

**[00:01] Intro/Outro**

Arkansas Row Crops Radio, providing up to date information and timely recommendations on row crop production in Arkansas.

**[00:12] Jason Norsworthy**

Welcome to the Weeds AR Wild podcast series as a part of the Arkansas Row Crops Radio. My name is Jason Norsworthy, distinguished professor and Elms Farming Chair of Weed Science with the University of Arkansas System Division of Agriculture. I'm joined today by Dr. Bob Scott extension weed scientist. And we've got a special guest today, Dr. Bryan Young, professor of weed science at Purdue University. Bryan, hey, it's great to have you on our Weeds AR Wild podcast series.

**[00:43] Bryan Young**

Great to be here, guys. Thank you for the invitation today.

**[00:47] Jason Norsworthy**

Hey, Bryan, I know you didn't start your career out at Purdue University, so let's just kind of. How long have you been at Purdue now?

**[00:54] Bryan Young**

I've been at Purdue just slightly over ten years. So before that, I was at Southern Illinois University for about 15 years, which is technically part of the Delta.

**[01:05] Jason Norsworthy**

It is part of the Delta.

**[01:07] Bryan Young**

Yes. So I lived in the Delta technically according to government, for 15 years.

**[01:14] Jason Norsworthy**

So, Bryan, you've been doing this for a little bit longer than 25 years as a, as a full time faculty member, then.

**[01:21] Bryan Young**

Yeah. If you want to, you know, color me old. Yes, that's one way to put it.

**[01:24] Jason Norsworthy**

But I'm not going to say who's older, me or you. I don't know. It's probably at point a coin toss, Bob. I know who is older between the two of us and I'll just leave it at that.

**[01:35] Bob Scott**

I started to say you're just casually leaving me out of that and I appreciate it, but thanks for dragging me in. Okay.

**[01:42] Jason Norsworthy**

I hear you. So, hey, Bryan, you know, all of our listeners are always interested in kind of what's happening in Indiana. We're going to talk a little bit about some of the research that me and you have today through USB, some of our See and Spray work, but we're always interested in the crop and how things are progressing there in the Midwest. I mean, you guys really dictate to some extent what corn and soybean prices are going to look like based on what your crop is, how your crops are going to perform. So how do you really characterize the crop this year?

**[02:13] Bryan Young**

I characterize it from a weed science perspective, variable. Variable in terms of planting day, we had a two month planting window. It seems like some guys are just finishing up. They've been too wet. Some places we have corn that's waist high, in others it's about three leaf right now and not looking the best. So soybeans anywhere in between there as well. We have some narrow row beans that are covering the rows and some 30 inch row beans that were planted really late and, you know, they're they're about first trifoliate right now. So it's really variable. The rains that we've gotten this year have been spotty and the weather was just playing jokes with us that, instead of having, you know, a warm front come in or a cold front for a week, we'd have a cold front for two days and then two days have hot. And I don't think the crop knew what was going on for a while and the weeds didn't figure it out either. We have really spotty weeds that came with the spotty crop.

**[03:16] Jason Norsworthy**

Hey, it seems like to me talking to some growers from the Midwest over the last few years, you guys are having a tendency to plant earlier and earlier and earlier. I know mean you have some research USB related to that. How early are you seeing some of the Indiana growers plant these days and what impact is that having on weed control?

**[03:38] Bryan Young**

Well, if you count the outliers, we could say late March. But if you're extracting some of the real big outliers, it'd be the first week of April that, if the soils are fit, they're ready to go as soybeans and they're willing to do that. Up until the third week of April. And then they get turned on to corn. So they're willing to spend a couple of weeks trying to put in some beans if the soil conditions are right.

**[04:05] Jason Norsworthy**

Putting those beans, in before corn, which historically you would agree, it's not something that the Midwest has done.

**[04:11] Bryan Young**

So not typically until the last, you know, five, five, ten years depends on who you are and where you're at. But certainly going back to the nineties and early 2000, that wasn't the case. You know, being whether it was in Illinois where I was at or Indiana corn was first. But then that's changed as we and I think that's come with not seeing a huge increase in soybean yields for many years relative to corn. If you look at the annual increases that a soybean breeder, soybean agronomists versus a corn agronomists would show, you know, corn been clipping at about one and a half bushels per year. I forget the number is. But soybeans hadn't been keeping up and they're worried about plateaus and hey early planted we're getting bigger yields in soybeans and so that's gotten a lot of attention.

**[04:57] Jason Norsworthy**

So in terms of herbicide performance and it seems like to me you'd be dealing with slightly a different spectrum and I know as you get cooler in cooler conditions, you may get a little more length of residual out of those pre emergent herbicides. What exactly are you seeing?

**[05:15] Bryan Young**

Well, we're seeing not necessarily good results because we have cooler temperatures, but also wetter conditions. So we might see some move out of the germination zone of our primary target such as water hemp. So it moves out of that germination zone even though the herbicides there is now in the right location anymore and it might be lower in the soil profile where soybean germination is occurring. And so there are some concerns with, let's be frank, some of the PPO inhibiting herbicides that they're in the germination zone under cool wet conditions, exposures longer, there's more uptake in those seedlings and there's some hesitancy to use a residual group 14 herbicide in early planted beans. And I'm not going to tell you that's unreasonable, they shouldn't be concerned. I think there is some level of concern that should be there.

**[06:08] Jason Norsworthy**

What about carryover? You know, I mean, those earlier planted beans, it seems like to me there might be slightly more risk of carrying over to some of these corn herbicides. Are you seeing anything there?

**[06:21] Bryan Young**

Well, the last few years on your very dry, growing conditions for the summer of 22 and 23, the two corn herbicides of concern have Mesotrione and Clopyralid. And you know Iowa they've had a problem with those parts of Illinois even parts of northern Indiana have had some concerns with both those herbicides. So has it translated to a greater concern for early planted beans? You know, there's been the recommendation from the university side that you're early planted beans don't put on fields where you had late applications of some residual corn herbicides following year or the previous year. But I don't know. I haven't heard of those being linked to any standard practices and success or failures at the grower level or not. Hopefully we have avoided some problems.

**[07:13] Jason Norsworthy**

So okay, you know, water hemp, you know, when I think of the Midwest, I think of water hemp, you know, palmer kind of being the Southern weed. We've got a USB project that we've been screening. I don't know, Byran, how long is it being? Five years. Probably six years now.

**[07:30] Bryan Young**

Six years.

**[07:30] Jason Norsworthy**

Six years. Yeah. We've been screening, watering up, looking at glufosinate, looking at dicamba. We've added 2,4-D little bit later into there. I know you actually summarized the data for palmer and water hemp, and presented that at the WSSA, the Weed Science Society of America meetings this past year. What's the big what's the big takeaway? If we look at that data over the last six years, what have we really learned?

**[07:59] Bryan Young**

Well, I think what we've learned is, you know, the purpose of that project was the USB directors was they wanted kind of like the canary in the mine shaft are we going to have resistance to these key herbicides for management, for weed management in soybean? And the answer is, well, the canary is dead. We do have problems. We have some counties in Arkansas and Tennessee and Missouri where Palmer Amaranth populations aren't dying in our greenhouse greens, 2,4-D, dicamba or glufosinate. So we have evidence that our weed populations are getting difficult to manage with some key herbicides. Same thing goes true for water hemp where we have populations in Missouri, Illinois, Indiana, where water hemp populations aren't dying from 4,4-D, Liberty, glufosinate and dicamba and it's multiple collections within individual counties. So you see there's hotspots within a state and certain counties and we don't have confirmed resistance. Those aren't confirmed resistance issues. It's confirmed instances where the herbicides don't work as well as they used to, which is, you know, the start of progressive resistance or the start of the major problem regardless.

**[09:19] Jason Norsworthy**

I think it's fair to say that all of those populations, for the most part, would also be resistant to glyphosate, would be resistant to the ALS chemistry. And so now all of a sudden, when you begin to see failure of the auxins, glufosinate, you know, it's a very scary situation as we move forward in terms of really what options that we have for control. Would you agree that's a fair assessment?

**[09:42] Bryan Young**

I do. And, you know, up to this point, a lot of the resistance has been to all to target site. Now we get with non-target site resistance and the auxin herbicides and PPD resistance. I get very concerned about, you know, what other resistance is going to be found with that 2,4-D resistant population, the dicamba resistant population because it really strips us of a lot of the effective tools that we once had but have been compromised, frankly. And we have you know, I talked to a retailer yesterday. This might make some sick a little bit in Indiana at least, but they just got another pallet of DiFlexx herbicide. So Dicamba in a safener and they have another partial pallet of Status in corn that were spraying because HPPDs won't do it and they already missed with the first shot of dicamba. They're just coming back with a higher rate this time.

**[10:38] Jason Norsworthy**

Higher rate with a safer thinking that's going to take the solution, huh.

**[10:41] Bryan Young**

And then I said, yeah, I don't think you're going to get it if you hit it with dicamba and fail, second shot normally doesn't do it much better. And in soybeans, they're finally learning that if they come back, come in post with just glufosinate or just 2,4-D, that's not enough. They need both those together in addition to glyphosate. And so my gosh, you know, beginning of the end, but I encourage the retailers said, you know, I wish some of the farmers would remember this. The problems they have during the summer months spraying post herbicides, I wish they'd remember that in January and February so that they get on the right track because some of its application timing. I have some Palmer Amaranth that research site yesterday there was 18 inches tall. Still not sprayed. Hmm. I don't know what type of magic fairy dust you're going to put on that. Kill it, but I don't think it's magical enough.

**[11:39] Bob Scott**

Well, Byran, that that sort of led into question I had. The first question I want to ask just kind of in general, this resistance up there in the Midwest it's developed in a fairly decent rotation of corn and beans. Right. I mean, y'all are continuous either one or is it a mixed bag on that.

**[12:01] Bryan Young**

Fairly decent rotation. I wouldn't have the numbers exactly. Or good numbers, but the only place we would have continuous corn's in our dairy operations more in the northern part of the state. So I would say, you know, probably over 80% of it's going to be a corn soybean rotation or at least some other crop because we rotate in, you know, tomatoes and mint into our corn, soybean rotations to some extent. S

**[12:30] Bob Scott**

We have a rotation of rice down here and it hasn't helped us in some in some instances with some of these weeds. Are you seeing back to your timing and remembering in January and February what happened? Have you seen an increase in residuals up front to try to combat these weeds?

**[12:49] Bryan Young**

It's a mixed bag. You know, I think some finally at the retail level get it it's convincing the growers under, you know, difficult times in terms of commodity prices and interest rates the and land, you know rental rates that they need to spend more in the herbicide bill and you know the retailer yesterday was saying \$50 an acre for corn weed management is pretty standard. But, you know, some soybean acres and corn acres are going to eclipse that because of problems this year. But the residual herbicide, so we have one grower, they do a lot of interesting things on their farm, but they just use Zidua because they want to make sure they have rotational flexibility, the next year with corn or beans, that there's some fields they just don't know what they're going to go to. And so this year they had four ounces of Zidua applied and water hemp blew through it within a couple of weeks and to the point where BASF collected some soil and sent it to headquarters for testing. And we have it for testing, but it's like, well, if you think about it, a single active ingredient as a soil applied hasn't been a standard recommendation from at least us in the Midwest, maybe down there in the South. And I in that same field area, I have a three way, it's a Fierce MTZ. So we have Valor our Flumioxaszin, then you have Zidua the pyroxasulfon and Metribuzin and I got really good activity. So at least one of the herbicides out of the three might work.

**[14:19] Jason Norsworthy**

So that's a very good lead way into the fact that, you know, I, I was curious, are you seeing more Metribuzin in the Midwest? I know that we're doing more, Metribuzin has been a mainstay, I would say, in the Mid-South for a extended period of time. And we have some collaborative work looking at Metribuzinon soybeans. What are your thoughts? Is it underutilized? Does it need to be used more? Does it need to be used in mixture? What are your thoughts there?

**[14:50] Bryan Young**

I think it's still way underutilized, you know, in a state that has a lot of no till so, roughly half of our soybeans are going to be no till production. Your using Metribuzin to help burn down mares tail horse weed. Anyhow, let's just use the residual rate of that herbicide, but there's some reluctance to do that. It's not the ratio they have in the premixes that are used with Metribuzin and Metolachlor or whatever else you might have it pretty mixed with. So you have to spike in more Metribuzin and and that's just not

a standard practice yet. Hopefully it will be at some point, but we're taking way too long to get there. That's that's my concern. We need higher rates of Metribuzin now. Now, the concern is growers have memory of injured soybeans. This might go back to the eighties, maybe early nineties and the level of knowledge about Metribuzin safety or tolerance in soybean at the seed dealer level isn't what it used to be in the eighties. I think they have some information they might not have comfort in sharing that information. And then I have a question that you might be able to answer either one of you. How similar is Metribuzin injury on soybean? Is it similar to the Valor injury, which is going to be temporary and they're going to recover you might have a stand loss or is it going to be like saflufenacil or sulfentrazone a sensitive variety where it kind of persists for a while and it's more than just a stand loss. So what is that Metribuzin response, do they eventually recover? Are you going to be fine? Just make sure you have a good final stand or is it chronic and is it chronic and it's going to eat away at your yield throughout the year?

**[16:37] Jason Norsworthy**

I think it's somewhere in between those. You know, I think that it does persist generally when I say it is cold, wet conditions with a sensitive cultivar, it's two weeks, three weeks maybe four under worst case scenario. But it's not you know, it's not the necrosis that you'll see that we see with a Valor containing product, you get the necrosis and you know, it'll pretty much grow out of that. If they survive, they grow out of it. And and two weeks later, you never realize you have any issues. The one thing that also I see with Metribuzin I think at least here in the mid south, there's been a tremendous, tremendous effort to, I think, breed for tolerance. I don't see the degree of sensitivity today that we had 15 years ago. Now we still have sensitive varieties. Don't get me wrong, we need to continue to understand which ones are tolerant, which ones are sensitive, because if you pick the wrong variety and you put Metribuzin out there, especially as that pH of that soil begins to increase, you can really run into into issues. But, you know, for us, I've yet to see any Metribuzin resistance in in Palmer. I mean, what about you, Palmer? Water hemp. I mean, are you seeing anything?

**[18:03] Bryan Young**

No, we haven't today. And that's why we want to push that a little bit more. You know, has different rainfall requirements for activation to some of our other residual herbicides and soybean. So it can be complementary in that regard. So I see a lot of value in it, just, you know, some lack of confidence at this point. So I appreciate your comments about that injury and how might come out of it, because I'm trying to think, do I tell the grower or retailer to go on a fishing trip over in Illinois for a week? Or do I tell them to go to Alaska for two weeks before they come back and look at that field for that injury?

**[18:39] Jason Norsworthy**

It's amazing what warm, dry weather will do for you when it comes to Metribuzin. So I guess.

**[18:49] Bob Scott**

I will add this, Bryan, and a lot of our guys now, you know, we've been pushing these residuals for so long. We have a lot more of our growers and consultants who have adopted this overlapping residual concept. I got a lot more calls about that coming back from administration back into this role than I felt like I was getting back in 2018 or whenever. That was a notable change. And a lot of those guys that are familiar with these fields, they kind of know their rates. I mean, they know about how much Mtribuzin to put out to not get injury. Again, like Jason said, it depends on the variety and the rainfall and there's a lot

of factors there. But they all kind of they all kind of seem to have a rate in mind for each, you know, general field or or soil type that they're comfortable with.

**[19:40] Bryan Young**

Right, that that overlapping residuals I was at a meeting won't say which which meeting I was at but they were talking about overlapping residuals and the value dependent on soybean growth stage and they talked about, well, you got to add Roundup or Liberty or 2,4-D to kill the weeds that are up. I said, Well, wait a minute, if you have water hemp up it's no longer an overlapping residual, you're now applying a non residual herbicide to a weed that's emerged. So there's no dual modes of action going on there. That's not a overlapping residuals. So let's make sure we call an overlap in residual what it is. You know, you're applying that before weeds come up.

**[20:16] Jason Norsworthy**

I've got a slide to spray dirt spray dirt with residual herbicides. As long as you're doing that, I guarantee you you're taking selection pressure off of any post emergent herbicide out there right now.

**[20:30] Bryan Young**

I think that's the message. Again, the conversation I had with the retailer yesterday in his corn system that as one grower pointed out, having success. You know, a lot of people are hesitant to spray, you know, soil that didn't have any weeds up post emergence for corn. But that's the one grower that's pointing to can't find any weeds right now because he did spray early.

**[20:52] Bob Scott**

I know we're talking about we're talking about the Midwest and we're talking about beans and corn. But, you know, we've got rice down here and it's almost become mandatory to try to spray dirt, as Jason said. And do overlapping residuals because the alternative is weeds that we're running out of options for to control duty resistance and and we just have some weeds that are difficult to control anyways if you miss them, like crabgrass and things like that that we don't really have good answers for. So I think having that adoption in rice has probably helped us.

**[21:28] Jason Norsworthy**

So what about water hemp, Palmer? I know you've got you have access to both. I've actually starting to get access to some water hemp as well as Palmer and I've, we've summarize Byran and we've done some work to across I know early on with USB looking at residual herbicides, post emergence herbicides, etc. Do you see any differences in the control of those two weeds.

**[21:58] Bryan Young**

In control of specific herbicides or management strategies?

**[22:02] Jason Norsworthy**

Let's just talk specific specific herbicides.

**[22:08] Bryan Young**

Okay. My first experience with Palmer in terms of trying to control it was down in Southern Illinois and we're doing an application study with glyphosate and different drift reduction nozzles, drift control agents, and we smoked everything in that site. I said, Boy, that's Palmer hammering. It's easy to kill. The

one key point is it was still sensitive to glyphosate, so when sensitive, it was easier to kill than water hemp. But now with glyphosate resistance in both species, well, yeah, water hemp and Palmer both a bear. Probably Palmer even more so because the alternative herbicides, you have to hit them at the right stage, couple inches, maybe. Otherwise you're going to miss it and regrow from it. So Palmer's a little bit more difficult because it's so time is of the essence and you end up a lot of regrowth, more so than what you might with water hemp.

**[23:00] Jason Norsworthy**

You guys use a lot of, I would say sulfentrazone is probably your go to PPO, whereas in the Mid-South our go to PPO is flumioxazin, Valor. My experience has been that Valor is stronger on Palmer. Now, I'm not saying versus water hemp but it's it's definitely stronger. Sulfentrazone for us appears to be much much weaker on Palmer and I also know one of the other issues we run into with sulfentrazone is we grow a crop down here called cotton on occasion and the plant back really really restricts us on that. But I'm of the opinion that Valor is a much better product on Palmer. What about the chloracetamides? Do you see any differences there? Group 15, let's just say group 15 herbicides.

**[23:59] Bryan Young**

I would say in terms of the group 15 commercially, I guess if they vote with their pocketbook, I guess Zidua or pyroxasulfone is a winner there in terms of length of residual.

**[24:09] Jason Norsworthy**

I'd agree.

**[24:11] Bryan Young**

And so, you know, after that, you have, you know, it's a toss up depends what rate you use Metolachlor is in there some will claim our Outlook or Dimenthenamid is in that area but I get pretty inconsistent results with that frankly. And then you have acetochlor. Well, that one's highly variable, too. Let's just say that I would agree with getting out of that encapsulation and getting it into the soil solution to be active. It's pretty inconsistent. So, you know, it seems like metolachlor and pryoxasulfone are common ones being used or trusted. But it's a cost issue for some of them. They might rather see the activity out of pryoxasulfone, but they'd rather spend the money on metolachlor.

**[25:02] Jason Norsworthy**

Yeah, it's definitely cheaper. What about cover crops? I know. That's something else that we've got that we're doing work on through the United Soybean Board. How widely adopted are cover crops in the Midwest?

**[25:17] Bryan Young**

Well, it varies quite a bit by state. And I think what two years ago we were like one and a half million acres out of our 11 million acres of corn and soybeans, something like that. So maybe 10% of the yeah, 10% or so of the acres. We're up, I think some reports had us up to 2 million acres with some level of cover crop. But those are being estimated by do you have uniform green fields using satellite images. That's how those estimates are being made. Well, could be a wheat crop. So, you know, I don't know how much you can trust some of those numbers, but we're definitely using a lot of cover crops, a lot of cereal rye, which is good. We still have some annual ryegrass that gets out of control on them when they



use it as a cover crop and then it becomes a weed for them in year two, three, four, five, six, seven, eight, nine, ten because they don't treat it as a weed, it's not their target. And they end up missing it, I'm talking about somebody very close to where my small personal farm is.

**[26:24] Jason Norsworthy**

Well, I can assure you one thing, ryegrass is a weed here in the Mid-South. I mean, it's every bit of its resistant to glyphosate as well as a wide assortment of herbicides. And so when we talk when we talk cover crops, we're talking cereal rye. There's no confusion between it and ryegrass.

**[26:43] Bryan Young**

Yeah. So I just shared some results earlier this afternoon with our Indiana Soybean Alliance and it involves cover crops with some cereal rye and you know, the soybean and the cereal rye add yellow color to it. And it also had one growth stage, it was V2 instead of V3, planted on the same day as no cover crop. And the comment, feedback I had is, well, you know, 100 pounds ammonium sulfate because that's a sulfur deficiency. Like, well, that's another layer of management that makes it a little bit more challenging, you know, because that's probably going to be a lesson learned and a year that hopefully don't repeat that problem. But there's extra costs for that as well. If just because a cover crop, we're seeing that sulfur deficiency because ammonium or nitrogen being tied up and that influences your sulfur.

**[27:35] Jason Norsworthy**

So so you know, I think we both would agree that cover crops are extremely valuable from a weed management standpoint. I'm not going to sit here and say that they're as consistent as our herbicides, but again, they take selection pressure off of the herbicides. How do we get more adoption of cover crops? What's it going to take to get over the hump? And I mean, because you basically just said a very small percentage of the total acres have cover crops on them. How do we get greater adoption? And in doing so, reduce the selection that's currently on our herbicides?

**[28:16] Bryan Young**

You know, well, it's been frustrating. Trying to get better adoption of what we call our best management practices, whether in state of Indiana or other states. And the simple thing is, as growers gravitate towards practices that are simple to implement and cover, crops are not simple. If it if they could automate that somehow, if they could just spend money and automatically it got done. But managing a cover crop takes you know a person out there making decisions and labor and personnel are kind of a bottleneck in farm operations these days. To have somebody you trust be helping guide you and do things. If extra steps are involved or extra complexity, it's difficult to get adoption. So I don't know how we automate that. I don't think you can because essentially you're managing two crops, your primary cash crop and your cover crop, and that's just difficult to do now, maybe with drones, maybe we'll see more aerial seeding with drones. So we'll get some more timely establishment of cover crops in the fall, which is a limitation for us because of our later harvest, relatively speaking, compared to the Mid-South. You know, we might be able to get some seeding done in September that otherwise might have to wait till mid-November after we harvest our corn. So maybe drones will help in that regard, make it easier and maybe they're hiring it done. So it's not extra time commitment that they have to have on their end. So I think there's some technology that might help improve cover crop adoption moving forward. How quickly that happens, I don't know, but it will certainly help some.

**[29:55] Jason Norsworthy**

Speaking of technology, I know the two of us are also doing work on See and Spray. You know, I mean, that's a technology that's just really getting up and going. I think the future really lies around that type of technology. Targeted sprays of weeds. I was curious in your work, what are you seeing in terms of savings? And I'll just start, range of savings. What kind of savings are you seeing when you're actually using the See and Spray type technologies?

**[30:30] Bryan Young**

Well, I'll qualify that by any of my research that I consider to be viable in a See and Spray or targeted spray needs to have as strong a residual herbicide as possible so you don't go out with See and Spray and automatically start saving money. You have to have the right sort of residual and not a single active either. So I'll go back to my example where I was talking about where this four ounces of Zidua broke on water hemp. Well that same field area I have that Fierce MTZ and I'm going to do See and Spray at that site and I'm expecting I'm going to have we're going to spray maybe Monday if the weather cooperates. I'm anticipating maybe a 70 at least a 70% reduction in the foliar spray. That compared to the grower who uses a residual herbicide. You know, they're going to fail their broadcast application because the weeds got away on them from the start. So in that system, the pre herbicides are going to make the difference. And I think we can see, you know, up to 80% reduction, but it's probably going to take further refinement of the application system on the sprayer. How many nozzles are firing, the fan angles that they're using? So it's going to take some things that we're not going to see, you know, in 2024, maybe not even 2025, but it's going to take some time. And the one thing I would caution on is I see a lot of value beyond just the spray savings. A lot of people in marketing have said, well, that's our greatest benefit, let's sell it based off of the spray savings. I have a grower in southern Illinois that he sprayed in no till his field boundaries. It was paraquat and I think Metribuzin combination just to beat backs ome mares tail and he had a 30% reduction in how much paraquat he sprayed. So I think that's, you know, wouldn't the EPA be interested in a 30% reduction in the field margins?

**[32:30] Jason Norsworthy**

Oh, absolutely.

**[32:31] Bryan Young**

So, right. And if we can do that for other key herbicides that are going to be impacted, all of them will be impacted by the Endangered Species Act. But if it spraying just our borders with something like this, technology allows us to maintain our herbicide use in the field interiors. It goes well beyond a subscription fee of \$3 an acre or \$4 an acre. If we still maintain some of our tools for herbicides in the rest of the field, and I don't think that part's been focused on enough. It's all been about we need to reduce, you know, our first post emergence spray by 70%. I see the value go beyond that, especially when you start talking about dual tank systems and antagonism and residual herbicides. I see a lot more value in just reductions in spray.

**[33:20] Jason Norsworthy**

I agree with you completely. I mean, we've done some work. You've done some work on the antagonism side of things. It's just amazing what you can do with an auxin herbicide with even a graminicide, just the dual boom aspects of that. As you said, you know, we've done some work looking at off target movement of herbicides and yes, substantial, substantial reductions by being able to separate

herbicides, reduce the area sprayed and hence off target movement of those particular herbicides. So it's an exciting technology. I mean, my thoughts are that that technology is here to stay. I think that over the next 5 to 10 years, we're going to see everyone, I think, migrate to this type of technology. I think it's going to continue to be refined. It's just amazes me to see how quickly this technology is moving. I mean, I remember seven years ago the initial starts of what then was Blue River Technology. And today it's a John Deere See and Spray on 120 foot sprayer with dual tanks. So I think the future is extremely bright as it relates to the technology. I know we're kind of running out of time here. And with that, I want to Bob, I'm going to open it back – any question, any additional questions you have for for Byran?

**[34:42] Bob Scott**

No, Byran, I just wanted to tell you how much I appreciate you getting on here and letting our guys down here know what's going on up north. It's good to talk to you again.

**[34:54] Bryan Young**

All right. Yeah. Nice connect you guys again, too.

**[34:57] Jason Norsworthy**

So, Byran, I will close with I know that you've got a massive research program. You've got a lot of graduate students, you've got a lot of research going on. I'm just curious, out of all the things that you're working with this summer and you may not be able to talk about about all of them, but is there anything that just jumps out to you that says, man, I'm really, really excited about this. I'm excited about the future of this? Or you had a finding that you can share with our listeners.

**[35:26] Bryan Young**

Boy, I wish I could, but tell you the truth, you know, we've been working with some things that we had high hopes and we were told that we should have high hopes about what this technology or practice might bring. And ultimately, you know, the weather doesn't cooperate. Things don't go as planned. And, you know, it just isn't as quite effective as what somebody had hoped or what we had envisioned. And so I think that highlights that there is no silver bullet. We don't plan to have a silver bullet. It's going to take multiple tactics and you know, non-chemical and chemical. So unfortunately, you know, I'm testing some novel things, but nothing's a silver bullet. You know, they they get sold, I don't say oversold. Some aren't even being sold yet, but they they all need help. They're all part of the equation. They're not the answer.

**[36:22] Jason Norsworthy**

You know, I'll just tell you that I agree with you on that. In terms of my program, we're testing a lot of new chemistry, a lot of new tools. I've yet to find the easy button. The days of the 1996 Roundup ready I've yet to, me and you Bob, we'll never see that again. I think in our career, I think those days are all gone. It's a very complex system moving forward and folks hate complexity. But if we're going to win this war against these weeds, it's going to take a lot of tactics, I think, on top of each other for us to be successful.

**[37:01] Bryan Young**

Right. Well, to paraphrase Bob from something he said a while ago, you know, Palmer Amaranth doesn't give a darn about how complex your weed management program is.

**[37:13] Bob Scott**

It doesn't care. It doesn't care what weed scientists and farmers want to do either.

**[37:20] Bryan Young**

Right.

**[37:23] Jason Norsworthy**

Well, hey, Bryan, again, we really, really enjoyed having you on today. I hope our listeners again found your information to be very useful. I know I did. I've enjoyed having you as part of our Weeds AR Well podcast series and I want to thank our listeners for joining us today for this episode of The Weeds AR Wild podcast series on the Arkansas Row Crops Radio.

**[37:48] Intro/Outro**

Arkansas Row Crops Radio is a production of the University of Arkansas System Division of Agriculture. For more information, please contact your local county extension agent or visit [uaex.uada.edu](http://uaex.uada.edu).