

## The Fowl Frontier: Egg Drop Syndrome 76

### **Zac Williams**

Welcome to the Frontier Poultry Science Unplucked. On this show, we're going to break down the intricate world of all things poultry science. So, join myself and my distinguished guests and experts in the field as we dissect the latest research and information on poultry production. Whether you raised broilers, turkeys, laying hens, breeders, ducks, etc. or a seasoned producer just starting out, we've got you covered. The Fowl Frontier is brought to you by the University of Arkansas System Division of Agriculture Cooperative Extension Service, and The Center of Excellence for Poultry Science. I'm Doctor Zach Williams, poultry extension specialist for life production at the university, and I will be your host. So as one egg said to the other. Let's get cracking.

### **[00:51] Eric Gingerich**

Okay. I'm a veterinarian with Diamond V. I've been around the industry a long time. I graduated from vet school in 1977. So, I've been in poultry over four years. Went to work for, feed company first then, diagnostic lab and then a primary breeder, DeKalb, for about 17 years. Then went to another diagnostic lab in Pennsylvania, University of Pennsylvania for ten. Then I started with Diamond V in 2010 and have been there ever since doing technical service, support of the product they sell, and so basically my, experiences in layers, it's been, most all layers for my whole career. So that's why I'm, been working on. All right, very good. I cover, the United States, mostly, Canada and, work with layer customers to, just, I do help them with their veterinary, layer health management questions and that kind of thing.

### **[02:06] Zac Williams**

All right. Good. Thanks. So today we are going to talk about egg drop syndrome 76 or EDS 76. Let's talk about where did it, where did it originate or where did it come from.

### **[02:20] Eric Gingerich**

Well, egg drop syndrome is a problem around the world, except for the US. The first, indication we had EDS in the country actually was in 2011 when, we had two flocks in northern Indiana came down with, egg drop syndrome signs and, we didn't know where it came from then, and it just kind of died out. It never showed up again in, in that area, but since 2011, this area of, northern Indiana, where we've got the egg drop syndrome right now, is, is developed into a, brown egg specialty market area. Highly populated with, brown egg layers, also ducks and broilers and, it appeared that it started in, one flock and then just went down wind possibly spread by wild birds or, or, but they're spreading. We're not sure, but it just went down the road, and then from there it spread out, to more, places, and unfortunately, and we know that wild ducks, wild waterfowl can carry this virus in their bodies, similar to what, avian influenza viruses, they don't show any signs, but they can carry the virus and spread it. Only in brown egg layers of the only ones that are really show

any signs. We found out that white egg layers can be infected, but they don't show the signs. We do not know exactly why that is, but it's a fact of life.

**[03:54] Zac Williams**

That's interesting. We'll get to that in just a second. So is it all waterfowl or just ducks? So, like geese or all migratory birds? Or are we just looking at the.

**[04:06] Eric Gingerich**

I think it's basically ducks. Okay. I'm not I'd have to look into that, but I don't think. I don't think geese are affected. But I know ducks are.

**[04:15] Zac Williams**

Okay.

**[04:15] Eric Gingerich**

That's where it started, was in some ducks in the Netherlands, they use these, ducks to produce vaccine, and it was contaminated with this EDS virus. And that spread to those chicks that received that, American vaccine. And, that's what we have to use to isolate the virus. Yes. Yeah. Embryos, duck tissue. So only tissue we can isolate.

**[04:39] Zac Williams**

We don't know. Well, like high path AI keep ducks away.

**[04:43] Eric Gingerich**

That's right. There are somewhat of our enemy.

**[04:47] Zac Williams**

Yep. All right, so we got the origin. We're looking at, you know, just kind of popped up in Indiana. What about, what about signs and symptoms? What can our producers look for in their birds?

**[04:59] Eric Gingerich**

Okay. It's. You don't see anything in Pullets. If Pullets are infected we don't see anything, but it layers in brown egg layers you will see, a big increase in shell-less eggs. Very poor shell quality eggs. The eggshell pigment turns white, or they lose pigment. We can get up to 60% unmarketable eggs that aren't able to be put in the cart because they don't have a good shell. There's, there's no mortality associated with this or, any outward signs the birds are look, you walk in the flock, they look healthy and happy, and, but they're just not able to. Apparently the virus attacks the oviduct shell gland, and they just can't it can't function properly to put a good shell on the egg.

**[05:47] Zac Williams**

So are they poor as I want to be are they poor quality shells like the deformations are? They shell-less eggs in general that they're going to see. Both Oh, okay. Both they're both

**[05:58] Eric Gingerich**

Both. Yeah. Very thin shelled eggs. They crack very easily of the shell-less eggs. They a lot of them break during the process of bringing them up to the, you know, the Packers and stuff. And that, that becomes a real problem with flies in the summertime, all that egg material. And it would be.

**[06:17] Zac Williams**

Oh, yeah, I bet.

**[06:18] Eric Gingerich**

It serves as a great place for flies to breed. And then, you know, we don't know if we think flies probably could carry it too. So that's another issue with biosecurity.

**[06:28] Zac Williams**

They got some insect vectors.

**[06:32] Eric Gingerich**

Yeah. Insect vectors. That's right.

**[06:35] Zac Williams**

How long will it last? So, like the flocks positive, when they start laying, will it eventually resolve itself or will it last the life of that flock?

**[06:46] Eric Gingerich**

Yeah. The flocks that have gone through this and they have not, molted or depopulated, they'll be out of they'll see lower shell quality for probably 4 to 6 weeks, maybe longer. And then, even after that, they'll see a few lingering problems. Even after that, you know, maybe 2 to 5% of shell -less eggs or poor-quality eggs even after that.

**[07:13] Zac Williams**

Okay. So, we're looking at several weeks are a pretty lengthy time.

**[07:17] Eric Gingerich**

Yeah. Producers going to lose maybe, two and a half to three dozen eggs per hen. Yeah, that's a big hit.

**[07:24] Zac Williams**

That is substantial. And then you're getting them right when it comes to right when they're like coming into production and peaking and can.

**[07:30] Eric Gingerich**

Yeah. And some flocks of their, some flocks of broken like it. That's 50 and 60 weeks. They, they tend to not recover as fast.

**[07:38] Zac Williams**

Oh really. Oh yeah. Yeah. Do we know why it's, it's so late, so long.

**[07:45] Eric Gingerich**

Well, those are just getting exposed. They're the ones that. Do we track it in?

**[07:50] Zac Williams**

Okay.

**[07:51] Eric Gingerich**

Then. Exposed. Yet.

**[07:52] Zac Williams**

That makes sense. Right. All right. Does it happen or does it affect people?

**[07:59] Eric Gingerich**

No, no, it does not people. It's, It's not like, high path AI. Some of those viruses can affect people, but EDS does not.

**[08:08] Zac Williams**

Okay, what about the eggs? So that means that the eggs from an infected flock are safe to eat.

**[08:14] Eric Gingerich**

Yeah. They are, they probably are, from an infected. I would be have they'd have virus in them. But the virus is not. It does not affect, you know.

**[08:21] Zac Williams**

Okay. I mean, if you could get the eggs with no shell, anybody to eat would probably be safe, right?

**[08:26] Eric Gingerich**

Right? Right. Yeah, yeah. Usually. Well, we'll not market those eggs anyways. Yeah, the good eggs would probably have some a small amount maybe, but it's not affected. Does not, infect people.

**[08:38] Zac Williams**

Yeah. Okay. What about treatments. Are there treatments. We'll talk about vaccines here. But let's like if your flock, if you know your flock has it, what can a producer do?

**[08:49] Eric Gingerich**

Pretty much. There is no specific treatment for a disease that we have marketable. Not like for, Covid. We have antiviral agents that we can use or antibody preparations, but we don't have anything like that for chickens. So that's pretty much just supportive therapy. Just make sure they got plenty of nutrients and , good, good gut health, things like that.

**[09:12] Zac Williams**

What's kind of been everybody's take on a positive flock. They ride it out or we trying to stamp it out like high path or.

**[09:19] Eric Gingerich**

Right. Well, originally we tried to stamp it out and we depopulated probably over half a million birds and unfortunately that way we try to clean those houses up. We went through, an extremely good, clean up and disinfection using 3 or 4 different disinfection. Some even used formaldehyde. And those, I'd say 60 to 70% of those new flocks that were put in those premises broke again. Geez. So it wasn't effective in eradicating the virus? This virus is a non envelope virus meaning it's a lot more resistant to disinfectants. Even. And so it's a very, persistent virus in the environment. So we've come to the conclusion that we're not going to be able to eradicate it. Some people will have molted flocks that have broken and that has brought them back into production with good shell quality, a little sooner than if you just let it alone.

**[10:19] Zac Williams**

Oh, really?

**[10:21] Eric Gingerich**

Yeah. You get better, shell quality than if you just don't molt them. But, there is no treatment, and, but vaccine is what we're, we're going to rely on. Good deal.

**[10:34] Zac Williams**

Well, let's, let's, talk about the vaccine then, what's, what is what type of vaccine is it?

**[10:41] Eric Gingerich**

Again the vaccine is a inactivated vaccine that we have to inject to the chickens. We have to import it from Hungary because, we have not because we did not have this virus or this disease in the U.S, we haven't don't have a vaccine from US company in the produce in the US. And this unfortunately, this virus is very difficult to isolate. We've actually taken tissues from our Indiana flocks to the laboratory tried to get them, put the, material into duck eggs. And it's not been successful in isolating the virus. So, we've had to import the virus, the vaccine from Hungary, where they use a special cell line to produce the vaccine, that we're having trouble importing that into the U.S, USDA is, having we're having some issues importing that for a vaccine company to make the, vaccine here. So then we use the vaccine. We're now allowed to use the vaccine in the pullets where it's most effective. You use the the vaccine, inject the pullets about 13 to 14 weeks, pretty much 3 to 4 weeks ahead of when they would go into the lay house where they could be exposed.

**[11:56] Zac Williams**

Or have. So, well, the vaccines, vaccine going to cure them or is it just going to stop them from shedding or stop from.

**[12:04] Eric Gingerich**

Okay. Yeah. The vaccine that it contains, the antigen material that, the birds will produce and the immunity to they'll have circulating antibodies and circulating white blood cells that will attack the EDS virus if they're exposed. And then what it does, it prevents, reduces the, clinical signs. Where we've used the vaccine, I might mention we've had we've been dealing with these. EDS, in Pennsylvania for about four years now, but it has not spread in that state as widely because their brown egg flocks are very, not as densely populated.

**[12:38] Zac Williams**

Okay.

**[12:39] Eric Gingerich**

They've been using the vaccine successfully, and where they've used it in the pullets, they have not seen any, any signs of the disease where they've gone into a multi age complex that has the EDS virus there already, but they have not had any issues with, with disease.

**[12:57] Zac Williams**

All right. Very good.

**[12:58] Eric Gingerich**

They have shown it does reduce shed. And that's our hope that we can use the vaccine to the birds that they don't break in their house. If they won't shed the viruses bad and allow it to spread to other, other flocks in the area or other flocks outside the area.

**[13:12] Zac Williams**

Yeah, that'd be helpful. That'd be great.

**[13:15] Eric Gingerich**

Because we do have a lot of these eggs are going. The materials could carry the virus. The egg shells would have virus on them. But we we're shoving eggs to the northeast to Missouri, California, all over the place. Those eggplants, if they're not properly disinfected and sanitized, go back to some farms, say, in Missouri, and they could take the, handle those, flat spot but on their hands and get to carry the virus into the flock. So that's our fear.

**[13:45] Zac Williams**

That'd be nice if I could help shed, will interact with any other vaccinations, like with our current vaccination program.

**[13:53] Eric Gingerich**

We don't think so. It's a as it's a killed vaccine. It, just adds to the antigen. Usually when we handle these birds, we're giving them multiple antigens already.

**[14:03] Zac Williams**

Yeah.

**[14:04] Eric Gingerich**

We usually give them Salmonella vaccine, Newcastle, Bronchitis. Some give cock riser and other, other vaccines and the birds are amazing. They seem to respond to all these different antigens that we put on them. So okay, we know the later fair. Well.

**[14:22] Zac Williams**

Do you think, will how many years this is going to be a really philosophical question? How many years before you think we'll be producing our own vaccines?

**[14:32] Eric Gingerich**

Oh, that's a good question. I'll bet it's going to be within maybe two years. Okay, well, we just. Yeah, yeah, we were working on, in fact, I just had a meeting today, and this, researcher at Ohio State said he may have a if we can get him the virus, he may be able to to work with that and maybe produce a vaccine for us. Nice. Different vaccine.

**[14:54] Zac Williams**

So, good. So, you mentioned earlier about brown, layers versus white egg layers. And, you know, we know there it primarily we see it in brown egg layers, we usually see the sign. Why, do we know why.

**[15:13] Eric Gingerich**

We do not know why. There must there has to be some kind of genetic difference between these, the brown egg lines and the waiting lines. Apparently, there's also been seen differences in, say, the, resistance to aflatoxins. Apparently brown egg layers are susceptible to aflatoxin compared to white egg lines. I did not know that.

**[15:35] Zac Williams**

I did not know that either.

**[15:37] Eric Gingerich**

And so there are apparently differences in the meatbolsim that they have in their bodies that, you know, maybe they don't have the right, right genes to allow the vaccine, the virus, the white egg layers they don't have the right genes to allow the virus to infect their cells. I don't know.

**[15:54] Zac Williams**

This is interesting. Will they carry it and shed it like ducks or anything, or do they just clear it?

**[16:01] Eric Gingerich**

Yes the white egg layers will carry it. Yeah. We've we've done tests and they are infected and we've isolated it out of their feces, for example, so they could serve as a source of infection. Okay. Yeah.

**[16:14] Zac Williams**

Wow, that's, I don't know. I found that very interesting that it's privately, you know, we see it so much prevalent in brown egg layers and not white egg layers. I just yeah, it's really interesting to me.

**[16:25] Eric Gingerich**

Yeah. Hopefully somebody will work that out.

**[16:28] Zac Williams**

Yeah. Be kind of interesting to know.

**[16:31] Eric Gingerich**

Yeah.

**[16:32] Zac Williams**

So I know we've actually, reportable disease, that's kind of a state by state thing. Is there a reason why is it just new or not really posed that big of a threat to the food supply, or is that kind of, state by state thing as to why some states is reportable and some it's not? Because up until I think last week, Michigan, it was not reportable. And I think we're going to change that. Yeah.

**[16:59] Eric Gingerich**

Yeah, that's what happened in Indiana as well, because we didn't have EDS before. Wasn't very widespread until we had numerous outbreaks. They didn't have a reportable until they we had about ten outbreaks. And then they started having it reportable so the state could use some of their resources to help track it and help the, you know, notify the people, the, producers in the area that what's going on. They had a town meeting, for example, got their state people involved with helping us, you know, just organize ourselves and, you know, improving biosecurity, that kind of stuff.

**[17:36] Zac Williams**

Okay. So if they're just playing catch up.

**[17:40] Eric Gingerich**

Yeah. Right. Right. Yeah. And until you have it in the state, I don't know if you could make it reportable or not, I don't know.

**[17:47] Zac Williams**

I don't know either. But yeah.

**[17:48] Eric Gingerich**

So let's try to we've tried to petition and, like the state of Missouri to allow vaccination there because some Pullets are being grown there for Indiana, but they won't allow it until they have an outbreak in their state. So and they're I'm aware that it's not reportable there yet either.



**[18:09] Zac Williams**

So, that was actually a question I had to, that you brought it up. What about moving Pullets from state to state across state lines? Right. Should they, like, if they're importing pullets from, like, an area northern Indiana? Do to a state is not going to allow vaccinations or the state doesn't have it. Should they ,should they bring those birds in vaccinated or should they not? What do you like. What are your thoughts on that?

**[18:40] Eric Gingerich**

That's ,that's a good question. We have had that happen. We had some pullets being grown within a mile of an outbreak flock that were going moving to Iowa. And so we now have the ability to test these flocks using a, shoe covers, shoe covers. And we just walk through the house, it gets the shoe covers, you know, full of manure. Then we send that to the lab, and then you do a PCR test to, detect the the, virus material. And we would test in that case, we tested the Pullets just before they moved, and we tested them negative. So they knew they weren't infected, so they moved them safely. And as far as I know, they have not, broken.

**[19:20] Zac Williams**

Okay.

**[19:21] Eric Gingerich**

But if, and I'm not sure if the state, that was receiving those pullets will allow vaccinated pullets or not. Now, that's a great question. I don't know how that happened come up yet.

**[19:32] Zac Williams**

That's one that we've actually had here recently. All right. Yeah. We've got some of our guys are trying to move pullets, I think, from either. I can't exactly remember they used to going from Michigan to Indiana, or they were bringing them from Indiana into Michigan, and they were trying to figure out what they should do about either sending them down there. Do they try to get vaccinated before they send them or, yeah.

**[19:58] Eric Gingerich**

Well, like I said, you know, some state they won't they won't allow the vaccine to be used until they have it in the state. So we're on those cases. We're vaccinating. As they unload.

**[20:08] Zac Williams**

Okay. So that is so that's an option there. So just vaccinating.

**[20:12] Eric Gingerich**

Its an option Is not the best option, but it's it's better than not doing it.

**[20:15] Zac Williams**

Yeah. If they were to get them tested or like you were talking about how long before they move them. Should they get tested?

**[20:24] Eric Gingerich**

Yeah, as close to the move as possible. Just like for moving pullets in an AI control area, test them like, within, you know, say 2 or 3 days of movement. Luckily, the PCR test, you can have the results in the next day.

**[20:40] Zac Williams**

Okay.

**[20:41] Eric Gingerich**

Take it one day and submit them to the lab in the next morning. Bye, noon. You probably have the result.

**[20:46] Zac Williams**

What are can they just send those to the state lab like a state diagnostic lab? Okay. Yeah.

**[20:50] Eric Gingerich**

Certain state labs have it, like, Indiana, Purdue has it, Ohio. I don't think Michigan State has it yet, but, there are several, for, Georgia has a lab, Pennsylvania. But I think Iowa State not yet.

**[21:06] Zac Williams**

Okay, so they have it, but they have options. Yeah. Okay. We talked about moving.

**[21:15] Eric Gingerich**

You can overnight these samples, too? Yeah. That's the, test.

**[21:19] Zac Williams**

Okay. So that kind of leads in the next question. Really? Well, what about transferable or transmission of the virus on, like, people and equipment or, say, like live haul trucks or, you know, pull it carts or so forth? You talked earlier about how it's really hard to kill.

**[21:38] Eric Gingerich**

Yeah. That's. Yeah. Yeah, we do the best we can to, you know, sanitize is clean and sanitized as best we can. We. But because we cannot isolate the virus very easily, we we're not exactly sure if we're doing a real good job. Fact. That's one of the, research project we're proposing to a, she's a student at Georgia that has needs to do a project. You know, that's one of the research things that is high on the list is to find out of how our cleaning and disinfection processes, like for egg flats and pallets and trucks and, you know, that kind of stuff. Is that being effective or not? The unfortunate thing about PCR is that you only detect it'll detect dead virus. So if you detect it, if it's positive, after you've done all activity of disinfection, do you know if it's live or not? We don't know. Maybe there's a means of doing that. You know, there may be something you can add to that media to tell if it's live or not.

**[22:41] Zac Williams**

And yeah.

**[22:42] Eric Gingerich**

Well, that's one of the big questions we have thus far. We have. No, it doesn't appear that we've spread it by very widely by, flats and people, although there was one case, there was an outlier case of this northern Indiana area. It was like 20 miles away from the original spot, and they pretty much have decided that it was a person that went from a duck breeder flock and visited one of our layer flocks to repair , an egg belt or feeder. Did apparently did not use very good, personal protection or any biosecurity. And seven days later they broke with EDS. So there have been some cases where they're pretty sure that it was people that tracked it Yeah.

**[23:28] Zac Williams**

Yeah. So what can like, I mean, as far as cleaning and disinfecting just as best they can.

**[23:37] Eric Gingerich**

Yeah, glutaryl on high products, those kind of products, apparently from the literature. One of the best ones to use. No, Formaldehyde, of course, that's pretty hard to use.

**[23:47] Zac Williams**

What was that?

**[23:49] Eric Gingerich**

Formaldehyde.

**[23:49] Zac Williams**

Oh, yeah.

**[23:51] Eric Gingerich**

And, but that's you have to be licensed to be able to disinfect with that, we found out the alcohol hand sanitizer, is it isn't all that effective against, these adenoviruses.

**[24:04] Zac Williams**

Oh, really?

**[24:05] Eric Gingerich**

They have at least, like, 70% alcohol for it to be effective. So we've told some of our people, to, wear gloves in the houses, you know, cover up their hands with gloves and, not rely on the alcohols hand sanitizer. That's one of the big things we're telling people to is to change their boots rather than rely on disinfected footpans that are, a lot of these disinfectant solutions take about ten minutes to work. And also, dry powder is better, I think, but it still takes a while for it to work. But if you change boots, I think that's a better option. So we're using the, Danish entry systems for the use of those a lot more. And, you know, cover your hands or use hand sanitizer or change your boots, and take off your outer clothing, your, coats and stuff, and, you know, also, there's a whole list of things we, we try to do, you know, not visit other poultry things.

**[25:04] Zac Williams**

That's a really good tip, though, about the gloves. And because most people, you know, they're like, we've especially over the last two years of Covid, we've been so conditioned that alcohol is going to get rid of viruses. Right, right. Yeah. So that's a really good tip.

**[25:18] Eric Gingerich**

Especially after you've handled eggs flats that might carry the virus. Yeah.

**[25:24] Zac Williams**

What about like egg packing equipment and like, the, like the processing plants or the, egg belts or the, you know, just normal or should they try to step it up or normal cleaning and disinfecting ?

**[25:40] Eric Gingerich**

Oh, yeah, they need you need to watch the system, make sure that, like, egg flats are getting cleaned properly and, you know, they don't have any adhering egg materials or, you know, feathers and stuff like that. And, just try to do the best they can. But we do consider the egg flats a big potential source of this.

**[26:02] Zac Williams**

Okay. Any last or parting words or thoughts you'd like to say to people about either egg drop or, you know, just something you want people to be aware of? You know, we always talk about biosecurity. Yeah.

**[26:18] Eric Gingerich**

Right. Yeah. Other than, you know, make sure your biosecurity plans are in place and, we're just hope with the vaccinations that we're being able to use is gonna, you know, stop this and prevent more, more flocks. But, just do the best you can. Try to use more Danish entries and stuff like, so hopefully, you know, step out of the biosecurity. I think that's one of the reasons northern Indiana didn't have, we had an introduction of high path AI, three duck flocks. They were surrounded by chicken flocks, but it did not spread. So with our, affect, you know, our increase in biosecurity and also, we have closed up these flocks, the organic flocks, and not allowed outdoor access since last October.

**[27:10] Zac Williams**

So a while.

**[27:11] Eric Gingerich**

For almost a year. So I think that really helped prevent the spread of high path AI too okay.

**[27:17] Zac Williams**

Well good.

**[27:18] Eric Gingerich**

Well preventative.

**[27:20] Zac Williams**

So thanks again for coming on. Thank you for tuning into the Fowl Frontier Poultry Science Unplucked. We hope you enjoyed our deep dive into the world of poultry science. Be sure to subscribe so that you can stay updated on the latest episodes. If you have any questions, comments, or just want to reach out to us, you can do so on social media or via email at [zwilliams@uada.edu](mailto:zwilliams@uada.edu). That's [zwilliams@uada.edu](mailto:zwilliams@uada.edu).