## Fly Control

## Season 1, Episode 19

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**Olivia Amundson:** Alright, welcome back to another episode of Cattle HQ. I will be your host today Olivia Amundson. I am a Cow/Calf Field Specialist out of the Sioux Falls Regional Office. Here with my colleague Kiernan Brandt, located out of the Watertown Regional office, and today we are joined by Pat Wagner and Dr Joe Armstrong. Pat I'll give you the floor here to give an introduction of yourself and a little bit of what you do.

**Pat Wagner:** Sure, so I am the Entomology Field Specialist with SDSU Extension. I am based out in the Rapid City office and I pretty much cover the western half or I guess western third of South Dakota in terms of any and all bug issues. I do have a couple colleagues, one based in Brookings and one in Pierre, so kind of between the three of us, we can cover a lot of the insect issues that go on. I cover a lot of different areas. Mostly kind of being row crops, agronomy issues. You know just farming in general that way. Then also with pasture and range touch with some on livestock. You know that's why I’m here today. And then also I cover a lot of the urban questions and stuff that happened or issues with you know home gardening or that kind of thing.

**Olivia Amundson:** Thanks Pat. All right, Dr Joe you've been on this podcast with us before but go ahead and give our listeners another introduction of who you are and tell us a little bit about what you do.

**Joe Armstrong DVM UMN Extension:** Perfect, yeah I'm Dr Joe. I'm a veterinarian. I work at University of Minnesota in Extension as the Cattle Production Systems Extension Veterinarian. I used to be in private practice down in southeast Minnesota worked both beef and dairy auction barns and then did a small amount of small animal work as well.

**Olivia Amundson:** Thank you. Alright, so thank you guys for those introduction. So today we're going to talk a little bit about flies and livestock and some of the different species of flies that are out there, as well as how maybe we can go about controlling the number of flies that we have regarding our livestock, and so I think just to get the conversation started a little bit, Pat do you mind talking a little bit about maybe some of those different species of flies that can affect our livestock and how they're affecting our livestock.

**Pat Wagner:** Sure, so I think there's kind of you know, probably four big groups, you can kind of put them into. So we have of course our horn flies, those are a big one, stable flies, face flies and then we have our horse flies and deer flies that I kind of like to put them together because they're similar in a lot of ways.

**Kiernan Brandt:** Yeah, those are like the worst ones too.

**Pat Wagner:** Yeah.

**Kiernan Brandt:** Yeah deer flies are like the big ones right, those are the ones that take the chunks out of your leg.

**Pat Wagner:** Exactly yeah like horse flies, deer flies are a little bit smaller but they're both pretty big.

**Olivia Amundson:** Pat do you want to, I guess in terms of talking about flies they kind of all affect the cow or the livestock in a different way. Can we discuss a little bit about how they affect the livestock in different ways and kind of some of that economic impact that that might have for the producer dealing with flies.

**Pat Wagner**: Sure, so starting off with horn flies, in general they're going to be affecting more the back in the sides of the animals. A lot of these flies kind of covered different areas or that's the different areas that they target, but for Horn flies again mostly the back in the sides. They're going to be blood feeders. They have piercing sucking mouth parts so they're going to be congregating on the animals and then just taking blood meals. And if you just have you know a few of them it's not a big deal, but more and more of them it kind of adds up and you can definitely have some issues, so I mean blood loss in general that's going to be causing just problems with weight gain or weight loss. And the animals are going to be obviously having issues with you know irritation and stuff that they don't like the flies on them, so you know switching their tails and you know kind of swinging their heads back and forth, and that kind of thing. Just that motion and stuff they're going to be working a lot harder. The other thing too, I mean this covers all flies in general, but you know, though they're going to be bunching together and the cattle will be or they'll be finding if there's a pond or a creek or something they're going to want to stand in water to get away from them and, when they're doing that they're not grazing, so again you're kind of having that reduced weight gain when they're out in the pasture. So I kind of covered horn flies there quickly. The other one is stable flies those ones are going to be feeding on the legs of the animals. Again they're going to be biting and causing issues that way. Face flies are a little bit different. So face flies actually don't have those piercing, sucking mouth parts. They're just going to have the sucking end of it they're going to be feeding on. You know, like ocular secretions like the tears, nasal secretions and that's why they call them face flies because they're going to be affecting the face of the animal, and they're not directly harming the cattle. It's what their activity is doing. It's causing an irritation and it's providing entry for other parasites like eye worms or like conjunctivitis. They get pink eye and that kind of thing. That's the main concern with face flies. Then deer flies and horse flies those are the other ones, the larger flies. They have a little bit different mouth parts on those. They're almost like a cutting and sponge mouth part that’s like a knife basically cutting into the animal and then like a sponge that they're lapping up the blood, so those can eat a lot more blood being a lot bigger and cause more harm that way. And those with horse flies and deer flies they're going to affect the entire body of the cow. They're not going to go for one specific area. They're going to go wherever they can get on and they're a little bit different from the others so like horn flies, stable flies, and face flies all of them are going to be reproducing in like manure or decaying organic matter that kind of thing. With your horse flies and deer flies those ones are more aquatic their life cycle so they're very similar to like mosquitoes. So you're going to have more of an issue with those flies in areas where you have wetlands. You know if you have any kind of pond or stream or that kind of thing wherever there's going to be any kind of marshy area, you would have more of an issue with those horse flies and deer flies popping up.

**Pat Wagner:** In a feedlot setting with horse flies that would probably be more like, muddy and mucky, I don't know if it money in lucky I don't know if it would be necessarily a good breeding ground for horse flies. That'd be something more prime real estate for a stable fly, I would say.

**Kiernan Brandt:** Sure.

**Joe Armstrong DVM UMN Extension:** What we're seeing though Kiernan is that in the runoff areas where we're trying to help with run off and planting basically wetlands are creating wetlands there we see we're creating also the perfect habitat for those horse flies and those deer flies, so it definitely can be an issue on the feedlot depending on what's around.

**Kiernan Brandt:** You always just notice horse flies when they bite you because they take about a golf ball out of your arm or your leg, but you always like that the stagnant, crusty manure filled, just like really dirty pens that haven't been scraped in a while. You always notice those bunches of small flies that you can tell are just congesting on those animals legs and up under their brisket and just driving them crazy and they're running around, not eating, stressing themselves out, not relaxing and staying in the shade they're up, they're constantly agitated. So I guess I don't know it kind of depends on the area that you're in this this year, but you know here in eastern South Dakota pretty wet and soggy, it’s just something for some people to be aware of, but might not be as big of an issue out in Rapid if you guys stay dry, but it sounds like you guys are kind of underwater right now.

**Pat Wagner:** Yeah, no we've gotten plenty of moisture I think we kind of had a little bit of a drought buster but maybe it'll dry out again, who knows, welcome to South Dakota.

**Kiernan Brandt:** Yeah.

**Pat Wagner:** Might be in drought here in August or July. So yeah you bring up a good point and something else that I want to bring up too, there is a little bit of a seasonality, with some of these. So like horn flies they don't love the heat of the summer. We'll kind of see a little bit of a pulse with them in the spring, I mean right now is probably about prime time for horn flies. And then their populations might kind of drop off a little bit that pressure might reduce in you know July and August, but then, once you get into September, into the fall cooler temperatures, they like that, and then you're going to see another peak there in your horn fly issues. Stable flies and face flight they're kind of around all season, but then with the horse flies and deer flies those ones prefer that kind of that middle you know heat of the summer July and August, are very common times for you to see those horse flies showing up so that I know that kind of might have a tradeoff that way that when the horn flies are dropping down then your horse flies and deer fly numbers might jump up. So if we stay wet yeah we might have some issues with horse flies. I know we had plenty of issues back in 2019, that was I like to joke, like the year without a summer that it was just raining all the time and we had all that flooding. There was plenty of horse fly and deer fly pressure that year, so yeah it kind of depends on the time of year, and definitely like you said, with the environmental conditions. Being if it's a drought or wet year.

**Olivia Amundson:** What are some of those management strategies that producers can take to kind of help manage some of those fly populations?

**Pat Wagner:** Yeah so you can use there's insecticide sprays that can be either you know you're usually kind of shorter residual and those ones might have to do, multiple applications throughout the season. And you can also do like your ivermectin obviously with your pour-ons and injectables. There's back rubbers or the dust bags and stuff that they'll rub up against they can get that insecticide on them that way. Also like insecticidal ear tags. Those ones, maybe not so great for managing stable flies or horse flies. They don't really care. They're big enough I don't think they'll just you know you treated with an insecticide whatever they know they don't care, but at least with like your horn flies and face flies and stuff that can kind of deter those insects from feeding. And then there's also like the vet gun. You know, kind of like a paintball I basically that you could shoot them with the insecticide that way. But yeah and then and then too there's also kind of more of a push for some organic options. Things like you know feeding them garlic so putting that in the animals diet, to try to deter flies from feeding on them in the first place. Stuff with like spraying apple cider vinegar. I know there's been some research on like doing more of a push-pull strategy and there's some research out of Nebraska that they looked into that. I think the focus was on stable flies and actually spraying the animals with coconut oil. That's kind of like your push that it would be like a deterrent and then the pull was using like lure traps to capture and kill the flies. So they'd be pushed off of the animals and then be caught in the traps and all of that, you know, without having to use an insecticide or the only insecticide is what's in the trap. It's not actually going on the animals themselves.

**Joe Armstrong DVM UMN Extension:** Yeah there's all sorts of products out there and so it can be kind of confusing, with all the different things that are out there. For me, I think there's two things and we talked about how to kind of identify which fly you're dealing with and I think that's important. Between pasture and confinement, I mean we usually think about stable flies, that's a confined issue when we're in a confined area because they need organic material to breed but there's one thing that kind of it's changed the game and at least here in Minnesota has changed the game, we see stable flies on pasture now because of the round bale feeder. That round bale feeder is the perfect situation to breed stable flies. So when you've got that round bale feeder out there for supplementation or whatever else you're using it for if it's out there in the winter and you don't move it. If you don't clean up that area around the round bale feeder you end up with stable flies on pasture rather than just having horn flies and face flies on pasture. The big thing for me is to think about this in a preventative way and being a veterinarian that's like you're probably going to be sick of me saying things about prevention, but that's the idea, especially with the stable flies it's all about cleaning up that organic debris that is wet and provides a perfect environment for those stable flies to breed. So those are the kind of things I focus on and usually we got to focus on that pretty early. If you're thinking about it now it's great to get it cleaned up and get it going but, at this point, you might be a little too late, you might already have a pretty significant population of stable flies brewing on your place if you haven't taken the time to clean up all that organic debris and find those places that they're breeding.

**Kiernan Brandt:** I guess, if nothing else, at least, yeah like we were talking about earlier. Like you hit that soft mud driving across you can just see the tire crunch the wads of flies so if you're finding those habitat cesspools then yeah get a rake out there and break some of that stuff up. I guess, in the name of preventative measures. That’s something I wanted to pick your brain on Joe, is where are we at with the fly tags? I remember using them a lot, when I was at the Meat Animal Research Center in Nebraska you know, especially on a hot muggy day with no air flow man you about pass out using them because they're so stinky. Sometimes they work, sometimes they don't. Seems like if you use the same one two years in a row you had a lot of trouble with it not working, the second time around. What's going on now?

**Joe Armstrong DVM UMN Extension:** I agree, I used to put in a lot of fly tags and you had to be careful not to touch your face and wear gloves and even wash your hands after you wore gloves because you could get some pretty nice burns on your face from touching yourself and so yes, that's still definitely part of it, and it should be careful, using them there's some other products that are coming back on the market I'll say. Because they used to be there and have less of that effect, and they were pulled from the market for honestly from what I'm told we're not quite sure why. Some public perception concerns, maybe, but they were great tags and they're coming back so the key with fly tags, just like when we talked about most parasite things is to rotate modes of action, so there are designations for the mode of action on all the fly tags, they’re even numbered by category, so you can just switch numbers every year. Develop a rotation, so you can rotate modes of action, and you will see them work much better if you're doing that. Now I'm a big proponent and I don't know if you guys are going to get to this or not, but you’ve got to have a tag and each ear. I know it looks ridiculous in the calves, but it is a good idea to put a tag in both ears, even if they're small.

**Kiernan Brandt:** Makes sense.

**Olivia Amundson:** So this might be a really dumb question, but like ivermectin has that I mean is that used as much anymore, I mean has there been like s resistance built against that? Or, I mean are guys still using that.

**Kiernan Brandt:** I still see it being used all the time. That's exactly where I wanted to go next.

Because that's probably the most popular when we're talking about cattle, I mean really on pasture. We're in a in a feedlot setting when we're talking about external parasite control is they come in, they get poured on and they get sent back out.

**Olivia Amundson:** Right

**Joe Armstrong DVM UMN Extension:** So there's a couple different schools of thoughts on this. Any of the avermectins, so I mean ivermectin is a part of that they're all very similar. So even when we're talking about avermectin versus moxidectin, you know, I mean are they really that different? From what I'm told, no, so when we have an internal parasite discussion I don't think they're all that different any of the pour-ons. Now resistance on the fly control side, I think it's definitely there, I mean the generation time on most of these flies is so short that you can develop resistance very quickly. So does it work in some areas, probably, but again we're back to rotating modes of action if you can and I'm a big proponent of if you're going to pour, then you should pour as specific as possible to your problem. There's no reason to use an ivermectin if your problem is flies, use a fly specific product. There's no reason to expose animal to the internal parasite control if they don't need it. So to me it's more about being as specific as possible, rotating modes of action, including ear tags in your strategy and then staying up front on the preventative side. And you know it's tough to prevent horn flies and face flies because they reproduce in dung pats, but you can you can drag your pasture if you want and break those up and get them to dry out and you will have less flies. Unfortunately a lot of that prevention also is dependent on your neighbors so it can travel a long ways, and I know when I have talked to both Roger Moon and Dave Boxer, they've got some crazy studies that show that these files can go, you know, five, six miles, at a time, and so you just gotta be diligent about it, and hopefully get all your neighbors involved as well.

**Kiernan Brandt:** That's crazy, I did not think that flies would go six miles in the air. When we were chatting a little bit earlier. I guess just about one that there are in fact people out there in the universe that have PhDs in flies and two, that the research involving that specific sector is incredibly convoluted and difficult just because of the nature of what you're trying to accomplish. You have so many confounding variables like apparently flies that can fly in from six miles away and that's totally like weather dependent and your neighbors pen condition dependent, that's crazy. I know that's something we wanted to chat a little bit about today anyways was, you know there's lots of buzz, like there's been a resurgence just in the last couple years about like garlic salt in feed or just added garlic in you know many different measures like tubs or whatever as fly control and that's one of the I guess the jury's still out as far as I know. Because there’s no definitive findings besides some small claims out of Canada that saw some mixed results, right?

**Joe Armstrong DVM UMN Extension:** Yeah with the garlic, yeah it's making a big resurgence. There's a couple companies that are really seeing some heavy growth in that product area in that part of the market. I think the big thing to note is that we know they’re repellents, they're not going to control the population at all. So we have to keep that in mind, and that presents some challenges right? If it's just a repellent and let's say you bring in a new animal or you buy a new set of animals or you have a bull that comes in it hasn't been getting that feed with the garlic. They aren't protected, or they don't have that repellent so now you've pushed all of the fly pressure from the whole herd onto just a few animals potentially that don't have that repellent right, regardless of whether it works or not that's how it's going to play out. So I don't know a ton about it there hasn't a been a bunch of research to read about it. To me there's a couple things that make a big difference that I can tell from reading about it and from talking to two REPS from industry. The source of the garlic matters and the amount of sulfur in there and the types of sulfur and the compounds that come out of that matter, a lot. So the source matters an incredible amount and then after that I don't I honestly don't know a whole lot because there isn't a whole lot to read.

**Kiernan Brandt:** So is it the garlic, or is it the sulfur within the garlic?

**Joe Armstrong DVM UMN Extension:** So it's the garlic and what it gets broken down into and then what's excreted through any secretion on the animal so tears, mucus, potentially oil in the hair, so from what I understand that's what's going on is what matters is what gets basically exuded by the animal after eating the garlic and that's highly dependent on what's in the garlic and your source of garlic.

**Kiernan Brandt:** Sure.

**Olivia Amundson:** Then I've also heard that it doesn't necessarily take the fly away from the cow, but it stops them from biting the animal. Is that a fair statement?

**Joe Armstrong DVM UMN Extension:** I don't really know to be honest. My thought is if they can't bite there's no reason for them to be there. I don't know I, but you know you hear a lot of anecdotal reports. The most powerful stories are like that situation I just described. You've treated your whole herd, you're not seeing much for flies, you stick a bull in there, or you stick an animal in there and then you come back the next day and that animal is covered. And they can't get away from the flies and they're agitated and if it's a bull he's not even doing his job because he's got so many flies on him he can't handle it so that's what we're hearing. I'd have no research to back any of it up.

**Pat Wagner:** Maybe all the flies in the meantime are just bugging the neighbors cattle and then looking for an opportunity.

**Joe Armstrong DVM UMN Extension:** That's exactly what I said to the last person I talked to about this as maybe you're just pushing your problem to your neighbor, I don't know.

**Kiernan Brandt:** Well, I have heard it secondhand I haven't heard it directly from any REPS of those companies that sell those products, but they have claimed that they even as REPS don't know of any data behind it. It's totally customer demand driven that they keep offering those products because I mean there's other options out there in terms of lick tubs, there are several feed additives that contain what, IGR is just what is it an insect growth regulator that's for flies right?

**Pat Wagner:** Yeah and I think a lot of like we already talked, yeah there's not a lot of data out there, I think it's kind of becoming more of a hot button topic and focus for researchers, because it's kind of gaining in popularity with a lot of our producers. And I think a lot of that's kind of being driven, at least in a pasture setting by the ranchers noticing or learning about dung beetles and their importance, and the fact that if you have you know more dung beetles that they can kind of break up the dung pats and reduce some of that fly pressure and it's kind of moving away from using some of those longer residual insecticides, things that have a residual in the manure, like your ivermectins, like your oral larvicides, that kind of thing and finding some type of alternative that's not going to hurt your dung beetles, but will keep those flies still away from the cattle.

**Olivia Amundson:** Really good point.

**Joe Armstrong DVM UMN Extension:** And with these insect growth regulators like you were saying Kiernan, the key to those if you're going to use them, they can work, but you got to use them at the right time, and you have to because the whole goal is to get rid of that first growth because the whole fly population is exponential right. If you can kill the first group, you're probably going to be okay unless your neighbor doesn't do anything. So it's all about feeding it at the right time too because oftentimes what I find when someone's feeding an IGR and it's not working, they didn't start it early enough, not even close I mean you got to be feeding it way ahead of when you probably think you need to and continue that for quite a while, so that you can get rid of this early growth and stop the generational exponential growth from happening in the first place. A lot of times that means you know in our part of the world you're still probably going to have to be maybe starting that feeding it in April or early May at the latest, to have an impact, so I think that's the problem if you start feeding an IGR in June or July it's way too late and you're not doing a whole lot at all.

**Kiernan Brandt:** Yeah, handing out a handful of extra doe tags at the end of the season when there's already a gagillion deer running around isn't going to put a whole lot of a dent in the breeding population. That's a good point.

**Olivia Amundson:** So, ultimately, this all comes back to money right because I mean it's all on the economic loss that these flies are causing the livestock, and so I guess in terms of this economic injury level like what does this mean and what do we need to know about it?

**Pat Wagner:** Yeah so the economic injury level, that's basically the point at which the benefits of doing any type of management is kind of outweighed by the cost of that management or the and also, in addition, the injury that those you know the specific pest is causing, to in this case a cow our cattle and basically, you know you want to, yes, we do we have that economic injury level and the goal is to avoid reaching that point and there's such a thing is the what economic threshold or action threshold, that is the point where you it's kind of like that sweet spot of okay, this is, you know, any more pest pressure than what we have is going to cause an economic loss, and this is kind of the again the sweet spot of where you can implement some type of management to try to keep those fly populations down. And you know, not all of these flies have you know, an economic threshold, so like horn flies, for example, on those it's about 200 flies per animal. With stable flies I want to say it's like three to five or something per leg. Anything that kind of gets you can go a little bit below or a little bit above that but you kind of get to a point where if you're reaching those kind of numbers, you kind of need to do some type of management. With face flies you know there's not really a threshold for those because you can have just one fly or something that can cause irritation or something and cause pinkeye to develop or the same thing too with horse flies and deer flies. I'm not really sure those have that kind of a threshold level either. But it's more of these ones that you have like horn flies like I was saying, at the beginning, you know a few of these not a big deal, when you have 200 on an animal yeah that becomes a big deal. And you need to step in and do some type of management. I don’t know if Joe has any additions to that.

**Joe Armstrong DVM UMN Extension:** That was perfect. I think the biggest thing that I think about is that the generation time is short. So, by the time you hit the economic threshold and you are trying to treat you better be on it quick you can't realize you're there and then wait another week or two. Because you you've got a problem that's completely out of control, at that point. So you gotta be careful because it happens quick it's exponential like I talked about to. An expert by the economic threshold is a great place to start and it tells you, okay, this is what you need to be watching for I, and I always just depend on the cattle to tell me what's going on. You know, stable flies are notorious for making cattle bunch more than anything, and stamp their feet and do all of that, so I let the animals tell me what's up if they are still grazing and everything's good. And I feel like I did a great job of cleaning up my place and preventing organic debris. You know I think we're okay I don't think you need to be out there, counting flies but it's nice to know what it looks like I think there's some good pictures out there, if you search for Google, or you look at some of the different extension websites, you can see. gail what is, what does 200 flyers look like on a cow, especially we're talking Horn flies So you can see Okay, what does that what does that look like and you'll see the behavior the cattle change, but I just caution people that once you're there you can't wait you got to get going, because it's going to get bad and a lot worse in a hurry, if you don't do anything.

**Kiernan Brandt:** Are there some good general words of advice for pasture management and trying to minimize some of those resident populations just through good preventative grazing practices?

**Pat Wagner:** Yeah, so I think rotational grazing is the big thing. Because you know you're moving those cattle away from, at least for the case of like horn flies and face flies, kind of their food source or where they're larvae are developing there in the manure. And then the other thing, I mean there's been research too I want to not to go nuts on the dung beetles, but that rotational grazing can actually increase your dung beetle populations and the dung beetles they're going to be competing for that same food source as your horn flies, feeding on the dung and if you can up those numbers, then that's going to in turn, eliminate some of that food source for the horn flies and reduce those populations as well, but I think yeah just a good rotational grazing or intensive grazing regimen is ideal.

**Kiernan Brandt:** Something I wanted to ask you earlier. Do the IGRS have any impact on dung beetles or any of the good downstream bugs.

**Pat Wagner:** I think that's kind of mixed right now, but I would say yes, I know there has been some research to show that they do have at least some effect on dung beetles maybe not actually killing them but making them, kind of reducing their fecundity or their ability to reproduce and it'll kind of slow them down definitely. I think that kind of goes back to what Joe was talking about with trying to if you're going to use an IGR, do it early and I totally agree the same thing too if you're going to use an ivermectin do it as early as possible because, as we get later into the growing season you're going to have your dung beetles are going to become more active and if you use them early and you're hurting your fly's there with the IGRs and the ivermectin. Those usually have like a what 30 day residual on them typically and if you use those early enough, well yeah you're getting rid of your endo parasites, but by the time the cows go out to pasture and the dung beetles are active, that residual’s already gone and then that dung isn't going to be toxic to those to those beetles.

**Olivia Amundson:** I guess one last question, I mean our flies beneficial for anything?

**Pat Wagner:** Yes, they have a purpose. So I mean one Yes, they are detritivores. They're going to be removing that dead organic matter. They're going to be removing dung. You know they're going to be getting rid of that stuff off the soil surface or you know fertilizing the ground, I guess, in that sense. Obviously the cons outweigh the pros. But the other thing too with flies is that they are kind of at the bottom of the food chain that they're important food source for a lot of birds and other insects and things like that. Yes, they have their benefits, but like I said, maybe the cons outweigh the pros in this case.

**Olivia Amundson:** Yeah they just reproduce a little too fast, I think.

**Pat Wagner:** Not to go on ecological terms, but like they’re an R selected species that just reproduce like crazy versus like your dung beetles that are K selected species that it takes a longer time for those populations to build up. So the other thing too, if an insecticide kills a dung beetle it's going to take a lot more time for them to recover than fly populations from year to year or within a season will just explode.

**Kiernan Brandt:** Well that's probably just good advice. You know we talked about the exponential growth. It's the same thing for your dung beetles, it's just going to be a lot slower curve and you just found your first roller out there. Maybe don't put IGRs out for a while, just to protect the little guys and get them going. You know, something we didn't talk about that I think is just kind of neat there and it's another one of those things that's incredibly difficult to quantify through any kind of research or statistics but, it seems like you definitely can through some pretty major things just through primary breed selection and things like that, I mean you see it down South all the time, with the brahma crosses, but you can select for insect resistant animals that just naturally tend to keep flies off them a little bit more, it seems like to me.

**Pat Wagner:** That's a good point, one thing that I guess I do want to bring up is. Flies and especially like your horse flies and stuff they rely heavily on vision to find their target animals. And with that said they're looking for any kind of large dark object that they can they can find and go for. So I mean you, you can see such a thing is like a black Angus or Red Angus cow was probably going to have a lot more fly pressure on it than say like a Charolais that's going to be white, harder for them to see than would be some large dark object. I don't know if there's been research on like different breeds and stuff of how that changes. If it's like would they be as bad on like a black baldy or something as they would purebred Angus. I don't know. But yeah just something to think about.

**Joe Armstrong DVM UMN Extension:** I did see a study where someone was trying to figure out why zebras have their stripes right, and so they shaved a cow into stripes. So as a black cow and they shaved it so that it looked like a zebra and they actually saw less fly pressure on that cow. So I think there's something to that color for sure and I don't know if this is something that's true or not, but I'm always told not to wear dark blue when I'm in the woods during fly season, because it just attracts flies like crazy. So I think there's something to it and it's hard for me to say, don't breed Angus because they're my favorite, but at the same time yeah there's something to it. The color matters, I think, and apparently I think we know why zebras have their stripes now.

**Olivia Amundson:** Yeah that is hard, especially when you receive more premiums for black cattle than colored cattle so that's really a bummer, but that is really interesting concept.

Alright, well, I just want to thank you guys for being on with us on today's podcast talking about fly control and all the different topics and conversations that we can have about this for our for our listeners, we will put some of this information up regarding some of those fly thresholds and things like that, and maybe I can even get Joe to send me this cool paper on.shaving a cow to look like a zebra for our listeners to check out too, but other than that thanks for tuning into cattle HQ and we'll catch you on the next episode.

**[Music]**