# GRDC VIDEO or PODCAST TRANSCRIPT

**Risks of pre-emergent herbicide degradation when dry sowing**

[00:00:12] **Hilary Sims** Hi there, I'm Hilary Sims. The Bureau of Meteorology is forecasting a dry start to Western Australia's 2024 growing season. It's a prediction that seeing many growers kick into gear early with dry seeding. But without the knock down herbicide opportunity, growers are relying heavily on their pre-emergent herbicide choice to remove weeds from the system after the breaking rain. In this podcast, we hear from Dr Mike Ashworth on the latest pre-emergent herbicide degradation research and how to set up robust farming systems to deal with dry years without the hangover of a large weed seedbank into the future. But first, we speak with Farmanco precision ag and agronomy consultant Blake O'Meagher for his take on the season ahead and his recommendations for growers. Here's Blake.

[00:01:02] **Blake O'Meagher** We're starting to really kick into gear with seeding around the state, obviously under dry conditions, so seeing a lot of dust being kicked around. But it's mindful that we're trying to fit in logistically where we can continue to start seeding and follow through with our seeding programs. So a lot of the state was started to see that progression into seeding happening now. And we're just being mindful of obviously some of the parameters around what that seeding dry entails and how we best manage it.

[00:01:29] **Hilary Sims** And Blake, why is it important for these growers to be mindful of their pre-emergent choice when seeding?

[00:01:34] **Blake O'Meagher** Obviously under dry seeding conditions, it's not generally ideal in terms of a lot of herbicide applications, especially with that prime chemistry. So understanding obviously what affects play in place with that pre-emergent options with dry seeding and how long we anticipate that sort of herbicide to be there under these drying conditions is definitely something obviously, we need to take into consideration when we look at, I guess, strategies for prolonged sort of dry seeding programs. So certain herbicides will react differently under certain degrading conditions, potentially with the dry, whether or not it's between some available moisture they might start to degrade or between soil microbes etc. This sort of puts affect on obviously how the efficacy of that herbicide works. So when we start talking about obviously our target weed control, that's probably our primary goal with obviously herbicide applications and that's all cost relative. So expenses outlayed with with our herbicide options we obviously want to get the best bang for buck. But we just need to be cognitive of what conditions they're going into, how they persist and then what our alternatives are. So starting to create strategies around dry outlooks, especially with guys that have been a bit more prompted with logistics to start seeding earlier in the seasons.

[00:02:46] **Hilary Sims** So what would your key messages be for those growers that are in the process of seeding now, or about to commence their program?

[00:02:52] **Blake O'Meagher** Key messages are probably so just be wary of what herbicides you are using. The strategies in terms of maximising its efficiency, whether or not it's in increasing rates with what we're allowed to push rates to, or looking at alternative options based on the discussions that we generally have with when we look at herbicide degradation under dry. What that might look like in 2 to 3 weeks. So just being mindful of those choices and then obviously where we can change herbicide options around and then look at some strategies, post em as well. So just be mindful of our options. So I think most guys are persisting with the seeding once we start with generally continue to go and be prepared to make decisions on the fly.

[00:03:31] **Hilary Sims** So which pre-emergent herbicides and other weed control tactics are most suited to a dry start? Well, my next guest has the answer. Dr Mike Ashworth is a research agronomist with the Australian Herbicide Resistance Initiative (AHRI), based at the University of Western Australia. He recently led a GRDC investment on annual ryegrass management in wheat that determined certain pre-em stand-alone products and mixes are more residual than others. Mike joins me now to share these findings, and he starts by describing the trial setup.

[00:04:08] **Dr Mike Ashworth** GRDC funded us from 2019 right through to 2022. We did approximately 12 trials during that period of time through the Western Australia grain belt over a diverse array of environments and rainfall conditions. And that trial had two times of sowing. So we had time of sowing one or our dry sowing treatment that was sown completely dry. And then we had a delayed sowing treatment. That was approximately five weeks after the first time of sowing. And what that was is normally that was after our breaking rain had occurred. Then within that trial, we also had six pre-emergent herbicides. We had Trifluralin and that was used at two litres per hectare. We had BOXER GOLD which the active ingredient was Prosulfocarb and Metolachlor at 2.5L per hectare. We also used Luximax which is Cinmethylin at 500ml. We had Sakura, which is a well known herbicide that's Pyroxasulfone at 118g per hectare. We used Mateno Complete which was a mixture of Pyroxasulfone, Aclonifen and Diflufenican at one litre per hectare. And we also had Overwatch which is a newer product called Bixolone at 1.25L per hectare. And a lot of those herbicides persisted very, very differently within the soils early in the growing season. We also added a third factor to make things quite interesting. We had three crop seeding rates, which was 100 plants per square metre, 150 and 200 plants per square metre. So these trials had three major factors that were particularly big, and they came up with some excellent findings.

[00:05:43] **Hilary Sims** And what were the findings that you had?

[00:05:46] **Dr Mike Ashworth** Okay. So what we found was that the persistence of the herbicide had directly correlated to the amount of ryegrass that was set in those fields. So when was it going in dry, for instance. What we tend to find is that it's really, really important that they use a more persistent herbicide in their farming system, such as, you know, Sakura, Pyroxasulfone or Bixolone. They are far more persistent than products like Trifluralin. And so we want to sort of edge towards mixes that contain good, robust rates of those herbicides to allow that persistent control.

[00:06:20] **Hilary Sims** And Mike seeding rate also plays a role in persistent weed control. Tell me about the positive research findings you've had on this topic.

[00:06:29] **Dr Mike Ashworth** One of the important things we found within this research was that even though we were dry sowing, we didn't get a knock down application there. What we actually found was we could still get very, very good levels of control, control to the same level that we would have received if we got a knock down. Okay. So it's really, really important that we set up a farming system well. So what we found was when we combined the right pre-emergent herbicide choice with increased crop seeding rates, we could reduce our ryegrass seed production down to very, very low levels. Another very, very important component of increasing our seeding rates is we need to also think that if anything has managed to survive or germinate within the crop slightly later and persisted, we must make sure that none of those go to seed. So increasing our crop seeding rate holds the plant higher up in the crop, and allows those individuals to be more susceptible to harvest weeds they control. So what I'd recommend to growers is that in a season like this where we don't get a knock down, we want you to make the right pre-emergent herbicide choice, increase your crop seeding rate and then make sure you go back with something like harvest weed seed control to control anything that has come through. Because what we want to do is continually drive the seedbank into decline.

[00:07:50] **Hilary Sims** And you just mentioned harvest weed seed control. What are some of the other weed management strategies that growers should consider alongside their pre-emergent herbicide?

[00:08:00] **Dr Mike Ashworth** At the end of the season, we can utilise harvest weed seed control, to control the weed seeds that might normally go into the field. We also operate within a rotation. So if we have a blow-out in a certain year, we can also rotate our crop type for the following season into something such as canola, which gives us far better weed control. In following seasons we can decide to also put that into a pasture, for instance, and that gives us a lot of options to control the seedbank blow-out. If we get a blow-out in one year, we can always rotate out of that situation and get better control.

[00:08:32] **Hilary Sims** So to wrap up. What would your advice be to growers planting early in these dry conditions?

[00:08:39] **Dr Mike Ashworth** My key message would be think about weed control in a farming system, not just about a product only. So make sure you set up a competitive crop. Pick a competitive variety or competitive crop time. Use a persistent pre-emergent herbicide package with that. Make sure that you monitor the control that you get, potentially going back with another product if need be very, very early in the cropping phase and then come back at the end with harvest weed seed control. Make sure that everything is cleaned up that no seed is left to go back into the soil to infest the following season.

[00:09:13] **Hilary Sims** Mike, thank you very much for speaking with us today.

[00:09:16] **Dr Mike Ashworth** Thank you Hilary.

[00:09:23] **Hilary Sims** That was AHRI research agronomist Dr Mike Ashworth, based at the University of Western Australia. And before him was farmanco precision ag and agronomy consultant Blake O'Meagher. More information on this topic can be found in the description box of this podcast or online at GRDC.com.au. I'm Hilary Sims and you've been listening to a GRDC podcast.