



Soil Education Course Chapter 1 FAQ

Session #1: Introduction

- 1. Q: From bad soil to good soil: What's the average length of time it takes to heal it if you start doing the correct inputs?**

A: It does vary a lot depending on the conditions that you start with, but we usually see 2 to 3 years. That is where things really start turning around. Of course, you'll get results in the first year of making changes, but to get it to a point where you've implemented all of the strategies and everything is pointed in the right direction-- That usually takes a few years.

Session #2: Historical Perspective

- 1. Q: What would be the 2 or 3 most significant observations over the history that we've just heard in terms of where we stand today because of course we stand on the shoulders of the past. What would be the 2 or 3 most significant observations upon which we now base our thoughts?**

A: (Cathy) I think that is going to vary from one person to another and what our situations are. For me personally, chemistry was really important to develop tools to help accurately measure things that we test. I think that Da Vinci was way ahead of this time and opened up so many doors for further studying.

A: (Matt) There are so many pieces that were brought to the table. I really appreciate what Thoreau did: how he wrote, how he looked at everything as a whole system. Of course there's a lot of other people who've looked at these things that Cathy wasn't able to mention today. There were so many scientists, especially in the late 18th early 19th century, retro European Renaissance of science. People like Darwin and Goethe and all these other great naturalists. It's really hard to pin all the contributions on one person. Of course the more modern perspectives, Dr. Inghams work that she did at Colorado State and University of Georgia and that team of people back in the 80s who really helped try and understand the living component of the soil and its relationship to the plant. And after all that, we're still learning.

Session #3: Primary Succession Part 1

2. Q: We're talking about geologic time here. How much time is involved from a Pioneer Stage to an Intermediate Stage?

A: Left to its own devices, it can take anywhere from hundreds of years to even thousands of years for one system to grow what they estimate is a half an inch of soil. Even 2 centimeters of soil -- it can take a long time to rebuild a system. It depends a lot on what else is going on in that environment. Right here in the Willamette Valley with our agricultural fields for those fields to become Native Oak Savannas. Again, without human interference, they estimate 150-300 years, just for the trees to come and re-establish that ecosystem from bare ground. That's why it's so important to measure the soil and to look at what's going on, because we've tried to accelerate the process of successional growth. And even if you have bare ground it takes a long time. In Hawaii, with all the volcanic activity (and I know Cathy will cover this in the next couple sessions) basically, you can see the tropical forest system coming back in almost as quickly as the lava cools. It takes 10-15 years for things to be re-established.

So, it depends a lot on the environment, the ecosystem, the types of plants, and what kind of damage is done.

3. Q: About the different areas as the glaciers receded... There's obviously different kinds of rocks and minerals exposed, or are some areas in North America faster to establish soils than other areas of the Pacific Northwest? The Great Lakes, or the area around the Great Plains?

A: I think so, because again, it depends on the climate and what kinds of things have been exposed, and other external influences. How quickly are animals coming back into the system? How many birds are flying over? What is the wind doing? Is it bringing in seed and dust to help build up that? I think there are different areas that have no herbals that are quicker to recover. If you go in and if you've ever visited the Scablands or Craters of the Moon, Idaho... or any of those places that are left over from that process, the 10-15,000 years since those things happened, and there's barely any life in those areas. It's so slow to rebuild because there's nothing coming in. But if you look at the areas around it, you can see some of the most productive lands in the world and they are within 20 miles of it. So there are a lot of factors that go into that.

4. Q: Do we know enough about succession and soil biology to safely accelerate the process? Are there potential issues with human intervention on each ecosystem?

A: Whenever you use the word "human intervention" you know there's a problem. But that is the nature of people. I think yes, we do know enough about succession. In the upcoming sessions we will be specifically addressing successional characteristics of our agricultural crops. We know the biology, we know the mineral component of the soil, we know the needs of the plants, if a plant fits in an ecosystem at all, we can build up a soil to support that plant. It takes some effort. No, I wouldn't recommend going into the Scablands of Idaho and trying to establish a banana plantation for example, that would be kind of silly. Even though

we know we could probably fix that soil, the climate itself wouldn't support that plant very well. How much organic material would you have to haul in to get it to a point where it could be usable?

So, yes, we do understand the succession, the biological profile, well enough to be able to grow things. Yes, we have the tools to manipulate it a little bit. But, of course, our approach and our goal is to try and use the right tools to support the natural processes, and then we kind of try and get out of the way if possible.

Session #4: Primary Succession Part 2

- 1. Q: I have a question about the fungal bacterial ratio that a particular plant might desire... How is it determined that this is just empirical, or is there some way of trying to figure that out?**

A: It's mostly empirical research done in the 80s and prior. More recently, research has looked at those plant communities and where they live. We'll see the more complexity the higher the order of plants that you get, the more fungi those plants need. When looking at the spectrum from bare rock, all the way up to trees, there's a continuum in the fungi to bacteria ratio that follows that continuum. For session #6, I'll be focusing specifically on the successional requirements of plants as they relate to our horticulture and agricultural needs. I'll dig into a lot more detail on that, and break down a bunch of different groups, and where they lie in that spectrum.

- 2. Q: Visually, can you tell if your plants are lacking fungi?**

A: That's a tough one because the plants will tell us a lot about what is or isn't going on in the system. Usually, you can see *symptoms* of disease pressure, that's pretty easy, and you can see the *indirect effect* of biology, when you're looking at nutrient deficiency symptoms. So, if the plant is yellowing or it's not getting different nutrients, visual effects are usually indirect, and if the biology is off, then you're not going to get the nutrients you need. So, most people will respond to that by trying to fix a nutrient, but really it's probably a biological problem. Indirectly, you can tell. And it depends a lot on the plants, I mean, if most of their balance is off, they're going to be sick, and suffering somehow, right? And, so, unless they're being perfectly fertilized and put on life support, they're gonna show some signs. But as far as specifically that they're lacking fungi... I just assume that anyway, just based on all of the years with testing, I can typically assume that they're deficient in fungi, but this is not always the case.

- 3. Q: So then if it's deficient in fungi, what are the tactics that the gardener (or farmer) uses to build up that fungi?**

A: There are a lot of tools. We'll spend a lot of the coming 15 sessions talking a lot about those tools. There's nutrients that you can use, compost, adding compost extracts, adding biology to the system, feeding the biology that already exists. We need to be looking at what's going on, what's causing it. Sometimes, it's just changing your practice. (Ex. Over-tilling) A lot of times if you're overworking the layers, sometimes that means just backing off until we can make a huge difference in the fungal population. So, it really is a

process of looking at what's going on, what's actually happening, what is actually deficient, and reviewing practices.

I apologize that this is a lot of work. Our approach is more thinking and working than just adding a product to the system, but sometimes that is the answer too -- just add some ReVive, for example, a fungal food to feed it that stimulates and keeps it going forward. But that's not always the right answer.

- 4. Q: I add a lot of organic material to my soils. I'm interested in the process of how the plants take the mineralization, the potassium, the magnesium. I'm using some rock phosphate this year, glacial rock dust. What's the process that occurs? These are minerals that take a long time to break down so how do the plants, the chemistry, and biology all work together?**

A: Yeah, that'll be a whole session. The biochemical process of biology breaking down organic matter. The biology is collecting those nutrients and storing them in their bodies. Then there are predators that come along and eat them, and it interacts with the root exudates of the plants to create the conditions for all of those nutrients. All of those minerals are being constantly processed by biology. And by weather and other things as well, but primarily by the biology, and then made available to the plant and that's how those forms are manifested, it depends a lot on the conditions in the soil as well. That's better answered in our nutrient cycling session. We discuss what those processes are and how they all work together. Those upcoming sessions in detail will help succession make a lot more sense.

- 5. Q: You mentioned early successional plants as a weed. What would you define as a weed?**

A: So, in my opinion, 'weed' is a bad word, in that it's improperly used, because anything can be a weed. Also, nothing is a weed. I like the idea that it's a plant that is out of place. Early successional annual opportunists: those pioneer species, that are technically what we really would categorize as 'weeds.' But, when there's an oak tree starting to grow in the middle of a cornfield, you might consider the oak tree a weed if it's going to interfere with your ability to harvest your crops. The oak tree out of place indicates that something is different in the soil (i.e. better suited to an oak tree) than what is ideal for your corn. It's really any plant that is disruptive to your primary goal. If you're trying to grow roses and you've got maple trees trying to overcome the system, the maple trees could be considered a weed. Cherry trees, for example, are constantly coming up through our lawns. Those little starts are a pain in the butt.

The idea is that anything not falling within the successional range of your primary plants are of concern and are problematic. Yesterday I was talking to folks in Montana with the knapweed problem, Russian thistle. While you're trying to grow alfalfa, they've got Russian thistle coming in and that's a perennial weed in that region. In some places in the world, it's just fine. It's not a problem, but in dryland farming in Montana, it thrives. So it's a real tricky problem dealing with a plant that is actually within your succession. But it's causing problems... it really is very context-sensitive depending on what you're trying to accomplish.

6. Q: Are there any early successional plants that you would absolutely not want in a pasture? I am converting cropland to pasture.

A: The only consideration is toxicity to the animals. Just as an example, it has some allopathic components which is like a walnut tree putting out chemicals, and showing all the plants around it so that it can dominate that system. So, you want to be careful of any plants that might be toxic to your animals. You have to be considerate too, because what's toxic to a horse... a goat or your cattle may not be affected. Some things may be fine, others may wipe out your sheep. Those are the main things that I look for.

Some annual plants can be just great. Dandelions are wonderful plants, They have a lot of really great properties, medicinal as well as culinary for some people. Not everybody will agree. But those are annual plants and they have value. A lot of our herbs are very valuable in their own little annual plants. It's not to say that annual plants are weeds, it's just that some are better than others, depending on what your goals are.

7. Q: What is the difference between the two tests that we are offering in the webinar series package: the Advanced Biology and Plant Available Nutrient?

A: One is we look at the actual biology: the bacteria, fungi, protozoa. The other one is that report that Cathy showed during the presentation of the plant available nutrients. And so using those 2 pieces of information, as well as the context of your soil type and what you're trying to grow in your climate, things like that. We use that in those 2 pieces of information to determine how well the nutrient is being made available to your plants. We ask: how well is biology doing to make those nutrients available? So they work together. Those are the 2 tests that we're offering are the two perspectives on that on that soil profile.

8. Q: If your parent material is lacking certain minerals, how do you overcome this with biology? Or do you have to supplement with inputs?

A: That's a good question. The really broad answer is that technically your soils will not be depleted of any particular nutrient. It's strictly based on availability. Now that changes if you're making a container soil, then you have to think about feeding the biology. You can't pull boron out of the soil, if there's no boron there. The plant's biology can't make something that isn't there for it to eat. So, you might have to put some sort of nutrient supplement in. It is really context-sensitive again because, are you growing small or large-scale... are you growing wheat on a thousand acres? How you approach your fertility program for that will be very different than if you're growing some tomatoes in the backyard. So, it really depends a lot on your context and what tools are available. Feeding the biology, feeding the soil, and then monitoring the health of those plants and getting them what they need.

Session #5: Secondary Succession

1. Q: This is related to the example of the landscape advisor. Say I've tested your soil and it's really early successional with a lot of bacteria. The customer wants

to go with plants that are more fungal friendly. What do you advise that person to do to speed up the process and get the fungus there?

A: Your best friend is a good compost, because as you're planting the trees you may not be able to treat the whole area. Having compost (or any kind of biological inoculum) is great as you do the prep work while looking at your fertility program and managing water. The main thing is getting that organic matter within the compost, and making sure it has good fungal content. When you're planting those trees and shrubs, it's your best friend. It is important to make sure that there are mycorrhizal spores, especially with shrubs and trees. Having a mycorrhizal inoculant can be a great boost for those trees in that situation.

2. Q: Are we going to learn how to make our own fungal compost?

A: Yes, there's a whole session on composting. Also, just for you guys, we're talking about some advanced training beyond these webinars. One of those is a more intensive, hands-on composting program, where we can go through the whole process over a 6-8 week timespan, to actually build compost. The composting sessions already included in this series will be brief, but still, we'll give you a lot of good ideas on how to approach the composting.

3. Q: How long does it typically take for soil to recover from secondary succession?

A: It depends on where the soil was before the event and on the intensity of the events. It can be really context dependent. For example, some of the fires in Yellowstone were so hot that there were some sections that actually turned the silica content into near glass. So, in those areas, it can take a long time. In contrast, farmland (ex. the Mississippi Floods) where there isn't a huge amount of physical movement, can recover more quickly. In the Mississippi Floods, it didn't strip away the topsoil, and most recovered within the season. We've worked with some people who have experienced a flood, and they were able to recover and still harvest the crop even in that same season. A hailstorm can also cause secondary succession.

It depends a lot on the nature of the event. When you're working a landscape that's been stripped down to the clay layer, and all the topsoil has gone, if you know what you're doing, you can re-establish in just one cycle of the seasons.

4. Q: We're talking about the biology, but there's also an integrated factor with water and temperature. One of the things we're seeing here on Vancouver Island is our Oaks are suffering because of climate change. Part of the succession is the climax community, but it seems to be that that's even being pushed because of climate change. So, how does what we're talking about fit into the radical changes that are occurring with the new climate that seems to be coming into our systems?

A: When we really look at these ecological components, the climate is the biggest contributing factor. The hours of daylight, the temperature, the amount of moisture... The real key is, in large-scale natural systems, it may be very difficult to save those plants. Succession is going to do its thing, the climate changes, and those communities will change. Say we are dealing with a tree in a landscape, now you must think even more about managing the biology and conditions to support that tree in the face of climate change. You

also have to integrate nutrients, manage the water, and focus on making sure that the biology supports the tree. It is going to be tough. The effects that we are seeing now are small. We are not seeing any major shifts yet in the climate, (*note: early 2020*) all the changes we are seeing are still fairly small compared to what is coming.

The changes that come are that we will have to baby those trees, more and more. We will have to start thinking of them as non-native species, and question how we will support them outside of their native habitat, basically. We can grow banana trees in Alaska if we can control the temperature, but if you don't have control, we will lose them. We will lose a lot of them that way, sorry to say, but it is true.

5. Q: Which microbial functions does Secondary Succession affect? Which plants will help best recover the soil? Are there any plants that are always good, something that you'd always recommend?

A: I think that is too context-sensitive to determine. Using plants to repair the soil -- that is a long-term proposition, because plants tend to be slow. I mean, covering the ground is always going to be important. You have a secondary succession, getting something into the ground in those conditions to help cover it, and start protecting it, start holding water, and start helping the microbes to have a habitat to help it start restoring. Again, in a lot of those secondary successive events, in a natural system, there are going to be some really interesting plants that start showing up that weren't there before. They will be incredibly well-suited to that soil condition (i.e. fireweed post volcanic eruption) to help rebuild that soil.

There's really two situations with second succession and the processes in ecology. One is the natural process: what happens in the larger places like Yellowstone. We are not going to go in and micromanage those forests, we are going to let it run its course and leave it to the natural process to repair. But in Paradise, California, they want to rebuild their landscapes, and put their gardens back in, and get their cattle running again. In that case, you'd go in and use human-managed systems. It is really about getting it back to where you want it as quickly as you can, using plants, composts, inoculums, whatever tools you have available. Earthfort deals with this secondary succession all the time -- I mean, our primary work is fixing tilled up soils. We are constantly working with Secondary Succession, whether it is tilling or chemical application and damaged soils. We are trying to "undo" the backwards movement that a lot of these processes utilize. We are always in an ebb-and-flow against natural processes.

Session #6: Successional Balance of Agriculture

1. Q: When soil is inoculated with endo or ecto mycorrhizal fungi, if allowed to establish in the correct conditions, will they remain dormant when conditions become less ideal? (ie. weather changes or soil moisture) if so, how long?

A: The strategy of using mycorrhizal fungi is that they will produce spores. So, if the conditions become unfavorable, they'll go into a reproductive phase and produce spores. And those spores can live in the soil for years and years, until conditions are right. A lot of these organisms utilize that kind of strategy. General fungi and a lot of the bacteria go into

spore form, or they'll produce spores. Then they'll wait for the conditions to return to a favorable state. So, the answer is yes.

The problem with that though is, if you inoculate, those spores that you're putting into the ground germinate, and they don't colonize your roots, then you lose that spore. There's a little bit of trickiness that evolved with putting those spores out. If they germinate, then you lose them. If they don't germinate, those spores could last for awhile, so the conditions are not right.

2. Q: I'm doing a veggie garden in new raised beds. I want to improve the soil which is a topsoil/compost 50/50 mix. What should I be doing to improve it?

A: The main thing is to look at what is going on in that material. It is hard for me to say anything other than you need to test it. What is the biology/chemistry of the material? And then, look for what is missing and what is excessive. Is it in the right balance for what you're trying to grow?

Then, you can make recommendations: Do you inoculate the feed? What kind of soil amendments might you want to consider? And of course always in the context of the type of plant. This is the more traditional way: put plants in the ground and see what doesn't grow and how badly they grow, and then make adjustments to try and get them to grow. That's the hard way, I think, to do it. If you put in tomatoes, and they just won't grow, or they are yellowing, and they won't produce flowers then you could be looking at calcium deficiency. You could be looking at nitrogen deficiencies, it could be a bacterial or fungal imbalance. I hate to say that you need to test but really realistically; That's the answer. That will serve you best in the long run. Test your soils!

3. Q: Succession seems to lead to fungal soils, will that always lead to a decrease in pH as well?

A: There is a direct correlation between increased fungal activity in the soil and the needs of the plants at a lower PH. *A plant that likes high fungal content tends to also like a low soil PH.* There are probably exceptions to that rule but that's pretty much the experience that we've had. The more fungal, the lower the PH, but not too low. I mean, if it gets to the point where it's, You know, starts dropping below five, five, No then, then we have other issues that need to be addressed. So, a reasonably low PH.

4. Q: I'm short in my fungal ratio, should I spread wood chips in the fall? Would that help?

A: Yes, wood chips with high carbon content, you ought to be careful with the kinda wood chips that you use. Don't use pine, fir, cedar, eucalyptus, or any other aromatics, at least until they're aged because that tends to be antimicrobial. I recommend using Maple, Alder, and some other softwoods, along with hardwoods that are non aromatic. They are really great.

5. Q: As a follow-up to the wood chips... What other tactics might be used to go from a bacterial to balanced soil?

A: Adding and feeding biology is always a good choice. Revive, of course, is a great tool. It is also how you manage it, how you take care of it, don't over till it. Don't overwork, it assures that there's good carbon content in that soil. The first habitat component that supports the fungi is its carbon content, so compost wood chips that are high in carbon to begin with are very helpful. Then minimizing disturbance, and focusing on water quality. A lot of our water, especially if you're on municipal water, contains things that over time will affect the fungi more than they will affect the bacteria. I think that maintaining fungal content is a challenge. That's why it affects everything that we do -- when a human being walks across a field, we're damaging the fungi and that makes the bacteria happy. It's a constant struggle to keep that fungal content: get it where we want it and then maintain it.

6. Q: Can you have too much organic material in the soil? What happens if you do?

A: I've never seen that be a problem. But, it depends on the plant. If there's too much organic material, it could cause problems. I think where we see it is in some types of plants like in the hills of California Manzanita. Some of the trees thrive in stressed conditions. So if you take a manzanita and put it into a really rich, organic system, it causes a decline of the plant. This happens simply because this is not the right habitat. But for the most part, it's really hard to get too much organic matter. There may be some plants that don't want too rich of soil. Chances are pretty good that's not going to be the case where you're at (Vancouver Island, US) or in some of the area's natural areas there. There's 50-60 percent organic matter in some of those soils. What ends up happening in that case is that, you know, it's a bog. The PH drops below and the oxygen drops. It becomes a very acidic bog-like environment and only things around the fringe will grow. So, that's a conditional. It's not necessarily because there's too much organic matter, but because there's also other things going on that contribute to plants' not being successful there.

As a farmer or as a landscaper, I don't think you'll ever really run into that problem.

Emailed Questions

7. Q: You mentioned ground cover and mulching being important in treed settings. I've been telling my customers to mulch around tomato plants and wherever in their veggie gardens (lightly as I have found it attracts slugs and rodents). Would you agree with this suggestion?

A: Yes. Covering the ground is always valuable, for all crops and systems. A) for protection, and B) as a food resource and habitat. The mulches are important for trees and vegetable gardens.

Each of these different systems has different requirements. You don't want to put hardwoods on your vegetable gardens, for example. It all varies, and it depends on the crop you are trying to cover. The slugs are non-native species in the US, and the little black slugs are European -- they are the bane of the grass seed fields, as they can wipe out a couple hundred acres in 2-3 days. The ideal situation is that we figure out how to feed the slugs (in that life-focused approach) so they don't damage the crop. Another example is making sure to feed your deer before they even get to your garden, that way they won't need to jump

into the garden because they found what they needed around the edges. It is really a balance. Same with weeds: are the weeds really a problem, or do we just have a couple volunteers?

- 8. Q: What are the quickest ways to tell if your crops are winning the fight against weeds if brix isn't the most accurate way? I have clients who I'm starting to consult with that their main concern is weed pressure. From what I can tell, primarily early succession weeds and they want to reduce this pressure. Should the main goal be to make the plants stronger than the weeds rather than eliminate weeds? Will the weed pressure reduction follow if our biology is on point? What would that look like? Crops are essentially outgrowing the weeds?**

A: Brix is more important for nutrients of plants and pressure from pests. It won't tell you if weeds will be successful. It is more about nutrient cycling. The question is: at what point are the weeds interfering with your garden? Maybe they are your ground cover for your vegetables. If you are working with customers that have crops, you still need to ask them that question: when is the weed a problem?

The other thing is the level of control: people think of removing 100% of the weeds, when really it should be a mindset of removing enough of the weeds that it slows them down. Because really, the weeds offer a lot to the successional balance of that soil. And if you're having a lot of weeds surface in the soil, it is because the soil is trying to balance itself. When you introduce Nitrogen fertilizers to the system, you overfeed the plants, and the soil tries to right itself -- which is why we see an increase in weeds. What you need to do is utilize testing to see what you can do. As you start to rebalance based on those test results, you will see a change in the type of weeds. There are a lot of seeds that lay dormant in the soils until the conditions are right. For example, we'd have a client shifting from thistle to dandelion (calcium to magnesium balance) which was a great switch, because the thistles are more problematic, and they didn't care if the dandelions were there.

- 9. Q: In the regenerative agriculture space (I've done a lot of research and listening on to the Regenerative Ag podcast and have taken classes with Nicole Masters from New Zealand) they talk about the importance of securing the right amount of available nutrients to start or any biological work will be rendered ineffective (i.e. too low of Calcium) therefore you're going to inherently experience compaction and low nutrient cycling. Do you subscribe to this theory?**

A: I think it is important to understand the whole process. We don't need to focus on the nutrients, we must focus on the nutrient cycle. It is not necessarily that we must add minerals and adjust the chemistry, but look into the biology and how it works with the chemistry -- a life-first approach, rather than a chemistry approach. There is always ebb-and-flow. What I have learned is that you can't start with the soil's chemistry, it will take hundreds of years. We must focus on biology.

This is why we do the plant available nutrient test. NPK isn't the primary concern, it is the calcium and magnesium balance. Here is the key: don't feed the soil calcium, feed the soil biology... and test in your area to see how *available* that nutrient is to the plant, based on the biology. This is why fungi and bacteria are so important. Fungi isn't the most important,

but it is the one that needs the most help right now. It is not just about fungi or bacteria, it is about the balance of everything - allowing it all to work together.

Feed the organisms in the soil, not the plant.

10. Q: On a farm soil that is very low in pretty much everything but bacteria, would you suggest overwintering wood chips on the soil surface to jump start fungal activity along with fall fungal worm tea sprays?

A: That is another one of those myths: Compost with woody bits, can tie up the nitrogen content. So, if it is an immature compost, the nitrogen isn't completely processed. You can also make a fungal tea, and spray that over the top of the wooden compost, that can help a lot.

Lactobacillus is great for yogurt, but not great for soil. It ferments the soil, and that is not what soils want.

11. Q: Can you have healthy active levels of fungi with too low active levels of bacteria in farm soils even if the fungi to bacteria ratios are on point for that crop? Lately John Kemp has been talking about taking care of bacterial levels before even thinking about building fungi.

A: It is rare that bacterial levels would be low and fungal levels high or adequate, correcting the balance of the biology should be based on the results of the testing and the needs of the plan.

12. Q: You mentioned that there is a need for an understory or cover crop that prefers fungal soil and is shade tolerant, to be planted in orchards. At the moment, folks are using the typical pasture cover crops, which prefer a different F:B ratio and thus aren't properly suited to this purpose. You also mentioned that strawberries originally came from a shaded, forested environment and prefer high fungi soil. Would heirloom strawberry varieties be considered for use as a perennial under story crop in orchards? I will research how strawberries would interact with the soil and if they would function to benefit the soil and orchard, or if they might actually be harmful. I would think the climate down in central california would be ideal. Or maybe this would be a poor suggestion all together. What are your thoughts?

A: Yes indeed, this could be an excellent option, along with perhaps lavender. I think it will depend greatly on the watering needs and how well it supports or hinders harvesting.