

# Japanese Beetles

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## SUMMARY KEYWORDS

japanese beetle, insecticide, products, spider mite, option, year, certified organic, residual, joe, effective, grubs, emergence, trap, field, couple, problems, beetle, growing degree days, white grubs, netting

## SPEAKERS

Speaker 3, Christa Hartsook, Joe Hannan

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- C** Christa Hartsook 00:15  
Hello, and welcome to the small farms podcast, a prediction on the small farms program at Iowa State University Extension and Outreach. Our podcast covers the opportunities and challenges associated with rural life. I'm Christa Hartsook Program Coordinator with Iowa State University Extension and Outreach. Welcome to the small farm sustainability podcast. With me today is Joe Hannan, commercial horticulture field specialist with Iowa State University Extension Outreach. Joe always great to visit with you.
- J** Joe Hannan 00:46  
Yeah, Christa. Good to see ya. Seems like we're on a weekly basis here now.
- C** Christa Hartsook 00:50  
We're doing well.
- J** Joe Hannan 00:51  
We are, It's a good sign
- C** Christa Hartsook 00:54  
Joe Our topic today is maybe not a fun one. We are talking Japanese beetle.
- J** Joe Hannan 01:00

Joe Hannan 01:00

Yeah, Japanese beetle is got a bad name in the industry sitting in a great meeting yesterday and one of the board members like no, we're not talking about Japanese beetle. We're a couple weeks away yet. No, let's just ignore it. Rightfully so it is. It's a pain well to deal with and the amount of damage they can do in a very short time. It causes us a lot of problems in the fruit vegetable industry. You bet.

C

Christa Hartsook 01:29

So let's first talk about what Japanese beetles are. So and then why we would be concerned what kind of damage are we looking at?

J

Joe Hannan 01:37

Yeah, Christa Japanese beetles are a white grubs very typical to other white grubs that we'll find in our soil. And they live in our soil as white grubs basically from August through the winter all the way to about middle of June the following year. While they're in that grubstake, they'll feed on plant roots in organic matter. And you might see problems like within your turf grass if they do a lot of heavy feeding, although it's typically not just Japanese grubs, or Japanese beetle grubs that are doing feeding in your turf grass, but if you can peel your turf grass back away from the ground, a lot of times that is a white grub damage. white grubs are just a white C shaped, round fat larvae in the ground that is about as good as I can describe it on a radio show. They emerge right around middle of June. So we're recording right here as they're coming up to us. And they can last for anywhere from a couple of weeks into mid to late July, depending on the season. They're not quite a half inch long. They're about a quarter inch wide. Man, they're really the best way to identify him out in the field. If you look at their head, and you look at their thorax and another way to say thorax for the non entomologist, folks. Look at the shoulders. So the head and shoulders are bright, metallic green color. And then their wings are a bright metallic coppery red color. And there are other other beetles that look very similar but Japanese beetles and further differentiate it by the white tufts of hair along its abdomen. So that's that's how you identify it in the field. Okay, why it's a major issue for us. It eats everything. It has a very broad host range of fruit of food and the produce industry. I tend to see it more on our fruit crops. The so think our apples or grapes, strawberries to some extent raspberries for sure. We'll see you know out there and it can get on vegetables. Last year I believe I even saw eating the silks on sweet corn. But I don't tend to see it on strawberries and cucumbers and melons and greens and things like that as much as I would see it on the fruit crops.

C

Christa Hartsook 04:05

Okay and so really their damages in that leaves stage Joe?

J

Joe Hannan 04:10

Yeah, so that Christa, you're asking what kind of damage on that leaves. They eat the main green tissue part of the leaf, leaving basically a skeletonized structure. So the veins will still be present on the leaf. But you've got these large shock holes over the entire leaf and under really

bad defoliation you can have a leaf that is just veins and everything else is gone. And it it can happen fast. I mean, you can see your first Japanese beetle and come out 48 hours later and see just tons and tons of defoliation. They eat and they mate and that's all they do.

**C** Christa Hartsook 04:52

Okay. So we know it's kind of coming. You know, we know we can sort of plan on mid June Can we really predict when they will arrive,

**J** Joe Hannan 05:01

we can we can dial that down a little bit further, they, we have a grown degree day model that starts with January 1 and accumulate to about 1,050 growing degree days. And then we'll start to see Japanese beetles emerge. So that 1,050 growing degree days starting from January 1 using a base temperature 50, high temperature cap temp of 86, for those of you that do growing degree days, and they will continue to emerge for 800 to 1,000 growing degree days after that initial emergence, so we can kind of predict them. My entomologists friend said the model is pretty good. I'm going to be trying it this year, just to see how accurate it actually is.

**C** Christa Hartsook 05:53

Okay, sounds good. So Joe, I have seen products maybe in the store in our farm store or hardware store, that are specific to trapping Japanese beetles, and talk to me a little bit about that.

**J** Joe Hannan 06:07

Yeah, so rather than doing growing degree days, you could set out a trap to identify and pick up when Japanese beetle will, is emerging. The thing is, they're really, really a their greatest racket, they will bring them in in droves into your field, and actually make it way worse than it ever would be without having a trap out there. So normally, when we put traps out, the traps are good, and they'll catch a couple Japanese beetles trap is really good. And it'll catch a lot. I think on campus, our Entomology Department at one point, they were putting a trap out and just connecting it to a 50 gallon drum. And they can feel that. Oh, and then you can imagine a drum of dead Japanese beetles and how that smells and gross Yeah, don't please don't trap, you'll be you'll make matters worse, you're not going to be able to trap out Japanese beetle and try to get out of management. That way that's not effective. There's just too many of them, too many of them in most cases. And frankly, they're pretty easy to identify, go out and look at your sensitive crops or grapes or your raspberries or apples and linden trees and other things out there, around in your landscape, you'll find them real quick.

**C** Christa Hartsook 07:30

Sounds good. So Joe, then let's talk about what our options are for management.

J Joe Hannan 07:36

Yeah. And actually, Kristin, maybe we can back up a little bit and talk about where they are in the state, I think that might be a good place to jump to. So if we look at where they are in the state, they first started coming into the state on the Eastern Seaboard. So the Mississippi River Valley, and has slowly moved towards the west. After they got to about the east side of Des Moines, they started becoming a little bit more patchy. So from I 35, to the western side of the border, they skipped about three counties wide and jumped over to the Omaha Council Bluffs and Missouri River Valley. So there's a lot of folks in west central Iowa that really won't see a lot of Japanese beetles. And as you get on to the western sides of that, again, Missouri, Riverside, they're kind of in that initial emergence of Japanese beetles those first couple years. And so their numbers and, and problems tend to be much more severe. As you go into the eastern side of the state, Japanese beetle has been an issue there for 10-15 years now. And the populations often won't be as bad as during that first initial emergence. Whether that's because he has some natural predators, that are starting to settle in or we just get better at managing them, I'm not entirely sure all of the behind the scenes of what's going on there. But just be aware, not everybody has that, please. Yeah.

C Christa Hartsook 07:44

Sure. Yeah. That's really good point, Joe. And that makes me kind of question two are some years worse than other years for Japanese beetles?

J Joe Hannan 09:17

Yeah, some years, maybe worse than other years. I don't have a rhyme or reason on why that would be. And what two locations would necessarily be heavier infestations and others. They're fairly Hardy here. So it's not necessarily a winter thing. And when you look at winter, it's not just cold temperature. There's a lot of other factors that I that we don't fully understand. Yep, we would tend to expect, you know, not that first year of going into a new area, but that second, third, fourth, fifth year to be really strong high pressure. And that's that's been fairly true as it's moved across. The state was really interesting right now kind of side detour here, but it's When I lived in Des Moines, I lived in the Grimes Johnston area. So it was the west side of Des Moines on the east side of 141. For those that are familiar with Des Moines, I did not have Japanese beetle. But then you go right across 141 into old town Grimes and Grimes proper. And they had Japanese beetle there. And you know, you're looking at a difference of three miles as the crow flies from my house to a friend's house and she would have Japanese beetles and I would not. And now that is kind of changing. Now it's backfilling because right when I moved out of Grimes, Japanese beetle in my yard was just starting to get pretty severe and other places in and around that area where I live, also started seeing Japanese beetle at that time. So it can get a little bit of patchy as it's coming into a new new area.

C Christa Hartsook 10:54

Sure, sure.

J Joe Hannan 10:55  
That's a sidetrack detour thing, but

C Christa Hartsook 10:57  
that's okay. It's interesting to know, and to question why they move around the way that they do too

J Joe Hannan 11:03  
Yeah, it's interesting.

C Christa Hartsook 11:05  
Yeah, we know we're gonna have them, we obviously we need to treat them to protect our crops, what types of management options do we have?

J Joe Hannan 11:12  
Okay, so remember, trapping, we're not going to do we're not going to mount that's not gonna work. The next option is if you're on a small scale, or just have some smaller plants that you want to protect without insecticides, you could use an insect netting something like Kotek would be an excellent option for keeping the Japanese beetle off of your plants. And Kotek II. I mean, Japanese being a pretty good size, you don't even need a fine mesh netting even something like Windows screening would be effective against them, but not going to be great option for large acreages, is it possible you get a few in there just from emergence from the actual ground up into the canopy under the netting, but with a couple like that you can kill them or you're not going to get that much damage from one or two anyway. But yeah, so netting would be an often at very small scale. But as scales up as you go into vineyards and orchards or sweet corn netting is not going to be an option. At that point, you get into insecticide treatments, basically.

C Christa Hartsook 12:21  
And so if we start talking about insecticides, I'm assuming that there's maybe some that aren't quite as effective as you would hope against the Japanese beetle infestation?

J Joe Hannan 12:31  
Yeah, so there's a lot of insecticides that are labeled for Japanese beetle, there are some that are very good. And there are some that I don't recommend, unless it's a really good reason for it. Typically, if you're certified organic would be the option when I would look at bringing in

some of these options. So some of the not so grand ones are things like Aza-direct. Aza-direct is more of a repellent and knock down or knock off the insect from the plant, the Japanese beetle, it's, it's a healthy, beefy insects, it'll get right back up and get right back on the plant. So you're not going to get effective control using Aza-direct even though it is labeled for it. Things like beetle gone, which is a BT product target for Japanese beetle and other type beetles. The Midwest fruit production guide says it has good effectiveness from what I hear from actual people in the field using it, they would disagree. And I don't know enough, whether it's just because they're not putting it on frequently enough. Or if it's just not providing good kill. My guess is it probably needs to go on on a fairly frequent basis that it doesn't have a lot of efficacy, but I don't know that. For sure. Pyganic is another option that people use quite a bit. It's for certified organic individuals is the only place I would use it. It is effective at knockdown kill, but it has absolutely no residual. So you're gonna have to come back in and apply every day or every other day during that emergence period to keep your plants clean. So if you're in a certified organic situation, and that is your, your option, that's going to be one of your better option. Yep. Likewise, Neemix or neem oil is rated fair against Japanese beetle but in and of itself again, it provides some good knockdown but not a lot of residual activity.

C

Christa Hartsook 14:29

Okay. So Joe, if we really look at that and Midwest spruiked Pest Management Guide, you know, which I know it's available online for folks and free to download. It does list some of those better products that are out there for control measures. Okay

J

Joe Hannan 14:29

Interesting enough that when you put Pyganic plus Neemix together, it's not a it's not a one plus one equals two situation. It's a one plus one equals two plus, you know so one plus one equals three or something like that. The two have a mixture that proper term you're looking for but the two combined together in your tank mix work better than either one applied alone they have some partnership activity there. So In a heavy infestation of Japanese beetle and you're getting certified Pyganic plus, neem oil in a tank mix would be a better option than just one alone, I'm going to be seeing some decent management using, using that combo. Again, those products are really expensive. So unless you're certified organic is not something I would jump on as being a cost effective option. And you're still gonna have to play it fairly regularly, you know, every couple days, maybe you can sneak it out three or four days, but that'd be about it. Okay, another one that's labeled is Surround. Surround is really more of a barrier that would prevent feeding and maybe some suffocation against Japanese beetle, not one that I would really jump out and say, Yeah, let's go use this particular product. The only time you think about using it for this would be in certified organic control, but I think Pyganic plus Neemix is a better option. And then we get into one that is effective, but it has some other other issues. So Sevin, which is really commonly used insecticide. It's readily available, it's fairly cheap. But the problem with Sevin is when you put it down, it also kills some natural predators for the two spotted spider mite. And so you can put Japanese beetle control down and if say you have to use Sevin, a couple of times, you can turn around and end up with a spider mite outbreak shortly there thereafter, thereby needing to go back in and treat for spider mites where you necessarily wouldn't necessarily have to, if you had chosen a different product. Sure, actually happened with several of our other good products as well, and I'll point those out. Yeah, so our better products are going to be in the Iraq class code families, four a, one B and three A is the

other one. And that includes products like Sevin includes a sale, Dannatal, Eminem, Warrior, Mustang Max, belay, and atara, there's a lot of different products that fall within those Irek code. But again, there's really only three Iraq code, or classes or families and insecticide that are really going to do the job well, when we look at the ones to be of caution, so Sevin, Dannatal, warrior, Mustang Max, those are all ones that can cause a spider mite outbreak, if you have to use you use them a couple of times sequentially. Sure, even one application, it could happen, but it tends to be more if you're repeated applications, they work they have good residual, but you have to be careful that you're not in a situation where you're going to end up with spider mites. So of course warrior and Mustang Max are restricted use products. So you would need to have a license for for those products.

**C** Christa Hartsook 18:06

Okay, good to know.

**J** Joe Hannan 18:08

So I think I mentioned Amaden in there, that one is fairly cost effective, it's readily available, it doesn't have the challenges with the spider mite outbreaks that some of the other products do. But it does have a key requirement when you're mixing it up that it is dependent on your spray water pH. So if you're using Amaden in your spray tank, you need to adjust your spray water down to 6.0, okay, if you do not and a lot of us are pumping out a deep wells that are seven, eight give or take on that pH coming out of that wall water or that wall water 7.8 or so that image dam will be rendered ineffective within minutes or hours depending on where your pH is you have to adjust the spray water down in order for it to stay effective and to have residual activity for several days. If you don't, it's gonna have some very, very short efficacy.

**C** Christa Hartsook 19:10

Yeah, and none of us need to be wasting money right now doing that

**J** Joe Hannan 19:14

we do not. Yeah, we do not. Yeah.

**C** Christa Hartsook 19:19

And so I'm assuming you know, if we are facing a long emergence season, you know, which could or could not happen, we might need to apply more than once.

**J** Joe Hannan 19:29

Yeah, the reality is with Japanese beetle, you're looking at probably a minimum two applications. Could be more than that. If we have a long drawn out emergence period. I always

it's a good idea to have multiple different families of insecticides on the shelf so that you can rotate through your products. Sure, one, it's for prevention of resistance build up. Again, if you're using something like Mustang Max, switching over to Amaden will help prevent that spider mite outbreak. So have a one a three a four a, you know, pick, find two products, have them on yourselves and rotate. That's just smart, smart practices for preventing long term resistance build up.

**C** Christa Hartsook 20:16

Yeah, and make sense. Joe, any other tips for successful management during the season here?

**J** Joe Hannan 20:23

Yeah, get out there be scouting for them, they're going to be showing up here fairly soon. Get on them right away, get out there and spray, make sure you're getting good coverage with your pesticide sprayer which most of our commercial growers have been doing a pretty good job of getting good coverage. Be aware that if we're in hot, sunny temperature patterns, and you have a pretty heavy outbreak, you're going to be applying multiple times and the residual activity. So they the activity or the ability of the insecticide to kill post application several days down the road is going to be shortened up, you know, you're not going to get seven to 10 days, if we're 90 degrees and and very, very sunny, like we were the first week, week and a half of June, the insecticide will break down in the sun, so you're going to have to reapply more, more frequently. Unfortunately, if we're cooler and cloudy, the insecticide will have that longer residual period.

**C** Christa Hartsook 21:28

So okay, that makes sense. Joe, thanks so much for everything today. It's a lot of good information for our producers out there. And unfortunately, something we need to be on the lookout for.

**J** Joe Hannan 21:38

Yeah, it's, you know, this is a problem we got to deal with every year. It's worth being on top of it and getting ready to go. Oh, you know, and as I'm looking through my show notes, I just totally missed that. Some of these products have application restrictions of either two applications or total product per year. So there's another reason why you need to have a second product from a different family on the shelf. Let me say that before we sign off yes, that's mportant.

**C** Christa Hartsook 22:07

One good tip. Yeah, absolutely.



J Joe Hannan 22:09

But yeah, it's out there if people have questions if they have challenges are always welcome to shoot me an email or give me a jingle to help them through it. So.

C Christa Hartsook 22:18

Okay, sounds good. Thanks so much, Joe. Thanks, Christa.

S Speaker 3 22:21

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