



## **Season 1 Episode 6 – IPM Importance**

**September 19, 2022**

Speaker 1:

Welcome to the Farming Basics Podcast with Olivia Fuller. We'll have sustainable farming tips from growers across the state and Extension specialists at Auburn University.

Olivia Fuller:

Hello. We're back at Olivia Fuller here, your host for the farming basics podcast.

Jacob Kelley:

And I'm Jacob Kelley, your co-host.

Olivia Fuller:

Today, we have our team leader, Dr. Ayanava, who is an Extension specialist for entomology. How are you today, Ayanava?

Ayanava:

I'm good. And thank you for inviting me here, Olivia and Jacob.

Olivia Fuller:

Today, we are going to talk about IPM importance. So we get a lot of calls, Jacob and I about what's the first thing a grower should do when they're developing an IPM plan. What would you say is the first step Ayanava?

Ayanava:

Okay. IPM stands for integrated best management. Let's first emphasize that and it's call integrated because it's a holistic approach to best management, not just using insecticide. So it's emphasizing the ecological approach. It's emphasizing multiple systems to be integrated. And first thing first is identify correctly, whether you are killing a pest or beneficial, make sure you do not make the mistake of killing the beneficial. So IPM is really a decision management tool.

Olivia Fuller:

That segues great into our next question.

Jacob Kelley:

Another thing we get, I explain what IPM is to our clients, and I talk about scouting. Can you just go ahead and give us your definition of how we're going to scout forensics and what are things we might be doing when we're out there trying to identify these insects as to whether or not they're beneficial or they're going to cause damage or harm to our plants?

Ayanava:

Okay. That's a very broad question. So let's break it down into smaller topics. First thing first, you got to know the symptoms of why you need to scout and what to look for. So for example, if you have an insect, you can look for couple of things. For example, a direct method would be look for the insects and typically insects will be hiding underneath the leaves or under the plants or in the soil. So don't forget to scout in the soil and look directly underneath those hiding places where they like to hide. So you can directly look for them or you can use some indirect methods, like look for their feces or excreta, and that will tell you what is hiding and many times how bad they are. So there are some methods.

The other way that is very popular is to use some of the insect monitoring tools like pheromone traps. And we do pretty extensive pheromone trapping around the state. In fact, both of you have been working pretty hard on generating data from our state. So there are so many ways you can scout and look for insects these days.

Olivia Fuller:

What time of year should I start doing that? Because here in Alabama, they seem to come out way sooner than we anticipate.

Ayanava:

Typically, insects become active, especially if they're soil based, they'll become active as soon as the soil warms. So as soon as you put your first seed and the seed germinates, you can expect insects to start showing up. We just almost have never ending supply of insects in Alabama. And these are both flying insects that comes from outside, or they're established on your farm in the soil. So they're living with you.

So you have to look for both above ground and below ground in insect, and then incorporate these scouting tools like pheromone traps or direct scouting. There is no shortcut to direct scouting. You have to look in the canopy of the crop you're growing so that you can detect insects quickly. And the timing shifts, especially with year to year with excess rain for all drought. So weather is very important. It has a huge effect on the plants and insect populations. And we have to be constantly reminding our viewers and listeners about the importance of that. So keep an eye out and make appropriate decision.

Olivia Fuller:

That's very helpful. That way you're not just blindly spraying insecticides, not knowing what you're trying to kill. This is a change of topic, but how does trap cropping play into this IPM? And how do you suggest farmers use trap cropping effectively?

Ayanava:

Once you've identified the insect as a pest, and if they are typically your pests like lyphlet bugs, stink bugs, which are extremely difficult to manage in organic or smaller, low cost production systems, then you have to look for these alternative pest management tactics. And there are two types of IPM tactics, there is the preventive tactics, and then you have the therapeutic tactics. We all know about the therapeutic tactics, which include insecticide, which should be our last choice, but the two preventive tactics, or there are several, but the two prominent ones that we research on is the trap cropping and then best exclusion systems to stop the insects from coming to the plants.

And trap crop is essentially a system that uses insect behavior to our advantage. Insects are attracted to a certain food, certain plants, and you can manipulate their behavior to your benefit. For example, keeping them away from your main crop and let them go to this trap crop or sacrificial crop and killing them there. So it's a really good attract and kill strategy. And you can look up resources on Alabama Beginning Farmer, YouTube page, or a Farming Basics phone app for these trap crop videos. It's really remarkable to see how insects respond to different host plants.

Jacob Kelley:

It's just like when I'm at the buffet, I'm going to go to the Mac and cheese first before I hit the green beans. That's what I'm doing every time and it's the same with these instincts. They're going to hit their Mac and cheese before they hit their... Excuse me. Not macaroni and cheese. They just hit their green beans.

Ayanava:

Absolutely. So it's a combination of visual and smell and then touch when the land that triggers this behavior in insects. So it's the same thing as human behavior.

Jacob Kelley:

You'd touched on it just a second ago, but I'd like you to elaborate a little bit more. What are some environmental factors that may increase insect past pressure?

Ayanava:

Lately, we have been seeing cyclical weather events between drought and flood. And we have put together a slide based on the last 10 years of insect monitoring and looking at the weather. So we have been cycling between prolonged drought, which is where you have a long term drought for several months of no rain. Then we go into an extreme wet period when we have excessive rainfall, like we had last year in 2021, where there were water standing in between my tomato plots. And then you go back to flash drought, which means you have a very intense zero rainfall period for about a month or few weeks, but that is enough to stress your plants and increase the population of insects.

The main thing with insects and weather is their life cycle is shortened. When they have warmer more appropriate weather and warmer weather are hot weather also slows down a lot of the beneficial insects. So then pest species take advantage of that even further. If you are a high tunnel producer or you're a closed environment agriculture producer, you now also have X crops when you have nonstop crops in an environment where there's very little or no beneficial insects, pests will take advantage of that. So there are weather and other issues that we need to look for and look for it on a broad basis, not just focus on one plant, but look at the whole ecosystem and whole way you are producing your crop is important.

Olivia Fuller:

Are there some insects that can predict when there's going to be a weather event and as opposed to just the aftermath?

Ayanava:

That's a great question because we do have some indicator species that we track through our monitoring program. For example, we track lesser cornstalk borer. Lesser cornstalk borer is a long name for a really small insect. It's a moth. That insect loves drought. And if the soil gets excessively dry, it stays in and breeds fast and numbers of those moths in our trap indicates a very thirsty ground. And very likely if there's appropriate crops like peanuts or some of the other raw crops, this insect will jump on that and ruin that crop. We also have squash vine borer that we use, and that borer is everywhere, especially on small organic farms, where there is zero control of soil insects and it rapidly builds up. And that also likes this roller coaster of weather we're having. So yes, we have some good species that tells us about 10 days of forecast of what's coming.

Jacob Kelley:

So if I have vine borers on my property, what's the first thing I should do after I've figured out it's a vine borer? May see holes in the bottom or the crown of my pumpkins or squash or whatever I'm growing. I'm seeing all the symptoms. What's my next course of action?

Ayanava:

Very good question. The best way to deal with insect pests is to first, as soon as you encounter the insect and have identified correctly, think the three ways you can control them. And the three ways are level one is called the sustainable system approach, which means what is your planting time? Did you plan too late? When the insects are heavy, you may have to adjust. So those are called systems approach. The second is best exclusion system, which means physically stopping the insects from getting to your plants. And the third is using insecticide or commercial chemicals, whatever your choice.

Going back to the question of squash vine borers, you can prevent squash vine borers by rotating your crops. It prevents buildup of this insect. So that's a level one IPM strategy. You can also use pest exclusion system early in the crop, not late because you need the pollinators, but early after transplanting are growing from seed and covering up those plants to prevent those squash vine borer moths, which look like wasps in daytime to prevent them from laying eggs.

So prevention first and then therapy and the therapeutic methods or chemical or organic methods are more expensive and much more tedious. They're very difficult to control. So prevention here again is a better strategy than your therapeutic or immediate control.

Olivia Fuller:

You mentioned pollinators there for a second. Do you want to talk about when to spray to avoid killing all of your beneficial insects, such as the pollinators?

Ayanava:

In the chemical industry, there has been some interesting developments. For example, we have very good systemic insecticides now that you can use early in the season and delay or reduce or completely due away with late season sprays. The point I'm trying to get at is the late season application of insecticides be organic or chemical is a threat to our pollinators. And the ideal time to spray is early in the season when your crop is growing actively and avoid or reduce or manage your delivery system to where you're protecting those pollinators that we need for our crops.

So majority of our spray recommendations now, including systemic insecticides is early in the season. So we can have, or give a better chance to the pollinators and beneficial insects like ladybugs, lacewings that are some of my favorites to let them grow and let them thrive and reduce the number of contact insecticides, which are effective but we have to be very judicious in our use.

Olivia Fuller:

Are there tools that can help you scout on the farm?

Ayanava:

Yes. There are very useful tools and very economical tools these days that farmers and gardens can use to scout for insects. For example, using sticky wing traps and pheromone lures that get specific insects, you can also use insect netting or bit sheet or even white cardstock to beat your leaves on the card stock and see what insects crawl out of the leaves or the flowers. Always keep a magnifying glass or a magnifying lens handy so you can see those tiny insects. Collect those small ones in glass vials if you need those identified, because those can be tricky. Remember you have a very good camera on your phones these days. Use that camera for a steady, good picture and share it with your extension agent or specialist. And then use maybe sandwich bags or something like that for large insects.

Again, record keeping is very important. And in fact, in farming basics phone app, the second version that we're going to launch soon, there is going to be a record keeping feature on the app, which I think a lot of farmers will like. Lastly, I use flags. These long flags that you'll see the utility guys use. I use flags to mark hotspots when I'm scouting on a large field and that works great. You can come back to the hotspot and scout again, to see whether the insects have been controlled or whether they're holding steady, or if they're growing down so you can make appropriate decision.

Olivia Fuller:

Thank you, Ayanava. That's so helpful. I think our growers are going to really find all of this information very beneficial while they're out in the field trying to figure out what on earth is causing the damage on their crops.

Jacob Kelley:

So I go out there, I'm using these sticky wing traps, and I notice I have a bunch of fall army worms on my sticky wing traps. When do I need to start putting out any insecticide to prevent those worms from taking over my crop and destroying my livelihood?

Ayanava:

It becomes tricky to make a decision on treatment if you're going to use insecticide, because that can be pretty dangerous based only on pheromone traps or any of the monitoring tools. I recommend that you directly look at the crop and scout and determine mind the numbers of caterpillars or whatever insects, and then look at the recommendation before you spray. For example, if you're looking for aphids, if you have more than one aphid on 50% of the plants and they're breeding, you know have to do something. So make the decision not on just monitoring tools, but also direct scouting is my recommendation. The monitoring tools are great. They tell you when the insects are active, how bad they are and they give you some forecasting, but you have to look in the crop.

Jacob Kelley:

That's right because last year I saw many army worms on these sticky wing traps. And then as I would go through the planting and look for the worms, I wasn't finding very many and that could be due to trap crops in the area or alternate landing zones or just the weather blowing these insects out of the area before they have a chance to lay eggs. So I think that's a really good point to get out there, even though I see all these moths on my trap to get out there and look for worms, look for eggs and things like that, to make sure before I need to do something else.

Olivia Fuller:

You mentioned that you had a favorite beneficial insect. What is your most favorite beneficial insect?

Ayanava:

I think my most favorite beneficial insect is also one of the ugliest if you look out of the microscope. And I'm saying that because I am a big fan of lacewings, I know a lot of gardeners and farmers love lady beetles or praying mantis, which are pretty they're big and you can look at them. But my personal favorite is lacewings because the immatures are extremely aggressive predators and they are available widely. These days commercially you can get them at their different stages and release them when they're really aggressive, they spread out like wildfire across the field and don't fly away. So when you have these immatures, they stay and they continue to feed on the crop.

Having said that, I would recommend if you're a commercial producer for, especially if you're a greenhouse producer or a high time producer with a netting on you should be mixing the predators. So you can mix the lay swings along with lady beetles and praying mantis to get a wider control, a broader control and a longer control. So again, mix and match is good. You can also incorporate parasitoids and release them in the greenhouses and they will stay there and they'll continue the life cycle. So there are many options, but if I had to choose, I somehow just love the lacewings with their large mandibles and they look really ugly under the microscope, but they are extremely aggressive predators.

Jacob Kelley:

I'm with you on that. I like the assassin bug myself, just because of the name really though.

Ayanava:

And many people like other predators or the lady beetles because they are colorful.

Jacob Kelley:

That's right.

Ayanava:

Lacewings are not very colorful in their adult stages. They are just very delicate insects with large clumsy wings.

Olivia Fuller:

All right. That's it for today's episode. Thank you so much Ayanava for coming in and providing such insightful advice for our growers. I'm Olivia Fuller and this is my co-host Jacob Kelley, if you need anything, reach out.

Ayanava:

Thank you very much Olivia and Jacob. It's an honor.

Speaker 1:

This has been a production of Alabama Extension at Auburn University.