Cultivating Cannabis

Transcript – Soil & Nutrients

Welcome back to Cultivating Cannabis. This is Module Four: Soil and Nutrients.

Stephanie Syson: We are back with Nate to talk a little bit more in-depth about soil and nutrients for the cannabis plant. So, Nate, if someone is gonna grow in their backyard what are some things they really need to consider when they're thinking about prepping their ground? How do they get that going?

Nate: Well, there's a lot of things to consider. One is location. You know we were talking a bit in the last module where I was here about sunlight, you know, that's a huge consideration. Also, proximity to water, you know, making your life easy so that it's obvious not a pain in your behind, but when it comes to actually prepping the soil, you wanna, you probably wanna add a bit of compost and maybe a cover crop. I would think that you'd like to get started maybe like in the late fall prepping your ground.

Stephanie Syson: It's definitely one of my favorite times to think about next year's garden.

Nate: Sure.

Stephanie Syson: And we've got our little friend Eli here visiting with us.

Nate: Eli, he's our mascot.

Stephanie Syson: This getting that bed ready in the fall, by adding all the compost at that time, I feel like when spring comes the worms have already had time to integrate it --

Nate: Sure.

Stephanie Syson: -- and it's just like booming and ready to go.

Nate: Not even just the worms. I mean there's like billions of living organisms in the soil, so they all -- I mean, they slowdown in the winter, but they're all still working, they're still churning, they're still chewing. Any mulching that you can do, you can even do a cover crop like a winter rye or something -- there's many things; that's a whole nother course.

Stephanie Syson: Great. So, like we talked about in the other module, cannabis is a heavy feeder --

Nate: Absolutely.

Stephanie Syson: -- and so if we're thinking about adding compost, we really wanna be --

Nate: Yeah

Stephanie Syson: -- be heavy-handed in what we're adding, do you say?

Nate: Yeah, absolutely. I would put at least, especially if you're prepping new ground -- well, I would say generally like almost like two to three inches which is quite a lot, I think. And you can go up to, I think, six inches if you have access to the compost without breaking the bank or something like that. Really, the more the merrier.

Stephanie Syson: And in regards to compost, do you feel like there's a certain type of manure in the compost that is better for cannabis like chicken versus horse or any of those? Or does it matter?

Nate: I don't think that there's a particular manure that's more suited to cannabis. The most important thing is just that it's well composted meaning that it's cooked off, that the nitrogen components that turn into ammonia have changed so that they're not -- so that you won't burn your plants. If you put fresh manure on your plants, you're gonna burn them, you're gonna hurt them and you're gonna inhibit them from being as lively and vigorous as you would like. So more important than anything about when you're selecting a compost source is just to consider where it came from, what went into it, how it was cared for, how it was composted, how long it actually went through the process of composting much more than like a specific animal, I would say.

Stephanie Syson: Okay and so we really want, in good finished compost, I always like to take it and smell it. And smell if it smells like manure or like good, living soil. That's kind of my cheater method.

Nate: If it's physically hot in your hand, it's a pure giveaway.

Stephanie Syson: It's probably still composting.

Nate: It's still composting. It's still cooking.

Stephanie Syson: Okay and what about if someone is only able to grow in pots outside --

Nate: Yeah.

Stephanie Syson: -- on their deck or something, how does that soil mix change? Are there some recipes that you like when you're growing in a container?

Nate: Sure. This big, big topic, but so, I'm a big fan of heavily amended soil mixes for cannabis. There is a way that you can put that your plant will ever need through its life cycle in your soil when you're mixing it for your pot and then essentially just a little bit of water and some potential microbial inoculants or compost teas just as a little boost. And a plant can go start to finish with very little addition; it just takes some work up front. That's my favorite way to do it.

Stephanie Syson: Is there a company that sells a potting mix that you like or you have a recipe of making it?

Nate: There's both.

Stephanie Syson: Or this great book that you showed me?

Nate: Yeah, there's this great book; the Rev is a veteran Canadian grower who's been doing it for like 50 years or 40 years at least and he's developed this technique. And he does a heavily amended soil mix; it's peat and compost-based. It's basically -- it's close to like 1/3 peat, 1/3 compost, 1/3 like aeration material like we were talking about before and then there's a bunch of additional amendments. Things like kelp meal and blood meal and feather meal and bat guano and -- oh man, there's tons of 'em. Alfalfa's a good one, but he has very specific -- in his book, this one, "True Living Organics," he has very specific recipes on exactly what you can get. He even has a chapter on where you can source those products from.

Hi Eli, but there's also a wealth of information on the internet. There's a guy named -- his name is Clackamas Coot as funny as that is; it's an internet like forum deal. But he's really popularized on the internet mixing your own soil at home for pennies on the dollar for what you'd buy it for. It does take a bit of work and some -- you gotta source your material, but if you ever, if anyone at home can ever look up Clackamas Coot, just say Clackamas Coot soil mix online, you can find again, very specific recipes that are really easy to follow. They're pretty inexpensive to put together on your own and you're setting yourself up for the basis of living soil which is what I advocate for very strongly. Life breeds life and if you want healthy, medicinal plants, you might as well have life in the soil that's producing them.

Stephanie Syson: And so, a lot of people talk about flushing pots and I know we discussed this a little bit. Can you tell us what your theory on flushing pots -- tell Eli and I.

Nate: Eli, if you're growing in an organic way that's living soil and with natural amendments and no synthetics, you'll never need to flush. Flushing it became a, you know, a term in the cannabis industry is because most people use -- I wouldn't say most people. Many people over time use synthetic, bottled synthetic nutrients or even just crystalline synthetic salts.

Stephanie Syson: I'm gonna send you away now.

Nate: And those salts build up in the soil and they build up in the roots of a plant and if they're not flushed, they can really cause some issues. So essentially, if you don't use synthetics, you never have to worry about flushing. It's as simple as that.

Stephanie Syson: And so, in books like this, they'll have recipes of how someone can just have one type of soil in their pot the whole life cycle of a plant.

Nate: Sure.

Stephanie Syson: Is there not a difference between what nutrients the plant might need in vegetative growth versus flowering growth?

Nate: There is --

Stephanie Syson: Cause I know I've seen bottles of things that say for flowering --

Nate: Yeah, yeah.

Stephanie Syson: -- for veg growth. What's that whole --

Nate: Well, the biggest difference is like the vegetative growth's very nitrogen-heavy. So that's what causes the vigorous green growth and all the leaves and stalk development is nitrogen. Not to simplify it so much, there's a lot of other micronutrients involved.

Stephanie Syson: Sure.

Nate: There's still calcium, magnesium and silica's a big one, but less phosphorus and less like, you know, generally speaking, the NPK thing's well known. That's how they label fertilizers and how they rate them, but it turns out it's a little more complicated than that. There's a lot of players involved, but to use that as an example, the vegetative growth is all about nitrogen. And then as you slide into flower, more potassium and more phosphorous are needed and really a calcium boost too, late really helps.

Stephanie Syson: And so if you were wanting to -- maybe if you thought you didn't have a really good balance of all those things in the starting soil, are there certain things naturally that you can add as the plant goes into flower that might be beneficial for that stage?

Nate: Sure. Again, I'm a big proponent for teas.

Stephanie Syson: Like compost teas?

Nate: Yeah, like compost teas, but also fermented teas; fermented plant teas or they call 'em fermented plant extracts or fermented plant juice and you can find a lot of information on your own on the internet if you just look up those things. But essentially anything that's -- bone meal, fishbone meal, people make actually -- a common thing is an extract out of fruit; papaya and pineapple are the most common. They ferment that for a couple of days and that's a really good boost the first couple weeks in flower like a weekend and then maybe at three weeks into flower. Those are really good times to do an additional phosphorous and potassium.

Stephanie Syson: Is that a tea you would add to the soil around the plant?

Nate: Once you ferment it, you put very little; it's like 30:1 into water and then you water it in regularly.

Stephanie Syson: Okay.

Nate: Yeah.

Stephanie Syson: What is your feeling on compost teas or nutrient teas like that on a foliar feed versus a soil feed and why would you choose one method of feed versus the other?

Nate: I wouldn't really do the nutrient teas as a foliar, but I would, I do do compost teas as a foliar feed and essentially what you're doing there is -- well alright, so compost teas when I think about them are actively aerated so they're aerobic; it's an aerobic process. You introduce a little bit of compost, a little bit of a feedstock and most common is molasses, but there are a lot of other things that little micro herd like to eat. And so, you introduce some food, some oxygen, and some biology and then by brewing it vigorously, by having so much air available, the populations explode by like the trillions. So, what you're doing when you're adding compost teas, in my opinion, you're not really feeding very much, but what you're doing is like a microbial enhancement.

Stephanie Syson: Like a probiotic shot --

Nate: Like a probiotic, exactly. So, what that helps with is nutrient cycling. So now there's more life that can build symbiotic relationships with plant roots, that can work to find all the things that you need in your soil mix and bring it up to the plant so it can be expressed. I think it's great and I use that for foliar too for any sort of fungal issue that could show up on plant like any sort of like PM, like powdery mildew, anything like that. Anything that's like microscopic in nature, basically the good guys will outcompete the bad guys. So, if you just bring in a lot of the good guys, it's like a shotgun approach; nature will sort it out.

Stephanie Syson: That's what I feel like in almost all gardens or all gardens, it's really the diversity --

Nate: I agree.

Stephanie Syson: -- that ends up saving the day. I can add only so many things or understand only so much, but if the bacterial and the fungal life is really dense and diverse, it seems like everything just kind of sorts itself out.

Nate: Yeah, it's true. I couldn't agree more. Nature thrives on diversity, so why try to limit that?

Stephanie Syson: Absolutely.

Nate: And that's what synthetics do is they limit the diversity by giving all the microbiology the time off. They don't have to work anymore, they don't have to -- because there's all this excess nutrient available, they don't have to build relationships with each other and they die off and so that's not very diverse.

Stephanie Syson: No. Okay, so there's a couple common additions people are used to hearing about being added to different gardens and so I'd love like just the real basics of bloodmeal. What is bloodmeal adding and why would cannabis like that?

Nate: Bloodmeal is a very potent nitrogen addition and it's a very fast-available nitrogen addition. There's certain additions that are readily available right away to a plant and there's certain things that take a little bit longer to gestate and to become available. That's fast nitrogen.

Stephanie Syson: Okay.

Nate: And so especially in your vegetative state, if you want nitrogen right now if you want a boost, bloodmeal.

Stephanie Syson: Alright. How about bone meal?

Nate: Bone meal, I mean it's calcium and phosphorous essentially. So, I like to use bloodmeal about the third week -- I use it right around when the flowering is flipping and around the third week. And it really helps to finish buds, to help them become more dense and more solid.

Stephanie Syson: Okay, so bloodmeal more at the beginning of the vegetative growth cycle --

Nate: Sure.

Stephanie Syson: -- and bone meal more at the finishing of the flower stages?

Nate: Yeah. Yeah.

Stephanie Syson: Okay. I often see in grow stores like bat guano, is that manure particularly valuable or just trendy? Or why do I see that a lot in grow shops?

Nate: I think it is valuable. It's pretty concentrated. It's very potent. I'm sure there's a trendy aspect to it, but there's also many different species of bats in the world. So, there's bats that have really high nitrogen in their manure and there's bats that have really high phosphorous in their manure. They're like from Indonesia and they eat fruit. There's bats with more potassium, so -- and they're all incredibly potent. So --

Stephanie Syson: A little goes a long way?

Nate: Exactly. It's bang for your buck a little bit, but it is kinda pricey, but a little goes a long way is a good way to put it.

Stephanie Syson: Okay and we talked a little bit about eggshells in our potting mixes for drainage, but how do you feel about the viability of the calcium that comes from adding eggshells to your garden?

Nate: It's gonna take a while.

Stephanie Syson: It's gonna take a while.

Nate: I'm a big proponent, you know, like you of if you're growing in containers, re-use your soil, re-use your soil, re-use your soil. There's nothing wrong with it and in fact, you're encouraging more life to flourish the longer that you allow soil to be alive. So, eggshells can -- so, eventually that calcium will be available if you continue to use your soil. It's gonna take a while, but like aeration, I think it also gives some of the micro herd places to live. The porous spaces on an eggshell could be a good habitat for tiny little buggies and so, I think there's that addition too.

Stephanie Syson: Okay and I've also heard of people using Epsom salt for a magnesium source. Is that something you have any experience with?

Nate: Yeah, it is. I have used Epsom salt for magnesium deficiency. It was back when I used to grow in a way that was a bit less considerate on the front end and it was --

Stephanie Syson: More reactive?

Nate: -- more, exactly, more reactive. Oh, I looked in this book. It says magnesium deficiency looked like that, that's what my plant looks like. I used Epsom salt; it did work. So it is effective.

Stephanie Syson: Like as a fixup?

Nate: As a Band-Aid for sure. If you realize that you need magnesium, it definitely works.

Stephanie Syson: Okay.

Nate: And it adds sulfur too and cannabis plants love sulfur. It really -- that's what leads to terpene development, so the rich aromas and the flavors that are so sought after in cannabis plants, sulfur is huge for that. So, magnesium sulfate which is Epsom salt; it's a good thing.

Stephanie Syson: Okay and so we talked about using compost tea to be a great bacterial inoculant, are you familiar of any fungal inoculants that might be valuable --

Nate: Sure.

Stephanie Syson: -- to add to a new garden or a garden where you're not sure that the mycelium is present?

Nate: Yeah. Well, the best thing to me that you can add is mycorrhizal fungi. So, there's many different styles; there's endo and ectomycorrhiza. It leans more towards the endo side is what's a little bit more important for cannabis plants specifically, but generally speaking, there's a lot of different ways that you can get your mycorrhiza. I really like the stuff that Paul Stamets produces.

Stephanie Syson: I agree.

Nate: I think that he is the fungus master and they have really diverse strains and they're really competitive and they establish really, really strongly, but yeah, I would 100%, no matter what -- and when you're transplanting, you want to get it towards the root zone because mycorrhizal fungi builds relationships, symbiotic relationships with plant roots and if they don't have plant roots around, that's where the rhiza portion stands for or means is root. So, if they don't have those roots around, they can't survive. So, you're really wasting your money if you're just throwing it everywhere. Really concentrated at the root zone is ideal.

Stephanie Syson: Okay and Paul Stamets has a great website, Fungi Perfecti, and just with really, really lovely fungal inoculants for your regular garden too, not just your cannabis garden. So, I highly recommend to any client starting a new garden to inoculate with those fungal inoculants. They're really valuable.

Nate: Absolutely and earlier we were talking about soil mixes that you can buy. And there is one that I like a lot and it's a brand out of Washington state; a guy named Tad Hussey who I mentioned earlier has the study; well I don't know if I mentioned it on camera. There's this guy named Tad Hussey in Washington state that has a company called KIS Organics and they have a website, kisorganics.com, but they have a water-only, heavily amended, fully cooked soil mix that you can buy by the bag and it's fantastic. And they also, all their compost sources you can look at lab microscope photographs of the life in their compost and they're really thorough with their inputs. And they use great inputs, everything's cooked really well there. You'll never burn anything. You don't need anything, but water through your entire growing cycle.

Stephanie Syson: Wow.

Nate: You can do some additions like some compost tea, some nutrient tea if you want to. You can do some top dressing, some amendments or some compost, you can boost it a little bit, but you'll grow great plants start to finish with just water.

Stephanie Syson: Wow, that's great.

Nate: Yeah, so for a beginning grower, I think that's a really good thing.

Stephanie Syson: So, I think that brings us to the end of our soil conversation. Obviously, we can talk about soil for hours and hours and hours, but this is a good start to get you growing. And basically, a live, diverse soil is gonna have everything your plant needs to grow healthy and strong. So, thanks for joining us, Nate --

Nate: Thank you.

Stephanie Syson: -- and we'll see you again in another module.

Nate: Alright, thanks.

Brian Gandy: This is a little side by side comparison. These are both the exact same clone genetic and you know, the difference in growth is strictly from the soil type. This is a soil from a friend in Georgia that's based off of pine bark and compost and all really heady, good things that I really want to be excellent. This is kind of my benchmark. This is a coconut core, ocean porous blend that's kinda what I consider really good. I know it's gonna perform, so I put it side by side to test my friend's soil and you can see just the difference in growth. I mean, unfortunately, this is underperforming. Now I could probably rectify this with fertility, but I think what the problem is and one thing to keep in mind if you're sourcing compost especially for making your own soil, is the salt content in compost; especially commercially produced compost. If it's produced from cow manure or any kind of manure, it can have a really high salt content and it's just gonna stunt the plant. And it's just like growing in saltwater; it doesn't like it. So, if you are gonna make your own soil, you're gonna make your own mix, use compost that's been created from, ideally, vegetable waste or some other known source that's not animal manure-based. You can make your own compost, that's the best method. It takes a little time, but you know it's -- you know all the inputs so it's something to be aware of.

And another thing to consider too is with straw or hay used in compost, you can actually have carryover of herbicide from the hay production that will inhibit a plant's growth. It's a really unfortunate reality, but if you go get hay from a neighbor and then use it for compost, it can have herbicide carryover that can hurt your plants. And it can even go so far as if a horse eats the hay, poops out the hay and then you compost that horse manure, you can have residual herbicide. Now I don't -- I mean, it's really hard to be aware of and just to kind of get around that, there's companies like EcoScraps and different commercial production that is a good compost that can go into a soil mix without huge problems, but just a side by side to see how clearly different soil will affect growth, so it's definitely something to take seriously. A great one to start with is Ocean Forest by FoxFarm and when you're getting a soil, one thing you wanna be able to do with it moist is you wanna be able to make a really, nice aggregate ball, but then you also want it to kinda be able to fall apart pretty easily. That tells you it's got a good structure and it's gonna drain really well. You see the white stuff in here too, that's perlite. That's just volcanic rock that's puffed up for improved drainage and water-holding capacity. It's just a, you know, a good soil, has a good smell and you know, for the plant lovers, it just feels good. And you kinda know it when you see it and you just wanna make sure it's not too heavy and it's not gonna hold too much moisture. The number one way to kill a plant is to overwater it. So, you want a soil that drains well, holds up well structurally and has good nutrition.

Stephanie Syson: Thanks for watching Module Four: Soil and Nutrients.