FARMER TO FARMER podcast

EPISODE 110

Jean-Paul Courtens on Creating Soils and Farmers at Roxbury Farm and the Hudson Valley Farm Hub

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Chris: It's the Farmer to Farmer Podcast, episode 110, and this is your host Chris Blanchard. JJean-Paul Courtens is most famous for being the founder and owner of Roxbury Farm in New York's Hudson Valley. He operated Roxbury Farm from 1990 through about 2015, when he started work with the Hudson Valley Farm Hub to create and then to run a professional farmer training program, where he is now the Associate Director for Farm Training. Roxbury Farm is a 245 acre integrated farming operation with a hundred acres dedicated to vegetable production for a thousand member CSA. Jean-Paul shares the details of Roxbury's green manure rotation, the details of how they use unique crops, careful scheduling, and a summer fallow period to clean the fields of weeds and pathogens allowing for more efficient field operations.

We also discuss the details of the semi-permanent bed system that complements the soil building cover cropping program. Jean-Paul's success as a farmer and his distinctive leaderships builds upon the recognitions of his skills as a teacher and mentor in organic practices, land stewardship, whole farm planning, and farm business development and we discuss how he brings this all to bear in the pro-farmer training program at the Hudson Valley Farm Hub. Jean-Paul also shares some of the techniques that he used at Roxbury Farm to train employees and establish expectations, as well as to help people avoid mistakes and misunderstandings.

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Jean-Paul Courtens, welcome to the Farmer to Farmer Podcast.

Jean-Paul: Hi, Chris. Thank you for having me.

Chris: I don't know if you know this but for the 100th episode, I had a friend interview me for the show and she asked me who were people on my bucket list to get on this show and you were one of them, so I'm really pleased that you're here today. Thank you.

Jean-Paul: Thank you. I feel quite honored that you mentioned my name.

Chris: All right, I'd like to start off by having you kind of give us the lay of the land in your life. I know you've got a couple of projects going on and the new work that you're doing with the Hudson Valley Farm Hub, even though I think you're more known for the Roxbury Farm work that you've done. If you could just tell us about where you are and what you're doing?

Jean-Paul: Sure. Yeah. In 1990, I founded the Roxbury Farm and that has gone from basically five acres of vegetables now it's becoming a 425 acre integrated farming operation. Whereby it's pretty solid. One of the things that I've always done at Roxbury Farm is I work with apprentices. Very early on in my career, I realized that the word apprentice in here often is not really the way that we use the word apprentice in Europe, where it means that you're doing a formal apprenticeship as part of your agricultural education.

In the early '90s already, a group of farmers and I came together and we formed the CRAFT program, the Collaborative Regional Alliance for Farmer Training. It was a collaboration between the very few organic biodynamic farmers that were in the area in the Hudson Valley and the Pioneer Valley of Massachusetts. We really had to scrape together the 12 farmers that were actually working at that time in a pretty large area. We all felt the same way, we wanted to do more training. Training has been dear to my heart.

About three years ago, I was invited by the director of the Local Economies Project to become involved here with the possible purchase of a large tract of land and they wanted to incorporate some farmer training. He got my ear and said that's very interesting. Initially, I was hired as a consultant to help them in a transition to organic agriculture.

This is a 1200 acre property, actually it's 1600 acres with 1200 acres of tillable land. That was a farm predominantly in sweet corn. It was a sweet corn operation that you have a big hydro cooler that used to be here and a big packing line and large harvesters. They wanted to transition this farming operation to organic method. I worked very closely with the farm manager to put some rotations in place to prepare for this organic transition.

Then the second conversation started that they said, "We want this really to be a research and education center. It's going to be a non-profit. It is a non-profit and would you like to be more involved with creating curriculum for a farmer training program?" That's really where I got more deeper involved and that led to me becoming full time employed here as the Associate Director for farmer training at the Farm Hub. We're going now in our second year with our pro-farmer program. We had

three pro-farmers in the first year who are going to the second year and then now we're starting with the second cohort of five pro-farmers, so we'll have eight pro-farmers here working with us at the Hudson Valley Farm Hub.

The idea and what really got me excited about working with them is really the vision that the director brought from LEP brought to the Hudson Valley Farm Hub, which is guided by a triple bottom line, is that it's not good enough to just create a successful farmers and to have people economically viable. We also have to think about the social relationship with thinking about equity, in general, that is often absent in the farming community, not only for farmers, in for example, having access to land but also with farm workers. Then of course the ecological component is very deeply part of our mission here.

It has been a really wonderful and exciting opportunity for me to be a pioneer again, which I was when I founded Roxbury Farm. For me, pioneering is definitely in my blood. It's something that I couldn't really pass on and here I am.

Chris: You know, I've done a lot of reading about conventional business and conventional entrepreneurship and it's something they talk about a lot is how much different it is to start a business or to begin an enterprise than it is to maintain something and how oftentimes the people that are the best at starting and growing something aren't necessarily the people that are best at keeping it running in the long term because it's two entirely different skillsets. I love that you've done this creation and now you've kind of stepped on to this next thing.

I'm really interested in the Farm Hub because like you said, there's a lot of apprentice programs, internship programs out there, that I feel like oftentimes, and I know we used them this way on our farm, the various vocabulary that we used, it was a source of cheap labor rather than being a source of real in-depth structured farm training. Then I've also seen there's a lot of incubator programs out there now where people are given a half acre or three quarters of an acre and some access to farm machinery but it seems like you've got something that's a little bit more integrated and wholly thought out. Can you tell us a little bit about how you're actually doing the training there at the Farm Hub?

Jean-Paul: Yeah. The pro-farmers there are actually full time employees. They get a salary, they get benefits, it includes a wellness fund. That's one thing that's different. They're clearly, they're employees at the farm, even though significant amount of time, about 20 hours a week or so is spent on training. We do regard if anything we really felt it was important that we give them an academic foundation to work from, especially if we want to reach out to people who otherwise do not have access to farmer training. I have to admit that many of the apprentices that have come to Roxbury Farm, they were in a position whereby they could afford to work for $1,400 a month plus housing or something because even though they had four years of college degree behind them, if they ever decided to do something different, they have usually a career to fall back on that would pay them a decent amount of income.

We also would like to include people who really would not have that opportunity. So

for us paying them has been an important principle. The other one is that yes, you're right, there's a lot of training opportunities. There is actually a multitude of choices for people who wants to get into agriculture. What we also found is that they're often relatively small scale. We said well, what we don't want to do is train new farmers who are then going to start another CSA or produce for farmer's market. Can we train farmers who are willing to scale up? We're really selecting also farmers who are willing to work at a larger scale.

In our curriculum, we include really a lot of mechanization, a lot of emphasis on mechanization. In the first year, they become certified pesticide applicators and you may ask yourself why we were only using unrealistic materials. Well, there's a lot to learn from studying the core manual and being able to really know what it means to apply worker safety standards. That's an important principle. The same thing is they got a GAP training, good agricultural practices training last year. They will go to training this coming year so we really want to prepare them on a little bit different level here.

We're also working very closely with collaborative extension in order to give them the tools in horticulture, in plant pathology and entomology, give them the tools under their belt so when they're out in the field they can identify insects, they can identify diseases, they know what materials to use. They are able to work on a very efficient and effective scale.

Chris: When somebody comes into the program, how many years does the training program go for, for a given individual?

Jean-Paul: Well, it really depends on the individual. We had for the very cohort, we had some people with already extensive experience coming in. One of the trainees actually was a vegetable manager before she came here. For her, the training might be not as long as for some other but we envisioned this program to be a three to five year program whereby we are in the very first year we're taking them really and we bring them on board of what the standards are here, what the procedures are on this farm, bring everybody into the same place. Then slowly, we want to give them more independence whereby they are able to really try out what it means to run your own enterprise. They can do that by taking the third year. They can do that by taking on their own crop or few crops and operate it independently, track their input costs. We will assess how successful they are, not just how economically viable these operations are but also to see if they actually meet a triple bottom line.

To what extent, how did they manage the people they work with? How do they take care of the land and how do we monitor that? For us to be successful is to really meet that triple bottom line at the end. To me, I really look at farmer training not that different from becoming a medical doctor. I think we really have been underestimating the skill level it takes to be successful as a farmer. The approach that we have taken with the curriculum is that the amount of information and the amount of knowledge and skill that our farmers need to have when they complete this program is not that different from the amount of knowledge and skill level that a medical doctor has and I think that's what it takes to be working on a mid-scale level.

Chris: Something I think is interesting about the Hudson Valley Farm Hub is that you are promoting ... Well, you call it a mid-scale level. When you talk about a hundred acres of vegetables, for a lot of people, we think of that of being a very large scale farm. Of course, in a California or Arizona sense, it's pretty tiny but you're not talking about 5 and 10 and 20 acres of produce. How did you end up working on that kind of a scale? I know that's one of the hallmarks of Roxbury Farm is that it's not a small farm.

Jean-Paul: No. I mean but still, if you look at it from enterprise to enterprise in the sense of like crop enterprises, we are a tiny farm. It's just that we are putting all these small crops enterprises together that form together a pretty large farm. With our CSA at Roxbury, we're producing 40-50 different vegetables, pork, beef, and lamb. Between all these enterprises we are, as far as revenue is concerned, we're considered a large farm but when you actually look at how we are growing these crops, I would not consider ourselves to be operating at the mid-scale. We are somewhat mechanized but again, we could probably handle for each crop more acreage with the mechanization that we have. Still, it's not near to where we would be able to compete on a wholesale level.

Chris: Maybe we should back up a bit. I feel like I know Roxbury Farm pretty well, even though you and I have never met. I've never been to the farm. I've been following what you guys are doing for 20 years out there. Can you tell us for our listeners, give us the lay of the land at Roxbury Farm.

Jean-Paul: Yeah. I don't think we're in philosophy, we're not going to be changing that much so I can really speak for both the farm up in Roxbury Farm as far as what our principles and philosophies is there, which is really based on reduced inputs. Roxbury Farm is right now about 425 acres, although there's only 250 acres really of workable land. The rest is really in woodlands or waterways or any other areas that are really what we consider to be biodiversity areas. We really give that back to the wildlife. Of the 250 acres, about a hundred is dedicated to vegetable crop production. Although, at any given time, and this is really important to understand, in net in vegetables is maybe 33. We are losing, we're losing, I don't like the word losing but we are giving up about 45 acres of land, we're giving up about 12 or 13 acres in headland and harvest lanes.

[00:17:00] We have done that because we really want to have easy access to our produce. We don't want someone to schlepp a crate broccoli for 200 feet. Nobody ever walks more than 24 feet with any given bucket or crate to what we call the harvest lane and then the truck picks that up. It takes this sort of amount of lands. The other half of that vegetable acreage is dedicated to growing green manures. When we found this farm, the levels of phosphorus potassium in certain areas of the farm were very elevated. It was a potato farm. Using organic fertilizer would mean we would continue to elevate these phosphorus levels because inorganic and manure based fertilizers, you will find of course phosphorus and potassium in certain amounts, if your application is based on how much nitrogen you want to give to your vegetable crops.

We decided very early on that in order to both bring the organic matter levels up our

soil and at least not to deplete them and to bring up the nitrogen levels of soil, we would be greatly dependent on green manures. The other reason for doing that particular rotation whereby we alternate vegetables with green manures in one given year is for weed control. When I talk about this reduced input model, I'm looking at like ... We're not trying to maximize the revenue on our farm because we have 250 acres of open land. A hundred acres of it is very suitable for vegetable crop production and as you hear, only 33 is actually put into actual production any given year.

Some of that land, at least 25 or 30, is in permanent harvest lanes and headland but then the other land is then in green manure crops. What we're finding over time, and I don't have any way how that is documented. I'm not a researcher but we do know that our cost of producing say an acre of potatoes has gone down. Our yield has gone up. What we're finding here is that for me, if I have a harvester who is trying to find say a lettuce mix in the weeds and harvesting and basically weeding at the same time, that's costing me a great deal of income and increases my cost.

Our philosophy's always been like if I have clean ground, I have fertile ground. When I say clean, it's not just clean from weed seeds, it's also from pathogens. If there is some kind of a pathogen on my lettuce or yellow leaves and anything like that, again, it takes time for that harvester to then be sorting out these leaves while they're harvesting.

When you develop a rotation whereby you have healthy crops, whereby you have clean land, then we're actually looking at yes, we could've maximized our revenue by growing a hundred acres of vegetables but we actually are doing better on those 33 because we have really reduced our input costs. We're not really bringing in organic fertilizers because we're actually, we're growing our own fertilizer in the form of green manures.

About 50% of all our nitrogen needs in the vegetables actually comes from green manures. The other half we're still are dependent on some manures that we are bringing into our vegetable fields. Which is, by the way, necessary because we're exporting quite a bit of potassium of course, when you are harvesting these vegetables. It's not that we're completely trying to stay away from manure altogether, or composted manure. We're trying to do some nutrient budgeting there whereby we're not elevating the levels in our vegetable soils. When you have a continuous vegetable crop production that is a real danger.

Chris: Tell me a little bit more about the practical details of the rotation that you're using, with half of your land in cover crops, half in vegetables. How are you moving between crops from year to year to year?

Jean-Paul: Yeah. It is important when you start ... When I develop a rotation, I usually think three years ahead. I'm thinking about I'm standing in front of a piece of land and I say like, "What is one to become in three years?" Usually, it's already in vegetables at that given time. You have a way to think it through what next year's cover crop should be. Then really, it's a matter of thinking it through like how I'm going to treat the land this year to be ready, so if it's now 2017, in say in 2019. I'm really looking at like what is for

example, the particular weed pressure that I'm finding in this land. Also, what is the crop that I imagine that would really follow nicely in this particular based on the history of what has been grown there.

[00:22:30] For example, if I imagine that field will in potatoes in 2019, I'm starting to think about how I'm going to start limiting the weed pressure of my summer weeds. I will definitely start working with a summer bare fallow then in that particular piece of land in 2018. I will not grow a cover crop whereby I will not have the ability to do some real good weed control, in the months when it is going to be a problem in my potatoes.

Looking ahead, as far as thinking, making sure I will have the fertility, I will have the land clean at the right time of the year, those are kind of things whereby you start thinking a little bit more about your rotation. It's really that simple if you growing a spring crop you wouldn't want to follow with a spring bare fallow. There are very different weeds at different times in the year, as you of course know. It's a matter of cleaning up the land beforehand.

Chris: So when you're using that summer bare fallow, that of course is coming between cover crops right? It's not like you're just leaving the land bare all year, you're leaving it bare for a specific period of time.

Jean-Paul: When you talk about the summer bare fallow, that land will be open for a certain number of weeks and then if you have a very dry summer, it might be very worthwhile to irrigate that land in order to let the weeds sprout up.

Chris: Then what are you doing to maintain that bare fallow without excessively tilling the soil? That's something I know when I experiment with bare fallow, sometimes it felt like, God, we were just out there all the time working the soil and working the soil. I know that's not something you really want to be doing.

Jean-Paul: [00:24:30] No, I agree with you completely. It's an interesting dilemma that you're faced with, especially in the transition stages, where we inherited at the Roxbury Farm, a seed bank that was tremendous so we had to overcome that. The only way to really deal with that in some areas was to put it back in hay. Whereby we allowed some of the seeds to lose their viability over time. In other areas, we just had to cultivate them out. I will tell you, if you are growing some very vigorous green manure crops, what the Nordells, and by the way the Nordells have always been the role model. We always talk about in the mid '90s when we adopted this particular rotation we said we're Nordelling our farm. Last time I checked it's actually in the dictionary right now, Nordelling.

This is something that anyone can do. It means that you rotate basically your green manures out of ... into vegetables alternate years. What we have found by doing soil testing is that we actually have been increasing our organic matter levels, despite the fact that we are doing this incredible, intensive tillage. We haven't quite figured it out yet because this is something of course that you talk to the soil scientists, they will say like tillage is an addiction, you shouldn't be doing it and there's no way you're going to

maintain your organic matter levels. You're not going to have aggregate stability.

What we're finding actually this rotation is that we moved Roxbury Farm in 2002 to another piece of land. Between 2013, 2014, we basically doubled the organic matter levels without the import of a lot of compost. We can do this. I hear what you're saying. I'm not advocating extensive tillage by any means. What we have found is that you can really increase aggregate stability. You can definitely increase active carbon and increase the organic matter levels over time. You're going to have to really select your green manures very carefully.

One thing that we have found, which is really important, it's not about how much organic matter you plow under, it's what kind of organic matter you plow under. Make sure there is a legume mixed in with your green manures. That has been really important. Having legumes in your mix and having a diversity of cover crop mixes has been key in increasing the organic matter.

Chris: When you say a diversity of cover crop mixes, are you doing these, trying to think of the right word now that I've heard of, but these very diverse cover crops where you might have five, six, or seven different species growing at a time?

Jean-Paul: Yeah. I don't go that extreme but definitely three or four. Yeah. For example, one of my favorite mixes for the summer, for a summer mix, is Crotalaria with Japanese millet, sunflower, and either regular 40-10 field peas or that would reseed themselves in the fall or go for a cowpea sort of before in that mix. I would seed about 10 pounds of Japanese millet, about 50 pounds of Crotalaria, or sunn hemp, about 5 pounds of sunflower and a 50 pounds of cowpeas or 50 pounds of regular peas.

Chris: That's really interesting. When I think cover crops I always think oats and peas or rye and hairy vetch. You're using some really interesting species.

Jean-Paul: Yeah and they get very tall.

Chris: How did you get to those? I just had to Google Crotalaria because I've never actually heard of Crotalaria before, which either means I'm way out of touch or that you're doing some really weird things, one of the two.

Jean-Paul: Well, it's again, what some of us like to do. We go back to these old textbooks you see that all this stuff is figured out before 1930 and a lot of research has been done on this, so all you have to go back to these old textbooks and you'll find them all. Adrian Pieters wrote a wonderful book called Green Manuring in the 1930s and he listed every single one of them with all their benefits. I got really intrigued by Crotalaria and people told me you can't use that because it's a tropical legume. Well, this is one of those things, side of effects of global warming, apparently we can use Crotalaria. We're able to do it.

Chris: Just because we're talking about Crotalaria, tell us a little bit more about that as a crop and what it does for you and why you chose that. Just to get down in the ... I was going to say get down in the weeds but just to get down into the cover crop a little bit

here.

Jean-Paul: Yeah. We've been growing Sorghum Sudan for many years and I was trying to find a legume that could actually compete with Sorghum Sudan. I tried forage soybean, it was really expensive. Any other legume which had been shaded out by the Sorghum. We really liked Sorghum because a tremendous amount of biomass that you can work under the end of the season.

I basically started reading Peterson and said, "Let's see if we could come up with really a tall legume here." Crotalaria is one ... It gets about six feet tall. It's a cowpea. It effectively competes as long as you don't up your rates too much with the Sorghum or the Japanese millet, it works quite well. It was just one of these things that I feel like, "Well, you know, let's try it out." Initially had a hard time convincing my seed supplier to ship it to New York. They didn't think it would work. We similar promise with our bell beans still, nobody on the east coast grow bell beans, that's a west coast crop. Bell beans is also one of my favorite green manure crops for the spring that we utilized.

I do things I think are true and this is what you do. You try things out and you fail and you succeed sometimes. For every successful cover crop that I've grown, there's probably a few other ones that didn't work out as well.

Chris: I want to go back to the bare fallow. I'm interested in how you actually carry that out at a functional level. What tools are you using? How often are you using them? How do you have them set up?

Jean-Paul: Sure. It all depends on to what extent I have to make a seed bed, what I'm working with to begin with. If the bare fallow follows say like a spring lettuce, there's not a lot of tillage that needs to happen in order to create what we call a bare fallow. Maybe in the other cases when I'm working under a green manure crop, a spring green manure crop, then I will have to use some more deep tillage. We don't use a moldboard plow. I haven't used a moldboard plow for over 20 years. We only use a coulter chisel plow if we do that.

We make sure we chop the green manure up as finely as possible. Then we coulter chisel plow. Then after that, we really follow with what we call a perfecta II harrow, it's a combination seedbed maker. You can set that at any depth you want, anywhere between two to six inches. Although, I really rarely go six inches deep with that tool. It really would pull awfully deep but usually it's two to four inches.

Then it's a very effective tool especially if you have perennial weeds, bindweed or crack grass, it will bring it to the surface and let it dry out. It really depends on how much rainfall you have during your summer bare fallow to what extent you're going to be affected. One of the things is that I am very careful about when it comes to aggregate stability, is to be concerned that you don't work soil too wet but you also don't work it too dry. When you work it too dry, you have that same problem. The water really functions as some sort of glue between these aggregates and you create dust. When you're working it too wet you smear the soil. Finding that perfect moisture when you do your bare fallow is really important.

If you have to irrigate these plots, that would be ideal if you don't have the ability to do that, then the summer bare fallow is not as successful, except of course, for your perennial weeds. Then you sometimes wait until you have some moisture in the soil in order to put your equipment on the field. I would really want farmers for not working their soil when it is too dry in the summer bare fallow.

Chris: How dry is too dry when you're working the soil?

Jean-Paul: Oh, you'll see when you create dust. I think always look back. When you see that your soil is being pulverized and that's why I don't like rotavators or anything like that. I like any tool that finds the natural breaking points of your soil structure. When I went to Ag school and my soil science teacher, he basically took a lump of soil and dropped it from three feet down. He said, "Look, those are your natural breaking points." He said, "Do not have a tool that does more than this." I have used that as a guidance. Am I going to do something that is going to do more violence than dropping it from a three feet height? I'm probably doing some violence to a soil. That would be one way of a litmus test but you really are able to see when you are pulverizing the soil.

One way is to also see it is when you see a discoloration. When you see a discoloration, you know that your aggregates, your sand sealed clay and organic matter are being separated. Easy to see when you take some soil, you rub it between your fingers, and you see that now suddenly the soil has a different color. That's a good way of telling, "Oh, look, I just really rubbed all the aggregates apart." That is what you're looking for, is for stable aggregation of your soil.

Chris: That's a nice practical tip. I had never heard that before. Are you following that perfecta then with a cultipacker or anything to create some good seed to soil contact between the weed seeds and the soil?

Jean-Paul: Yeah, you would think that right? I am not a fan of a cultipacker. A cultipacker is definitely one of those tools we are using it when we're reseeding our hay fields but I don't like it at all. It really does a lot of damage to those aggregates. The rotavator and a cultipacker are two tools that I like to stay away from.

Chris: [00:36:30] Okay. You're not doing anything to firm that seedbed back up after you've gone through with that bare fallow with the perfecta?

Jean-Paul: No, precipitation will do that. That's really what ... Precipitation is a great way of creating good seed to soil contact.

Chris: Then how long would you do a bare fallow for? Is that something that you're going to do for three weeks, or six, or 10?

Jean-Paul: Yeah, I would say that for about three to four weeks and that's all you're going to need.

Chris: [00:37:00] Then really, like you said, a matter of timing that for the crop that you're

investing in for the future.

Jean-Paul: Correct. Yes, correct. It's really thinking about like this field is going to be in potatoes the following year so I'm going to flush out these weeds in the previous season. Then it's that field that is preceded by a spring cover crop and then a fall cover crop. I will say though that, once you have your weeds somewhat under control, you can move away from your summer bare fallow. That's where we are at the place right now at Roxbury where we have our weeds under control. You can start moving into some very aggressive summer green manures. Here we're using shade as a form of weed control.

What we're finding with our Sorghums, with our Japanese millet, and Crotalaria, is that there will be a bit of an understory of weeds there but because there's so much shade there that these weeds that have germinated in the shade of those large tall cover crops, they never form any seed heads. Here's a way whereby we are allowing for some germination to take place in the year before the vegetable crop but we're not using a summer bare fallow to eliminate these weeds, we're actually using shade to make sure that these weeds do not reproduce.

Chris: When you talked about clean fields and the importance of having a salad mix or a lettuce crop that's really clean from weeds, you also mentioned having them clean from pathogens. Can you talk a little bit about how you do that?

Jean-Paul: Yeah. I think when you look at a vegetable rotation and I have some resources actually on the Roxbury Farm website, you will see that certain pathogens are not restricted to be hosted by just one particular plant family. What you will see often is that if you want to break that cycle of not giving the host to that particular pathogen, is that growing a cereal is often the best way to break that. This is really where you are looking at by growing a completely different crop that is otherwise not really within your rotation, you are in a way, depriving that pathogen of a host. That really allows you then to clean up your land, so to speak.

I've always looked at vegetables as being this not so great as a rotation within themselves, within plant families, they are as far as what they do to the soil, I don't consider to be soil builders. They don't create a lot of shade and they often ... You have somewhat compacted situations of the soil. When you're growing these green manures, you're creating this environment in general that is much more conducive to beneficial organisms. One way that early on in the soil health test, one of the parameters that Harold van Es found was the absence or the presence of beneficial nematodes, the real indicator of a healthy soil.

What do you need to do to increase the presence of beneficial organisms is to really create a healthy soil by creating great pore space and to really allow for that. Again, if you have these off-seasons whereby you can really build your soil and you're growing a very aggressively rooting crop, then you are able to also increase your beneficial organism and decrease your pathogens.

Chris: That's interesting that you just focused on the aggressively rooting part of the cover

crop.

Jean-Paul: Absolutely.

Chris: Obviously, when you drive by, you're looking at the tops but you're really interested in what it's doing down below the soil.

Jean-Paul: Absolutely. Both from a rooting perspective but also if you are digging up your legumes, if you want a seed of not you also want to see them nice and pink. They're pumping nitrogen into your soil. For example, a wonderful crop that we're using right now at the Farm Hub in the transition period is yellow blossom sweet clover. Yellow blossom sweet clover is one of those fantastic very large legumes that form a tremendous amount of biomass but most importantly, they are really, really good at breaking up any possible fracture pan down below.

Those woods will go down and not only will they break up any kind of hard pan or plow pan, especially following a subsoiler, they will really follow that subsoiler down further, down into the soil. They will also, with their root system, go down seven, nine feet, and bring up nutrients that were otherwise lost and bring them up back to the surface. It's another way again to reduce your inputs.

Chris: Now, you said that when you guys moved your farm to the new land in 2001, you started Hawthorne Valley Farm in 1990 but then you moved 10 years later. When you made that move, did you guys immediately dive into this Nordell rotation or was that something you had been doing before?

Jean-Paul: No. Was a nice slip there. I did not start Hawthorne Valley Farm. I did work there but ...

Chris: Oh, whoops. You're right. Okay. I've given you some credit here.

Jean-Paul: I'll take the credit for that. Yeah, I did work for three years for Hawthorne Valley but yeah, no. When we started Roxbury Farm in 1990, I met the Nordells in the early '90s. Well, the other person I met in the early '90s, there's a couple of change that I made and there were really basically Nordells and then the Denisons. I met the Denisons up in Maine and I was introduced then to the permanent bed system that he had done on 150 acres of vegetables there, Brian and Justine Denison. Then the other thing, almost kind of the same time, I met Nordells and then I met their rotation.

I really created a combination of the semi-permanent bed system that I learned from Brian as I learned that rotation then from the Nordells. Those were really two very important places where I adjusted from a European approach, a flat field, whereby in Holland we use every square inch of land and it's unthinkable to take a piece of land out of production because land costs about a 100,000 euro a hectare, to this more less intensive approach whereby we have plenty lands but we really don't have the labor and we don't have the energy, we don't have the equipment to really work it so intensely as the Dutch do.

There's really for me, being in the US, really adapting to what this what was demanded of me. It was in the early '90s that we started very aggressively growing these green manure crops and broadening our rotation.

Chris: How did you go about making that transition? I know on my farm, when we started adopting the Nordell rotation it was difficult. In fact, for a large portion of our land, for our best land, where we probably would've benefited the most from doing it, I didn't feel like I could because I didn't feel like I could take that land out of production and make the investment with it because I needed to keep producing rather than building productive capacity.

Jean-Paul: Yeah, I think that's a really great way of putting it. It's an investment. I think this is the dilemma and this is a choice. I don't have any adjustment about it when people are not able to do it at any given time because everybody knows what revenue they have to create or produce that given year. Then if you do have to meet a particular production goal, you can do that. Can you afford to make that investment really? Usually when you make an investment, we don't pay for it at any given year, we usually pay it off over time.

This is very hard to imagine. Taking out say an operating loan to take your land out of production because it's going to pay off over time and it is daring. You're working with nature. It's not as easy as doing a cost analysis for this as saying like, "Well, if I buy this tractor it's an investment and it's going to pay itself back over a certain number of years." It is very similar. You have to look at it like that, that this is long term. This is not like, "Oh, well, if I do this there's an immediate payback." This takes time.

Chris: Now you mentioned the Denisons, who were farming up in Maine, and their permanent bed system. I see from the pictures on the Roxbury Farm website that you guys are using a raised bed production system. Can you tell me a little bit more about what you mean by a permanent bed system?

Jean-Paul: It is a semi-permanent bed system, in the sense that we are taking our beds out at the end of the season and we plant our cover crop again on flat land. What it is, is that it is to a certain extent, it's a controlled field traffic. Because we have these permanent harvest lanes, we know where are sections are and every section will have eight raised beds. In the case of Roxbury Farm, these raised beds are six feet, from center to center. At the Farm Hub, we have 10 raised beds that are five feet, or 60 inches, from center to center. It's still about 50 or 51 feet that is open ground in between each harvest lane.

We are able to find these beds back every year but we are breaking up where the field traffic does go. It is really important in that we ask our primary tillage, we never put a tractor wheel on the area where we're growing the crops. After the coulter chisel plow goes through the section where we do our ... In the earlier years, we had to first go through with a subsoiler, which is no longer necessary. This takes a number of years that you are eliminating your plow pan, after years of moldboard plowing.

Then the only primary tiller we could do is a coulter chisel plow that has actually an attachment in the back that's built by Unverferth which is an s-tine and a leveling barn. It is really primary and secondary tillage in one pass. After that, we lay out what we call our rough beds. Brian had built a rough bedder out of a disc with some shields on the side and that was his rough bedder that basically an offset disc with some shields that were ... You know, he built in his own shop.

We ended up settling about six years ago maybe, for trying to lay these beds out three at a time by purchasing a double disc. Imagine that this is an equipment that lays out three beds at any given time with a roll marker whereby we are creating a hill whereby the center to center again is 72 inches and at the Farm Hub again being 60 inches for center to center. These are two disc, one large disc and one smaller disc and then opposite of each other, creating basically a hill.

It's a tool that is mostly used say in North Carolina for creating hills for sweet potatoes and they're either 36 or 40 inches apart. We basically spaced them out a little further with the same effects. That really then forms our wheel tracks. The nice thing about having a disc bedder that forms these beds three at a time is that we were more accurate about the spacing. It was if you lay one bed out at a time and you repeat that 10 times in a section, you're going to be a couple of inches off by the end of that, you know when you make your final pass. Laying out the number of beds in one pass allows us to have more accuracy to find our beds back again where they were two years before because it's every other year, ideally.

That then is followed by an additional task of a small perfecta bedder that then levels that out. Then we make our final pass, if needed, because for many crop this is a sufficient planting bed for say corn or anything like that or cabbage. If we want a nice seedbed we're actually following that with another combination seedbed make mounted in the front and a buckeye bedder in the back to make a really nice flat surface. It will take a number of passes but you can hear that we are driving on that field each time to get a smoother and smoother seedbed. For us it's really important that at least that tractor tire is always in the same traffic, so it always follows the same place and there's never any compaction where we end up then placing our seed or placing our plants.

Chris: Jean-Paul, with that we're going to stop here and take a break, get a word from our sponsors, and we'll be right back with Jean-Paul Courtens from Roxbury Farm and the Hudson Valley Farm Hub in upstate New York. I didn't say Hawthorne Valley Farm that time.

Perennial support for the Farmer to Farmer podcast is provided by Vermont Compost Company. Vermont Compost potting soils are a really special product. I use Vermont Compost Fort Vee as a blocking mix and a potting soil for over 12 years on my farm and we grow great transplants with it. I mean, really great transplants, year after year after year and we save time, money, and management hassles compared to mixing our own. At a time in the organic movement, we're seeing more and more companies jumping on the organic bandwagon, Vermont Compost is a reminder of art and the

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All right, we're back with Jean-Paul Courtens of Roxbury Farm and the Hudson Valley Farm Hub. I'm assuming that what we're talking about at Roxbury Farm, a lot of those production techniques also apply with what you're doing at Hudson Valley Farm Hub right?

Jean-Paul: Yeah, and I think what's really exciting here is that, I already mentioned that to you before, is that we've made all these change at Roxbury Farm and it's like, okay, fantastic, a wonderful story, anecdotal stuff. The bottom line is that show me your documentation. Well, we were busy farming. I can tell you we doubled the organic matter over 13 years or whatever it took. It was 1.4 to begin with so we brought it to 2.8 right? It's still remarkable. The thing though is that right now, I have the opportunity not only to be able to teach that to the next generation but to document it. We have a partner organization that is actually ... They are based at Hawthorne Valley and Harlemville is the Farm Scape Ecology Program.

They're working here to do a lot of mapping and monitoring here at the Hub. We did a soil health test as a baseline documentation last year on the full acreage. They're looking at the full ecology of the whole farm. What I am really interested in is to be able to now have the documentation in place that say five years or 10 years from now we can say, "See, here are the changes that took place after we converted from conventional sweet corn to these vegetables and small grains, beans and corn and we can now see this is what the yield is. This is what your organic matter is. This is ... in much greater detail."

This is a very exciting opportunity not just for me but for all of organic farming, that we have this gigantic lab where we can monitor all these changes that we organic farmers have claimed are better for the soil. Having the resources available here to do the documentation is a huge change compared to working at Roxbury where we were

really in the trenches and ultimately we had to make a living from every activity we did every day and so this is a luxury.

Chris: That actually connects tangentially with something that I wanted to talk to you about which is you're not involved on a daily basis with Roxbury Farm anymore and yet Roxbury Farm continues on. That's not an easy transition to make. I mean, I can't imagine it was an easy transition for you step away and I also can't imagine it was an easy transition for Roxbury Farm itself to make to suddenly have you not be there.

Jean-Paul: Yeah, I understand that that could be a perspective. Yeah, I think that I was definitely struggling for a number of years to say ... I really worked myself out of a job at Roxbury Farm. The farm was kind of place where there my body did not allow me to be on the harvest crew anymore. My knees don't allow me to kneel in the field for more than half an hour before I start becoming stiff. I was doing a lot of the tractor work. I was really isolating myself from the crew. Really, some of the people who were working for multiple years at the farm, in some ways, I was really in the way for some upward mobility there because they would like to do the haymaking and that kind of stuff.

In many ways, it was a logical thing for me to say, "Listen, I've reached an age right now. I don't have to actively farm every day anymore. It's time for me in my career to pass on the information I have to the next generation." This makes a lot of sense and I think that ... I have really it's been a slow transition for me from the daily operation whereby Jody and Keri were really running the farm for longer than I had been gone there. Jody and I had been putting these pre-seeds in place very, very carefully, over the last 15, 16 years. You are familiar with our manuals that are online. This is something that really greatly helped to create an environment what I like to refer to as like self-management.

Whereby, people know their job. They know what is expected of them and they're given certain amount of autonomy to execute their job. There's no way that anyone can manage as diversified a farm as Roxbury by telling everybody every day what to do. People know what they do and we have employees ... some of them have been with us for 12, 13 years and are not going anywhere. That is really what allows a farm like that to continue. It's a highly diversified farm and it cannot be carried by a single person. It has to be carried by a team. I think that we successfully created that environment and Jody and Keri are excellent farmers who can make a lot of these executive decisions. They have that knowledge and skill level to do that.

There are a few times when they call me up and have a question but it is rare. If anything, I'm a silent partner. I look at the financials and we look over it, things look good. We do of course make a decision what equipment we purchase for the following year and right now we're in the process of purchasing more land and this is ongoing and I find it exciting that I'm able to step away from this and things are going on. It should not be dependent on any individual how an operation is being run.

Chris: You said that you guys worked on creating these procedures over the years. How did you go about doing that? How did you actually structure things on the farm? The

procedures are one piece but I know because I've worked with farms who've extensive procedures, it's not the only piece that makes it possible for other people to step into those positions of authority and responsibility.

Jean-Paul: No. No, you're absolutely right. I think you not really hire someone and put them in charge of a certain thing. You train them and then it's really about slowly giving them more and more autonomy. When someone comes first on it, we move relatively slowly with people. People come to the farm and they expect that they're going to be involved in a haymaking year one or doing primary tillage in year one, they're going to be in for a huge disappointment. They start at the bottom of whatever work needs to be done. They will be planting, weeding, hoeing, in the greenhouse, they'll be in the washing and packing.

Then as they're getting a feel for the flow of the operation, they can step into more responsible positions but that take years. This is not something that ... This has to be an operation that's run by people who have a long term investment. We are blessed with having had very, very talented people attracted to working at Roxbury Farm. Yes, there's a certain amount of being fortunate involved in this as well.

Chris: You just mentioned the importance of training and again, you guys have put a huge amount of effort into developing resources that you've made available publicly. We're going to put a link to that on the show notes page on the Farmer to Farmer Podcast website. Tell me a little bit more about how you do your training, when you get somebody new on the farm because again, obviously, you're not just handing them a manual and you're not just reading the manual to them. What do you guys do to get people up to speed?

Jean-Paul: Well, we all start with an orientation week. Now I'm speaking for Roxbury Farm. It's different of course the training we do here at the Farm Hub is it's much more intensive and it's much more theoretical based here as well. There's a lot of knowledge training happening here at the Farm Hub that is not necessarily happening at Roxbury Farm. It's all based on the actual activities.

It's really about showing people that this is how something is being done. I think that we'll be taking too much time to go into all the different procedures but imagine that this is what ... First of all, it is really important that you communicate in many different ways how you expect the job is to be done. We are very dependent on what we call cheat sheets on list, task list. People know, if they're new to the farm or even if they've been for a couple years on the farm, they know through the weekly task list what we have decided, what needs to be accomplished in that particular week. That gives them a sense of like, "Okay, I'm grounded. I know that this week we're going to plant corn. This week we're going to hoe the lettuce or whatever, maybe we're going to make hay." So they know the overview, so they feel somewhat grounded.

That's a very important part of the training and if possible, we'd like to involve them in the creation of the weekly task list. We also want them to be the eyes and ears of the farm and mention it in the morning meeting. We meet every meeting, we start off with a procedure whereby we check in with everyone to make sure that everybody is

right there, ready to start the job. Then we communicate with them what the objectives are through the day. We have the weekly task but then the morning meeting we can articulate with them what the objectives for the morning are and for the afternoon are and how we imagine the flow will happen.

Then there is a clear for example, with the CSA harvest, there is a harvest list. It will tell how many buckets need to be on the truck, so nobody has to think about it. Or the buckets will be already on the truck or the baskets. Then there is a clear layout in the fields whereby we did the creating our rotation, whereby nobody has to start looking for things. For example, we know that particular greens are harvested before 8 o'clock in the morning. We'll group those together in one section, even though there might be five different plant families there. Because we are having this rotation with green manures, we don't have to look that carefully, we can group different plant families together. It's more important that the crew is there in one section harvesting all the different crops.

Then when they're actually harvesting them, we have to sit next to them. We will show them like, "Okay, this is how you hold your knife. This is how you grab the crop. This is how you place it. This is how many beets you want to have in a bunch. This is how you put your rubber band on. This is how you put the twist tie on." Whatever it might be, you guide people through that.

Then we are developing expectations. We say like, "So, you harvested so many cases of this product, while I did about twice as many. Let's see how I can improve your procedures so you can keep up with my speed because I'm really not any better than you. There's probably a different way to hold my knife, maybe a different way I put the bunch on." We always assume that there's nothing to do with the fact that people don't want to increase their speed, it's a matter of looking at how they move their body, how they move their hands. With the focus being on, I remind them all the time, "You are looking for the minimal amount of movements. If every movement you make too much, you're tiring yourself out." We can't afford to make a movement that is unnecessary. We're focused on that.

That gets ingrained in everything we do. We really try to minimize movements. You set things up so it is clear how the washing setup is and you guide people through that. In the beginning there's going a lot of like, "Just watch us, how we do this." You take good observations and let the crew that has done this for 10 years, let them just show you how we do this. A lot of learning happens by osmosis. You don't have to really explain everything verbally, a lot have happened by example. Having long term employees who are quite good at doing their job are the best teachers.

Chris: Who makes up your long term labor force at Roxbury Farm?

Jean-Paul: Yeah. So we have it's I would say, one thirds of the employees maybe a little bit more, are full time year round employees, one third are seasonal employees that live locally, and then one third is probably people that come for one or two years. There's a real balance there between ... I would say that the local employees that are seasonal, they work there for eight months of the year, they are extremely important. It's just that

we don't carry them over the winter or we bring them in over the winter when we maybe pack the winter vegetables but they're really ... At this point Roxbury Farm cannot employ 10 full time employees.

Chris: What are you doing in the wintertime that helps you keep a third of your staff on over the winter?

Jean-Paul: Yeah. I mean, they are working less. It's understood that many of them will work 55 hours or so in the summer months and then they will work 20 or 25 hours in the winter months. When you talk about full time there's a real balance. People take their vacations over the winter months. I think this is the kind of area where everybody can breathe again and where take that advantage but we make sure that they live on the farm so they don't have to worry about their ongoing living expenses.

This is one way in which we can ... We make sure that they meet their annual needs in order to be able to live sustainably. They don't have to look for a job over the winter. They know that they have money saved up in order to be able to get by on that 20 or 25 hours over the winter. Having housing provided is really important in that scenario, that they don't have to worry about housing, about heat, and light, and everything else.

Chris: Jean-Paul, I wanted to ask you a little bit about what it was like getting started in CSA farming? I stumbled earlier because it's in my notes that you developed the vegetable garden at Hawthorne Valley Farm prior to starting Roxbury Farm in 1990. This is in the dawn of the CSA era here in the United States. Tell me about getting started and how you got that whole ball rolling when there weren't any models to follow.

Jean-Paul: Yeah. You know one these things. It was really that I was approached by someone in New York City, Jonathan Hilton. They had attended a lecture by the executive director by the biodynamic association Rob Shouldice about CSA. Rob had seen what I had done in Minnesota. He was aware of my work at Hawthorne Valley. These people were looking for a vegetable farmer. I just started Roxbury Farm based on wholesaling vegetables. I worked with two organic wholesalers, focusing mostly on lettuce and tomatoes and some greens. Jonathan called me and said, "You're willing to come to the city and talk about this?"

We had this meeting on West 13th Street in Manhattan and I was like, "Sure. Let's have it a go." The wholesale business at that point was very volatile. We were just going in a takeover of a large organic wholesaler from the west coast was trying to gain monopoly on the east coast. It was some cutthroat pricing going on there that made me diversify my market portfolio actually quite a bit. I moved away from the traditional organic wholesale business to institutions, the Culinary Institute, Omega Institute, and others, which didn't really demand organic certification.

I was like, "Well, this might fit in." Also, what we fit in is then going to the green market in New York City. We went to the green market and also met our members in New York City. What happened was that a year later ... One of the things that I told John, I said, "You know, traditionally, nobody actually went to the city." I actually

questioned that. I said, "It's really hard, this whole CSA model was based off a farm whereby Trauger [Groh] imagined that the future churches would be the farms. Instead of people going to church they would go to a farm.

It was like this incredible ... this vision that Trauger brought about what CSA farms could become. They could really be a community builder like churches have been a community builder. Not that the CSA will be a religion, not by any means of the word, but more like when you have a community, this could be another place where people go to create community just like they go to church to create community aside from their religion.

I said to Jonathan, "Well, that's not really ... We're going to be in the city. It's going to be a very loose relationship." I actually called Trauger up and I said, "Trauger, can you actually start a CSA farm in the city?" Of course a long pause and he said, "People in the city have to eat too, right?" That was it. All right, let's just try it. Let's do it. Then a year later, I got a call from Albany, from the Committee for Peace and Justice, who had heard what we were doing.

The concept of what we were doing in New York City was very simple, we said like, "You support the farm and then the vegetables are free." That's really how we spread the idea of CSA. It was not like come here, get your vegetables and this and that. It was really about this is about supporting a farm and their operating budget. Then if they're successful, the vegetables are free. The Committee for Peace and Justice really liked what they heard about that and the contacted me and said, "We would like to do this in the capital district as well."

We had to get the blessing from the bishop. We met with the bishop, Bishop Howard, and he immediately got it. He said like, "This is a peace and justice initiative. This is about bringing equity to agriculture and to the farm workers in a very practical way." He gave his blessing and we immediately expanded that second year to 300 members. It went very quickly because of the way in which we made our connection, first in Manhattan through the Center for Anthroposophy and then in the north with the diocese.

Then we pretty much weaned off our wholesale business and continued serving the CSA and the institutions for the next 10 years, until we became completely community supported, once we made the move to Kinderhook. We moved the farm from Claverack where we were for 10 years to a new location, for a long term land tenure then in 2000.

Chris: With a thousand members in your CSA and marketing at somewhat of a distance to at least a portion of those, how do you guys maintain the connection with your membership?

Jean-Paul: Well, we have always emphasized that we really need an active membership. We originally had core groups and the core groups' really our ambassadors to the members. The sites, we have 17 different sites, they are quite active. They form their own community around themselves. Right now, they are maybe less in community

with the farm as they are also with each other. Although, a significant number of these people come to workdays or they come to a festival at the farm and they are being kept up to date every week through our weekly newsletter. They will hear what is happening on the farm and now with Johannes, our son, being back at the farm, he takes a lot of pictures and sometimes videos and he reports really a lot of that. There's more audio visual ways in which people can have news about what is happening at the farm.

There's not like in a traditional sense like with Trauger and Anthony and Lincoln where you have a real community around the farm that sits around once a year and pledges their support through a pledge system. We are in that sense, more traditional with the share price and which differs from site to site but it is less of the original impulse as Trauger had imagined that.

Chris: I did want to make sure that if there was something you wanted to say about the farmer training program that we grab that.

Jean-Paul: Let me just say about the farmer training program that we will be accepting applicants again. We will open up again between July and August, people check our website. We're looking for people who are absolutely committed to be long term agriculture. This is a training for people who aspire to work on a mid-scale and to make agriculture their living. We had 60 applicants last year. We were very happy about the tremendous interest that people have shown. It's a very strong selection process, we take it very seriously. We just want to invite people to follow us and apply and follow us online on all the activities that are happening here at the Hub.

Chris: Awesome. With that, Jean-Paul, we're going to turn to our lightning round, after we get a quick word from one more sponsor.

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Jean-Paul, what's your favorite tool on the farm?

Jean-Paul: Oh, my favorite tool on the farm? Well, probably a baler. I love baling hay. Probably not the one you expected to hear huh?

Chris: No, because of course we didn't talk about the hay. What about the baler? What does it for you about that tool?

Jean-Paul: Oh, well, the particular baler is a Krone Fortima baler. You know, the last number of years that I was still at Roxbury, I really felt like I want to be able to get a good grass-fed beef product and it's all in the forage. If it is all in the forage, yes, you can grow good forage but then you also have to be able to preserve it. This particular baler makes a very, very tight bale. We bale about 40% moisture and then we wrap it and it becomes baleage. Our grass clover mix, we bring our meat to the butcher and it just has beautiful marbling. I think we got the greatest compliment we could ever get, which is that the butcher himself wants to buy one animal a year from us. I mean, he's seen a lot of animals but he wants our animal for his own use.

To me, that's like, okay, we're doing something right. You know, that baler has something to do with it. Of course, there's a whole thing behind that you have to make sure that your nutrient budgeting is correct for your hay fields and pastures and everything else after forage is such a pleasure and I love making hay. It's just something it's my quality of life moment making hay.

Chris: That's awesome. Now, if I ask what's your favorite crop to grow, are you going to turn around and say hay as well?

Jean-Paul: Possibly but I really enjoy growing ... Now, I'm going to give you another answer here. Yes, hay, of course but I really enjoy bell beans and I really enjoy Crotalaria. Again, these are two green manure crops. If you would ask me what vegetables do I like, I really like carrots. I think carrots is a great crop. It's been undervalued in the marketplace tremendously but it's really nice to grow. The other one is sweet potatoes. I like root crops in general. If I want to select any crop in my vegetables that I really enjoy a lot, is growing vegetables on ridges. Yeah.

Chris: Finally, Jean-Paul, if you could go back in time and tell your beginning farmer self one thing, we're talking way back in time here, what would it be?

Jean-Paul: If I would tell myself something, well ... I've been fortunate that I had really good mentors. My mentors told me everything that I really needed to hear back then. I would say that one of my mentors was my teacher in economics. I had mentors like in a diversity of place so you have farmer mentors and my teacher economics was a mentor. He said, "You're going about to graduate from school right now," and said, "Just realize that farming is a great way to lose a lot of money." All right. He said like, "Well, what I want you to do now is that I want you to do what you really want to do. What you really believe in that you should be doing." He said like, "Become good at it and become the best." He said ultimately since farming is a good way to lose a lot of money, he said you can't really make too many mistakes.

He said that if you become really good at what you like doing most, you're also going to find is that money actually flows to good idea and good execution. He said like, "Don't ever worry about the money," he said, "Because the money will find you." I

thought that was a really great piece of advice and I followed that and it actually works.

Chris: Thank you so much, Jean-Paul, for being on the Farmer to Farmer Podcast today and let me mark something off on my bucket list.

Jean-Paul: Well, I feel deeply honored.

Chris: All right, so wrapping things up here, I'll say again that this is episode 110 of the Farmer to Farmer Podcast. You can find the notes for this show at FarmertoFarmerPodcast.com by looking on the episodes page or just searching for Courtens, that's C-O-U-R-T-E-N-S. The transcript for this episode is brought to you by Earth Tools, offering the most complete selection of walk behind farming equipment and high quality garden tools in North America.

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Thank you for listening. Be safe out there. And keep the tractor running.