farm.

JM: Yeah. I look forward to that. I really do. I really want to make this a showcase property that's producing food for the community.

EC: That's fantastic.

JM: Coming back from Gabe – I didn't have a scale of the scope of the amount of land used to produce, but I saw the garden plot that he had that was feeding four families. It's relatively small. I mean it was the size. You would know this and maybe you could expand on it, but it shocked me that the size would fit in most people's property already that's loaded with grass. I mean it's not that big.

EC: It doesn't take a lot of space

JM: Yeah. I know that not everyone owns a home. I get that. A lot of people rent. It's just an impractical thing to do. But then there are community gardens. You could participate in them and catalyze your community to this awareness. We can almost be guaranteed that virtually no one there is going to understand this.

EC: Right.

JM: You can be part of the creation and regenerative process by spreading this message and information. Believe me, you are on the leading edge. Hardly anyone knows this. This is less than one percent of the population. Would that be fair?

EC: That knows about Biodynamic?

JM: Well, they may have heard of it, but really understand it and understand the principles.

EC: Maybe it's up to 3 or 4 percent.

JM: Is it that high?

EC: I hope so. I don't have any idea. Again, I'm just talking about the U.S.

JM: Well, it's still low. Of course.

EC: We have a lot of work to do.

JM: Yeah.

EC: Yeah.

JM: I'm really excited to be part of the process to do that and get behind it, because the bottom line is, folks, the organic standard is bastardized. It almost doesn't mean anything now. It's better than nothing, but not much. This is because of the integration of corporations and the federal regulatory agencies and the monopoly they have over those and how they can pass things through and find loopholes and create them.

I mean it's so sad to see these companies, these organic companies – well, maybe not organic companies – but companies committed to health and good food, and then they sell out. I mean I've seen it so many times in my short career. They get to a few hundred million dollars in sales and then they cash out. They've created the branding, the labeling, the people and the awareness that it's a healthy product. Then it's bastardized. It's totally changed. Most of them just go non-organic. They never make a big deal out of when people assume it is.

EC: Yeah.

JM: I'd like to think that those companies aren't going to be successful as the years go by. You know, the millennials are not fooled. They really want an authentic story. They really want to know where their food comes from, how it's made. They really want to know the values of the company that's representing it. I think that bodes well for the maturation of the natural food industry. I also talk to a lot of natural food companies that understand that in their sustainability initiatives, they have to be thinking in addition to packaging and transportation, what's the agriculture that stands behind their products.

I really think that it's a clarion call right now, especially for the natural food industry, to really be focusing on regenerative and Biodynamic agriculture. Because at the end of the day, they're uniquely suited to address this issue of sequestration in a way that other industries are not. Consumers have so much power in this. Every time we go to the grocery store and spend your grocery dollars in the foods that you choose, you're voting for those companies.

JM: And we can have enormous influence. We did. We have been. Roundup is now poison-labeled in California. If that isn't a victory, I don't know what is. Just be careful. There is no way the U.S. Department of Agriculture (USDA) Organic label represents regenerative agriculture. Most of those labels are farms that are actually not using cover crops, not integrating holistic

herd management and having lots of bare soil on their farms, which is ruining the microbial life in the soil.

We're actually going to have a line of clothing in the fall of USDA Organic, but I think that's a temporary one. Our focus and goal is to have it Biodynamically certified.

EC: It would really be the first Biodynamic textiles really represented in the national scale here in the United States.

JM: Yeah. That's our goal.

EC: It's really exciting.

JM: I mean, we're starting with organic, which is like hardly available anywhere. They do have them, but we're working with Marci Zaroff, who I interviewed recently. She started the first organic textile mill in the United States. I don't know what the standard of certification. But it's a different standard than USDA. It's a higher standard that they're using.

EC: Great.

JM: It's good. It was a great pleasure to meet you and work with you. Thank you for inspiring me to certify my piece of property to be Demeter certified.

EC: Thank you so much. We're so grateful for everything that you do, Dr. Mercola.

JM: Alright. We can change the world. You can change the world too by spreading the message. Please do.

[END]