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.

In this episode I visit with Suzanne Slack assistant professor of horticulture with Iowa State University specializing in perennial fruit crops. Brandon Carpenter, agricultural specialists with the Iowa State horticultural Research Station, and Liv Meyer, a graduate student in the Department of Horticulture here at Iowa State and today we are continuing the beginning fruit farm series with Apple trellising. I'm Olivia Hanlon, small farms extension specialist, and we hope you enjoy the show. Welcome, everyone. We're glad to have you all joining us today.

Thanks. Glad to be here.

Thanks for having me.

All right, Suzanne, why don't I kick it to you and let you get us started here on Apple trellising?
Suzanne Slack 01:08
Yeah. So lately, we've been talking about trellising, this is our third or fourth episode about the trellising system. And for apples, this is kind of where if you don't do it, right, you're never gonna make any money. So this is not just important for the health of your trees. This is a huge economic decision. Whenever you're starting a farm thinking about cultivars are really important, I would say trellising is the next most important economic question that you can answer for yourself. So if you make a mistake, you'll be literally paying for it for a very long time. So let's get started about Apple trellising. Brandon, how do you feel about Apple trellising?

Brandon Carpenter 01:52
I feel as if you're gonna grow apples, the only way to grow apples is on a trellis. I think trellising is critical in Apple's and I think the I'm even coming down to the type of trellis is critical. You know, there are ways to save money and do it right. And there are ways to save money and do it wrong, basically, you know, or there's ways to overspend even, and do it right or wrong. So you know, these decisions with apples, the trellis is critical. And deciding and planning the trellis is also super critical.

Suzanne Slack 02:25
So thinking about the basics of trellis, so no matter what you do, there are a couple of things that you have to have to make this work. We talked a little bit about this in previous episodes. But for Apple trellising, making sure you have the right size posts to begin with are really important. I see people trying to save money by going smaller for their end posts, then they call me two years later with a trellis that fell down like a domino because they snapped apple trees are big, even even with these dwarfing trees, they're still big. And if you think about all the weight of all the apples on them, a bushel of apples, which is a regular sized crate, for those who aren't super familiar, it's 42 pounds, apples are heavy. And when you have all of those trees next to each other, that close and they're all loaded up with all those apples, you have a lot of weight and a lot of money resting on that trellis. So unlike raspberries, whenever we talked about how trellising is more of a cage to contain the plants, Apple trellises are literally supporting the apples. So instead of like growing wood, we're growing fruit, and we're supplementing the wood with the trellis to hold up all our fruit. So it's a really big decision to figure out the posts. So with that do one of you guys want to talk about the different sizes of posts that we need to have to start.

03:48
Yeah, I could. We use a treated post on our apple orchards. If you're doing organic production, you're going to want to use untreated posts. So you probably would rather go with a metal post or use something like black locust is a really good wood for posts. A quick note on the black locust, if you're putting them in the ground, and most likely you're ordering them, they're going to be kind of green, they'll have bark on them, you'll want to remove the bark anywhere that's going to be in ground contact, that bark will will shorten the lifespan of that wood, it'll rot quicker if you leave the bark around it. So there's a little extra work on those when you get them in. But what we use is a treated post. What we can get at Menards or the local lumber
yards is a 12 foot post. And that's the length at twelve is kind of our maximum. Our end posts we use a 12 foot by eight inch and it's always a little oversized, so they might be a little bigger than eight inches. They're almost never smaller than the eight inches. And then the line posts the ones down the line that we use are six inch posts. So those they're 12 foot again, and we put four feet of that into the ground. So our trellis is all maxed out at eight feet. It would be nice to be able to get you know Maybe a 14 foot post and have 10 feet of trellis, then we could support that tree even higher and really, you know, your production, I think that's really good the way you put it, you're growing fruit, not wood, and your production is going to be that whole panel basically of that trellis. And so we kind of lose some production by going shorter, but it's what's available in our area. I know if you're in Michigan, or bigger states that produce a lot more apples, they often have the size posts available that you would want for a 10 or even a 12 foot tall trellis. With the black locust you can easily get we've got black locusts that are 18 foot posts. So those posts were 24 feet when they came in. So we've got six foot of those in the ground, those are on a hop yard that we have. But we're limited to what we can get because we're not in an area and we can't ship it in from Michigan, and really afford to do that. So we're kind of stuck with what we have.

Suzanne Slack 05:55
That's a good point. One thing to mention about organic growers, there are ways to use treated lumber in organic systems. You just have to get a little creative or and definitely work with whoever is your certifier. So, I know some people have wrapped their treated lumber in black plastic. So when they go in the ground, the posts aren't actually touching the soil. There's black plastic in between. I've seen some people pour cement columns around their posts, so there's no contact. Also, I've just seen people been okay with grandfathering it in after a couple of years, but it's up to your certifier. So, if you're doing organic, or you're already organic, and you want to incorporate a high density trellising system for apples, definitely go there. I am not super fond of using the metal systems for trellising, I've seen way too many dominoed trellises. With those, especially in high wind situations, and it always happens in September. Again, with all that extra weight, it's not a winter problem, it's a you can see the fruit all over the ground, and your trellis is down and your trees are all snapped problem. That being said, I'm sure you can do it fine, correctly, it's just a, it's an added risk, whatever you're not using the treated lumber posts. So wire wire, again, we talked a lot about that in the last one of the previous episodes, especially for apples. So I don't think we're gonna get too much into it. But for Apple trellising, there's different amounts of wire you can use. I've seen some systems recommend six wires going across the trellis at different intervals, there's also wants to just have one at the top. So typically, whenever we look at those, we're thinking about different training systems. So when you plant an apple tree, you can't just leave it and hope you get some apples. They're pretty intensive whenever it comes to training and pruning them to get the best fruit yields to actually make money. But that being said, especially with some of the current economic situations that we've been in recently, maybe there's a little bit more one shoe fits all kind of situation going on. Brandon, would you like to talk about that?

08:03
Yeah, we've used a few different systems out here, our most popular up until the last two plantings that we had was a two wire system. So you've got a wire at about 18 inches above the ground, your bottom wire, and then you've got a wire eight feet at the top of the trellis. And
You put a 10 foot piece of conduit between that so you rest the conduit on the ground and you put a tech screw into the conduit at both wires and kind of wrapping so that conduit is tied to the wire, you put that conduit on the windward side of the trellis. So it's pushing against the wires when the prevailing winds are blowing against it. And then you grow the tree up that conduit so you use that conduit to tie the base of the tree on to and go up from there. It's a good system, it works really well with the different types of training systems that you use from the vertical ax to the slender spindle or tall spindle systems. It works really well to hold those in place. The big problem with that system now is cost conduit has almost tripled in price since the last system we put in that way you know the metal has gotten more expensive and the conduit is harder to make than wire is. So those conduits bear a pretty substantial cost now so it's almost half of what the tree costs you. So if you're putting in 1,000 trees, those 1,000 trees or $10,000 You can imagine that you're gonna have you know, 4,000 or maybe a little under that of conduit, you know that you're gonna have to pay to put in there. It's also you've got to put those screws in it's pretty labor intensive putting it in. You had mentioned the six wire system I think on a taller trellis you would do the six wire system. We've gone to a five wire system where we have a wire at about every just close to two feet all the way up the post. The first one is a little less than that 18 inches, I think the first three are 18 inches and then it goes up maybe to two 20 inches above that. But we have a five wires basically. And then we buy a tree guide and tree clips from a company that kind of bends a wire clip that holds the tree and get you something to grow against. And those wire clips make the job a lot easier to kind of train that you've got wires everywhere to tie those branches off to where on that conduit, you've got to tie it to the conduit. And so you're constantly trying to keep ties from sliding up and down the conduit whatnot. The other nice thing about the five, or the six wires, trellis system is that you've got a lot more wire out there, you know, so the two wires that you can imagine all of that fruit is being held up by two wires in that conduit system. And so when the wind blows against it, it's a giant sail. And that wire has to have the strength to hold that load whatever that wind is at the time, whether it's 50 mile an hour winds are 80 mile an hour winds, five wires just holds a lot better, you know, and we've eliminated some of the cost on the five wire system by drilling through the line posts to instead of stapling, Staples tend to come out, they swell and shrink and swell with water and freezes and thaws. And pretty soon they work their way out. So you've got to always go back and restaple and stuff. Now what we do is about a third of the way into the post, we drill a hole at the level that we want that wire to go through and we just run the wire through. So you thread and you're basically threading the needle to get it up there. But it's held in that post so it can move it can shrink and contract and expand and move freely on that system. So it keeps the tension pretty constant across the wire. And it also eliminates the cost of the staples, which is it's a small cost in the end. But it's still a cost that we're saving.

Suzanne Slack  11:48

I'm also a big fan of drilling through the posts, I've only seen a couple of times where people have had trellis wires fail. And it's usually because they drilled the hole too close to the edge instead of more center or at least a third of the way through. That makes sense. Staples, I've seen some really sad breakage, especially pop wire, if it's stapled, it's going to come out and take the top half of your tree with you. It's just a matter of time, my opinion of it anyway, unless you're really on it and checking it multiple times a year and restapling as necessary.
Yeah, on staples, there's actually a science behind staples, there's a very specific way to put the staple in there, it's got a bevel. So the bevels on both legs of the staples are opposite of each other. And you have to put that bevel in the right direction when you capture that wire. So if you don't do that, first off, if you don't put the staple, right, it's going to come out immediately. It's just not going to hold. They're not designed to go. And the other thing is if you hit that staple vertically in a crack of the something that's going to split open on that trellis post, it's going to come out easily too. And even if you get it done right, even if you use the staple properly, and you get it at the right angle, and you have the bevels to the right side, it just it works its way out, I think of a life of a staple in Iowa is probably a max eight to 10 years, you know, at 10 years, you're going to be wanting to put new staples in and resecure those trellis lines. And so it's just it's much easier to drill a hole.

Suzanne Slack  13:25
I completely agree. So we talked about a five line seems to work great. There's a lot of pros to it. While it might seem excessive, you're saving money on the long run, because a long term investment up front. The other part of a trellis that's really important whenever we're talking about trellising apple trees is the root stock. So Liv tell us a little bit about root stocks and scions and why that would be important for trellising.

Liv Meyer  13:52
So I guess we could probably break down the definitions of both are what a scion and a rootstock is. So typically when growers get their apple trees in, it's a whole system, but there are two parts to that system. So the scion you can think is sort of a majority of the elements of that tree above the ground. And then the rootstock is that portion at the base, and all of the routes below that. And there's this union where you graph the scion and the rootstock together. And that's just for lack of a better term connecting one plant or that sign on to the other plant or that root stock. And there are different ways of doing that too. I'm sure we'll probably get into that a little bit later as well. But the scion or everything above the ground really contributes more so to the cultivars that you're growing. So with Apple types and all of the texture, flavor, aroma, things like that, where the rootstock contributes more so to things like tree characteristics. So the height for example, and that You know, that's important, again, talking about trellising systems and what you want to consider, as far as like planting densities, how tall those posts are, when you're putting that trellis in. Other things that the roots can really contribute to are the ability to be able to survive some of the environments that those trees are in. And again, depending on the region, that you're growing those trees, things like that root development underground. So again, those high density planning systems, some of the rootstocks that you're working with, and how far apart they're being planted, we won't see as vigorous of a root stack below that ground compared to maybe other planting systems where your along that route to go a little bit deeper to really take hold. And that also relates back to the trellising systems that you're working with to. Another big one is also and that this one I think a lot of growers really pay attention to is insect and disease resistant capabilities of that root stock. And, you know, with changes in climate and things like that, and we're seeing different diseases and different insects in regions that we didn't normally see them in before, really spending time looking up, what type of rootstocks you're working with, with the cultivars of apples that you're growing, I think is really, really important right now.
So one of the things that Liv said and alluded to was the size. And I think that's the most important thing for what we're talking about now, which is the trellis. Whenever you're putting in a trellis, you need to think about how the trees are going to look. So the spacing, so are you thinking of super high density planting where they're 18 inches apart from each other, or were you thinking something a little more spaced out like six feet apart from each other. And even with six feet apart, spacing between your trees, you still need some sort of trellising system, if you're using a dwarf or semi dwarf rootstock. So you took an apple, your favorite honey, crisp apple, and you planted a honey crisp seed, two things its going to take like a really long time for you to actually get that tree to the point where it would produce apples. it would not be a honey crisp, would probably be a crab apple. And it'd be very disappointed after waiting 10 years for getting an apple off, that tree also would get like 40 feet tall. So whenever we graft we graft on to other genetic individuals that are dwarfed, they don't produce those big rootstock systems. So the tree doesn't get 40 foot tall. So like for bud 9, for instance, which is a very common root stock, it's a dwarfing, semidwarf rootstock, they don't get very tall at all, depending on the soil type. They can even be super stunted. We have some trees that are on bud 9 at the heart farm that are only five feet tall, and they're almost 20 years old, just because the soil that they're in, they didn't like it, I've seen other ones, I can reach that 15 foot tall wire, a lot of different factors go into it. One of the other things, too, that Liv alluded to was your environment. So for instance, if you have a really muddy thick soil there are rootstocks that will do better than ones that would do in a sandy soil or vice versa. So figuring out your soil types really important. For instance, like I said, unhappy, bud 9 might only get five foot tall. So if you've put in all the work to put in an order all the posts and have a 12 foot trellis and your bud nine tree only gets five feet tall, because the soil types bad and other factors, you just wasted a lot of money, right? So but then that's the thing. So you can change the rootstock but still grow the tree. So for instance, if you wanted a honey crisp, and you had different soil types, you just picked different food stocks for your honey crisp, and you still got a honey crisp apple. That being said, you know that you're only going to be able to get 12 foot posts, thinking about what kind of root stock will fill up that eight foot trellis because you know four feet are gonna be in the ground. So if you had a super vigorous rootstock, and the tree is gonna get 20 foot, but your trellis is only eight foot, that's not a good, that's not a good way to go. And I've seen some people say, Oh, it's fine, I'll do it anyway, you really can't out prune the vigorousness of these root stocks. It's impossible. It'll eventually get away from you, way faster than you think that what those trees can put out feet of growth in a year.

Not only that, here at the farm, we have some broodstock variety trials where they were actually trying different root stocks on the same scion so might be a Gibson golden or on a Honeycrisp and the ones that have too much vigor. So whether it's too much vigor for just Iowa, you know, maybe it's our soils or something that helps that rootstock be too vigorous, those trees, there'll be beautiful trees, you know, they'll put on nice green leaves and they'll grow tall and they'll look great, but they'll throw like three apples a year. You know, they just won't put on apples. And so you know that that also makes a big difference. That's one of the things you want to look for.
Yep, exactly. So if you're planning a larger planting, definitely reach out to me or anyone in the fruit extension world to learn a little bit more about it, this is a part of that equation that makes or breaks money. So for instance, if you had a dwarfing rootstock, you can pick whichever one you want. And you had honeycrisp, and you had a trellising system and you had up spacing density of four foot or less, you can make your money back from all this investment by year 10. Whereas if you had a traditional semi dwarf tree, that's like a m111, which used to be the standard root stock, those trees still get 20-30 feet in the air, you won't make your money back until close to year 20. Even just because even though you don't have all that upfront cost to the trellis, the trees gonna take forever to grow, because it's growing wood for the first probably eight years of its life. Whereas with the trellis, we provided the wood, it doesn't have to do that. And putting an m111 on a trellis will not actually save you any money, you can't combine them because the m111 will still want to just grow wood. So if you’re thinking only like one or two trees, you should go with an M111. If you want like a nice bushy apple tree in your backyard, or an M7, something along those lines, where they're still smaller than a seedling, which would be 40 foot tall tree. But they're not, they're not trellis and you can prune them. So if you have a huge deer population, you can prune them up, so the deer can't reach the apples, so you need a ladder to harvest them. But if that's something you're thinking about that might be a better way to go. trellising are not deer proof by the way, you definitely need a deer fence, we didn't mention that. They can wipe out your eight foot trellis no problem. Other things are important for trellising. So there are a lot of training systems out there for apples. Brandon, let's talk about some of the more popular ones right now.

Brandon Carpenter 21:49

Yeah, here at the farm, we have vertical axe was the standard, you know, 20 years ago. And so a lot of our apple trellises are vertical axe, the trees don't tend to be strong enough to stand on their own, they need that support. But they're still a bigger tree, they're going to be 12 to probably 13 feet tall. And the way you grow that is you'll have a permanent trunk that grows, you know from the ground to the top, and then the bottom of your scaffold branches are going to be the layers of branches coming off that trunk. So at about 18 to 24 inches above the ground, you would start your first layer of scaffolds. And that's going to be probably five branches in a star pattern around the trunk if you're looking down from the top, and then that's permanent. So that trunk and the first level of scaffold branches are permanent, everything else on the trunk would get rejuvenated. So you would allow it to grow, it would fruit for a few years. And in an ideal world, you would take a couple of those branches out every year. And so they would constantly be rejuvenating wood up on top, above that first level. And then that scaffold branch is going to be permanent. These trees are usually spaced about eight feet apart eight to 10 feet apart, depending on the root stock. And when they're pruned correctly, they should look like a Christmas tree. So they're skinny at the top and kind of bigger at the bottom. The idea behind that being that it's going to catch more light, you know, so if you just had a big snowball like ice cream cone looking apple tree, it's only going to catch light on the outside. So the top is going to shade the bottom branches out on that Christmas tree shape, the top doesn't shade the bottom branches out. So you get production on, you know, basically every level of that tree. Then after that, people started moving to systems like the slender spindle, which is very popular in Europe. And that tree, they kind of grow it up and bend over the top branch and let it produce fruit and then trim that off and let a new top branch come up. So you get this kind of spindly looking, but the only thing permanent on that tree is the trunk. Everything on that tree, all the branches from the top to the bottom can be rejuvenated. And so those would be you know, you'd let those again grow out, they'd start producing fruit, and then
you would, you know, trim them off when they get I think the rule of thumb I think is when it's about half to two thirds the size of the trunk, you would want to bring that branch off. And so you would take the larger, maybe two or three of the larger branches off of that trunk every year, and you would constantly have new fruiting wood on that tree. The tall spindle is kind of a, I think more modern, it's probably the most recent type system. And there might be new systems out there that are even newer that I don't know about. But for us, the tall spindle is kind of what we're doing now. And the new ones we're putting in. These are very high density. So you're going to plant these at three feet. They even go closer than that on some of the planning. Our first one we planted at four feet because we weren't sure we kind of worried about it being three feet. I think in hindsight, we should have put it at three feet. That's the recommendation we should have just listen. Many, many people did it before us. And that's what they were saying. But we got scared, and.

Suzanne Slack  25:06
it's very common, by the way, most of that's a very, very common thing. So if you're, if you're used to growing, you know, 10 foot space trees, and you're thinking, oh my gosh, this is already close, someone's telling you, oh go three feet, or 18 inches, a lot of people do the five or the four foot, and then they usually regret. So we can, we have a great example of why you shouldn't do that at the farm now.

Brandon Carpenter  25:30
So our next ones are going to be closer. So we're putting in one that's at three feet, and when that's at two feet, or is it two and a half, so we're putting in two closer than what we put in last time. So we're going to have examples of all three of them. And you can see for yourself, why you wouldn't want to go four feet. But this is again, like the slender spindle, all the branches on this are rejuvenated over time, you take again, two or three, you don't let them get bigger than two thirds the size of the trunk. The big difference being on this system versus the slender spindle is you try to grow that tree as tall as you can in the first couple of years before you put fruit on it. And then that just kind of stays if the top grows above your trellis and breaks off, you don't really worry about it, and you try to keep it pruned back to about the top of the trellis, or maybe a few feet above. So it's not way up there getting broke, you know, pulling too much wind and breaking your top wire. The nice thing about these systems and especially with plenum close together, this tall spindle especially is it's like a panel of apples. So you've got this nice, slender trellis. And nothing's growing much more than a foot foot and a half out from the trellis and it's capturing sun. So it's, you can think of it as a long panel of solar panel, basically it's capturing sun from about 10 o'clock in the morning, until six o'clock in the evening in the summertime, more sun you catch, the more fruit you can produce. And there's actually even calculations for how wide you put your rows apart. Now we spaced our rows according to the equipment we have, because we'd want to be able to use our equipment and drive it up and down the rows. But I believe it's your row width needs to be 90% of your row height. So if you've got a 10 foot tall trellis, you would it's pretty easy calculation you would want at least nine feet between the rows. Now you can go more if your equipments more, but the more you spread it out, the less trees you're gonna have per acre and the less production you'll have in the end. So if you can keep that at about 90% of your row height, they say you'll make your money back quicker, and you'll make the most money that way.
Suzanne Slack  27:36

Those are good points. The other big factor too is what equipment you already have. So if you have a tractor that's too wide, is it worth buying a new tractor, things like that, too. So a lot of people use vineyard tractors, instead of traditional big tractors for high density. That's been the industry shift. But that's the other limiting factor. So if you're going from row crops, for instance, and you have a very large tractor, thinking about that, because you don't really want to break any of your branches, because they will stick out a little bit. They won't stick out nearly as much like Brandon said, as a traditional big apple tree. But every time you break a branch, we call it tractor blight, you're introducing more pathogens, you're introducing more things that are eventually going to kill that tree. So trying to keep them not broken is best practice. The other thing to talk about is cultivars selection. So whenever you're thinking about high density, you're planting upwards of 2000 trees per acre, sometimes more, a little bit less. How do you pick cultivars? And how do you feel about locking cultivars?

Liv Meyer  28:47

The ultimate goal I'm sure for a lot of people growing apples is that they want to sell the apples. So I think a big contributor to what cultivars you want to work with are what your market wants, you know, and that's whether you're working with a co-op, grocery stores, you're going to the farmers market, things like that. Also keeping in mind, you know, what works in your region in your zone, but getting a good idea as to what the demands are in your area. Unfortunately, we all really like you know, I don't want to generalize, but there are certain cultivars that have been established, you know, over a long period of time, and those are usually the ones that a lot of people gravitate towards. And when you introduce new names, there may not be a lot of uptake right away and may be a little bit slow, especially if you know you've got access to newer cultivars or cultivars that maybe a majority of the people in your area aren't familiar with. They may not be as popular right away. So yeah, those are I think the biggest thing to think about is who's your market and what do they really want. The other important thing too is that there are certain trees that, and I'm sure it's a majority of them. Now, you need different types of cultivars, or if you have crab apples in the area, this may work too, but for pollinating appropriately, let's say you want one that you really want to start out with, can they self pollinate? Or is this something where we need cross pollination? Primarily with apple trees, self pollinating is when what we call pollinators would knock off pollen. And in those apple blossoms from the male part, they go into the female part, and you can grow fruit from that cross pollinating is when you need a different cultivars to be able to help pollinate the other ones because that process on that one tree, that's self pollinating doesn't work, so you won't get the fruit.

Brandon Carpenter  30:48

Now, I've heard that Golden Delicious, are self fertile. So you could pollinate a golden delicious with a golden delicious, but that they're not terribly productive when you do that. So if you plan it only golden, delicious, you may get apples, but you're not going to get a lot of apples, and they're not going to be good quality apples, all other apple trees won't self pollinate. You have to have another pollenizer. Is that right?
Suzanne Slack  31:12

Yeah. So there's a couple that claim to be self-fruitful, self-pollinating, but their apples are lesser quality, they're not very good. They're not very big. You really need to cross pollinating doesn't really matter what you cross pollinate with, as long as there's some cross pollinating something else to think about one of our I think Liv was trying to beat around the bush talking about honey crisp a bit because that seems to be what everyone wants. But it is not a good beginner apple, it needs a lot of extra work. Adding to that is pollinating it. If you have honey crisp, you need a pollinator, but honey crisp is not a good pollinator back. So then you need another apple in there. So for instance, if you had you wanted ambrosia and Honeycrisp, you need something else in there to bridge the gap or you won't get any ambrosia apples, for instance, also apple trees flower at different times. So there are some that are late blooming and early blooming. And if the flowers aren't out at the same time, then there's no cross pollination. So when you're planning your spacings, and your blocks thinking about that, the other part thinking about and this is more for like figuring out how many trees needs this type of Trellis thinning? How are you going to thin your apple trees? Are you going to do it by hand? Or are you going to do it chemically. And we'll talk a lot about thinning later on. But when we're planting people to think about thinning, and if you're going to use a chemical thinner, so whenever I say chemical thinner, it's a plant growth hormone that tricks the apples into removing or letting go of parts of the fruit, so it has less fruit you want. It sounds counterintuitive, but if you thin your trees, the fruit that they Apple keeps are bigger, so you make more money with bigger fruit, they're typically tastier. But different cultivars are sensitive, different sensitivities. So great example, at the hort farm, we have a scab resistant block. So sounds great scabs a huge major disease. So we have liberty Gold Rush and red free apples in there. And they're not spaced very well. So we've had to hand thin them because gold rush, you need a lot of thinner on those trees to actually make them drop the fruit, red free. If they even get a whiff of thinner, they'll drop all their fruit. So you can't really use thinners that well in a system like that. Whereas if you had a whole block of red free, you could apply the minimum amount of thinner be great if you had a whole block of gold rush, you could douse the crap out of them, and you wouldn't hurt any of your other trees. So something else to think about when you're designing your trellising block is thinning.

Liv Meyer  33:47

Would susceptibility to certain diseases also be kind of a consideration?

Suzanne Slack  33:53

Yes and no. So pretty much all of the cultivars that everyone likes, besides honey crisp, ironically, are magnets to a couple of major diseases that can wipe out a trellised apple System really quickly. But if you had cultivars that were more sensitive to Fireblight, you would want to put those further away from a road. Because if you have trees that are more disease susceptible, it sounds the opposite of what it should be, they should actually be further away from the road. So you had to get out of your truck and go look at them more often for scouting. But being exposed to the dust from the road actually causes like little micro abrasions on the leafs and stems and then you can get more pathogens in that way. So you want your more disease resistant ones closer to the road. And that's true for any perennial plant.
Liv Meyer 34:42
Because we've been talking about all different types of fruit in on this podcast so far. Let's say for example, people want to plant both apples and maybe blackberries or something like that. Is there an issue with maybe one plant being a host for certain diseases and that being problematic and again, I'm sure we'll get into this in other podcasts. But since we're on the topic,

Suzanne Slack 35:04
Down the rabbit hole, my favorite example of this is apples and blueberries. So for instance, if you're doing organic apples and blueberries, there's a biological control agent of apples, which is called blossom protect works great for Fireblight will completely decimate your blueberries. The yeast really likes eating your blueberries and will cause some rot problems. But it works great for fighting fire blight on an apple doesn't hurt the apple. So yeah, there's a lot to consider with multiple different types of crops. That's why most people historically were just Apple farmers, or just corn soy. Unfortunately, the way that the world works these days, diversification is better for long term survivability, but it comes with a lot more planning. Another great example, apples and pears, I'll ask the group should you plant your apples next to your pears?

Liv Meyer 35:57
Nope.

Suzanne Slack 35:58
Why?

Liv Meyer 36:00
susceptibility for fireblight is pretty bad. Unfortunately, in our farm fireblight hit our pear orchard. Luckily, they weren't planted in close proximity to the apples. Is there a number that we can kind of put on distance? Or is that? I know there's a lot of factors related to that too.

Suzanne Slack 36:19
But I mean, some people recommend if you grow apples don't have pears at all.

Liv Meyer 36:23
Okay.
Suzanne Slack  36:24

I mean, that's something to think about and most people think apples and pears, you know, they're both pome fruits. They're very closely related. But yeah, one is super susceptible to a disease. The other one's super, super, super susceptible to put it that way. Thinking about things like that raspberries can also get Fireblight. So can strawberries apparently. So thinking about what your disease pressures like on your farm to farm for those who don't know, Fireblight is a bacterial disease that spreads really rapidly and can wipe out lots of different types of rosation, crops, roses can also get fireblight, hawthornes Buitoni asters, ash trees, although that's probably not a big concern right now for most people because of the emerald ash borer. Yeah, there's a new disease coming through that has a really wide host range to, you know, apples to tomatoes to strawberries. So yeah, there's always something on the horizon. So that's why you should listen to the podcast and keep up with the news on whatever you're growing. There's always something trying to eat your crops. Is there any other thoughts on Apple trellising?

Brandon Carpenter  37:33

I've heard a lot about the difference between tip bearing apples and non tip bearing apples, would that affect whether you choose a vertical axe? Or whether you choose a tall spindle? Or does it just affect how you prune it when you choose that system?

Suzanne Slack  37:48

That's a really good question. So most of the apples that are very common in grocery stores, not all most are spur bearing. And those are way easier to grow on a trellis and train. So spurs are little nubs, for lack of a better term that come out at different points on the tree. So you have more apples, tip bearing only produces flower, bud on the growing tips of the branches. So you can think of it as only the fingernails produce the fruit, whereas the other ones, you could have fruit all the way up to the arm. So if you're doing constant renewal pruning on your trees, you're really increasing those spurs to get those nice spurs. That's kind of like the the point of that renewal system. So if your tree doesn't make spurs, what are you doing, you're cutting off all your wood. So a great example is a Granny Smith is a tip bearing tree, very common cultivar, they can be more challenging to get those high yields on high densities. I know there's a bunch of research being done on tip bearers to think of different types of training systems, they look kind of cool. They look more like the traditional espalier with long branches coming out and lots of like branching off. I think that's still in the works. But that's also something to think about. So if you're dead set on a Granny Smith tree in Iowa. Well, bad news, you probably couldn't get apples on it anyway. It's a very late cultivar. So it's probably not a big deal for our region. But there are other cultivars that are more tip bearing. So you might not get the yields you expect compared to something like the honey crisp, that's a spur bearer, or gala as a spur bearing. And there's also a spectrum so some can do both. And that's a sign on trade that your rootstock wouldn't change that that's like the science genetic preference and where it makes the fruit buds. Thanks again Liv and Brandon for joining us to talk about trellising. I think we have two more to talk about. We'll talk about grapes coming up. And maybe a little bit of a recap episode too.
Brandon Carpenter 39:50
Thanks for having me.

Liv Meyer 39:51
Thank you.

Small Farms 39:52
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