Season 1 Episode 14—Ugly Tomatoes: Diseases

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Announcer

Welcome to the *Southern Ground* podcast provided by Alabama Extension through Auburn University. Extension educators Shane Harris and Dr. Chip East discuss seasonal lawn and garden topics, address common questions, and provide the practical solutions you want to know. Let's dig in to our southern ground.

Shane Harris

Hello, and welcome to *Southern Ground*. I'm Shane Harris with the Alabama Cooperative Extension System and joining me for this podcast is Dr. Chip East. And Chip we have a special guest again for this part three as we continue this conversation of ugly tomatoes in the home garden, as well as on the farm, we've got Dr. Ed Sikora with us.

Chip East

We do and Dr. Sikora has been with us since ’92. He's an Extension plant pathologist, a professor and Extension plant pathologist with Auburn University. He's been with us since 1992. And when he has helped me out…I've asked him a lot of stupid questions, and he has helped me out so many times, and I appreciate everything he's taught me over the years. And no telling where I'd be without you, Dr. Sikora. I really appreciate you.

Ed Sikora

I've had thoughts where you would probably be without me and I. I'd rather not bring it up during this podcast, but oh, thanks for the kind words and it's nice to be here with you guys. You guys do a great job. I listen to the podcast all the time. It's about time you asked me to join you.

Chip East

I wanted to get you on episode one Dr. Sikora, but Shane didn't so that's why.

Ed Sikora

Shane never liked me.

Shane Harris

No, I liked you from the very beginning. Now, don't throw me under the bus. I really appreciate you working with us on the Master Gardener program. Coming and teaching, plant diseases, to our master gardener and always learn so much every time you come. But also, over the years, we've done tomato workshops and we've gotten deep into, all the diseases, the insects as well as the abiotic disorders. The one reason we're doing this podcast today is a result from those workshops, because we were able to accumulate all these issues that tomatoes have that can definitely result into ugly tomatoes. So, Dr. Sikora's with us here Chip to talk about those plant diseases that where plant just don't look right.

Chip East

Yeah. We deal with those all the time, and he's a good one to tell us about it.

Ed Sikora

There can be a lot of ugly tomatoes in Alabama, so let's get at it.

Chip East

Well, Dr. Sikora, what would be one of the main or why don't you the main problem with tomatoes or the question we get often asked, we we're talking about early earlier, and you told us a story of one of your first calls here in Alabama.

Ed Sikora

Yeah, I'm from Chicago originally. You probably can't tell by my accent, but first phone call I received in my office excited, older woman asked me a question, said, our tomatoes were firing up, and I really had a hard time understanding her. So, I said, can you repeat that? She said her tomatoes were firing up, southern accent. I'm going what do you mean by firing up? And she meant that they were burning from the bottom up, the plant from the older leaves up to the top, and after about five minutes, I figured out what she meant by that and that that's what a lot of people experience, especially in backyard gardens where they're not, on a calendar-based fungicide program. So, you and that's, typically early blight, which is, our most common foliar fungal disease that we see in the state very common in backyard gardens. I said no resistant varieties out there, and that's the one that we'll start seeing about mid-June.

Shane Harris

And when you describe firing up, that's the yellowing of the leaves, the bottom leaves ground up, and that yellowing just literally as the disease develops, gradually moves up the plant, causing the leaves to turn yellow, developing a leaf spot and then eventually turning those leaves brown. So, we want to make sure people know about this fungal disease. This is early blight and the most common fungal disease that we see early in the season, before the tomatoes are even close to being ripe.

Ed Sikora

That's correct. That's correct. So, we normally see when temperatures are between 75- 85 degrees. Good moisture, decent moisture. If you're overhead irrigating, you're providing conditions that favor the development of a pathogen. These fungi love it warm and wet. And that disease will start on the lowest leaves. You'll see black to brown specks in the leaves, maybe a half a millimeter long or a millimeter in diameter. And then they'll increase in size and what you'll see is in that lesion will be a concentric ring, like a target spot.

And then you get a yellow halo around that lesion and then those lesions merge and eventually leaves turn yellow like you said, Shane. And the spores form on the leaf on the lesion. And then they are spread upwards through the canopy of the plant. So, the older leaves yellow, turn brown and die and new leaves moving up towards the top of the plant will become infected. And it might take 7 or 10 days for an infection to occur before you actually see the symptoms, so it's, you can't pull the leaves off and keep it from spreading, typically.

Chip East

So, when these leaves are drying up and falling off and how does that affect the production and the fruit that's left on the plant?

Ed Sikora

We did some trials back in the 90s, trying to figure out basically answer that question if we could do a weather time fungicide sprays. But, when you start losing those leaves, you reduce the photosynthetic area of the leaf tissue that's picking up the energy from the sun that feeds those fruit. So that's part one, so that's going to lower your yield. And then as those leaves drop or die the fruit that are produced are exposed to the sun. That's when you start seeing fruit, ugly fruit with a beige or white lesion on it. And you're going what, what is that? But that's just sun scald because those fruit are no longer covered by the foliage. Should be there. So, it's a, it's a double whammy. Our, our test, we showed that, in the absence when the disease was present in the absence of a chemical spray, in this case, we had a 50% yield reduction of marketable fruit in, a two-year study.

Chip East

That's a big number. 50%.

Ed Sikora

Yeah, yeah, there was a combination of you can't sell a sunburned fruit. And I'm sure your family doesn't feel like eating it for dinner.

Shane Harris

A lot of people see the yellowing of the leaves, and they just sort of ignoring think it's going to go away. They may blame it from other issues, maybe other environmental issues. But the problem is this fungal disease gets worse and worse and worse, as the plant begins to mature and eventually does can eventually kill it. So, when we have these fungal diseases in the backyard or on the farm, what are some of the things that we should do to try to prevent this? Because we know from listening to you over the years, you can't prevent the fungus once the damage has occurred on the leaves. You have to have a preventative program, a preventive spray program, or do some cultural things to try to limit the impact.

Ed Sikora

What I would do is have a your home gardeners have a calendar, and they'll see this disease show up pretty much every year about the same time, especially if the moisture, we're getting rainfall or overhead irrigation. So about when that time the disease start showing up. That's when you start your preventative program. And they could buy a product like, I always used to recommend, Daconil was one product that was, the active ingredient was chlorothalonil, which is very hard to spell.

And, but that's a protective fungicide. And you would apply that about every 7 to 10 days, and it's like a coat of paint effect on the foliage so that you spray that the leaves are covered with it. When the fungus fungal spore lands on it, it can't penetrate it. But of course, you have new leaves coming out daily, so you have to spray it again a week later, and some of that will wash off due to irrigation and water.

So it's a calendar-based spray, like you said, every 7 to 10 days during the season. And they'll keep early blight in check, but there are no resistant varieties for it. You want to maintain a balanced fertility program of a soil test done every couple of years, I believe. When you are irrigating, try and keep the foliage dry.

So, drip irrigation, water in the morning, don't water in the evening, even though that might be the easiest time after work. But these fungi like it warm and wet, if you have wet foliage going into the night, that just provides conditions that this fungus loves.

Chip East

I have two questions on that one. When would you start spray the spray program. And does mulch help?

Ed Sikora

I would typically, depending on when you plant, I don't there's not a really a growth stage, but I would, so, it likes temperatures of 75 to 85 degrees. So, once we start hitting those, I mean right now I think is or 80s all this week, this would be the time to start that program up and then mulching. That would be helpful because some of those leaves dropped to the ground. And also, just when you're watering, it's rain splash that moves the spores up into the canopy. So, mulching will keep that, the spores from splashing up. So, it's very beneficial, it also keeps the roots cooler and keeps that moisture at a level base. So, I think mulching is extremely important.

Shane Harris

Chip in our Clay County soil when we saw the mud being splattered upon the leaves of the tomatoes, we know that those spores are also being splattered up on those lower leaves of the tomato. So, one tip has always been to sort of break off those leaves at the bottom that are that are touching the ground just from a sanitation standpoint.

Ed Sikora

I had a couple master gardeners tell me about Ed. Can you, you know, if you're if you have a transplant or a young plant with a couple lesions on it, can you remove those and keep the disease in check? And I said, well, the probably other, leaves have been infected. I go, but you could try it. And a couple of growers, farmers have told me that that that has worked for them in a small garden situation. So, you could try that early on. But, of course, if your plant's firing up halfway up the plant and give up the ghost there.

Chip East

I worry about the sun scald on that. When the season's over. And this may go for a lot of diseases. What do we do with infected plants when the season's over?

Ed Sikora

At the end of the season, I would dig those up. I would, you could take the leaves and the stems. If you have a hot compost pile, one that the center reaches 160 Fahrenheit for extended length of time, that'll, that'll burn up that tissue. But you don't want to leave the, the foliage or the, the debris of the plants if it's diseased on the surface and then come back the following spring and plant in that debris. Because the fungus, the many of these pathogens will survive on dead plant tissue, saprophytes.

So, they'll be just sitting there waiting for you to come back the following spring. So, removing, sanitation at the end of the year, maybe a hot compost pile or burning it, or maybe tossing it in your neighbor's yard or whatever you want to do. You can rotate some of the foliar diseases, not as effective because they do get rain splashed or windblown, but we'll talk about wilt diseases later on, soil borne disease, and that's where rotation could be very effective.

Chip East

So, if the if there's a larger farmer and they can't just pull your plant up and compost it. If they deep plowed as deep as they can and covered it was soil, maybe it would just, you know, break down faster.

Ed Sikora

Exactly. There's a disease we'll talk about if we have time. White mold, southern blight. I'm sorry getting mixed up in my crops. I work on, but that's one that produces a sclerotia. And that's when you want to have deep plowing to bury them as deep as possible.

Shane Harris

There are some other fungal diseases that are similar to early blight that you mentioned to us. So, you have early blight is early season, but there are some that look very similar even to us. Like maybe in one of those is bacterial spot.

Ed Sikora

Yeah. This is one that's that should be showing up right about now.

Shane Harris

And you talk about now it's about late May, early June here in the deep South.

Ed Sikora

Yep. And even earlier down in the, in the southern part of the state. So, I'm sure it's already showing up down there. And one of the reasons is it that comes in and often it comes on transplants because it gets in the in the transplant house. And the nurseries have a hard time keeping under control because they have so many plants in a small area. So that can come in. You might not see it at the nursery or at the local big box store you're going to. But that'll also start off as a black or brown speck, lower leaves, same type of thing.

You might get a slight yellow halo. Many times, I'll see bacterial spot, which is a different type of pathogen than the fungi. But there will be early blight and spot will be on the same foliage and both moving up the plant. And this one can also go to the fruit. So, you might start seeing fruit with, you're talking about ugly fruit again with, canker or lesions or swellings on them. And that's due to spot as well.

Shane Harris

Being it’s a bacteria, can we use the same fungicide like chlorothalonil to control bacterial spot?

Ed Sikora

Good question. No, this is it is a bacterium. So, fungicides are not going to work on bacteria. But one product that does work for spot to a certain extent is a copper-based product. And they do control, bacteria and they will have an effect on your fungi as well, but not to say chlorothalonil, and that would be better than copper for early blight, but copper would be one I would use. You could usually use that in combination with chlorothalonil to get double control on both of these type of pathogens. No resistant varieties there. Bacteria also like it wet. So, whatever the conditions are with all that splashing water. That disease will, we'll have a good time. Go crazy.

Chip East

Would we start early with our preventative or wait till we see the disease and then start with the copper spray? Or would you just start?

Ed Sikora

One thing I used to recommend with bacteria with bacterial spot specifically was, after you transplant your plants, start spraying copper for three weeks in a row. Maybe five days after your transplant, spray, spray, spray.

And that way you get this population, it might be coming in on the transplant stage. You don't see it yet. Symptoms aren't there, but you might be able to clean up those transplants. And then after that, just wait to see if you see symptoms developing. You have to scout at least twice a week. Just go through your garden, look around, talk to your plants. Whatever you do, if you start seeing symptoms, then you get on your spray program for, for bacterial spot and with early blight for the same.

If you want, you go by, weather conditions or past history or just when you start seeing early symptoms. But once you see symptoms, you got to start going, start spraying.

Shane Harris

The other thing that we get a lot of calls on homeowners, they begin to get in a panic when they go out there and they see their tomato 1 or 2 or more, maybe the entire row begin to wilt, droop, just not looking good. Let's now move into some of the wilt diseases that you've educated us over the few years, and some of the common soil borne diseases that we do see on the farm, or in the home garden.

Ed Sikora

In the home garden, probably one of the more common ones is fusarium wilt, which is a fusarium type, it's a fungus, in the soil, long lived in the soil. And in the absence of a host, it, fungi will infect the plants through roots, susceptible plants. Move up through the stem and then stay there for a bit and develop, and exactly what you said. You'll see a plant sort of yellowing, oftentimes with fusarium, it will be half the plant or half a leaflet or half a plant. Plant might will during the heat of the day, then revive at night when there's more moisture. And this might go on for a week or two. And then after about two weeks, that plant just gives up the ghost and wilts down and dies. And you're not going to pick up many fruit from that plant at all. What I do, to diagnose that in the field or in the garden, I'll take a pocketknife, make a longitudinal cut about six inches from the top of the stem down to the soil line and peel it back, and then I look for a brown discoloration where the vascular system is just underneath the, the stem tissue. That's fusarium moving up, blocking those water vessels, causing the plant to wilt and die. Now that disease is fairly easy control. There's, there's a couple different races or bio types in Alabama. But we do have resistant varieties. So, when I see the V, F, and N on the stakes, that means that that variety is resistant to fusarium. So, if they plant that they should not have problems with this disease. That's the best control you could use for fusarium.

Shane Harris

Because once they get it that wilt gets into the vascular system. There's no way to fix that.

Ed Sikora

No. Once the plant, as you say, once the plants infected, it's a goner. There's nothing you could do to inject it or apply a fungicide. It's not going to help, with that disease or any of these wilt diseases we will discuss today.

Shane Harris

Is that one that we that you've discussed that we just go in and remove it from the garden or the farm, pull it up.

Ed Sikora

You know, if you only have five tomato plants out there, you could try and dig it up. But the problem is, you never know if you get enough of the pathogen from the soil. And this fungus produces these they call them chlamydospores, I believe. But these, they're long live spores that survive in the soil. So, to try and eliminate all those from the soil. I mean, you could pull it up and throw it in the garbage if you want to, just to make yourself feel better. But it's not, that disease, is probably not going to be a great benefit.

Chip East

All right. So, planting resistant varieties is something we can do. And there's several that. And what Dr. Sikora mentioned was on that label when you buy it at the store. We have a lot of information online. You can look up fusarium resistant tomatoes. Your local Extension office can help you with that. How long do we need to wait before we plant a nonresistant?

Let's just say I want to grow an heirloom. How long do I have to wait before I can go back into that spot? So, I need to rotate. I need to go somewhere else the next year. When would you feel comfortable coming back?

Ed Sikora

I'll get that question a lot. And typically, we talk with fusarium on tomatoes, we might talk about a two year, one year break is okay. Two-year break is better but maybe a three-year rotation. So you only if you have a…if you're rotating in your garden, only plant tomatoes or a solanaceous crop like peppers or eggplant in that spot every fourth year or every third year, that might reduce the amount of pathogen in the soil, but it's probably not going to eliminate it completely. And you might, if you're doing that in the backyard, you might think about trying soil solarization in some of those sections to try and knock down that population of the pathogen as well. Double up on it if you will.

Chip East

If you only grew tomatoes, to me it's hard to rotate. But if you're growing other vegetables, we've got a good publication on vegetable plant families, so you'll know how to rotate tomatoes, peppers, eggplant, Irish potato. They're in the same family, so plant all those together, but then move them somewhere else and don't plant in, Dr. Sikora mentioned it. Don't plant tomatoes one year and peppers the next year. You didn't rotate when you do that.

Ed Sikora

Exactly. The crop family rotation the way we discussed it. I was looking at your one of your publications on, resistant varieties. So, there's a lot of good information put out by the Extension system that you've been putting out for 15 years, listing different tomato varieties for Alabama. That and the different types of resistance we have for multiple diseases. So very, it's the best control we have. Most economical, versus trying to spray or fumigate or some of these other crazy things that people have done in the past.

Shane Harris

So, tomatoes can get a fungal disease, they can get a bacterial disease, and they also can get a virus. So, the next one that we have seen for several decades, actually in Alabama is tomato spotted wilt virus. And when we say that at workshops and programs, is it a wilt? Is it a virus? Dr. Sikora, tell us what this is about.

Ed Sikora

Yeah. So, plant diseases are four major groups are fungi, bacteria, plant viruses and nematodes like root non nematode which we might have time to talk about today. But tomato spotted wilt virus is the most common virus we see in the state, we first detected it here back in 1987. About 15 Chip, you might remember about, about 15, 18 years ago, they came up with a resistant, some genetics that made, allowed them to make, resistant tomato lines. I think Amelia was the one that was very popular for a number of years. And that made that plant resistant to infection by the virus. And the virus, most of your plant viruses are spread or they call it vectored by insects.

About 90% of your plant viruses are spread by insects, aphids, whiteflies. And in this case, thrips are moving the virus from one plant to another, maybe from weeds to the host, maybe the virus overwinters in the insect itself, and then comes out in the spring and spreads the virus. So, it's an insect transmitted virus. They call it tomato spotted wilt virus which I, I think it's a, I'm not sure who named it, but I just saw it last week on the Auburn campus, I was looking in the campus gardens as well. This one fella had about 12 plants. About half of them were plants were stunted. They were yellowed. They weren't wilting, but there was a, you can see the leaves turning down, and then you can see a bronzing or a purpling in the upper canopy of the plant. Sometimes you might even see it. You can imagine seeing a ring spot in there, kind of cool looking symptoms for a pathologist. Not good for the home gardener. But they got me excited, I took so many pictures of that, and the plant just stopped growing. So, you get. And then you get a terminal. You can see how excited I get when I talk about virus. You see a distortion in the upper growth of the plant. That plant will just stop growing.

You're not going to produce any, viable fruit there. The virus can go to the fruit itself. You start getting ring spots on them, which is neat. On the green fruit, it'll be white, kind of faint. But if you get some older plants and the viruses move to the fruit, you'll see really cool looking ring spots on a fruit or browning with some of the new bio types you have. So that's a difficult one. And I think you're going to talk. Or you talked to Paulo Cremonez last week. Dr. Cremonez talking about, resistant strains now of the virus coming on in and breaking the resistance in this one line that we've been using for successfully for 15 years. And that's a problem up in in North Alabama right now, up in Chandler Mountain, Straight Mountain, Blount and St. Clair counties.

Chip East

I remember years ago that you mentioned Amelia, that there was only a few varieties, tomato varieties that were resistant to tomato spotted wilt and the homeowner, it was hard for them to get them. But now there's several of available and through internet sales too, you can get it. But Amelia, Quincy, Crista, I grew one called Talladega one time and that was tomato spotted wilt. Bella Rosa is one that a lot of homeowners are finding.

Ed Sikora

Forgot about that one, yeah.

Chip East

They can be found. They're not hiding out there.

Ed Sikora

Yeah. And those still work in parts of the state if you are out in the Dothan area or Fairhope or Auburn, if you have a resistant variety, there's a good chance that they'll still work for you versus that disease. But we just don't know where this new bio type or bio type of the virus that's breaking the resistance is in the state, but we know it's in North Alabama.

I talked to a specialist over in North Carolina at a North Carolina a couple days ago, and she said that we had it one year, and then the next year it didn't seem to really, poke its head up. So, we're, Cremonez and I and a couple other virologists. We're all trying to figure this disease out, try and improve things before they get worse.

Chip East

I appreciate y'all working on that. It really helps us.

Shane Harris

If you think you have tomato spot a wilt virus in home garden or on the farm. What should you do about it once you have that plants infected? You know, it's been infected by thrips based on the information we've shared with your today. So now what do you do with it?

Ed Sikora

I used to recommend this is back in the 90s. I used to recommend, spraying that plant with an insecticide, digging it up, putting in a garbage bag and removing it. But just due to the. And you can still do that. But just due to the life cycle. How that how the insect spreads, the, spreads the disease. That's probably not the easiest thing to do. And it's probably not all that effective. So, you could just leave them there if you want. You don't want to look at them, but you could just leave them there if you like. But I used to be a pull and spray, and get them out of the garden, but I don't think that has a great effect on control.

Shane Harris

Chip, the other issue we get sometimes is people suspect that they may have a nematode problem, maybe not so much in the home garden, unless you have a large, large family vegetable garden, but we definitely see it on the commercial side. Most people don't know about nematodes, Dr. Sikora, so they don't. Not sure if they even have them or not. So tell us about nematodes and Chip. You can pop in here and tell us more about that as well. From a commercial standpoint, if someone suspects they have nematodes, how would they know without being tested, what would they look for?

Chip East

I may just see a plant that stunted. Dr. Sikora, and you said like the tomato spotted wilt. It's not growing, it's sitting there. How could I determine tomato spotted wilt from nematodes?

Ed Sikora

Excellent question. I was born and raised a nematologist. My older brother is a nematologist. We got worms on the brain, I guess. But we, nematodes, most common animal on the face of the earth. More, more common and numerous than insects. Just not as diverse. But they're the ones we deal with are microscopic roundworms. They're about a millimeter long in the soil. Root-knot is one of about 12 species that attack, cultivated crops for the most part. Root-knot is a meloidogyne incognita, southern root-knot nematode. And they'll be in the soil. Not all soils, but not in everyone's backyard, but they can be.

Sometimes they're brought in on soil from someone else's yard in a commercial field, maybe a combine or tractor brings them in on dirt clods. It's a real common way. But, when you do see, when you're scouting your garden twice or twice a week, like I said, and you start seeing plants that are stunted, like East just mentioned. What you can do is you want to sacrifice one of those plants either during the season or maybe at the end of the season and just dig one up and look at the root system. And if you have root-knot—they call it root-knot because it causes knots on roots. OK. Very descriptive. And you'll get these large knots or galls on the root system. And these are nematodes that invaded the roots. They are endoparasites, they secrete enzymes that cause the cells around its head to increase in size and number. And you get a disrupted root system, which doesn't allow the plant to pick up, water or nutrients. And that's why you start seeing stunting, yellowing, wilting in the plant or in the heat of the day. A very common plant might revive, but you're not going to get the yield that you normally would want.

Chip East

Dr. Sikora, if I see a stunted plant out in the garden, a tomato plant, and I suspect it might be nematodes, how do I check that?

Ed Sikora

So, during the season, what you could do is, get a soil sample go on in, maybe go around the edge of the root zone of the plant and send the sample off to our diagnostic lab here at Auburn. And there's also one in Birmingham. But I think Auburn does the nematode testing. And they'll run a quick test, to determine what nematodes you do have, what population you do have. If you have nematodes present in that field and that will give you a recommendation, but you call your county agent and have them give you a hand. And there's boxes that you can get and get a sample over to the lab. And then when you on the same topic, Cassie Connor runs our diagnostic lab, and Jim Jacobi is up in Birmingham. He does a good job also. But you could all these diseases we're talking about. And I think we still have another 27 more to talk about today, but we're not going to get there. They can check for all these diseases. So, if you have a problem with a plant that doesn't look right, spots, wilting, get a sample to the lab and they can come up with an answer, pretty quick with recommendations to go along with that.

Chip East

Well, we sure appreciate you coming with us today and speaking about these tomato diseases. We have a lot of information on our website about tomato diseases and problems, all things you've written and all. But if

someone has an issue and wants to look further into it, if they would, call their local Extension office, their local person can help them identify. And if we can't identify, we can get them the information. Again, it's on our website to send this sample off to our land grant college to be checked. And once we find out what it is, then we can come up with a plan of what to do about it.

Ed Sikora

And occasionally that's exactly right. And occasionally now with technology, telephones, iPhones, people take pictures of stuff. If you're going to take a picture, take a good picture. I know I see fuzzy pictures, but I know I've received pictures or images from both you and Shane. We've been able to come up with an answer that way. It might be an easy start and then moving into the shipping a sample a little bit.

Chip East

It's a lot faster if we can get a picture of it. Sometimes you get an answer quicker. And I always think half the time we can tell from a picture maybe. I don't know if it's half, but it's a high percentage. But the problem is the other half the time a samples got to be sent. And yes, it takes time, but you get a definite yes, this is exactly what it is. By doing it that way.

Ed Sikora

You get the confirmation.

Shane Harris

I've got lots of pictures of ugly tomatoes. That's why I wanted to do this podcast. And as we were joking on the side, all our pictures for presentations are typically the bad things. The problem is we need some pictures of good tomatoes. Good looking prizewinning tomatoes. We hope you've enjoyed listening to this three-part episode of *Southern Ground*, as we've talked about ugly tomatoes in the home garden and possibly on the farm.

Shane Harris

We hope we've provided some information to you to try to prevent some of these issues, and that you'll be successful in growing those tomatoes this spring, summer and fall. Thank you, Chip, for being with us on another *Southern Ground* podcast. Thank you, Dr. Sikora, what a pleasure to have you here. We appreciate your information and, education that you provide us over the years, specifically on tomatoes and vegetables and other things.

Ed Sikora

It's happy to help out. And good to see you guys too, on campus.

Chip East

Thanks for being with us today and thank you all for joining us on *Southern Ground*. If you have any questions, always give us a call at your local Extension office. We can be found at aces.edu, that just stands for Alabama Cooperative Extension System.

Announcer

Southern Ground has been a production of Alabama Extension at Auburn University.