The Southern Fruitcast

Episode 6: Southeast Strawberry Disease Management with Guido Schnabel

[Intro] Thanks for tuning into the Southern Fruitcast. This podcast aims to cover the people, technology, and latest developments in small fruit production in the Southeast. We are brought to you by the Southern Region Small Fruit Consortium and the University of Arkansas System Division of Agriculture.

[Cato] I'm Dr. Aaron Cato, extension specialist for Commercial Fruit and Vegetable IPM at the University of Arkansas.

[McWhirt] And I'm Dr. Amanda McWhirt, extension production specialist for fruits and vegetables, also at the University of Arkansas.

[Music]

[McWhirt] All right, everyone, welcome back to the Southern Fruit guest today. Our guest is Dr. Schnabel, a plant pathologist at Clemson University with over 25 years of experience working with pathogens of fruit crops. He's an active research and extension program that focuses on the management of diseases of small fruits and stone fruits. He's also spearheaded the development of the My IPM app, which has pictures of symptomology, basic information and control recommend control recommendations for a range of small fruit crop diseases. The app is updated regularly by regional experts and is a great resource if you're not familiar with it. Dr. Schnabel, thanks so much for joining us today.

[Schnabel] Oh, thank you for having me.

[McWhirt] So we're going to go ahead and jump in and ask you a little bit about strawberries. So looking back over 2020, within strawberries and some of the other small fruits that you work on, what were some of the big disease issues that you saw?

[Schnabel] Well, every year is different in strawberry production. And in 2020, we saw some extraordinary things. Some were related to plant pathology and others were related to the weather. For example, in one location in South Carolina, we had a big hailstorm coming in and it really messed up some major fields in the coastal areas of South Carolina. So that was one of the problems that we had. Another one was we had several growers complaining about plants that looked stunted and never really took off. And when I saw those, I was immediately reminded of the 2013 incidents. I don't know if you guys remember that one. That was an outbreak of

viruses, two different viruses in strawberry plants. And a lot of growers are just scratching their heads, you know, what was going to go on with those plants? Never really delivering any fruit. And it was, you know, coming back to a to a nursery, which had a problem with aphids. And so those viruses came into the nursery plants, and then the nursery plants were delivered. And then there was a, you know, a big problem. So they, it reminded me of that. But in this case, we didn't see any viruses and we didn't, we didn't really detect any viruses. And I also always think about J Rooting and if I see stunted plants, J Rooting is something that comes to mind. But that was not the case because it was so widespread and it turned out to be again associated with the nursery source. And that seems to be really a common denominator when it comes to a lot of the problems that we have in strawberry production. Some nurseries seem to have a few problems here and there and some years. It's not always the same nursery. It can be, you know, be spread out. And it's just a very tough thing to do for nurseries to, to produce clean plants. Sometimes things just happen. Now, in this particular case, we were not really I mean, it was pretty widespread, but we weren't able to really see anything that would trigger some response, like it was no pathogen or it was regularly isolated from those plants. So I think we still don't really know what, what the causes. It could be as simple as maybe a growth regulator effect that sometimes happens when you spray pesticides either in the nursery or early on in production. Some of the DMI fungicides, for example, can cause stunting. There's a new disease that is, that has done some damage in Florida, and we tested for that one, too. It also causes stunting, and it's also a nursery derived disease. But we weren't able to confirm that either. So that wasn't that either. So that was kind of an interesting, guess, guesswork right there. Right. But in the end, we weren't able to pin it down to anything. So I think we'll just have to hope that next year is going to be a better year. And then, of course, we every once in a while have the occasional phytophthora root rot coming in and the leaf spots and maybe some anthracnose here and there. So those were the 2020 stories.

[McWhirt] Yeah. So on this mystery disease or mystery occurrence of kind of stunted plants, did you see that that really carried through the entire season into the spring and affected production?

[Schnabel] Yeah, unfortunately, yes, it did. Those plants really never delivered. And so it's something that we really need to figure out in the future what that might have, you know, what, what the cause was of that. But again, with the, with the tests that we conducted, we couldn't figure it out. We, you know, we looked at several samples and it was just there was nothing consistent that we could figure out. So it could be as easy as maybe plants being shipped in a truck. And it was, you know, somehow those plants got frozen, doesn’t take too much. So it could be as simple as that. And that's something you will never figure out exactly here.

[Cato] Yeah, we saw similar things here, didn't we, Amanda?

[McWhirt] Yeah, we had some issues with, um, with cold damage early on in the fall. We had a freeze that happened right around Veterans Day. So like November 13th, 12th around there. And, you know, on plants that weren't covered, we definitely saw some pretty severe cold injury

and we saw that it continued on through that through the season. But we could definitely trace it to that, to that event. Um, so yeah.

[Cato] The other thing we saw too was hail damage. And so, you know, some of our growers had it, and they were still able to sell the fruit. You know, it wasn't too bad. And so, you know, have you ever found anything about, you know, what you should do with fungicide applications after a hail event? And is it increasing the risk of infection on the berries?

[Schnabel] That's a good point. And because you get a lot of injury to the leaves, to the plant itself, and each injury represents an entry point for a disease, and there are several diseases that come to mind. And I think personally, it probably depends on the weather after the hail event, if it brightens up. Sunlight comes out and for the next few days it's going to be all dry. I think there's not much to worry about, but if it stays moist and it's sort of like a petri dish for, you know, two or three days after that event, I think then you have to seriously consider maybe following up with the fungicide application.

[Cato] Okay. Yeah. I think what we ended up with the growers that we talked about is maybe using even some of the ones that have some systemic activity like a, like a Luna sensation or something like that instead of just Captan alone because they had a lot of injury. And I think we just, we had rain every two days around that time. And so it was it's a very risky, risky time. But I think they got out of it pretty clean on fungicides. But that grower that got the most of the hail damage, they, they do a lot of you know, they have a good schedule. And so I think they didn't have too much inoculum there to start with.

[Schnabel] Yeah, Luna sensation is an excellent choice and as you said, it does have after infection activity. It's very different from Captan, which has very limited after infection activity. You're talking maybe 12 to 24 hours, whereas a Luna sensation, for example, can be as much as three days.

[Cato] Okay. And so, you know, coming into our some of the other questions, I think I have some more questions about, you know, different types of products. You know, one thing that we see pushed a lot from the other growers in the Southeast is to look at resistance profiles. And here and, you know, our side of the state and I would assume that a lot of the smaller growers across the southeast, these are very similar where they don't know what kind of resistance they have on their operations. And so we were able to do two this year, just two profiles, one of for botrytis and one for anthracnose. And we had higher hopes, but the major pandemic really slowed down some of those hopes for how much we could actually get out early on and look at grower's places. But so what we found was in Botrytis we had resistance for FRAC1 so a product like Topsin and FRAC17, which would be something like Elevate and FRAC2, which is roveral. And so my question is, you know, I know you deal with this a lot more than we do, in which ones are seeing very consistent. And are those products very consistently have resistance?

[Schnabel] They do. And to have that resistance it has been around for a long time the FRAC1 and I'm assuming that your audience is familiar with FRAC codes or do we need to talk about this a little or?

[Cato] We can, we can at least introduce them. So if we say a FRAC code, we're talking about the Fungicide Resistance Action Committee. And so basically it's just a moniker for how the fungicides kill the, the disease or the funguses that we're talking about, you know, how they're killing the pathogens.

[Schnabel] Yeah. So. So fungicides are categorized into modes of action, right? And so there's lots of them on the market and they don't all have the same mode of action. Some have mode of action A, some mode of action B, some mode of action C and any active ingredient that has the same mode of action gets the same number, the same FRAC code. So when you talk about FRAC1, that's actually one of the oldest fungicides that it has that was developed in the 1960s. Many, many of your audience listeners probably still remember Benomyl, that's a member of Frac 1, and that at the time was really a silver bullet to pretty much everything. It was excellent for many diseases, but only for a short period of time until resistance development. And that resistance has lingered on up to now. And that's because resistance is very stable. That mechanism of resistance that was implemented into the population of that fungus, that mechanism does not have any penalties, penalties. It's a point mutation that is implemented in the genome of the fungus and it doesn't come with any negative side effects of the fungus. It's just happy to have it. And in addition to being happy, it also is not really, um, it's not really vulnerable to applications or FRAC1s. So that's the one thing. Then the FRAC 2s that you also mentioned, that's that those were developed also in the 1970s like dicarboximides, also very old class of fungicides. And that resistance has been around for a long time and it has also been very stable. And part of the reason is that that a lot of growers have really relied on those chemicals for a long time and selected for resistance over a long period of time. Now that other class that you mentioned, FRAC 17, I think it was? or Elevate, that was only registered maybe 15, 18 years ago, but the fungus was able to develop resistance fairly quickly. But fortunately, resistance has not really extended to much in the population. We do have growers who don't, don't have any problems with the application of any of those FRAC 17 fungicides. So over the last eight years that have done the resistance monitoring, really, there's, there's a couple of messages that we learned, but a couple of things that we learned. One is basically 95% of all the gray mold fungus is resistant to FRAC 1. Okay. So spraying Topsin M specifically for gray mold control doesn't make any sense anymore. It's out there. It's in the population. It's persistent. It's going to stay for good. So no chance that even if we did not spray it anymore for the next ten years, it would come back into vengeance if we sprayed it one time or so. And then the same is true for the type of dicarboximides, but for the for [unknown]I think there is a little bit of a fitness cost to that population and that fitness cost really we can take advantage of by reducing the number of applications of that particular product and make sure that we can use it over the next few years still. So follow the label instructions, make sure you don't overdo it and it should still work for most growers.

[Cato] Okay, so you know, Elevate, the fenhexamid, It's, it's commonly used in combination with Captan, and so if you're using both of those together, what do you think the risk is for selecting for resistance that way?

[Schnabel] That's an excellent choice, Captan. And one of those side specific fungicides such as Elevate is an excellent choice because you're mixing a what we call multi site product, which is Captan that is not vulnerable at all to resistance development. So you're mixing that on it, which doesn't have the efficacy of elevate, but it still has pretty good baseline efficacy, mixing that one with something that is vulnerable. So you're protecting really that vulnerable product from resistant selection.

[Cato] And so anthracnose, the big resistance risk is, I believe the group 11, FRAC 11, which would be things like abound. Is that correct?

[Schnabel] That's correct. Yeah. That's FRAC 11 that particular group of fungicide was introduced to us as the strobilurin fungicides. So some of your listeners might recognize that name. It was introduced like around 2000, 2002. And so we've been spraying it for 20 years now. And resistance has built up in the population of gray mold fungus, botrytis, And now it's also beginning to build up in the anthracnose fungus, which is caused by or which is mostly called a [unknown] species. So we're seeing that building up now. It's not yet widespread, but we are seeing it much more than only like last year.

[Cato] Okay. We definitely did not see it in the sample we took, but we did see that it didn't really control Botrytis and I didn't know if that was because it never had the efficacy on botrytis or if it was due to resistance. I wasn't sure on that.

[Schnabel] Yeah, it is described as having a suppressive action on botrytis. It's not really a botryticide, it has suppressive action and that's one of the reasons why the companies like to premix it with something that is more active against this. So when you look at those FRAC 7+11 mixtures, those pre mixtures that you mentioned before, Luna sensation is one of them and Merivon is another one. Pristine is another one. So those 7+11 products, a work that seven product works against botrytis and the 11 product, that’s supposed to be a resistance management tool supposed to help with the control of the botrytis, but that's , that's no longer the case. So we actually found that about 90% of the population in the Southeast of the botrytis population is now resistant to those FRAC 11s, and that needs to be really considered in future programs.

[Cato] You know, another question I have kind of in the same vein is, you know, if you look at the south eastern strawberry guide through the Small Fruit Consortium, you can see where there are, you know, cases where if you had, was it was it five way resistance in grey mold now, is that what it's up to?

[Schnabel] Oh, say that again.

[Cato] Yeah. So say you had four or five different modes of action that were resistant. How common are those kind of situations where you have growers that just aren't going to be able to find very many, a very good selection of products to spray?

[Schnabel] They're not too common. I mean, most of the ice loss that we are looking at, they're resistant to the FRAC ones and twos. Those are the ones that we discussed. So you already have like two modes of action right there. And then they may be resistant to one or two others. But there's very few isolates out there that are resistant to five, six, seven or even eight chemical classes of fungicides. They are out there and we have to make sure that we don't let them proliferate. They're out there. But with the management strategies that we have developed and that we are recommending, I think we're, we're doing a good job controlling those multi fungicide resistant strain.

[Cato] Okay. And another kind of question in the same vein as we talked about, Captan, with Elevate. And, you know, you can find recommendations for things like switch or lunar sensation or Merivon that are all, you know, multi-site products. For a lot of these, do we need to be recommending or do we need to be putting Captan in with those? Do we see an increase in efficacy when Captan is in with some of those multi-site products?

[Schnabel] Basically, when you look at a Strawberry Field, you've got to be concerned with, with gray mold and anthracnose and all this. Right. So those are the two major diseases that drive the program. And mostly we are concerned about gray mold. That’s, that's a disease that always occurs and that you all you can always count on gray mold to show up and you've got to spray for that one. The anthracnose is something that we are trying to manage at the nursery level. Because a lot of the, especially the anthracnose fungus that is resistant to the FRAC 11’s, they come from the nurseries because they also have to use products such as FRAC 11 to control powdery mildew to control any anthracnose that they might, they might have any leaf spots. And we're working with them and trying to convince them to use other modes of actions so that no preselection is going on that, that would be transferred to the growers, to the grower fields. So that's, that's the one thing we're trying to do. And also clean plants. So if you have if you're starting out with clean plants, that is that's a big one. But it's also a huge problem and not always feasible. So if your plants are free of anthracnose there's no reason to believe that you actually have anthracnose But you never know. How do you know that you're not going to get anthracnose So as a grower, you just don't know. So, so really, preferably, you should spray something that works against both diseases. And so the choices that you have are Thiram which I recommend to be applied early in the season when it's a little cooler and it has a very good action against gray mold disease. And then as the season progresses and it gets a little warmer, you switch to Captan. Captan is an excellent activity against anthracnose good activity against gray mold. So those are the mainstays and those are the compounds that don't select for resistance. Now, when the situation gets a little bit more iffy is when, when the weather turns and there's a lot of rain and it's more favorable for the disease. And, and really, the Captan and the Thiram are no longer sufficient. So that's when you have to either switch to something more

effective or you have to add something to the Captan to make, to withstand the disease pressure. Switch, for example, is , is a product that is effective against both gray mold and, and Anthracnose. There's the combination of, of Captan and Fontelis, for example, is a very good choice to control both diseases or the combination of Captan and Kenja. So those are products that are only FRAC sevens, and I like to mix them with the multi site. And another one that was just registered is Miravis Prime. Miravis Prime is, is a mixture of two compounds, fludioxonil, which is also in Switch. But there's also a new FRAC seven in there. And it's, it's one of the best FRAC sevens out there. And not only does the FRAC seven work against anthracnose, it also works against gray mold. So you've got two active ingredients that work against gray mold and anthracnose together. And that's a little different compared to switch. Switch works against gray mold very well. And, but it's, it's only fludioxonil that works against gray mold. I'm sorry, against anthracnose very well. Both active ingredients ion switch work against both diseases but only against anthracnose we use that fludioxonil. So the advantage of Miravis Prime, is that both active ingredients work against both diseases. So I like that one.

[Cato] It's kind of in the same vein of what you're talking about with, you know, growers needing to make decisions for both. I know you can find a lot of things online, a lot of language that talks about Botrytis as being the issue or gray mold being the issue you always need to worry about. But I would say that, you know, in my experience here in Arkansas and talking to many people is that Anthracnose is very prevalent. And I know this year we had a lot of rain, but most growers in the state dealt more with that, I would say, with anthracnose Then Botrytis and, you know, know in kind of the risk that's coming out of nurseries, do you think that growers should just always make that decision?

[Schnabel] I think we're probably at the verge of having to make this decision and having to make that assumption that both diseases are always present. And so choosing, choosing products that work against both fungicides is probably a wise choice. And so, so those four that we already talked about are good ones. And there's a fifth one that I want to mention that is also good against both, has some activity and that's inspire super. So if you, if you rotate those five products or those five products or product mixtures, I think you've got a pretty good schedule.

[Cato] Okay. So another one we, I know I don't know much about is PhD or oso. Do you have experience working with that as well?

[Schnabel] Yes, we do. And it's one of those it's a, I think last year was registered as a biological controlled product. So it's OMRI approved now? The active ingredient is polyoxin D and it's, it has pretty good efficacy against gray mold, um, maybe not as much as Thiram or Captan, but it has some efficacy and I would recommend it to be used for disease pressure is low. So during times when you have maybe a four week stretch or maybe a three week stretch, it's more realistic, a three week stretch where there's no rain and no, no high relative humidity and you want to spray something that keeps certain disease pressure down. That would be a good

choice to use instead of maybe Captan or Thiram. So it gives the Captan or Thiram, a little bit of a break.

[Cato] Okay. And so kind of in the same vein of the always considering anthracnose and gray mold to be an issue. Another one like cultural control type technique that many growers use is removing dead leaves on plants. And so how do you weigh that benefit versus the risk of moving, you know, anthracnose spores around? Do you think it's still something that growers should rely on?

[Schnabel] Sanitation, I think, is always a good idea against both diseases, against gray mold and Anthracnose. You're reducing the inoculum level so that are reducing the number of fungal entities out there that can actually cause harm and cause infections. And you're also reducing the genetic pool of the fungus. And if you have a lower genetic pool, you've got less threat of resistance selection, right? Now, the problem that you mentioned is, oh, what if my workers who do the sanitation actually spread the disease around because they're going to go round those plants and they rip out all the leaves and rotten fruit. And in the meantime, they spread the spores all over the place. So and that is true. But I don't think it's going to be a problem if that activity is conducted during dry weather. Okay. So the plants need to be really dry and it would be a really good idea to apply a fungicide right after you are sanitizing your fields to just give it an extra insurance.

[Cato] Gotcha. Yeah, we get questions about that one a lot because once again, you can find wording where it says it’s high risks to for anthracnose. But you, like you said, lowers the inoculum of botrytis. Okay. So another question kind of related to anthracnose is, you know, a lot of growers, especially here in Arkansas, you know, you mentioned that three weeks without rain or dry weather. I don't know that we I don't know when the last time our grower saw that.

[McWhirt] In our last three springs. I think we've been lucky to have three or four days with dry weather, unfortunately, in Arkansas.

[Cato] And so one thing that, you know, a question that we got a lot this year is, you know, knowing what the increased risk of anthracnose, do you foresee growers needing to, you know, extend when they spray? And so if your focus is just on gray mold, for the most part, you know, once your flowers go away or once you're, you're mostly just green fruit there, then you're not as high of a risk for infection. But with anthracnose how high of a risk are you at infection when you, when you're just at green fruit out there that you're hoping to pick.

[Schnabel] So anthracnose is a warm weather disease. So it will get in into the plants when the weather transform and the berries are starting to ripen. So there's, if you have the anthracnose those in the field, it's going to flourish. And I think that the best action against anthracnose would be an integrated approach where we don't just rely on fungicide applications, but and we don't just rely on sanitization of the plants that are already in existence. But we also have to maybe sanitize those transplants before they even plant it. So tip applications off of anthracnose, active products would be a good idea. And I think growers need to start looking

seriously at some of the new cultivars that are coming out from several breeding programs that are anthracnose tolerant and some are anthracnose resistant and integrating those cultivars with spray programs plus tipping hopefully will lead to a much better control, success and less yield loss.

[Cato] Do you have much experience with DIP applications, like a Switch or anything like that?

[Schnabel] Yeah. So, so it's, the two best products that you can dip with would be switch. And Zivion is a new product that was registered last year in Florida and California has very good activity against anthracnose and some activity against gray mold. But it's better against anthracnose Actually. And this year it was registered in three more states, the Carolinas and Virginia. Okay. So it's not, unfortunately, yet registered for Arkansas growers. So somebody needs to get in touch with the company and make that motion. But it's my understanding that the company is working on a label that would help every grower, every strawberry grower in the nation. And so that would be a good choice to do. Either a Zivion or a Switch treatment right before planting. And so that will be something to consider for cut offs or bareroots maybe not so much for plug plants. I don't know if there are a lot of growers using plug, plug plants?

[McWhirt] Yeah, I would say predominantly we have growers planting plug plants here, a very few using bareroot.

[Schnabel] And then dip is a little bit more of a problem. You would then have to work with some other methods to, to expose the plants to those products. But if you dip with plants that already have a root ball and soil around it, then, then the efficacy of those dips are, are quickly fading because you have a lot of contamination in that dipping solution.

[Cato] So tip, people who buy tips, that's really where they could do it more.

[Schnabel] They could do it better, yes.

[Cato] Okay. We do have some and I'm sure that's the similar for the rest of the southeast with smaller growers, is that most of them are probably getting plug plants coming in.

[Schnabel] I would strongly encourage growers to look at those tolerant cultivars coming out of Florida and California breeding programs and hopefully there will be one in there that would be suitable for Arkansas conditions. And that's always the big question, right? They're being bred for certain locations, and it's not clear whether Florida breeding lines will do well in other warmer climates. Even in South Carolina we've had growers who said that some of those Florida cultivars just don't do as well. But you just have to, I think, give it a chance and plant a few test rows of those promising varieties and see if some of them are going to work for you.

[McWhirt] Right. So we're talking a lot about kind of moving into the fall and getting our new plants in. And this is kind of been mentioned in brief that, you know, we have big problems with healthy plants coming in from the nurseries and we're here in the beginning of September. So a lot of our growers are going to be getting their plants in and planting towards the end of the

month or the very beginning of October. So what advice would you give growers when plants come in of, of what to look for, to see if there is going to be some kind of looming disease issue down the line?

[Schnabel] Well, that's a tough one. That is really a tough one. So obviously, I mean, choosing a nursery source that you have done well with is a good thing to do. So, you know, and maybe even spread the risk. Maybe you can get your plants from different nursery sources because there's just no telling where there might be a problem coming from. So, you know, choice of nursery sources is a good one. And then when you get your plants, you look at them and see if there are any existing lesions already on the stems, on the leaves, maybe on the crown. And if there are existing lesions and there are anthracnose, that's a, that that's not a good, that's not a good thing. And I know growers who would just then basically say, no, I'm not going to plant those. I'm going to get a new batch and plant a new batch. And then, of course, they're struggling to find a new batch of plants. But if you're starting out with high levels of anthracnose, you're not going to have a good season. And I think every plant pathologist will tell you who, who has worked with anthracnose, he will tell you the same thing. It is an uphill battle.

[Cato] Is there is there anything to be said for like a fungicide application after planting or is it going to be very decreased in efficacy as well?

[Schnabel] I think you rely on those tips. The switch dips and the Zivion dips, so that might clean up a lot of it. And if you know that you have a certain disease, yes, you will have to stay aggressively on top of your fungicide program. And you have to make sure that, that you don't select for resistance or else your fungicides are not going to work very well. And so mixing and matching and rotating FRAC codes will be a key to success. But again, you know, starting with, with bad plants is it's an uphill battle. So that's a tough one.

[Cato] Gotcha, Yeah. We'll switch gears on diseases a little bit. We've talked mostly about the foliar diseases which infect the plant, but you're mostly getting to the fruit. But we're talking about like our soil diseases. We have a lot of growers that deal with Phytophthora and some of the black root rots and things like that. So a lot of the recommendations that I've seen is using ridomil gold or a similar type product right at when the plants to begin to grow. So when you plant them and then again when they kind of come back a wake in the spring. And so what kind of factors do you think should, you know, try to figure out what the best way to say this, what kind of factors should drive those decisions for growers? Should they always be considering a DRIP application around this time, or do you think there's need to be some history involved?

[Schnabel] I don't think that, I don't think a grower should just preventatively apply ridomil in the fall or in the spring. If there is no disease, then there's no, no need for any chemicals to be applied. And, and so that would make sense. I mean, we don't take antibiotics in the, in the fall either, only because with them we could get strep throat. Right? We could take it when we have strep throat. And some of the same philosophy would, would also apply in this case. If you., if

you had phytophthora in the past, that might be a different issue. So if you had problems the year before, I would say go ahead and do a preventative application of ridomil gold in the fall and maybe one more in the spring, but only that one year after you had that problem. And then then once that is taken care of, I think the second year I would just not do it anymore. And if you didn't have a problem the year before, then there's no reason to apply it, especially on well-drained soil. There's no reason to assume that Phytophthora is going to be a problem. Now, if you plant, if you plant your, your plants in an area that is known to have standing water and where the drain is just a problem, maybe that's something to consider those preventative applications. But typically we would recommend strongly against planting strawberries in sites that are just not conducive.

[Cato] So if growers are, you know, doing the implementing some cultural controls as well and rotating out of an area. So if they had a phytophthora issue and then they, they rotated out say for 2 to 3 years, do you think that they should go back, when they do go back into that area that they would need a DRIP application?

[Schnabel] I don't think so. Probably not. So if they do crop rotation and they do, they improve the drainage. I mean, phytophthora would only get in there if drainage was a problem. So they have to improve the drainage, very probably put some tiles in or somehow make, create some waterways to improve drainage. And once this is taken care of, then they should be okay. It is not a disease that would just appear for no reason. There's always a reason for Phytophthora to appear. That would be moisture, too much moisture, standing water in the strawberry beds.

[Cato] What about some of the other soil borne diseases like Verticillium or some of the fusariums?

[Schnabel] It's the same issue. Same issue. And I think your growers, are they doing fumigation to fumigate the soils?

[Cato] No, we're so far from the more of the intense, I think especially specialty crop production. I think this would probably be true for, you know, Arkansas, probably Mississippi and probably into Tennessee where we don't have commercial fumigators over here. I'm looking at Amanda because I'm hoping she, she knows better.

[McWhirt] I would say a lot of growers don't have the licenses or they're just not in the habit of fumigating. They're doing a good job of a crop rotation in most cases.

[Schnabel] Yeah. So those growers would have to rely on crop rotation and making sure that they have a good amount of organic material in the soil. A good, healthy microbial stock in the soil that can help with soil health. And so that would reduce a significant amount of those pathogens. No, there are ridomil gold specific for oomyetes. And so, you know, it wouldn't work against too many of the other soil borne diseases. So it's a very specific one. So yeah, I think they're stuck with crop rotation probably. And, and bio fumigation is an option and some, some products are being sold as biological products for, to, to be pushed through the drip lines. I'm

not sure how effective they are. There's a pretty good article out in Plant Disease that was published a few months ago by Gerald Holmes, and he discusses fumigation and also alternatives to fumigation. So he lists some of those biocontrol agents and how they worked in the past. But from what I read is that they're not a substitute for fumigation. They will help some, but they're not a substitute. And some of those fumigants you might be able to actually put also through the drip line, like metam sodium, for example, is one of those things. So you can try that as well.

[Cato] So that would be like laying plastic with the drip under it and then putting it through before you ever make any holes or anything.

[Schnabel] Correct, correct.

[Cato] Yeah. We'd have some interest in those types of fumigants here and we think they're probably pretty efficacious if you have enough issues.

[Schnabel] It's better than doing nothing.

[Cato] Yeah.

[McWhirt] All right. I think we're going to wrap up with just one last question. So will you tell us a little bit more about the My IPM app? We, I know I have it downloaded on my phone. I use it a lot and I know we have a lot of growers who use it, but I know there's still some people out there who may not be aware of it.

[Schnabel] Oh, so the my IPM app has been out for about four or five years now. And it's, it's a phone app that we developed in conjunction with the spray guide. So it's supposed to be an add on to the spray guide. It provides a diagnostic tool. So there's a whole bunch of pictures in there and videos you can link to YouTube videos and so and descriptions of diseases and pests. So you can use it as a diagnostic tool. But what I use it most often for is to remind myself about the products and the active ingredients that are available for certain diseases of certain crops. And the My IPM app has, you know, stone fruits and Pome fruits and small fruits in there and stretches disciplines, stretch, stretches from plant pathology to entomology. And now we're also adding weeds.

[McWhirt] Oh, nice.

[Schnabel] And so all those chemistries that are available for weeds and pests and disease management are in there and are being updated by a lot of specialists, you know, on the East Coast. And I use it mostly for reminding myself, okay, which of these active ingredients belong to the same chemical class? Which ones can I rotate? Which, which ones should I mix? Which ones are the same? So I shouldn't rotate or mix them. And you can, you can retrieve this information by using these interactive tables that are in there. They’re interactive in the way that you can sort them. You can sort them by activity. You can sort them by re-entering of a pre

harvest interval by active ingredient, by risk assessment. Yeah. So it's a whole bunch of good information in there that you can use to, to manage your pests and diseases.

[McWhirt] Very handy and free. So make sure you download it if you, if you don't already have it on your phone.

[Cato] Yeah. It's funny because Amanda and I will go to a farm call and we're sitting there looking at symptomology and we just open up the My IPM map and we're just comparing it to that. And so it's just very, we found it very useful, a lot of times telling us what it's not. And so it's a good reminder when someone thinks they have a certain issue just to pull it out real quick and say, no, we're not seeing the, you know, the key characteristics of the..., what we go for on there.

[Schnabel] I'm glad to hear that.

[McWhirt] Well, thank you so much for joining us today on the podcast. We really enjoyed all the great information you shared with us.

[Schnabel] You're most welcome. Thank you for having me.

[Outro] Thanks for tuning in to the Southern Fruitcast. Our episodes are hosted by Pod Bean and also can be accessed on the University of Arkansas extension website at uaex.edu/Southern Fruitcast. Here you can see all of our episodes and provide us feedback to help shape future episodes of this podcast.

We'd again like to thank the Southern Region Small Fruit Consortium for funding this podcast. The consortium provides a large library of production and integrated pest management resources at SmallFruits.org. We'll be back again soon with more updates on the Southeast small fruit industry and interviews with specialists, researchers and farmers from across the region.