Soil Sampling

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SPEAKERS

Christa Hartsook, Joe Hannan, Olivia Hanlon

C Christa Hartsook 00:15
Hello, and welcome to the small farms podcast, a production of the small farms program at Iowa State University Extension and Outreach. Our podcast covers the opportunities and challenges associated with rural life.

O Olivia Hanlon 00:28
In this episode, I interview Joe Hannan, Commercial Horticulture Field Specialist with Iowa State University and talk about soil sampling. I'm Olivia Hanlon, Farm Food and Enterprise Development Extension Education Specialist, and welcome to the show. Joe, welcome to the show. Thanks for being on again.

J Joe Hannan 00:46
Yeah, it's good to see you that we're back on a weekly basis here. So how's it going, Olivia?

O Olivia Hanlon 00:53
It's good. How's it going there?

J Joe Hannan 00:56

I can deal without the snow but...

O Olivia Hanlon 00:58
Me too.

J Joe Hannan 01:00
Yeah.

O Olivia Hanlon 01:02
All right, Joe. So today we are talking soil sampling, do you want to kick us off with a little bit of background info on that?

J Joe Hannan 01:10
Yeah. So fall is a good time to start sampling your soil to see what nutritional values are showing up in the in the ground and really help you make decisions for fertility next year, either pre-plant or during the season. So I wanted to give a little bit of tips and tricks on soil sampling and kind of walk through how to do it and how to do it, right. So it's a really if you haven't sampled soil in the last three to five years, it's probably a good time to do so, especially true if you're growing apples or grapes. If you're growing vegetable crops, I usually suggest maybe doing it every two to three years. But I thought I'd guess I'll just run through some of my tips for getting started. Tip number one collect one sample per soil series. So if you have a large field, if your field was over that five to ten acre range, you may have different soil types that you're farming on. And those different soil types can impact what the availability of nutrients are, from one soil type to the other. So if you have a large field, you want to sample just from a single soil type area. And you can find out what your soil types are and where they are on your farm by going to the lead Soil Survey, typing in your address, finding your farm, and seeing where those soil types are going to be located within your field. My next tip is to collect one sample per cultivar or crop. So cultivars can have tremendous variability in their nutrient uptake. And that can impact what's available within the soil. So if you're sampling across a bunch of different cultivars, you may not be getting a really good idea of what's actually going on. So things like Marquette, Honey Crisp, sweet corn, pumpkins, they can all take up nutrients very different from other crops and other cultivars. The next one here is really key. And that's get a soil probe, if you don't have a soil probe, go check out your local county extension office. Most extension offices will have a soil probe that you can borrow and take your soil probe out to your field and randomly find a place to put it into the ground to a depth of

about six inches. Or if you then historically sampling from a depth to a depth of eight inches and down to a depth of eight inches. But for this, I'll use six inches. Pull that probe up out of the ground, knock off that top quarter to one half inch of grassy debris on top of that core, and take the rest of that soil core and throw it into a good clean bucket. And then do that 10 to 15 times across your field. So you should pull out 10 to 15 soil cores and put them into that bucket, and that will be your soil sample. So that'd be plenty of soil. And you're just need about a cup to a cup and half of that soil. So take those core chunks of soil that you pulled out, break them up, modernize them inside that bucket. And then you're going to take a cup and cup and half of that and that's what's going to get mailed into your lab for analysis. So as you're out there randomly putting that probe into the ground, when you're out in the vegetable field, I just do it randomly across the entire field. If I'm out in a vineyard or an orchard, I don't take my soil sample directly within that bare ground area right underneath the tree or underneath the vine I collected from that middle way between the rows so in that grassy area in between the rows. So as you're collecting your samples, avoid any oddities. Don't collect from low line wet areas, don't collect samples right along gravel roads, over top of old building sites, you really want that soil sampling be uniform and representative of what's going on over the entire field. So avoid those oddball areas because that will throw off your your reading. And then the one that we're kind of dealing with right now, which is kind of why I held off on doing a soil sample podcast here, is we want to not do it when the ground is bone dry. So Eastern Iowa has been fine, to be soil sampling for quite a while now, but Central Iowa, western Iowa, are soil has been really pretty dry up until just last week or so. So we want to wait until the grounds not bone dry, but yet now we're getting quite a bit of rain. Some areas just saw two inches of rain with more rain coming. So we want to wait now until the soil is kind of dry out again a little bit. You don't want them to be saturated when you're collecting that soil sample. And the reason we don't want to be bone dry or saturated is because it can throw off your pH reading that you'll get as well as the potassium reading that you'll get from your soil samples. So just let things dry out now, here, give them a few days to kind of settle down and then go out and collect your sample.

O Olivia Hanlon 06:15

All right, those are some great tips for our listeners. Joe, you mentioned sampling every cultivar, if people are in a bit of a pinch, do they have to sample everything?

J Joe Hannan 06:26

No, you do not have to go out there and sample everything. The reality is of specialty crops with whether we're vegetables or grapes or apples, we probably have one or two primary crops, one or two primary cultivars, and then we have these other smaller fields,

other smaller plantings of cultivars that we're not really going to make different management decisions on those small areas. So a lot of times I'll say is go out and collect a sample from your primary moneymakers out in the field and use that information to make decisions over the entire field. So again, if Marquette and Honey Crisp are your primary cultivars, your money makers out there sample from those areas and use that information to make decisions across the whole field. Likewise, on vegetables, if you're growing sweet corn, and you're growing pumpkins, and maybe you've got melons and tomatoes, those are going to be your moneymakers. And then if you have a lot of other smaller plantings, use that information to kind of extrapolate out and move and make decisions there. The reality is, it's not cost effective to go out and sample everything and collect 20 different samples every couple of years. And we're not making management decisions down to an eighth of an acre or less than eighth of an acre. We don't have variable flow rate fertilizer spreaders for most of our specialty crops. So we're not going to use that information. So don't collect it, I guess, don't spend the money on it.

O Olivia Hanlon 08:06
Right, that makes a lot of sense, Joe.

J Joe Hannan 08:08
Yeah, we gotta we gotta be practical and realistic here.

O Olivia Hanlon 08:11
Right. When we are pulling these samples, and we're getting ready to send them in, what is it exactly that we're looking for?

J Joe Hannan 08:20
Yeah, so when we're talking perennial crops, but even annual crops, there's really only a couple things that we need to look for. One is soil pH, because that will tell you what the micronutrient availability is for the soil. We want to check electrical conductivity just in case we need to bring down the soil pH. And if the soil pH is low, the lab automatically do a buffer pH for bringing the pH up. We want to check for organic matter because that gives us an estimate of how much nitrogen is available to the plants during that main growing season. We want to check potassium and we want to check phosphorus. Though in perennial crops, we're not really going to change potassium and phosphorus or pH too much or real easily. But certainly with the annual crops we can change modify those pretty easily because we can till up and incorporate those nutrients into the ground. But

again, with a perennial crop, sulfur or limestone or potassium, phosphorus, they have to be incorporated into the soil so you're not making much changes regardless. What you don't need to be testing for is nitrogen, calcium, magnesium, micronutrients, your partielle samples are going to tell you your status of those nutrients actually in the plant. There's not great correlation between what's available in the soil and what actually makes it to the plant. So you're better off using your partielle samples, you're better off watching and interpreting what's going on during the growing season with those nutrients and making fine tune adjustments during the season.

O Olivia Hanlon 09:55

So when we're looking for those things that you just mentioned, pbviously, we aren't going to be able to find those. So where would we send our soil test to find that information out?

J Joe Hannan 10:05

Right. So you can actually get a soil pH and EC, and you can test for potassium, phosphorus and things you can do that with kits that you buy yourself from places like Amazon, the accuracy of those kids aren't going to be great. But they will provide usable information, if you want to do it yourself. If you want to send it to a lab and get a more accurate test, and really, you're not paying any more for sending a couple samples to the lab than you're providing a kit. The Iowa Department of Ag and Land Stewardship, they certify labs. And so any certified lab in the state should be able to analyze your soil sample and give you a consistent response regardless of what lab it goes to. Where I find there are some differences, there's some variability there, is in the interpretations. There's a couple labs, I really like that do a good job of interpreting that soil analysis for specialty crops. So I a lot of times we'll send samples to Minnesota Valley testing lab, and they're up in Nevada, I believe. And again, why I like sending samples to them is because they interpret the soil results, and do a very good job of interpreting them for specialty crops, like when somebody comes back to me with samples from that lab. Oftentimes, it very closely resembles what my interpretations would be. So that just saves people a step. The other lab that I really like that does a great job in interpreting for specialty crops is Waypoint Analytical over in Atlantic. And again, they do a great job of interpreting for specialty crops. Now, I know there's lots of other labs out there, I just don't see results from those other labs often enough to comment how good of a job they do for interpreting for specialty crops. But the results that you get from them should be the same as any other lab. And I think Olivia, we can probably put a link to the certified labs list in our show notes, I assume?

O Olivia Hanlon 12:15

Absolutely, we can. And that link will be in the description here. So we've talked about how to gather the samples, what you're looking for, and where to send them. But what are we going to do with all this information that the lab sends back to us, Joe?

J Joe Hannan 12:29

So I wrote a couple of really good articles for you last year that are available on the Acreage Living Newsletter. So one is called Interpreting Soil Reports (www.extension.iastate.edu/smallfarms/interpreting-soil-reports). And the other is called Managing Soil pH and Horticultural Crops (www.extension.iastate.edu/smallfarms/managing-soil-ph-horticultural-crops). And those go into great detail on how to interpret your soil report and make management decisions or fertility applications to your field. Or they can always reach out to myself or Ajay Nair or Patrick O'Malley and we can work with you one on one to help make management decisions. Again, because the reality is soil tests give you some information. But your action should be based on multiple years of soil reports as well as visual observations in the field as well as fullier samples of partielle samples out there. So

O Olivia Hanlon 13:24

Those sound like a couple of great resources for folks already on our page. Is there anything we didn't talk about today, Joe that you'd like to cover?

J Joe Hannan 13:33

I do kind of remember one thing I wanted to cover a little bit one, which I kind of hinted out here a little bit is information you get from soil reports is good information. But it's not the be all end all of fertility applications to your field. When you start getting into fertility, things can get really complicated. So by all means do reach out to myself or Patrick or Ajay, and we can help you work through those decisions and how best to go about it because what we can do in annual crops is so very different on what our availability for action items on perennial crops are. So we're happy to work with you.

O Olivia Hanlon 14:14

That is great to have a point of contact for these folks. Thanks again for being on Joe. It was great to have you back and I look forward to further podcast with you.

J Joe Hannan 14:24
Talk to you next week.

O Olivia Hanlon 14:27
Sounds good.

J Joe Hannan 14:28
Take care Olivia.

O Olivia Hanlon 14:30
You too Joe.

14:31
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