Interview with Sara Via

—----------Transcript—----------

Dr. Via (00:00):

You gotta have signs or something to explain to people what it is. And there's sort of a, it's very hard to convey. I really feel like I'm being discouraging. And I'm sorry about that. But just the practical matter is it's very hard to convey enough information in a sign for people to understand what it is. You, you see what I'm talking about and I want you guys to be successful. You know, I want people to say, wow, this was a great idea. I never knew this before, et cetera. So it might be, and maybe the Bethesda Green person could comment on this. Is there a person there?

Alex (00:36):

I don't think she's here right now. She had to go to another meeting. So she just opened up the Zoom.

Dr. Via (00:40):

Oh, got it. Got cause you're using her zoom. Okay. Um, um, well, I mean they have a big either membership or mailing list or something, right? Yeah. So, um, maybe it, uh, I mean you could send out some informational material if you wanted to write some stuff and then say, we're going to try to illustrate this. Um, I personally would steer away from the demonstration because it is a ton of work and there are a lot of reasons it could go wrong. I mean, there has to be water nearby cuz you need to be able to water the plant. So, uh, and, and you don't wanna have to take people out there. And if so, if it's not right in their face, then they won't see it. Um, well, I mean, I'm not saying it won't work, but you have to really want it to work. Yeah.

Andrew (01:36):

Yeah. Um,

Dr. Via (01:37):

And it might be for your internship, you know, bang for the buck that you could transmit a lot of the same information in different ways.

Andrew (01:47):

Mm-hmm <affirmative> well, you know, we're not expecting to get, you know, the most amazing site where tons of people are gonna visit. So, I mean, most of this is for, is for Alex and I, and Bethesda Green just trying to, you know, maximize carbon sequestration. And I mean, we won't be able to prove it through, uh, necessarily like testing right away, because it's gonna take a while, but we'll be able to show all the, processes we implemented. And even if it's not gonna be able to reach a big audience, I think Alex and I, you know, it is a, it is a spring conservation project. Um, so, um, Alex and I are really just trying to have the best garden and I mean, if the demonstration isn't great then, Um, so yeah.

Dr. Via (02:36):

I just don't want you to spend a lot of time, uh, um, and, and, um, feel like you, you know, didn't get very much out of it and you know, cuz nobody wants to feel like that. And you know, are you, are you guys, um, do you take science classes in school at all?

Alex (02:53):

Yeah.

Andrew (02:54):

Yeah.

Dr. Via (02:54):

So you know how you sometimes feel at science labs, like you go and you do a three hour lab and you're thinking this didn't even work. And you know, I mean maybe your labs all work, but I've done a lot of science labs for three hours that didn't work and, and you know, people don't feel good after that. Whereas if you wrote something or, or, you know, you had me and maybe some other people talk and like a little mini miniseries, then we could show pictures and we could, you know, it, it would be, uh, uh, I think, um, maybe more motivating, uh, uh, or at least you should accompany your plot, your garden with some other information. Um, one thing maybe you could put your plot out at a community garden someplace, at least those gardeners would see it.

Alex (03:46):

Yeah.

Dr. Via (03:48):

And maybe some of those gardeners are already implementing some of the practices and you could, you know, highlight those two. I don't know if they want people coming and look at at their garden or not, but, um, mm-hmm, <affirmative>, I'm just trying to a brainstorm to get the biggest impact for your time because Hey, who has a lot of time to spend and not make an impact, right.

Andrew (04:09):

Mm-hmm <affirmative> well, we will be

Alex (04:12):

One thing is, um, we have been developing a lot of information that we'll be putting out along with it. We'll be designing a website that will, will kind of include the overview of the whole process and have a lot of information about carbon sequestration and kind of what our goal was,

Dr. Via (04:29):

Uhhuh <affirmative>. So where, where are you getting all this information?

Alex (04:34):

Um, we've been doing research online and trying to find some, trying to find some other people to interview. Um, so we've been collecting information the past, like two months now.

Dr. Via (04:47):

Oh, good, good. So, um, well, I would definitely suggest that you read that report that I wrote about carbon sequestration and soil that's about agriculture, but it gives you all the background, you know, do you build soil health? Why is soil health in, in the ditch? How does soil health relate to climate change? This is all part of the background and, you know, you can transmit to people, um, and pretty much any of those practices can, or not any of them, but many of them can be adapted to using the garden. So you could get a lot of, of rationale for why, for example, no-till works. Why, um, um, cover crops work and you can learn how much greenhouse gas benefit you get per acre for each of those, those things. I mean, that's like, and, um, you know, not to, not to brag on my own report, but um, <laugh>, I, I read a lot of stuff to write this report and there is a huge quantity of total junk out there about carbon sequestration. And so I worry if I worry that, you know, you don't wanna then slurp up some of this stuff, which is not correct and then transmit that. So, um, it's uh, uh, uh, yeah,

Andrew (06:10):

Yeah, no, we're not just blindly following what we see. No, I know

Dr. Via (06:14):

You're not, but even some crap can look like it is important. <laugh> cause the people want you to believe it so much. So I have stuck since I'm a scientist, I have stuck to the peer reviewed scientific literature. And so I am pretty sure that what is in my report is correct. Other stuff about regenerative agriculture, blah, blah, blah. There are claims out there that are, that no normal moral would know is wrong. Huh? I mean, because unless you actually know what is going on, you won't realize that what they're saying is not even true. So I worry about that. I just worry about that, cuz I don't want, you have get the wrong idea for your own selves and I don't want you to be then telling somebody else the wrong idea. So, um, I, I don't know what else to say. Uh, I, I, uh, I mean you, I would say that the two best things you could illustrate would be no-till and cover crops.

Dr. Via (07:16):

Those are the two best things. It's hard for gardeners to use cover crops, um, which are put in, in the fall and left over winter. They crowd out winter weeds, they provide organic material, but by the end of the gardening season, most gardeners including me have run out of time and energy <laugh>. And so they're like, well, and most I can do is to put the mulch leaves on these beds, but I can't, you know, it's too late to plant any cover crops, especially now that, you know, you can harvest tomatoes right up through October, right after that it's too late to plant a cover crop. So mm-hmm <affirmative> um, you could illustrate that and um, what can you measure probably any place in Bethesda, any place is gonna have pretty good soil. Uh, so it may be hard to see an increase if you had a place that, where that really lousy soil, you could see an

increase very quickly, but, um, uh Hmm. Um, it's hard to design small scale things that work mm-hmm, <affirmative>, that's the unfortunate but line. Um, so you can demonstrate the practices, but it's gonna be hard for you to show a change and you guys will be done with college by the time there's a, a, a, you know, reasonable change in those pots.

Andrew (08:33):

Yeah, no, we, yeah. We realized that the output in carbon storage, isn't gonna be great, but it'll be, um, the idea of that if done on a larger scale, it would be over time.

Dr. Via (08:47):

Yeah. Have you hooked up with the Montgomery County master gardeners? No. You know what the gardeners are? Oh, they are your people. Um, the master gardener program is a program of, of, UMD, extension at land grant universities. Okay. What is that? Extension is the wing of the university that is dedicated to teaching people outside the university about, um, uh, science based solutions to important problems. So, um, it's the people from extension who go out and teach farmers how to do all this stuff. I'm in extension. I go out and teach people about climate change. Um, we teach people off campus. And so one of their programs is the, well they, several programs. They have these, what they call extension volunteer programs. They get these folks to volunteer, to learn a whole bunch about gardening. They have master naturalists, they have watershed stewards. So these people take like, I don't know, maybe 40 hours of training.

Dr. Via (09:52):

And then they have to volunteer a certain number of hours to, you know, give back and teach other people their knowledge. So I work with the Montgomery county master gardens a lot. I just participated in their, one of their, you know, trainings and, um, they are, they have a demonstration garden out there at, um, the agricultural. What do they call it? Agricultural, uh, research park. No. What do they call it? Um, on where is it? It's on what name? It's off Muncaster road. Um, all I know about this road is that I get a speeding ticket every time I go down there because they have all these traffic cameras that are set for like 35. Um it's um, but I could give you the name of the master gardener coordinator, and you could say, Hey, this is what we're interested in doing. And if you put your plot out there at their, um, you know, home base, they have a big garden, big demonstration garden out there.

Dr. Via (10:55):

You could probably get up on your master gardeners to help you. And, um, and, uh, it would be a place where, you know, at least some people would see it and there'd be water and other stuff. Right. So, and probably a lot of the them are already doing these practices. So you could kind of interface with some of the educational things they're already doing. Does that, it sound reasonable that way. You're not out there in the wilderness on your own. That's that that's hard. <laugh> being out there on your own is hard. So, um, uh, you know, that's, my suggestion is hook up with those guys. They may know of community gardens where you could put, um, a little plot or, or put out some information or somehow, you know, if you have a website or, you

know, something, you could build up a mailing list. And, uh, I mean, I, I, I know all the master gardens already know about carbon sequestration and stuff cause <laugh>, I taught half of 'em, but, um, um, uh, they would be delighted I'm sure to work with you. And um, and I think that would, um, that would make your life a lot easier.

Alex (12:06):
Mm-hmm <affirmative>

Dr. Via (12:07):
Um, who is sponsoring this, this internship, is this through Bethesda Green?

Alex (12:12):
Yeah.

Dr. Via (12:13):
Is it some formal internship program?

Alex (12:15):
Yeah.

Dr. Via (12:16):
Okay. So you, you have, there's some ex expectation of you doing, you know, a project and writing a paper or doing something mm-hmm <affirmative> and then you get, you know, credit or money or just general accommodation for this

Alex (12:30):
Yeah. I mean, I'm personally doing this through high school Uhhuh

Dr. Via (12:35):
<affirmative>,

Alex (12:36):
But then through Bethesda Green we have expectations of like develop, developing a spring project report about it.

Dr. Via (12:45):
Right. Right. Well maybe, um, you know, you guys could give a talk to the Bethesda Green people. Don't they sponsor talks all the time. I know I've given for Annapolis green and Poolesville green and I don't know some of the other greens, um, uh, uh, so, you know, maybe you could do that. Mm-hmm <affirmative>, you know, get some in person teaching experience. That's always, that's always good. Um, uh, okay. I don't feel like I've been a whole lot of help. Um, uh, one thing you could do is, um, I have given a bunch of webinars on this stuff and, um,

uh, I think most of them are there's videos on my website of, um, one about soil health and, and carbon sequestration, mostly about soil health. Um, I, I wonder if I have any recorded videos specifically about carbon sequestration? I don't know, but then I also have, um, webinars that I've given to master gardeners.

Dr. Via (13:54):

Um, one, I call regenerative landscaping and that is how to reduce the carbon footprint of your yard by mm-hmm <affirmative>, um, planting low mow grass. This might be a good demo for you low mow grass. That only has to be mowed like eight times a year instead of 30. Okay. So yeah, it can, this grass could conceivably reduce carbon emissions from mowing by like 60% huge. Okay. Um, and then I also talk about planting beds of deep rooted perennial plants to increase the soil health, bring in pollinators boost, biodiversity, um, help control water flow across your property, cause the deep rooted plants allow rain to infiltrate better. Um, and so some of those ideas I think are very consistent with what you're trying to do, which is help people understand how to garden and landscape in ways that will be climate friendly. And um, so, uh, you know, I can, I think you have a link to my website from my emails, right? Andrew. Yeah. Um, if, if, uh, or I can just send you some links to these webinars if you want. Um, um, and you know, you can watch 'em while you're <affirmative> on the treadmill or what <laugh>, whatever. Um, uh, but uh, you might then be able to broaden your, you know, concept of the project to make it easier for you to mm-hmm <affirmative> actually engage people and transmit some, you know, information that is useful to them. So, um, <affirmative>, you know, there's just a bunch of ideas.

Dr. Via (15:36):

Uh, I, if you want to make a plot, Hey, make a plot. I would definitely, uh, contact the Montgomery county master gardens though. Cause if you could do it out there, a lot of people would see it it's that the agricultural, um, agri throw farm park, they call it and it's on. Um, I don't know if you just Google a Montgomery county, agricultural farm park, you'll find it. And that's where the extension offices are and that's where they have this, um, this, uh, um, master garden sort of demo garden. Uh, and they're probably doing stuff in the air and you could put signage and, you know, stuff mm-hmm <affirmative>, you know, here's cover crops. Here's no till here's whatever here's mulching and um, and uh, you know, show how much mulching reduces the soil temperature and reduces evaporation. I mean, all that is really important using water wisely in the garden is super important for climate change. Um, so I, yeah, uh, <laugh>, I, I'm happy to try to help. I don't have a lot of time to do, you know, like, uh, new things, but I'd be happy to, you know, um, help you in sort of, um, <affirmative> sift through the ideas mm-hmm <affirmative> if, if that is any help at all. So I I've tossed out a lot of things. Um, is there anything else I can do while we're talking?

Alex (17:05):

Yeah, I think we had a, we both read your report, so we have a few questions kind of.

Dr. Via (17:10):
oh yeah, good.

Alex (17:11):
We can apply to our, yeah, go. Sure. Um, firstly, what are some like more unique strategies to carbon sequestration that you've found through your research kind of different from like the basic ones that pretty common like or common knowledge like no-till for example?

Dr. Via (17:31):
Yeah. Um, well planting Woody plants is really useful. I mean, this helps for a couple ways if people plant native shrubs, for example, that helps with pollinator and habitat, but Woody plants also sequester carbon, not just in the soil, through their roots, but in the wood. Right. So that, um, that, uh, boost carbon sequestration in the garden there's um, the other thing people can do is, uh, uh, um, what says, uh, a little bit of a sort of offshoot, but, um, they can plant, um, like, um, fruit, fruit, you can do multi what's called multi-layer planting and the permaculture people call it permaculture where you have, you know, taller plants and then you plant shorter plants, shorter like shrub plants underneath, and then you plant stuff underneath that. So you get, you know, this whole three dimensional vertical thing going that also increases carbon sequestration.

Dr. Via (18:32):
Um, uh, let's see. Um, so what you really wanna do in people's yards is you want to reduce their use of gas powered yard, equipment mowers, leaf blowers, especially leaf blowers, uh, are three times emit three times as much as lawn mowers and they're totally not necessary. Right. Who needs to blow the leaves? Nobody who needs to blow the clippings off the driveway, you know, nobody. Um, and, um, I mean a lot of people think they do, but, uh, so, you know, you could, there's a lot for you to say to people mm-hmm <affirmative> um, uh, and, um, you know, probably a lot of people who would tune in to Bethesda Green are already interested in, um, finding solutions to climate change.

Andrew (19:23):
Mm-hmm <affirmative> um, yeah. So I, in your report, you talked a lot about how like, uh, fertilizers with nitrogen are really bad, uh,

Dr. Via (19:34):
Synthetic nitrogen

Andrew (19:35):
Synthetic. Yeah. And then you also, there's also mentioning of compost and bio solids, so what kinds of, um, what could we add to the garden in term, like to boost the net primary productivity? Like not just plants, but like other, uh,

Dr. Via (19:58):
Yeah. To just sort of boost the whole soil ecosystem.

Andrew (20:00):
Yeah.

Dr. Via (20:01):
Well compost mostly, you know, uh, and, um, so compost is just well degraded organic material. Uh mm-hmm <affirmative> <affirmative> and, um, uh, you know, you can buy it, uh, you can in Montgomery county, I think you can go and buy, uh, what do they call it? Leaf grow, which is composted leaves. You can buy that at a bunch of Montgomery county sites. Um, but that's well, um, decomposed organic material, so it doesn't smell or anything. And you put that down and then what happens is the microbes use further eat that. Okay. And then that builds up the microbial population. And what they do is when they, um, further degrade that compost, then they, that releases the elements that were in whatever dead material was made the compost. So it releases nitrogen and phosphorus and other stuff, and then plants can pick that up.

Dr. Via (21:01):
And so if you have enough, um, organic material from compost or whatnot, and in the garden, you don't need to put on synthetic nitrogen fertilizer. Um, uh, the other thing people can do instead of applying synthetic nitrogen fertilizer is to grow Legume crops like beans and peas or legume cover crops like Clover, winter peas, <affirmative>, um, you know, alfalfa or, you know, some other. And then, um, in the spring, instead of pulling them up, just like take a mow or weed whacker and just go right down to the surface, leaving the roots because the roots will have the nodules in there. You probably saw the pictures in my report about root nodules and how the bacteria are living in there. And then they leach out nitrogen. So you do that stuff. You don't need to go buy Osmo coat or Miracle Grow or whatever that people buy because to make that synthetic nitrogen fertilizer is super energy intensive, they have to get temperatures up to, I don't know, 600 degrees or something by burning propane mm-hmm <affirmative>. And then they'd have some, you know, it's called the Haber Bosch process. And then, you know, somehow they're able to fix nitrogen. Um, but, uh, they only invented that in 19, the 1940s before that the only nitrogen that was, that came to earth that was suitable for plants was fixed by microbes. How cool is that? Right. And nitrogen fixing microbes evolved about the same time as photosynthesis, so is really pretty cool. Um, uh, so you can encourage people to do that. That's a, that's a good contribution along with not mowing. Um

Alex (22:57):
Hmm.

Dr. Via (22:59):
Yeah. Other questions.

Alex (23:02):

Um, yeah, I just wanted to say, we have the meeting will close at two 10, so. Um, so we're looking at how to limit soil disruption when we're first planting our garden. Do you have any advice?

Dr. Via (23:17):

Um, yeah, it's hard when you're first planting, cause you have to get, you know, depending on what is there already, if there's some, you know, lawn that's been in there and is, you know, somebody's been fertilizing and <laugh> has really thick it very hard to get rid of that. Um, uh, a really great way to do it is to put down a tarp for like six months to a year and um, that'll kill all the vegetation underneath. And then when you take the tarp off, um, weed seeds live in the soil for years. So what happens? You take the tarp off and then all these weed seeds are like, Hey, you know, bare ground and they germinate. And then you can very lightly hoe and get rid of those. Or you can spray 10% or 15% vinegar. And that kills them. Um, you can even spray household vinegar on little weed seedlings, cause they're so small, they have no roots.

Dr. Via (24:15):

So when you singe off the leaves, they just die. Mm-hmm <affirmative> so do that then you, and then you get rid of those weeds and then you wait another 10 days, you do it again. And then, Hey you, you've got, what's called a stale seed bed. You've got a blank piece of ground and you've germinated a bunch of weed seeds already. I got rid of them. And then you're not gonna just every time you disturb the soil, you bring more weed seeds up. So then you don't disturb the soil. You just go down there and make some grooves and put your plants in and then mulch it with something or draw paper. Um, there's a great horticultural paper that I'm, I love called weed guard. It's two feet, three feet or four feet wide. And you just, if you're planting transplants, you just make a little X in there and put the transplant through the paper and then the paper blocks the weed. Uh, cause people for years have gone out with newspaper and paper bags and stuff. That's so annoying to go out with newspaper, you know, those newspapers and the second the wind comes up, there they go, you know, these little pieces like this, I roll out this four foot by 50 foot length of weed guard. It's like, okay. And we're done. And then I make the holes in there. If I wanna grow beans, I make little trenches, little slits and plant the seeds. No we, so yeah, that's a breakthrough seriously.

Andrew (25:41):

So what about, uh, adding new soil?

Dr. Via (25:47):

Um, no, that's a waste. People go and buy of bags of soil at home Depot who knows what's in that it could be full of heavy metals or whatever. You don't have any idea how good it is and it's really expensive. So if people wanna add something in Montgomery county, they, you know, uh, they can, I don't know if you can get this delivered or not, but they can just go to of the places that sells leaf grow. Cause Montgomery county compost the leaves and turns it into this leaf,

grow stuff. If you wanna add something, get a bunch, a truckload of that and spread it out. That works really well. I've even driven all the way to Montgomery county to get some of that myself.

Andrew (26:25):

Yeah. Wow. <laugh>

Dr. Via (26:27):

Yeah. Now they make it in Howard, but I, I'm not sure how good it is. Um, they should have a report on their recycling website, Montgomery county recycling website, if you just Google Montgomery County leaf grow, they should have a soil report about what's in that, whether there's any bacteria or anything like that in there.

Andrew (26:46):

Mm-hmm <affirmative>

Dr. Via (26:49):

Any other questions?

Alex (26:50):

Yeah. I wanted to kind of build off what Andrew asked. Um, how can we kind of help develop, um, the myccorhizal network of fungi.

Dr. Via (27:02):

Put down.

Alex (27:03):

Okay.

Dr. Via (27:04):

Yeah. And, and don't, don't don't till, and don't, you know, do a lot of hoeing, heavy duty hoeing. I mean you can, I use, what's called a stir pole. I don't know if you know what that is, but it's lisort of like a stir up and it has a hinge and it pivots on the end of the, the stick. And so when you push it, it goes about a quarter inch underneath the surface of the soil and cuts off the little weed seeds and then you pull it back, you cut off some more, so you like push it and pull it, no lifting, no w what just pushing, pulling, you can do in a whole bunch of weeds and you only disturb the top half inch of soil. So, you know, that is really helpful. Um, um, your, the question you just asked was, say it again

Alex (27:48):

About kind of helping to develop the myccorhizal fungi.

Dr. Via (27:51):

Oh, develop the micro rising. Yeah. I would say, you know, just, um, uh, just don't disturb the soil and give 'em some compost to eat and oh, and, um, that's what cover crops over the winter also do is they provide living roots in the garden beds and the plants when they photosynthesize. Um, I discuss this in the report. They photosynthesize and they make sugar from photosynthesis and they pump it to the roots and it gushes out the roots and the microbes eat it, including the <affirmative>, uh, mycorrhizae who send little parts, little hyphae into the roots. And, and you saw the picture maybe in the report, they sort of, uh, the mycorrhizae, uh, grow out to fill the little roots cell completely. And then the plant sends, um, sugar from leaves down to the roots and mycorrhizal are in the root cells and they're like slurp and they take that out of there and then send it out of the plant down that mycorrhizal network, even to other plant species. It's really cool. Mm-hmm <affirmative> they can, the mycorrhizae can selectively determine which plant species get the sugar so they can take it from plant species A and say, eh, Hey, I'm gonna give this a plant species B. They're a force, an ecological force. Very cool. Yeah. So, but if you protect them by not killing and give them living roots in the winter, you will have mycorrhizae, like crazy.

Alex (29:26):
Okay.

Dr. Via (29:27):
Yeah.

Andrew (29:29):
Gonna get that one down.

Dr. Via (29:31):
<laugh> I decided that I wanted to see if I could see mycorrhizae in my garden <laugh> so I found this really cool method that involves just, you know, bringing up some roots. I, I went to, um, part of my yard is, is abandon pasture. And, um, I went and dug up, you know, some roots and.