

Spring Vegetable Production

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SPEAKERS

Christa Hartsook, Joe Hannan, Dr. Ajay Nair

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- C** Christa Hartsook 00:15
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.
- J** Joe Hannan 00:29
Greetings, everyone. I'm Joe Hannon, Commercial Horticulture Field Specialist with Iowa State University Extension and Outreach and welcome to the Small Farm Sustainability Podcast. With me today is Dr. Ajay Nair, Extension Vegetable Specialist with the Department of Horticulture at Iowa State. Welcome, Ajay. How are you doing today?
- D** Dr. Ajay Nair 00:49
Pretty good. Thank you, Joe. It's nice to be here. I know it's kind of a troubling times out there with what's happening. But I think it'll be fun to talk about plants and vegetables today.
- J** Joe Hannan 00:59
Yeah, you know what spring is here. Farmers and gardeners are out working in the fields, planting crops, planning high tunnels and things. So while we might be stuck in the office

or stuck at home, it's still business as usual, so



Dr. Ajay Nair 01:11

That's good. Yeah. I mean, I know we had this discussion before about the growing degree days and how you know, that gets accumulated. Days are getting longer, so that's good news. Right?



Joe Hannan 01:21

Yeah.



Dr. Ajay Nair 01:21

And then, you know, this horticulturist, or the clansman in ourselves, getting ready to seed and plan ahead. And there are so many crops that are going to be planted very soon. Come April. So I guess there's a lot of excitement. I know things, as you said, we are all in our offices, we are working from home remotely. But the planning still continues, hoping for the best. We are all acting in good faith thinking that things will get normal pretty soon. And we'll be out in the field.



Joe Hannan 01:50

Yeah, so you mentioned growing degree days, I just pulled up where we're at for growing degree days, and it looks like cross the top portion of the state we're at about 20 and as you roll down through the middle and southern portion of the state, it rolls up to about 30 to 40 growing degree days, southern part of the state being in that about 70 growing degree day range. But honestly, we're only a few degree days ahead of the normal climatology report, maybe 10 to 15 growing degree days. So really, we're not that far ahead of the season, since things have kind of calmed down a little bit here the last week or so.



Dr. Ajay Nair 02:27

Sure, I think we did accumulate a few extra growing degree days, a couple of weeks back, early March, when we had those warm days, we had no higher temperature 65, 70 degrees per week or so. And then we fell back to what the normal is for the normals. And and we are back on track in terms of what has been the historical numbers. And as days get longer, as we move into March, April, we will see these growing degree days accumulating more and more. And that is good. We need those growing degree days for our plants to

grow. Of course, that also impacts insects and other pests who will start emerging as we hit those higher degree days. Particularly taser is a great model. And it's a great metric for us to plan ahead and also know what the crop stage would be at a particular time during the year. So when is the flowering going to occur? When do we generally see routine happening in his specific crop? So the growing degree day is a good model for that.

J

Joe Hannan 03:27

Yeah. And would you agree that we're, we're basically right on track for where we should be for the season so far?

D

Dr. Ajay Nair 03:34

I think so. Yeah, I think I mean, there was a, there was a sliver of hope earlier in March. As I said, we were thinking we'll warm up early, but then it became cold. And then we even had snow last week. So we get on track. I think the growing season looks promising. And it's exciting to you know, we are all growers included all getting ready and planning ahead. And I'm sure many of them would have already seeded many of their spring crops because I know you work with high tunnels, I work with high tunnels, high tunnel production kind of amps up starting April.

J

Joe Hannan 04:05

It's funny Ajay that you say back in early March, we had a sliver of hope coming from a vegetable in person for being able to get into the field sooner. From the first crop sign all my apple growers and grape growers and strawberry folks were like 'uhhh, it needs to cool down and go back to normal, we don't want late spring frost.'

D

Dr. Ajay Nair 04:23

That's a very good point. Yeah, I mean, it doesn't mean you know, it's good for the others. I know it kind of gave a scare to many of the fruit growers in the state because they don't want the buds to open so quickly and then suddenly a frost coming and kind of hitting

J

Joe Hannan 04:38

True, yeah. Funny perspective between the two.

D Dr. Ajay Nair 04:44
Fruit growers wouldn't be happy with me.

J Joe Hannan 04:48
So Ajay, a couple of comments I've been seeing floating around on social media and things, since I'm tied much more into social media right now than I would normally be, is soil temp. Looks like we're about 38° to 40° degrees Fahrenheit for a lot of our soil temp, at least in the upper Northern Iowa area. What kind of temps should we be looking at if we're going to be out planting our spring crops?

D Dr. Ajay Nair 05:10
Sure. So as you noticed, most of our spring planted crops are cool season crops, many of the crops in the Brassica family, in the lettuce you know Asteraceae family, Hai Choc, many of the leafy greens, they prefer cool season. So as long as the soil temperature is around that 40°, 45°, I would say 40° to 45° range, which means the daytime would be definitely higher than the soil, it's time for them to be planted. So that's why crops such as broccoli, lettuce, other leafy greens are kind of on the verge of being planted. So beginning of April, you'll see a huge increase in the acreage of these crops. And with the warm season vegetables, you know, many growers here in the state of Iowa love to plant sweet corn. And for them, the soil temperatures are still pretty low.

J Joe Hannan 05:57
Yeah,

D Dr. Ajay Nair 05:57
We would like to have a soil temperature between 55° and 60° for a quick germination to happen and a quick establishment to happen. So that's a little bit farther away. But many of the cool season crops starting April, even onions, potatoes, those growers would be you know, getting ready to get those crops in the field.

J Joe Hannan 06:16
Yeah, so without black plastic right now, it's probably a little bit chilly. And if you've got plastic out or put plastic out last fall, it might be warming up fair enough that you could start doing planting.



Dr. Ajay Nair 06:26

Yeah, that's a good point. Yeah, just because it's 38° and 40° doesn't mean that we can go out and plant because the soils are still cold. You don't want the transplants to get that shock or your seeds for example, if you seed good carrots, you want the seeds to be in the cold soil for an extended period of time. If you had plastic, yes, the plastic would definitely increase the soil temperature, at least by I would say three to four degree difference. So if you have the plastic and again, that's why I put more emphasis on high tunnels, the field production still it's kind of on the iffy side. But the high tunnels yes, we are getting close to planting.



Joe Hannan 06:58

Yes, I stuck some radishes in a week ago when it was probably a little too cold. But I'm a little paranoid right now with everything that's going on, and I'm like I need food in the ground food, in the ground, just stuck my row cover over it I think.



Dr. Ajay Nair 07:11

that's also a great strategy Joe, like using row covers, because that can help to enhance the air temperature, modify the microclimate, and also protect from frost. These row covers would be excellent tools that can be used in that range where you have that 28° Fahrenheit, 32° Fahrenheit that iffy zone where temperature goes there, but again, comes back up. So for those days, those early mornings, row covers are an excellent tool.



Joe Hannan 07:36

Yeah, so one other question I get Ajay a lot of times is, do I have to have metal wire covers or PVC or something to keep that real cover up on off the plant? Or can I let that roll cover sit right down on the ground on top of the plants directly?



Dr. Ajay Nair 07:48

Well, if the objective of the purpose of using the row covers is just to escape those nights, where on early mornings, when the temperature falls below 32°, or comes close to 32°, you can just simply lay it on top of the crop. That's okay, you know, most of these crops are very small right now, even if the row covers move a lot, it's not going to cause a lot of damage. And I plan to, that's fine. But if the plan is to keep the row cover for an extended period of time, let's say about four weeks or six weeks, in that case, I prefer putting a normal like a nine millimeter galvanized iron wire to keep the row cover up and that also

creates a little bit of air mass in there that can be warmed up and there's more air movement, so less chances of diseases.



Joe Hannan 08:33

So a lot more buffer capacity on your temperature and yep,



Dr. Ajay Nair 08:37

Exactly, yeah. So in that case, you know, it will be better to just lift it up a little bit. And you can buy those wires and save those wires for many, many years. And all you have to do is just poke the wires on the ground and you put the row cover out on top of them.



Joe Hannan 08:49

Yeah, I'm regretting getting rid of some of my metal pieces here when I was cleaning up the farmstead this spring.



Dr. Ajay Nair 08:55

Oh okay,



Joe Hannan 08:56

Yeah I should of kept a few of those laying around.



Dr. Ajay Nair 08:58

Yeah, those are very handy. You know, you can throw it over any crop quickly. You know, it's a quick way to mitigate frost protection or provide for frost protection. They also serve as a good mechanical barrier against some of these insects that start showing up.



Joe Hannan 09:12

They do. They are a pretty effective you know, especially for you work with them a fair bit with cucumber beetles right?



09:19

That's good. Yeah, we use will cover especially for organic production systems to protect from cucumber beetles. We have also used covers to protect some of our early season crops like for example, broccoli, again, some of these loopers, cabbage worm, if we don't want to spray. And even if you're spraying you know BT, you can limit the amount of BT spray by having these row cover. So I know organic sprays are definitely more safer as compared to some of the synthetic products. But you can even reduce the spray of the organic pesticide by using these row covers.



Joe Hannan 09:49

Well that synthetic and intrust, and things like that. They're expensive.



Dr. Ajay Nair 09:53

That's true.



Joe Hannan 09:54

Anytime you can save money is good.



09:56

Yeah, it's not. You hit it right on point, you know, organic, it is really expensive. And for it to pass it has to be sprayed several times because it breaks down in light, it breaks down in temperature. And you know how relentless these cucumber beetles are, once they are there, they just keep coming.



Joe Hannan 10:14

And I think spin aside interest products are about the same prices by ganic. They're pretty similar. Sure, yeah. expensive. Yeah, the Spanish side have a little bit of residual, but still, it's your three to five days. Sure.



Dr. Ajay Nair 10:26

And with the row cover, as you know, there are different types of row covers, we have the heavier gauge one, and we have the lighter gauge one. The lighter one, which is primarily for insect protection, does still provide some frost protection, maybe a degree or two. But if you are primarily using the root cover as a frost protection tool, then usually we use the

heavier



Joe Hannan 10:48

Use the heavier what six out of nine outs.



Dr. Ajay Nair 10:51

Yeah, so we use this product, AgriBond, which is very common.



Joe Hannan 10:54

Yeah, I agree.



Dr. Ajay Nair 10:54

130 is the heavier one. Agribon 19 is the lighter one, there is a compromise there in terms of light, if you use a heavier material, you don't get enough light through it. But you do get higher, you know, increased temperatures; whereas the lighter one, you had more light. But again, that depends on the purpose, why you're using it for



Joe Hannan 11:11

Yeah, and what the lighter versus heavier wants to, if you have a heavier one on you're gonna have to take it off more often during the daytime to versus a lighter one you may be able to leave in place.



Dr. Ajay Nair 11:22

So we did an experiment couple of years back, I look extended application of this row cover like extended amount of time period of time it was on the Crawford broccoli, because for broccoli, we don't need to remove it to facilitate pollination, as in the case of muskmelons cucurbit. So we thought okay, how about we put this lighter material, all know right from the time we transplant a broccoli, and just take the row cover off only maybe two weeks before harvest. And we were successful in cutting down on almost all the sprays. We did not spray Beatty at all in that treatment, just because the row cover was on there. But we had to remove the row cover at least two weeks before because you know, broccoli is very susceptible to heat.

J Joe Hannan 12:04
Yep.

D Dr. Ajay Nair 12:04
And as broccoli is maturing at end of May, middle of June, if the row cover is on there that can definitely increase the temperature and cause issues with the head.

J Joe Hannan 12:14
And see a lot of florets popping in.

D Dr. Ajay Nair 12:16
Exactly. You see brown spots, you see yellow eyes, you see uneven growth of the head, you see some florets opening. And you sometimes you see black discoloration and you know broccoli or something like that shows up on the head, it's gone.

J Joe Hannan 12:29
It's yeah, it's not marketable.

D Dr. Ajay Nair 12:32
It's unmarketable. Yeah. Yeah.

J Joe Hannan 12:33
So Ajay, it's been years since I've purchased row cover, I think the last two rows I've gotten have been given to me. So I actually have no idea what is the actual cost on row cover right now? Do you know?

D Dr. Ajay Nair 12:45
So if you buy the Agri Bond material, I don't recall the exact length of it, but a roll of it would be anywhere between \$60 and \$80.

J Joe Hannan 12:54

Okay,

D

Dr. Ajay Nair 12:54

Maybe with added shipping and all that may be close to that \$100 mark. There are, again, different types, the heavier gauge one will be a little bit more expensive, they are Agribond 130 than Agribond 19. We are also using a newer row cover material called the Protect Net, which is a little bit more heavier, more nylon-like material, you can use it for multiple years. That's what they claim, at least for like six, seven years, we have at least used it for three years, and it's working okay. But the protect net is extremely expensive, I would say it's about three or four times more expensive than the regular row cover. With the regular row cover, you have to be careful of how you use it and how you store it. And oftentimes, you know, we use it very carefully. But at the end of the season, you know, when you're pulling it out, they sort of soil on a wet heavy clay and tears. So we need to be very careful of how we take it out of the field and we maybe wash it and then put it in a safe place, then you can use the row cover even I would say about two three years.

J

Joe Hannan 13:50

How are you washing your row cover?

D

Dr. Ajay Nair 13:53

Yeah, so what we do is we lay them on the floor, and then we have a pressure washer, we reduce the pressure not too high. And we just gently take the pressure water all through. So the objective there is to remove these big chunks of soil which are on the edges of the row cover, so we just use a pressure washer. And with the protect net I do the same thing. Maybe with a little bit higher pressure, we just leave it on the surface so that the water is not hitting against it too hard.

J

Joe Hannan 14:19

Not tearing it,

D

Dr. Ajay Nair 14:20

Yeah, not tearing it. And then we let it dry. And then we roll it and then put it inside.

- J** Joe Hannan 14:25
Alright. I just pulled up Nolt's catalog just to see what prices were. There is a 11 by 500 foot roll for the lighter half ounce is \$50 a roll and then there one and a half ounce heavier stuff is about \$110 a roll for a 600 foot. Yeah, highly reasonable.
- D** Dr. Ajay Nair 14:48
It's reasonable. Yeah. And Nolt's is pretty competitive pricing. Yeah, they're based here in Iowa. They're in Charles City, Iowa. Quick shipping also so easy to work with them.
- J** Joe Hannan 14:58
Yep. And a lot of our growers look there and I have their catalog sitting on my desk. They were quick reference, check. So have you planted anything yet?
- D** Dr. Ajay Nair 15:07
We seeded last week, two weeks back, we seeded broccoli plants in the greenhouse. We also seeded lettuce same time, two weeks back. We are anticipating to transplant lettuce somewhere like the 10th or the 15th of April, if everything is okay.
- J** Joe Hannan 15:21
Yeah, right?
- D** Dr. Ajay Nair 15:22
You can still go out and plant if that's allowed, you know, we'll we'll do that.
- J** Joe Hannan 15:26
But right now you are right, you're allowed to continue research?
- D** Dr. Ajay Nair 15:30
Yeah. So we have been encouraged not to come to the department. But since this is essential, because if I don't go, the plants will die? I can briefly go in, I can water my plants. I cannot hang around in my office for a long time. So I just go to greenhouse water, do whatever basic thing is necessary. And then we come back and we try to do it in shifts so

that not all my lab members are there at the same time just so that we can practice the social distancing. So I go one day, the next day, the grassroot would go and we try to do it in shifts so that not everybody is there at the same time. These are unprecedented times nobody thought something like this would happen.

J Joe Hannan 16:09
Yeah. So you've got lettuce, you got broccoli seeded?

D Dr. Ajay Nair 16:12
And then next week, beginning of April, we are seeding peppers

J Joe Hannan 16:15
Or high tunnels or?

D Dr. Ajay Nair 16:17
No the pepper will go outside in the field this we are anticipating at least six weeks inside the greenhouse. So we start on the first week of April, but mid May and then maybe another five or seven days at the hog farm just to acclimatize them.

J Joe Hannan 16:30
Yeah.

D Dr. Ajay Nair 16:30
And then 23rd 24th of may will be the planting time.

J Joe Hannan 16:34
Okay,

D Dr. Ajay Nair 16:34
The peppers will go when we have some specialty melons which will go in the high tunnel, but we are planning to put them out in the high tunnel somewhere 25th of April.

J Joe Hannan 16:46
Okay,

D Dr. Ajay Nair 16:47
So we will be seeding them may be the seventh of April or 10th of April because the melons take only like, maybe a little early maybe the first or second of April or three weeks for the transplants.

J Joe Hannan 16:58
Yeah those are usually bigger.

D Dr. Ajay Nair 16:59
Yeah, and another 5-7 days to acclimatize, and then we'll plant inside the item.

J Joe Hannan 17:05
I know I'm putting melons out here at my farm too. And I've got an itchy finger to start the seeds, but I know it's too early and I don't have the field worked up or prepped. I don't have coverage ready. So

D Dr. Ajay Nair 17:17
I know you have a high tunnel too, right?

J Joe Hannan 17:20
I have a high tunnel and construction that has a frame. I've got the end walls inside framed up but no cover, no covers on the end walls, no side wall curtain.

D Dr. Ajay Nair 17:31
Okay, and you've been doing some like field production are you putting some crops outside?

J Joe Hannan 17:34

Yeah, I'll be growing some stuff outside. My tunnel is mostly raspberries. And I have about a half row where I can do some veggies and things.

D Dr. Ajay Nair 17:43
Oh, okay.

J Joe Hannan 17:43
But with everything that's going on, I'm not able to bring in help to get it done and...

D Dr. Ajay Nair 17:49
I know it's challenging.

J Joe Hannan 17:51
It's basically, I'm prioritizing. I have to worry about my strawberries and my other actual crops and I'll work on the high tunnel probably after strawberries are planted and is dealt with now.

D Dr. Ajay Nair 17:59
Sure, sure.

J Joe Hannan 18:00
It is what it is.

D Dr. Ajay Nair 18:02
Yeah.

J Joe Hannan 18:04
I got the frame. I mean, I'm ready to put plastic and I'm ready to get it done. I need about three more. Okay, weekend, three or four more weekend days to get it knocked out. And then I just everyday I've been working on it's been too windy to do here.

D Dr. Ajay Nair 18:18
Have you started any transplants like put seeds and all that?

J Joe Hannan 18:21
Yeah, I have lettuce I started about a week ago. And I'm hoping if weather conditions will shape up, I can get a little bit of that outside. Okay, I've got row cover that can put on that to kind of keep it rolling. It's just kind of at the first true leaf right now. I think I have coastal star and rex. So coastal star is romaine type and Rex is more of a hydroponic buttercrunch type. But now I'm just playing with some of those.

D Dr. Ajay Nair 18:52
Yeah, I think the coastal star is from the high moving seed and other companies also provide some crisp type letters.

J Joe Hannan 18:59
Yeah, I know some growers grow coastal star and I really it does really well on my winter hydroponic indoor stuff.

D Dr. Ajay Nair 19:07
Okay,

J Joe Hannan 19:08
And I've got a hydroponic outdoors thing that I'm going to try again this year. And probably just put a little bit, more or less just trying to work out if it meshes well with my strawberry system and things like that.

D Dr. Ajay Nair 19:22
Yeah, I think some others in that group, Cherokees another one isn't that group Magenta are good, you know, romaine type lettuce.

J Joe Hannan 19:29
Yeah, I've tried a lot of the different butter crunch types and haven't tried a lot of romaine

types yet.



Dr. Ajay Nair 19:35

So we did an experiment like a preliminary trial last year, and this year we're expanding the trial have about eight cultivars there. Coastal Star is part of it, Cherokee, Magenta, there's one called Muir.



Joe Hannan 19:49

I've grown it a few times, I like it. I just haven't grown it enough to dive into it too far.



Dr. Ajay Nair 19:54

And we're also putting water head tight. The Adriana is a butterhead type. We don't have to always think about the leaf letters or the iceberg type letters. There are so many other romaines — different colors, different shapes that can be grown here in Iowa. I mean, this is good that you know, we are expanding and looking into other options.



Joe Hannan 20:12

Yeah, so we're starting transplants and you're starting transplants. I know a lot of other people are. I was talking to Luke Trunk President of Iowa Fruit and Vegetable Growers Association. I know he was itching to start transplants about the first of March, but they do a lot of row covers and stuff like that. So they push it pretty early, because they want their stuff.



Dr. Ajay Nair 20:34

Sure. And then yeah, I guess, you know, many of the vegetables — solanaceous crops, or even lettuces, even the cucurbits. You know, transplants, many growers are moving towards because one you get uniform germination, two you can take care of them and you can have a good quality crop, because research has shown that compared between direct seeded versus transplant production always outweigh the direct seeded once. And there's again, when you put the direct seed out there, there's so much of uncertainty, there could be crusting in the soil, there could be beetles, who can come and eat the inside of the maggots that can eat here. So that way, starting transplants is a great, great idea. And also Dr. Degladden, who was a greenhouse specialist here, and now, Dr. Chris Curry, it has been shown that the highest amount of rate on your investment ROI is at the transplant phase, which means the more you can pack that transplant with energy by

providing light, by providing enough water, enough nutrient, the return on that is way higher than if you do the same things outside in the open like you know, they're out in the field. So the rate of investment is pretty high if you can get good quality transplants.

J

Joe Hannan 21:46

Now what cucumbers are and cucurbits in general, we have to be really careful that we don't let them get too large in the cell pack and take good care of them. Because they I mean, they are touchy to being transplanted, right? We can easily stunt them or slow them down, when we take them out to the field.

D

Dr. Ajay Nair 22:02

That's very true. And you as you said, you know, they take only like three weeks to be ready to be transplanted. If you leave them longer in the flat, then they become lanky, they elongate and then when you transplant, you have to be very careful not to disturb the roots, you know, tomatoes, you can literally just stand and throw the transplant into the hole. But with cucurbits, you better bend down and put them in the hole. Because if their roots get damaged, they might not die, but you were very correct. They just stunted. So they will stay there for 5, 6, 7, 10 days and not grow. And then they lose that 10 days of growth and then the beetles come in and then another issue. So it's better to get them going as soon as you put them in the ground.

J

Joe Hannan 22:46

Yeah, and really provide them some good wind protection too, right? I mean, you don't want that cucumber transplant to be whipping around out there after you stuck it in the ground

D

Dr. Ajay Nair 22:55

True, true. And that's where the real covers could come handy.

J

Joe Hannan 22:57

Yeah, row covers when I was growing melons with Vince down in southeast Iowa we did ryegrass in between the rows to maybe provide some protection and some of us are not lucky enough to have good tree rows for windbreaks. So,



Dr. Ajay Nair 23:10

The ryegrass also helps to prevent sandblasting. I mean, these particles get picked up in the air and the hit against the transplant especially when you said Muscatine very sandy soil. You know, the wind blows, it can pick those soil particles



Joe Hannan 23:23

Very much so. So as we're going into our high tunnels, what insects and things do you normally watch out for early season?



Dr. Ajay Nair 23:32

Sure. I think with the leafy greens, especially lettuce and all, you know, aphids are a problem. You might see if it outbreaks early in the season. Ticks, not much because they are more heat come up when there's more heat and dry. Dry conditions are always there, but not much heat early in the season. So I would say if it would be something to keep an eye on spider mite. Not in the beginning, though, again, when it gets hot sometime in July, August.



Joe Hannan 23:57

I hear spider mites in like June ish, but I'll be really spotty.



Dr. Ajay Nair 24:02

Sure, sure. Those those, those insects have more heat. So at this point, if it's there could be some early in the season, cucumber beetles will be moving in. And again, as a growing degree day increases. They overwinter as adults. And so these adults from the fence rows and the woods and all they will be starting to emerge. So you'll see the more the degree day advances, you will see more cucumber beetles, especially when you're planting a cucumber or other crops in the high tunnel. We primarily you know if you're planting early and see a chance of the risk or we have had these pests in the past, we usually use row covers that will keep the insects at bay. And again, scouting is very important. You should transplant and not not just walk away. You should come every day take a look of the plant is it growing, is it stunting, is a yellowing, and if you catch those symptoms early in the season or right when they are developing it's way more easy to manage them as compared to when the insects population has you know blown out of proportion. So yeah, scouting is very important.

J Joe Hannan 25:04
I see aphids a lot in tunnels. But if you're out there scouting, you catch the aphids as they're just getting started. And typically spot spray the couple plants, you see him a couple plants around them. And that might be all it takes to get back under control, as long as you're out there scouting and you know, it takes a couple minutes.

D Dr. Ajay Nair 25:23
True, true. That's correct. These cool season crops, you know, they grow very fast. As you mentioned, you know, let us know 45-50 days, the crop is ready to be harvested. So we don't have a lot of time to waste on these crops, because it's already ready to be harvested. So we need to catch the pests right in the beginning. And later on, when we start into our solanaceous crops like for example tomatoes, many of the growers might if you are south of I-80, many of the growers would be starting to transplant tomatoes mid-April. And so tomato planting is also kind of coming up in the unheated high tunnels.

J Joe Hannan 25:57
A lot of heated tunnels that are already going, planted.

D Dr. Ajay Nair 26:00
They're already going, but the unheated ones like mid-April will be coming in. And in that case, again, just keeping an eye a major test for tomatoes and peppers inside the high tunnels are the hornworm again, scouting for them and looking for feces and we have any damage on the foliage, and they can be easily controlled with BT.

J Joe Hannan 26:21
Probably not until really even May

D Dr. Ajay Nair 26:25
I would say May. Yeah, end of May. I would say that's where you slowly start seeing those pests coming out.

J Joe Hannan 26:31
Yep. Well, Ajay, thank you for taking your time out of the day to to talk about production,

to talk about the seasons, provide some extension output for our farmers out there across the state. I'd also like to thank Christa Hartsock and the Small Farms Sustainability Team. Their team is the team that is pulling together these podcasts only and hosting them on their site. As long as the Iowa Fruit and Vegetable Growers Association, they're going to be getting involved with these podcasts and we should hopefully be hearing from some of them over the course of the next couple of weeks as well. Again thank you Ajay, thanks to our listeners. If any of the listeners would love to be a co-host some week shoot me a note and let's get together and talk.



Dr. Ajay Nair 27:10

It's always fun Joe, thank you for doing this good to talk vegetables. Thanks again.



Joe Hannan 27:13

Thanks, Ajay.



27:14

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