# GRDC VIDEO or PODCAST TRANSCRIPT

**Dongara Weevil – A newly named pest in WA's northern grainbelt**

[00:00:13] **Shannon Beattie** Since 2013, an unidentified weevil has been reported by growers and advisers to be repeatedly causing damage to canola crops in localised areas of Dongara and Mingenew in WA's northern grain growing region. Hi, I'm Shannon Beattie. As part of a two-year GRDC investment, the critter was recently scientifically identified and described as a new pest weevil species of unknown origin, representing a new genus of broad-nose weevil. In this episode, I chat with Christiaan Valentine from WA's Department of Primary Industries and Regional Development, who is working together with the Mingenew Irwin group on this investment to discover more about the Weevil's distribution in WA and some of the factors that influence the incidence and severity of crop damage.

[00:00:59] **Christiaan Valentine** Well, the first recording was about ten years ago, just on some coriander that was out there and pretty soon after that a crop just out towards Mingenew they were reporting problems as well. And that's just been sitting in the background and it's just been popping its head up every now and again for the last ten years.

[00:01:18] **Shannon Beattie** So it mainly impacts canola. Why is it that it was discovered ten years ago but we're only just starting to look into it and identify this weevil now. Why has it taken us ten years to get here?

[00:01:32] **Christiaan Valentine** It hides so very well in the background. It did take a couple of years for the agronomists who were actually working in those areas to actually discover that it was actually a weevil doing a lot of this damage. It's also likely it was mistaken as another type of weevil because this weevil previously hasn't been identified in the literature.

[00:01:48] **Shannon Beattie** When you say misidentified, what did people think this was to begin with and what do we actually know it is now?

[00:01:56] **Christiaan Valentine** Well, there's a couple of common weevils that have been around for ages and there's a Desiantha weevil, there's a Vegetable weevil. And these weevils are a little bit bigger and a little bit more common and a little bit easier to find. I think that originally the agronomist were thinking, okay, this and weevil damage is probably vegetable or Desiantha or even small lucerne weevil in the coriander. But it was something that possibly was mistaken and again the Dongara weevil hasn't actually been identified.

[00:02:23] **Shannon Beattie** When you say it hasn't been identified as part of this project, one of the missions was to describe the weevil scientifically. What does that actually mean and what's the importance of that in pest management?

[00:02:37] **Christiaan Valentine** As I mentioned, for about it not being identified, it previously hasn't been described. So nobody really knew what it was. The last two years, we've just been working on actually getting a very detailed description of the weevil, its characteristics, what it looks like, what it compares to doing a DNA analysis to actually see where other weevils, where it's closely related to. And that job is just to get it published in the scientific literature. So it's universal across the scientific community.

[00:03:06] **Shannon Beattie** And why is it important that it's, I guess, universal across the scientific community? How does that help us going forward?

[00:03:12] **Christiaan Valentine** It's standardised the weevil, the name, the description across the scientific community, so that way there's no duplication. If someone from another part of the world discovers the weevil over there, they've got something to come back to.

[00:03:25] **Shannon Beattie** You mentioned that this weevil, the Dongara weevil is a bit different to the other common weevils that we often see in canola. Can you give me a description of what the Dongara weevil looks like, what growers can keep an eye out for with this particular label?

[00:03:40] **Christiaan Valentine** This thing, it's tiny. It is really hard to get your eye in and get hold of it. It's only about 2 to 5mm long, like half the size of a lot of the other weevils out there. It's also very dark and fortunately it's shiny. So under the right lighting conditions, it does actually give a bit of a shine off the sunlight and or off your torch if you're looking at it at night. But it's tiny and it just hides in the cracks and crevices in the ground and makes it very hard to find. So something like the vegetable weevil is maybe 8-9mm long where this thing's only 2 to 5mm long.

[00:04:14] **Shannon Beattie** You mentioned it was darker in colour. What colour is we actually talking? Is it a like a midnight black sort of colour or...

[00:04:21] **Christiaan Valentine** Yeah, it's a very dark brown, almost a black. It does blend in very nicely with those deep cracking clay soils we're actually seeing them in.

[00:04:28] **Shannon Beattie** All right. Let's move on to a little bit more of what this project is all about. You're trying to figure out what some of the factors that influence the incidence and severity of crop damage that's caused by canola. So can you talk me through what the issue with this weevil actually is? What is it doing to our canola crops and why is it a problem?

[00:04:47] **Christiaan Valentine** Looking at the trial. So when we go to the trial sites, you dig around the young canola plants, just the young cotyledons. And it does look quite horrific when we see it. They take these big chunks or even ringbark around the hypocotyl, which is just the point between the roots and the first leaf and during the early lives of a canola plant, when it comes out of the ground, that's quite soft and it's quite delicate and they'll actually knock a big chunk out of that and that will severely restrict any water and nutrients coming up from the ground, or it might even just fall over completely and die. So just that young stage, we're seeing a lot of damage where we're seeing an entire paddock, anywhere between 30, 40, even 60 per cent of the crop has been just damaged quite severely to the point where it needs to be completely reseeded. As the canola goes on and gets towards that vegetative stage, that hypocotyl part of the plant, it does get a bit stronger, a bit thicker and we haven't observed it's just recently this year, but the weevils do tend to move up to the leaves and around the growing points of the plant and start to chew away on that. But by that stage they're not able to do too much damage to the plant. And it looks like the plants are able to grow away from it from there.

[00:05:54] **Shannon Beattie** What are the crop symptoms that growers can look out for that they might see that might hint to the fact that they've got Dongara weevil lurking about in their paddock.

[00:06:03] **Christiaan Valentine** This is where it's caused a lot of grief because it will happen quite quickly where they don't see anything until they see patches in the crop that just aren't developing like they should. And it's not until they get down on their hands and knees and really start tickling about the soil and having a look at the hypercotyl of the plants just below the soil where the damage is occurring, they'll see these big chunk marks actually taken out of the plant.

[00:06:24] **Shannon Beattie** Christiaan, you've mentioned a few times that there's a particular soil type that this Dongara weevil seems to enjoy or seems to be mainly situated on. What soil type is that, and do we have any idea why?

[00:06:36] **Christiaan Valentine** So where we're finding these weevils is just on the heavy cracking clay soil around the Irwin and Dongara regions, mainly around where the Lockyer in the Irwin River actually come in and meet and they just drain out towards Dongara. And it's a lot of that heavy clay cracking soil just in that area. And we think that they're using this soil just to hide at night, just in those cracks or just hide over summer and survive over summer.

[00:07:00] **Shannon Beattie** As part of this work, you've been trying to develop some more information on the Dongara weevil and trying to figure out some ways to stop it, I guess, and try and mitigate its effects. And you've been doing some trapping work as part of that. Can you explain to me what it is that you've been doing as part of the project with that side of things?

[00:07:21] **Christiaan Valentine** As part of this project, we really need to find out where these weevils are. And one of the easiest things to do is just put pitfall traps in the paddock and these are just basically little cups that we bury into the ground. So they're just sitting at the soil surface and any insects that come along, they fall into these cups and we can just put them out there, come back a week later and check what's in them and just see if there's any weevils in the paddock. We are finding quite a few other things which a lot of the entomologists here are quite excited about when we bring them back. But just generally and interested in the weevils in these areas.

[00:07:51] **Shannon Beattie** Can you tell me about the different components of the trap? I understand there's a well, the cup itself, but then there's a deflector shield. Some of them even have cameras installed on them.

[00:08:00] **Christiaan Valentine** Well, I suppose we want to take every opportunity to try and attract a weevil to this trap. So we'll do things like throw orange peel or something that attracts maybe apple just into the trap, just to give them something to smell and be attracted to and walk into the trap. But we also put, as you mentioned, deflector shields, which basically, I suppose some flat metal or some long length pieces of plastic. And as a the weevils just walk along or any insect walks through the paddock, they'll hit these walls, basically the paddock, and they'll crawl on the wall, which will hopefully funnel them into the trap. You also mentioned that we're doing some camera work, so as part of another GRDC project, we're actually looking at putting cameras on top of pitfall traps just so we can actually get a near live feed of what's actually happening in those pitfall traps. So we can just log in at any particular time and just see what's fallen in there.

[00:08:50] **Shannon Beattie** Is there a particular time of the day that the weevils seem to most often be in the traps?

[00:08:55] **Christiaan Valentine** Yeah, we don't really have enough data for that yet just to be confident that they're coming in at night or they're coming in during the day most of the time. At the moment most information is just coming from us just getting out there and getting our head down, looking at the plants and looking in between the rows and just digging underneath clods and looking in cracks. We find them a little bit active during the day, we'd find them just walking around every now and again. At night they do get a little bit more adventurous. And with a torch, we can actually see them that they'll be a little less scared of the environment and get out from the cracks and underneath clods and walk around a little bit more.

[00:09:27] **Shannon Beattie** With these weevils that you've been at trapping, you have been taking some of them back to the lab and doing some testing on them to see if insecticides will work on them. Can you tell me what it is you've been doing in that space and why it's maybe been a little bit tricky?

[00:09:44] **Christiaan Valentine** Well, it's tricky because you're trying to replicate what could happen out in the field in a vial, basically. So what we're doing is is putting a microdose of chemical into vials. And while we're doing that we're out there collecting weevils, which is a bit of a tiresome job, is a bit hard considering they're so elusive and so hard to find. So when you have maybe 50 or 100 weevils, we would actually bring them back to the lab. And in those vials we have micro doses of chemicals. We just put the weevil in there. And close it up and then just measure how long it takes for that chemical to actually kill that weevil if it does actually kill them.

[00:10:18] **Shannon Beattie** And what have you been finding? Are there any chemicals, any chemical combos on label usages, of course, that are actually working?

[00:10:26] **Christiaan Valentine** Yeah. So with the online chemical, we've had some pretty good success with Chlorpyrifos. It really doesn't take too much to kill them in a vial. I mean, this is a highly volatile chemical that smells quite bad to the weevils, I'm guessing. So even at very low rates, it's killing them in the vial. Synthetic pyrethroids. Had a little bit of success with those just in the vials. How that translates out to the paddock is a bit of another question, but I mean, they're a good starting point when we check some of those.

[00:10:52] **Shannon Beattie** Why is it that insecticides for growers in the paddock seem to have not been working all that well? Do we have any information on that?

[00:11:01] **Christiaan Valentine** Something like chlorpyrifos, which will kill insects in the vial very easily, it does smell quite bad and weevils in particular have a pretty good sense of smell. They might pick up that chemical being sprayed out and they're very good at running down, hiding down cracks and they could just be avoiding it. So that does make them harder to kill. But apart from that, might just be their biology just being very resistant to these chemicals.

[00:11:32] **Shannon Beattie** You've been listening to DPIRD's Christiaan Valentine talk about Dongara weevil. More information on this topic can be found in the description box of this podcast or online at grdc.com.au. I'm Shannon Beattie and this has been a GRDC podcast. Thanks for listening.