Weeds AR Wild S3 Ep18. Cover Crops (9-15-23)

[00:01] Intro/Outro
Arkansas Row Crops Radio, providing up to date information and timely recommendations on row crop production in Arkansas.

[00:12] Tommy Butts
Welcome to the Weeds AR Wild podcast series as a part of Arkansas Row Crops Radio. My name is Tommy Butts, extension weed scientist for the University of Arkansas System Division of Agriculture. And thank you for joining us for another episode of the Weeds AR Wild podcast series. Today I have the privilege, I guess, of having Dr. Trent Roberts on. Trent, you want to say hi to everybody listening out there?

[00:37] Trent Roberts
Well, Tommy, I appreciate you having me on the podcast today, but I am getting a little tired of you treating me like dirt. I'm a soil scientist, not a dirt scientist. So let's just, let's start off on a good foot. Okay.

[00:52] Tommy Butts
Well, you know, I could have started off making fun of your fantasy football team, but I didn't do that. So, you know, that's a plus.

[00:57] Trent Roberts
I won week one, so I'm at least started in the right direction.

[01:02] Tommy Butts
It's all downhill from there, Trent, it's all downhill from there. So anyway, so today you know, I asked Trent to be on with me to discuss, you know, pretty hot button topic, you know, starting up right now really honestly and that's cover crops. So we're going to kind of cover a range of different things with them. I wanted Trent to be able to talk a little bit about, you know, some species selection and some of the maybe agronomic soil aspects. And then I'll add on some of the weed control stuff. But, you know, I guess just jumping right in. You know, one of the first things, Trent, I wanted to ask you or have you, you know, talk about was maybe a little bit just about what different cover crop species you recommend for different scenarios and maybe you know since we're kind of getting into the window, you know, hit on planning dates and that kind of stuff. So I guess I just say take it away from there.

[01:53] Trent Roberts
Okay. Sounds good. So my approach to cover crops has really shifted more towards, you know, cash crop goal, sorry, goal oriented selection. Right. So rather than just saying, oh, I'm going to plan a cover crop without a plan or any type of, you know, projected value, it's really about the more effort we put in to, right, selecting the cover crop and getting it established properly, the greater the benefits we're going to see on the other end. And I mean, really, we're trying to avoid catastrophes, right? We're trying to avoid those catastrophic, you know, crop failures and those types of things. So. Well, what I like to tell producers is start with your cash crop and work backwards. So if I start with like a soybean, you know, cash crop, why would I plant a cover crop before soybean? Well, I might be interested in weed

suppression. I might be interested in erosion control. I might be interested in, you know, increasing soil health and organic matter and those types of things. Okay. I know my cash crop. I know why I want to plant my cash crop. So now it's like, okay, what cover crop species are going to give me those things. Well, in that scenario, I'm going to be looking at winter cereals, right? So high biomass, low input. Right. Low cost. Because for most of these things we're trying to do, biomass is the name of the game. So whatever is going to allow me to generate the most biomass, the cheapest is really what I'm looking for. So going into soybean, going into broad leaves, I'm going to tend to look at those winter cereals to dominate the mix. Low cost, high biomass. Now, if I start to switch over into a cereal cash crop now, all of a sudden I'm probably going to want different things, right? I might still want weed suppression, I might still want erosion control. The chances are I want my nitrogen credits, right? And some of those types of things that I will need winter legumes for. So now we're talking Austrian winter pea, vetches, you know, clovers, those types of things. And any time we're thinking about cover crops, we want to keep that same mentality of the more we can diversify our rotation, the greater the benefit. So if I'm growing continuous corn, or I'm growing continuous rice, I know there are going to be pitfalls to that. Well, include your cover crop in that mindset, right? I don't want to go cereal, cereal, cereal. Right. Anything I can do to mix that up with a broadleaf and then a cereal or so on and so forth is going to be beneficial. But those are just kind of the main things I want people to start out with.

[04:41] Tommy Butts
So just kind of along those lines, you know, like you said, you know, go into a cereal crop, you want more of a legume, you know, that kind of thing. And I know there's been some data that we've had that showed, you know, particularly like, say, with cereal rye and you try and go to corn, you can see a pretty bad, you know, negative yield hit because of chemicals or other things, whatever's going on there. But that can be kind of detrimental. Have you seen that? There's a good mix, say, going to corn or rice, that you could still maybe have some of the cereal rye, but to a lesser percentage and it's okay to go to those? The main reason I ask is, you know, when we talk weed control, you know, cereal rye is is king when it comes to the wheat suppression side of things, you know, the legumes can help, but it's very limited in what their ground cover can be and how thick they are and how competitive they are with some of our weed species and so if we're going to like corn and we could still say maybe have a 50/50 mix, right, and you still get some cereal rye to compete out there that maybe would help. And we're not going to see the negative impacts on the yield of the crop that would help from our aspect. But if you're still going to see the negative impact on yield on the cash crop, then it's probably not worth it. So have you have you seen any of that where like a lower percentage works okay then?

[05:56] Trent Roberts
Yeah. So I think if, if I want to do a cover crop before corn, I definitely want a legume to dominate the mix. You know, I'm still unsure about what the true effects of cereal rye are before corn. But I will tell you this, that I think a lot of it is actually nutrient tie up. And what I mean by that is I think the cereal rye just scavenges all the plant available nutrients out of the soil and then it doesn't decompose. Right? It just sits there on the surface. So then when we're going into our corn crop, we're already extremely deficient in plant available nutrients. And that's why corn suffers so badly following cereal rye. And the only reason I say that is if I go behind black oats or barley or something like that, that doesn't have that perceived allelopathic effect. It it's still related to biomass. If I have this huge cereal biomass before corn, it ties up all these nutrients. And then the corn performs really, really poorly. But back to your question

specifically about blends, you know, like a 60/40 or something just slightly above 50/50 tends to work pretty well.

[07:14] Tommy Butts
And so 60 of the legume then and 40 of the..? Okay.

[07:18] Trent Roberts
Yeah. So 60 of our legume. The problem you run into right, is if your cereal isn't dominating the blend, you're going to have reduced ground cover. Right. Just period. And so I think we just have to understand that going into corn, we're trading, you know, nitrogen credits, we're trading those benefits for ground cover and weed suppression. But the problem is, is the ground cover and weed suppression have net negative benefits that we're trying to avoid also. But yeah, I mean, somewhere between 60 to 70% legume and 30 to 40% winter cereal, I think is is a good mix before corn. But it just kind of goes back to what your what your interests are. A lot of times we plant pure legumes before it, just knowing that that residue is going to disappear very rapidly and that we need to be on top of our weed management.

[08:18] Tommy Butts
No, that's awesome. And thanks for bringing up the nutrient tie up thing. I hadn't heard that before. So that's pretty interesting to me that that's maybe a bigger piece of the pie actually to help explain that. So and that makes a lot of sense. So that's interesting. Thanks. The other quick question, I guess I had to while we're just kind of on this topic or maybe it's just a discussion point where that more than anything, but I know sometimes, you know, we go into cover crops with a plan of having it as a cover crop or and terminate it, whatever else. You know, there's some governmental funds to some of these things, but then all of a sudden, like, say, wheat, you know, we're going to use wheat as our cover crop, but then all of a sudden, you know, that next spring comes and wheat prices look good and our wheat crop looks good, and we take it to, you know, we're like, all right, we're going to switch this up and we're going to do it as a wheat grain crop now and just plant double crop soybeans or something. But I know that can have some implications on if we're in some of those governmental programs and things like that. Do you want to just touch on, you know, like cover crops versus making them an actual cash crop, you know, versus some of those governmental type things? Can you just hit on that a little bit?

[09:25] Trent Roberts
Yeah. So it it is a little bit tricky because the way that, you know, typically the NRCS defines a cover crop as essentially a crop that's planted but not harvested. But there's a little nuance there because I think in some cases you could harvest it as a forage, but not a grain crop. So there's still some layers there to what you can do.

[09:49] Tommy Butts
Is that so it's like is that sometimes is it all the time? Because I've heard too before that like sometimes you get caught on that too, where you can't even like graze it or anything else. So as that just kind of hit or hit or miss depending on the specific program.

[10:03] Trent Roberts
Well, and I think sometimes it varies state to state because, you know, I think at the state level and, you know, don't quote me on this because I'm not necessarily an expert on this aspect of it. But I do think states have some flexibility. Right. And in what programs they offer and a little bit on the interpretation of how you implement those programs. So I do think there is some variability just from state to state

within similar programs. But I would definitely say, right, any time you're going to do this, you want to start with your district conservation office or your county conservation office to get the details. But, you know, one of the big things that I would say is the intent of a cover crop is a non-harvested, right, crop planted between your cash crops. And so if we grow wheat for grain, that's obviously not a cover crop. The other thing that's kind of wiggled its way into this is how you manage the cover crop is important now, right? So early on with some of these programs, as long as you planted the cover crop, you were covered, right. How you managed it in terms of time, termination or timing or any of that stuff didn't really matter. But the evolution of this process, you know, I think a lot of times now, in order to take full advantage of these programs, you really also have to remove tillage from your production practices. And ideally to get the full benefit out of the cover crop, you've got to take tillage out of the production system because it's kind of like, you know, robbing Peter to pay Paul kind of thing. If I plant a cover crop, but then I till it up, it's like I'm shooting myself in the foot because all the benefits I got from the cover crop, I'm just reversing with the tillage. So many of these programs now, you know, they want to see a certain amount of residue in the field at crop planting to basically ensure that not only did you plant the cover crop, but that you used it for its intended purpose. Right. But definitely you want to check with your local, you know, in our NRCS offices to make sure you're fully aware of what the expectations are of your cover crop implementation program.

[12:26] Tommy Butts

That's good information. Thanks. Since we since you were mentioning, you know, termination a little bit there, tillage versus other methods, you know, from a weed scientist perspective, you know, we generally, like you said, the full benefits of cover crops are observed when you when you don't till it in and we kill it with a herbicide and we have a whole lot of residue there, you know, going into the cash crop. And I can vary from species to species on what's best to kill each species. And some are definitely more difficult than others to kill. You know, cereal rye is a great one from a weed science perspective because we can kill it very easily in the spring with with, you know, with a good shot of glyphosate, you know, other things like Austrian Winter Pea. I know I've had a lot of guys struggle to really get that under control. Well, you know, they can do okay, but but to fully kill it off can be somewhat of a challenge. You know, rapeseed is a real tough one to kill in the spring. We don't have a lot of great options there to try and kill it. You know, Vetch, we talked a little bit about vetch yesterday is one of those things where to some people are like, oh, yeah, I'll smoke it. It won't be a problem. And then other people, that's almost a curse word to say, you know, we're planting vetch, you know, particularly if they've been wheat growers in the past and are still wheat growers. So so some of these can be kind of challenging on that front. And so I guess I don't have a I don't have a great advice on the herbicide front, you know, for people to manage all of their species. I think the biggest thing I'd say a couple aspects, you know, we do have a section in our MP 44 that kind of gets overlooked oftentimes it's in our burn down table where we have several common cover crop species and different burn down mixtures and their effectiveness on those crops. So if you're if you have a cover crop out there, you know, feel free to check out that that table. It's right at the front again, right in front of our burn down section and you can get a rough idea and some of the best mixes, herbicide mixes to kill off some of those different cover crop species. But the second aspect of that too is, you know, I would just recommend, you know, you might try something in small acreage first and see how you can kill it in the spring and then go from there to bigger and bigger acreages from there on, if you find something is just real troublesome to kill, don't use it in the future, right? Avoid it in the future. You know, find things that you can manage successfully on your farm and go from there because again too, in the spring, sometimes the weed size or I shouldn't say weed size, but

the cover crop size or the timing can vary things a lot to whether it starts flowering or it's not flowering yet or how long we've let it grow. And you know, how long of a time before we plant the actual cash crop. Things like that can all affect to how well we look at at that termination part. So I guess there's a lot of factors that go into it and I'd say it's kind of a guess and test best type thing at this point with especially with some of the mixes, when we get some different legumes and things in there that can be troublesome to kill. And I guess just to add on to that, you know, the tillage part, you know, tillage can work in some aspects, you know, for managing our, you know, for terminating a cover crop. But there's so many other negative benefits, not negative benefits, negative aspects to that with the cover crop that I just don't see that as a super viable option in most of our instances, you know, I'd rather terminate it with a herbicide close to planting, and that helps us from a weed suppression standpoint as well as a lot of the other things that you've mentioned, Trent, between erosion or other things. So I think I would avoid tillage in most aspects. Now I know I've had a couple of calls of guys that are going to do it no matter what. You know, they're still going to till it up. And so the only thing that I've thrown out there to guys and you can correct me on this trend or maybe you'll have some other tips, but if they're going to till it as far as the species selection goes, one of the things I actually tell guys and that maybe is worthwhile to plant in there is a tillage radish. And the reason I mention tillage radish for guys is because there's been some research to show that if you till a tillage radish up, it actually has some nematode control to it. It's got, I think we talked about it's like a cyanide derivative or something you mentioned yesterday where you can actually get some management of nematodes out there by tilling it up, whereas you don't vice versa if you don't till it. So if guys are just hell bent on tilling up their cover crop, that's kind of one species that I like to mention as a possibility to throw in that mix then. Is there any other recommendations you have on that front, if they're for sure going to, you know, till up the field?

[17:00] Trent Roberts
Yeah. I mean, if they're if they're dead set, that they're going to till the field, then to me, especially for our cereal cash crops, plant a legume. And the reason is is if I plant legume and I let it grow to flowering you know, I could get 2 or 300 pounds worth of nitrogen credits. And so if I'm going to till it, then legumes are great because I get those nitrogen credits even quicker. So you know that that's a good option. But, you know, going back to the tillage radish thing, you know, another good or not good but particular aspect about tillage radishes, if you plant them early and by early, I'm talking, you know, anywhere from late August through, you know, mid-September to early October. So a lot of times they'll get big enough that they'll winter kill. And, you know, that makes it a little easier to terminate or till or do whatever you want with them. But once you start to get past October 1st, they're not going to winter kill. And so sometimes, you know, chemical termination can be can be a concern with tillage radish because it's similar to rape and some of those types, you know, canola, in terms of how easy it is to kill. But yeah, there's been a lot of work and I think even Dr. Norsworthy did some work when he was in South Carolina looking at different mustards or radishes. And I think they when they decompose, they produce like an isocyanate or something like that that can be used for fumigation or nematode control or even weed suppression. So there's a lot of work out there that shows that. So definitely anything you can do to break up that tillage radish residue and then incorporate it to decompose, you know, just think about using like Preen or something like that, you know, that's kind of what you're doing with that, with that residue. But I actually going to ask you a question, Tommy. So, you know, a lot of times I get asked how terminating cover crops falls into herbicide labels and those types of things. So how exactly is that managed? I mean, is it always just if a herbicide's labeled for a burn down, then it's okay to use on cover crops or just how how do producers need to approach that?

[19:20] Tommy Butts
So that's honestly a great question. And I, I don't know if I have a for sure solid answer to it, you know, but the way I've always viewed it is, is that like once you, at that point, you know, a cover crop almost just basically becomes a weed species that we're trying to kill. Right. And so it basically factors into, like you mentioned, if it's got a burn down label, you're not applying it. It's not like you're applying it to a crop right now. It's basically falling into a weed category that you are trying to kill. And so anything that that has a burned down label that will kill it, it's like you're just controlling weed species out there. Basically. That's the way I've always kind of understood it. Now, you know, a lot of those labels can be interpretable, different ways so that we'll see, you know, but that's the way I've always interpreted it at that point is it's yeah. Anything that's got a burn down label that will work on it, it's just like you're spraying a field of weeds that, you know, winter animals that grew all winter, you know, and you're now trying to kill them all. So that's the way I see it.

[20:27] Trent Roberts
And, you know, in terms of termination timing, you know, it's certainly one of those things. Most of these cover crops are going to break dormancy, you know, late February, early March. And most of the benefits that we get come, like I said, from increased biomass. But there's also the longer you let it grow, the harder it is to kill, the harder it is to plant into. Right. So there's this constant tradeoff with finding that perfect time of, okay, if I let it grow to this stage, I'm getting weed suppression, I'm getting surface residue, I'm getting organic matter, nitrogen credits. But I also don't have this, you know, three or four inch thick mat that I'm trying to plant through or so on and so forth. So that's definitely a situation where, you know, a producer has to make the decision. But I think more often than not, it will, what are his planting capabilities. Right. Because if you don't have equipment planting to a high residue situation, then you better be thinking about terminating your cover crop fairly early. You know, if you're set up for no till or high residue planting management, well, then I would let it grow as long as possible. Right. And then you're more just talking about, okay, what's my optimum planting date for my cash crop?

[21:53] Tommy Butts
Yeah, I hundred percent agree. You know, it's kind of like I mean, it's like you started off this whole conversation with it's you need a whole plan when you're dealing with cover crops right from start to finish. What's your plan? What's your goal at the end of the day? Because the same holds true for the weed control aspects with them, right? Like, you know, you mentioned the high biomass for everything else. It's the same for weed control. The longer we can keep that biomass out there, that groundcover out there, create that thick mat out there, the better off we are on the weed control front. But if you can't plant into that, you know, or you're, you know, you're running into poor vigor cultivars for some reason, right? Early season vigor or something. They struggle to get up through it. You know, that's that's the secondary aspects of that, that's you're losing some benefits there from it. So kind of trying to make that whole plan in advance, understand what you're doing is really important and while we're on that aspect. I figure I should just mention a little bit too about the weed control, you know, part of those cover crops. So, you know, obviously a lot of times we're trying to or the big push, I guess, in past years has been to plant cover crops for battling our, you know, nasty pig weeds like we're always battling in the spring. And I will say cover crops can help there. But I wouldn't look at it as a, as a, you know, a life saver, end all, be all like, you know, with those summer annuals, and especially if you don't have the equipment to plant through high residue, you're going to have open space out there in the field. Those pig weeds are going to find a way to get out, especially later emerging ones, you know, we start talking June, July,

that kind of thing. You're going to have escapes later on in the season. Now, it may be a lot less than in a normal year when you don't have a cover crop and everything else. But it's not going to be 100%. You're not dealing with pig weeds ever again. But another big aspect to pig weeds that that we are not paying weeds to cover crops that we've started to see in some other states research is it can be really good at managing ryegrass in the fall. So if we get especially like cereal rye again, if we can get that out in the fall, at least ahead of ryegrass emergence or if they're emerging about the same time somewhere in there, you know, we're seeing some really good reductions in in that annual ryegrass weed population out there and seed production. And so there could be some really big benefits there. And I'm not going to touch on that a whole lot. You know, spoiler alert, Tom is going to have a podcast next week with a few special guests to talk about ryegrass specifically. And that's going to be a topic they hit on. But again, there's more benefits than just those summer annual pig weeds or other things in the spring. We can manage some of that fall, you know, that fall, winter annual stuff that can be so challenging. And it helps us then that following year and then we get some added benefits if we let them grow a little longer in that first flush of summer annual weeds. So there's benefits on multiple fronts there that I wanted to mention. It's not just pig weeds like we talk about all the time. It helps in a multitude of fashions from different weed species.

[24:52] Trent Roberts
Well and so along those lines though, I mean if, if we're planting like cereal rye in September through mid-October, we should be ahead of ryegrass emergence, right?

[25:08] Tommy Butts
Weather, you know, it's all a little weather dependent, but yet normal in what's a normal year anymore. But in a normal year, yeah, you're right. Where we should be out in front of that ryegrass and we should be in good shape, I guess just along those lines, Trent, you know, when are you when are you typically recommended for guys to, you know, try and get their cover crops planted? I mean, is right now optimum? Is it normally that October one, the 15th window, that's optimum. What do you normally say is the best time to get out there?

[25:38] Trent Roberts
Well, so if we're looking at our winter cereals or winter legumes, I would say the 1st of September through early November, depending on what part of the state you're in, is is an optimal window. Now or we'll say a window of opportunity. I would say optimal for most places is going to be September 15th through October 15th to November 1st. Now, any time you start to put a mustard so radish, turnip, kale, any of that in the mix, they need to be planted earlier. So their optimum timing is going to be more mid-October through the OR sorry, mid-August through the 1st of October, just because with our mustards, the bulk of their growth occurs in the fall and then all they really do in the spring is flower, right? Where if we look at our winter cereals and our winter legumes, they establish in the fall, but the bulk of their biomass is actually in the spring. So we want to plant those mustards earlier so that they get that biomass production. But really, I think the other thing you have to think about is right now, you know, if you were to go put a cover crop seed in a lot of places, it wouldn't germinate till we got a rain. And so there you're kind of in that, you know, unknown area of do I wait for a rain or do I go ahead and do it now? And in my experience, I would plant a cover crop seed the minute you're able, right? So if I've finished corn harvest and I'm ready, I would go ahead and plant my cover crops seed because when it does rain, it's going to emerge. You're going to be fine. So I think I plant it when I'm able and wait for the rain because if I wait for the rain, chances are it's going to start raining and I'm never going to be able to

get it established. So as far as timing mustards earlier, you know, winter legumes, winter cereals are better suited for later. The window of opportunity for my cereals and legumes is much wider and you know, easily early to mid September through early to mid November. For our winter cereals and winter legumes.

[27:54] Tommy Butts
That makes a lot of sense. So it's good timing for us to be doing this because we're kind of right in the middle of the planting window. So I like it.

[28:01] Trent Roberts
Well, and one one thing I wanted to make sure and bring up on this whole ryegrass discussion, you know, a lot of other states and a lot of other places recommend annual ryegrass as a cover crop. Right? We want to avoid that. So we want to make that very, very clear that, you know, the state of Arkansas, we don't have a prohibited cover crop list, but if we did, it would be on there.

[28:28] Tommy Butts
Yeah, that would be number one. Highlighted, bolded do not do because yeah it's it's you're just planting a resistant weed basically out there is what we're doing. So yeah. Do not use that as a, as a cover crop in our row crop field. It's going to be ugly.

[28:41] Trent Roberts
So I've got another question for you, Tommy.

[28:45] Tommy Butts
No, you're not allowed, no.

[28:47] Trent Roberts
Come on. You got to ask me questions. I'm going to throw some back at you.

[28:53] Tommy Butts
That's what happens when you're the guest and I'm the host. The host doesn't have to answer questions.

[28:57] Trent Roberts
I guess I have to start a podcast and bring you on it so I can ask you questions. So from a weed management perspective, how would you say cover crops fit into the starting clean approach? So, you know, I think a major hurdle that a lot of our producers can't get over is the visual ugliness of cover crops and biomass and all that stuff during the winter or when they're trying to plant. So just from an integrated weed management or, you know, just that approach, how do cover crops that into the “start clean”, you know kind of message that you all promote.

[29:45] Tommy Butts
Yeah, that's a great question. And you know, I think it's it's honestly a little bit of a complicated answer because I think it's a little bit dependent on our on our species that we're talking about. Again. Right. So when we talk about, let's say cereal, rye, you know, I look at it as starting clean because you don't have these other real problematic weeds that we're dealing with. Right. It should be pretty much holding back horse weed or mare's tail in the spring. It's going to stop those real bad, problematic pig weeds early. It should be suppressing back ryegrass. A lot of those things that we just struggle to kill, it's holding a lot of

that back and so it's and it and then cereal rye counter to that is relatively easy to kill right we're have really good success at killing it and so to me it's starting clean because we have something that is very easy to kill, that has suppressed a whole lot of our other problematic weeds. And so it's it's, you know, we've battled the problematic weeds and we've got something that we can terminate very easily and plant into. And it's no big deal. Now, like I said, it can be a little bit counterintuitive when you start thinking of some of these things we mentioned before, like, say, the rapeseed or the tillage radish, if we plant too late, like you mentioned, or even the Austrian winter pea, we've had some troubles, you know, now all of a sudden, if you're struggling to kill some of that a little bit, then it starts going against a little bit of our starting clean aspect in some situations. Again, not all situations, but in some situations now it's almost like we do have some out there where we've created a problem for ourselves. So I think it goes all back to you making a plan and that there with cover crops there is no one size fits all type thing, right? You got to figure out what works on your operation, what you have success at controlling and what you know, what we talked about vetch before, right? Some guys don't care at all about the vetch because they've never had to worry about killing it. Other guys that grow a lot of wheat hate it. Well, that's fine then. The wheat growers just don't plant vetch, go a different direction. The other ones, if you don't care and you can manage it in other ways because you don't have a wheat crop out there ever boom than your golden right. You can make the decisions based on some things like that. So to kind of circle back, I'd say again, it's a little bit species dependent, but in my book it's, it's, it's still fit into the starting clean message because most of the time we're planting something that we can terminate very easily or is about to die off anyway due to its life cycle. And we're stopping a lot of our other problematic weeds that are much, much worse in that scenario.

[32:18] Trent Roberts
Well, no, I mean, because, you know, that that's something that I think right when we're talking about starting clean, it's in regards to weeds. Right. So anything we can do to eliminate or prevent that weeds when we start, right, our cash crop is what we're looking for. The last thing I was going to mention on termination timing is, you know, with most of these species, when we get to flowering or bloom is when we have maximum residue production. So after that point, really all we're generating is seed, right? So, you know, if I had a final time of when I wanted to initiate termination for anything, it would be the onset of flowering. So whether it's cereal rye or a legume or whatever, when you start to see flowers or you get to boot right, or fluorescence emergence, that's when we want to terminate. Because at that point you've generated all the leaves, all the stalks right, all the stems that you're going to produce. So after that point, you're not getting any benefit. So to me, that's when we want to try to terminate as a final time.

[33:31] Tommy Butts
Well, that's a great point, even from like the weed science perspective, too, because once something goes to flowering, it's much more difficult to kill, right? Like when you think about a systemic herbicide, say, glyphosate, if something's flowering and you spray that systemic herbicide on it, it's no longer going to like a growing point to kill a plant. It's going to the seed head that's being developed and the flowers that are being developed. And so it gets a whole lot tougher to truly kill that plant because it's getting dumped into different sinks that aren't really necessarily a growing point or that kind of thing. So that that makes it that much more challenging too, to control. If you get past that point with a lot of our herbicides and even with, you know, other methods of killing or termination, it just gets much more difficult when those plants are that big and they've moved into reproductive and they're no longer

focused on the growth because. They've changed their whole mindset as a plant and on what they're trying to do, and it gets much more difficult to actually fully terminate them. So that's you know, that's a great point, not only from the biomass standpoint, but just also from the ease of termination. From a weed science standpoint. It's the same boat there.

[34:38] Trent Roberts
With cereals I always kind of say flag leaf emergence. I mean, do you think that's okay or is that too late?

[34:47] Tommy Butts
For most of it? I think that's fine. You know, again, some species can be a little bit more varying in their tolerance to some of our herbicides. And so the you know, you can run into some troubles depending on the size and everything else and what you're using to terminate it. Right. Like, you know, a ground rig or a plane or what spray volume or what droplet size, you know, all that kind of comes into play then and every time, anytime something gets bigger and closer to that reproductive stage, you get, you know, you're edging and edging a little bit closer to having trouble. So, you know, generally speaking, yeah, I think you're in good shape as long as that, you know, boot leaf is out, but you're not anywhere past that. You should be in pretty good shape still there, especially with something like cereal, rye again. I mean, that should be pretty easy to kill still at that point.

[35:34] Trent Roberts
Sounds good.

[35:35] Tommy Butts
Yeah. Did you have, I think that pretty much hit on a bunch of my topics. Did you have anything left to mention there, Trent?

[35:41] Trent Roberts
The only other thing would be, you know, like seeding rate? So just generically, you know, we provide kind of a establish practices and seeding rates for common cover crops. And you know, a lot of times when I'm setting those guidelines or those seeding rates, I'm going for, you know, kind of optimizing agronomic benefits as well as reducing costs. So once again, I'm going back to that mindset of I want to try to optimize biomass production for the lowest cost possible. And so for instance, like for cereal rye, we would recommend anywhere from 35 to 50 pounds of seed per acre, you know, drilled as a cover crop, you know, depending on the time of year and the planting conditions. But I would just remind people, you know, that's definitely on the lower end. So if you're really targeting like cereal rye planting for weed suppression, you know, you want to be on that higher end if not higher because, you know, I think a lot of the work that Dr. Norsworthy has done is if you're just doing true weed suppression, you know, you want a higher seeding rate of cereal rye whereas our rates, right, are more targeted just to cost and agronomic. So just another thing to keep in mind, you know, we provide a range of seeding rates, but ours are probably going to be on the lower end of what you would want for weed suppression.

[37:09] Tommy Butts
And I know you mentioned you have that little fact sheet publication, whatever you want to call it, where where can we find that at?

[37:16] Trent Roberts
Well, so a lot of times we just posted on the Row Crops blog and if you have a better place to post it, I'd be happy to, you know, do that. It's just it, you know, if you put it on the soybean page, right, you can't you can't find it unless you're looking at soybean. So I just try to put it on the Row Crops blog, which I just updated it. So I'm going to try to get it posted in the next day or two, but I'm sure you could go find the one for 22. Still on the Road Crops blog. And it hasn't changed. But. But that's where it's always posted. Is the Arkansas Row Crops blog.

[37:56] Tommy Butts
Perfect. Awesome. Okay, now that's good to know because that's an easy Google search, at least if nothing else too. So cool. Had one more question there based on oh I know the seeding rates. So you mentioned like, you know your seeding rates guide, you know, maybe a little bit less than what we would typically want for weed suppression kind of thing. Could you also just hit on real quick then to the blends, right? So like, you know, you've got your 30 to 50 pound recommendation for cereal rye if you all of a sudden do a cereal rye and, you know, winter pea mix or whatever it is, how do you, what do you do to digest your seeding rates then for those mixes you want to hit on that quick?

[38:33] Trent Roberts
Yeah. So typically if we're doing a blend, we just want the weights of the individual cover crops to basically reflect percentage of a single species. Right? So if I did a 50/50, let's say cereal, rye, Austrian winter pea blend, they're single species rate let's just say it's 50 pounds per acre. So if I'm doing a 50/50 blend, I would want 25 pounds of cereal rye. Right, which is 50% if it's single seeded. Right. And I would do 25 pounds of Austrian winter pea. Right, which is 50% of it's single species rate. So when I put those together, it gets a little more complicated, right? When we go to those small seeded things like clovers batches, mustard with the same type of approach applied. So if I was doing a 50/50 cereal, right, like hairy vetch, well, 50% of 50 pounds of cereal rye is still my 25, but my hairy vetch number is now 20 pounds as a single species. So if I did 50% of that, it would be ten. So my mix would be 25 pounds of cereal rye, 10 pounds of hairy vetch to get that 50/50 blend.

[39:47] Tommy Butts
Yeah, perfect. Okay, now, and that makes sense. I just. I wanted to cover that a little bit, too, and make sure it wasn't other some other fancy calculation that you invented on your end.

[39:57] Trent Roberts
That's about as complicated as I get Tommy. If we do math harder than that. I'm. I'm out.

[40:04] Tommy Butts
Let me tell you, if I run out of fingers, I'm done with math. So, you know, I'm pretty limited on that front, too, but. Well, awesome. Like I said, I think that covered all my topics and you know, do you have anything else? Last minute things you wanted to mention?

[40:18] Trent Roberts
No, just reiterate the fact that, you know, the more you plan and the more you have a goal oriented approach, the more successful you're going to be, right? I mean, don't just plant a cover crop because you're getting a payment. Don't just plant a cover crop because it's the hot thing. I mean, you have a goal in mind. Make a plan, execute the plan and the benefits that you get I think you'll be happy with.

[40:44] Tommy Butts
That's awesome. I like it. That's a good ending note to have. So with that, I did want to just thank you for joining today. I want to say thanks to all our listeners out there for the continued support of the Weeds AR Wild podcast series. We've had a lot of people reach out to to Tom and I and tell us, you know, how much they enjoy it. And they're getting good information. So please continue to listen. We appreciate that. You know, also thank you to to all of our funding sources, you know, with a lot of, you know, our our Arkansas commodity boards and USDA and other sources out there, you know, we wouldn't be able to do the research to generate some of this stuff as well as have the opportunity to do these extension events. So thank you to to all of our funding sources as well. And with that, you know, I think, you know, I'd wrap it up unless you got any last minute thank you's, too. You want to say just thank you to me for being such a great guy to work with.

[41:33] Trent Roberts
Just a gracious host. I mean, you know, most people forget about us dirt dubers, dirt monkeys, whatever you want to call us. So, you know, anytime we're invited to talk, we really appreciate it. I just hope you actually post this right. I think you may listen to it and go, oh, that was a bad idea.

[41:51] Tommy Butts
We'll see. I may just cut out all of your speaking parts and it's just me talking to myself. So we'll see how that goes.

[41:58] Trent Roberts
Sounds great. I mean, probably, probably be a high rated podcast.

[42:02] Tommy Butts
Yeah, there you go. Thanks again for joining us. And with that, thanks for joining us for this episode of The Weeds AR Wild podcast series on Arkansas Row Crops Radio.

[42:15] Intro/Outro
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