# GRDC VIDEO AND PODCAST TRANSCRIPT

**Beneficials Chemical Toxicity Table: Use it or lose ‘em**

[00:00:05] **Intro** This is a GRDC Podcast.

[00:00:12] **Camilla Plunkett** Hello, I'm Camilla Plunkett. Integrated Pest Management programs have long been challenging for Australian grain growers, and while pest suppression has traditionally focussed on chemical control, the Australian Grains Pest Innovation Program, or AGPIP, is developing new novel pest solutions, with natural enemies being the main focus. Beneficial insects play an important role, providing natural pest suppression for growers in cereal crops of Australia. Until recently, there was no scientifically proven guide to help explain the impact of commonly used insecticides on beneficial insects - up until now. Developed in consultation with grain growers and chemical industry representatives, AGPIP - an investment by the GRDC in partnership with Cesar Australia and the University of Melbourne are happy to present the Beneficials Chemical Toxicity Table. I spoke with Rosie Knapp of Cesar Australia about the new resource for growers.

[00:01:20] **Rosie Knapp - Cesar Australia** Beneficial insects are already kind of really being made use of in the horticulture industry and the cotton industry. Both of these industries already have quite well developed integrated pest management guides for beneficial management. But we kind of noticed that the grains industry didn't have anything comparable. So, the main aim of the research really was to come up with a similar guide, a similar tool, but unique to the needs of the grains industry to help them boost their beneficial populations.

[00:01:54] **Camilla Plunkett** Rosie, in terms of grain growers, what research was carried out to develop this table?

[00:01:59] **Rosie Knapp - Cesar Australia** So the first thing we did is to start developing the table, we didn't want to reinvent the wheel. A huge amount is already known about the toxicity of different chemicals to beneficial insects. So, we really started with, a really kind of broad literature review to just collate all of the work that had already been done in this area. So, we brought this work together, we made sure that all of the studies we included were really standardised and robust, well replicated research, and we were then able to identify what the key research gaps are, so what were the key beneficials to the grains industry that we didn't have information on? Or what were the key active ingredients that we didn't know much about the effects of on beneficials? So, we then set out to fill these research gaps with our own toxicity testing in the lab. And we basically collated all of this together with the existing data and our new data, and we've kind of produced a summary of all of this work into what we hope is a really usable resource in the toxicity table.

[00:03:07] **Camilla Plunkett** How important is a resource like this for growers?

[00:03:10] **Rosie Knapp - Cesar Australia** I think it can be incredibly important just because, although the toxicity information's out there already on the effects of different chemicals on beneficials, it can be a bit fragmented, a bit kind of daunting and difficult to access, so in order to kind of promote the uptake of pesticides which are softer against beneficials, or rather give growers and agronomists the information they need to make decisions with beneficials in mind, we really wanted to just lay out the information in a clear and easy to follow way so that if growers and agronomists want to try and make use of beneficials for IPM, they can do that in a kind of easy to follow way.

[00:03:55] **Camilla Plunkett** What sort of damage are insecticides doing to our beneficial insect populations?

[00:04:00] **Rosie Knapp - Cesar Australia** The broad spectrum insecticides which have historically been used, although they do a really good job of wiping out the pests, they will also wipe out pretty much all the beneficial insects which are around. If you wipe out the beneficials, you then don't have a line of defence against secondary pest outbreaks, which you might see if that insecticide application hasn't quite got all of the pests. So, we do see this sometimes you might see a grower using a really, really harsh chemical - you then remove all of the insects that do a really good job of naturally predating on pests from the environment and this can actually just end up leaving crops a bit more vulnerable when you don't have that second line of defence. So they are really useful and good to have around and this is why we wanted to provide the information to growers on which insecticides they can use, which won't have these non-target effects on beneficials which they may want to avoid.

[00:05:00] **Camilla Plunkett** The table, can you run us through the information on where to find it and how to use it.

[00:05:05] **Rosie Knapp - Cesar Australia** To use the table, you can find it on our website, which is www.cesaraustralia.com. It's in our resources tab. You can find a PDF of it there, which you can download. You can print it out if you think you might want to use it in the field or in places where you don't have phone service or things like that. And when you see the table, what you'll see is a matrix. So, you've got all of the different active ingredients which are relevant to the grains industry. And then we've summarised information on a whole load of beneficial species, and we've categorised the species into different kind of key groups which growers might want to target trying to preserve in their crops. For example, we've got groups like ladybird beetles, we've got aphid parasitoids, spiders, a whole load of different groupings really, but within each group there might be data on four or five different species, so we've kind of summarised the information for the beneficials group as a whole. So, there's really two different ways you can go about using the table. The most important information is really just the toxicity rating. So, we've summarised all of this data and we've come up with a single toxicity rating for each beneficial group and each active so, the toxicity ratings range from low, medium, high through to very high, and these relate to different cut-offs of mortality that we see when we test the insects in the lab. So, it's quite visually easy to read. The green colour is low, yellow is medium, orange is high and red is very high.

[00:06:51] **Camilla Plunkett** And you're already planning to update the table with more information as it comes to hand?

[00:06:56] **Rosie Knapp - Cesar Australia** So the table success for us really lies in its uptake. So, we want to make this table as relevant and as usable a resource for growers and agronomists as possible. We always try and get feedback from growers and agronomists on the usability of the table? If we've missed any key active ingredients which they would like to see included that they kind of use generally on their farms that we've missed out? Or if there's any beneficials they feel we've missed out? We're always really happy to get that feedback. It's a constantly evolving table. It's not set in stone. We update it every year, so we want to keep this a relevant resource for grains growers. So if you do look at the table, you might notice that there's still a couple of data gaps for a few species. So we've been able to fill in a lot of the data for the beneficial groups, but for hover flies and spiders, we've still got a few data gaps for these, so this is work that I'm currently involved in testing in the lab and the reason for these data gaps really is that all of the other beneficials on the table are ones that are commercially reared, so you can order them in online, but so far, hover fries and spiders are not commercially reared, so although these species are around and doing a really good job of pest control kind of in their natural environment, to study them in the lab, I do have to go out and collect them from the field, so there's just a bit more labour involved with testing these, but it will be really, really good to get that data included on the next edition of the table. So yeah, watch out for that when it gets updated next year. If you do have crops and you see hover flies on them, we're really, really interested in kind of tracking down good spots to collect those from. So yeah, we would love to put a call out for hover flies in particular, if you see lots of these when you're out and about, you can email the pest facts team or just get in touch with Cesar Australia, let us know where you are and we may be able to come out and sample these hover flies and use them for the research.

[00:09:07] **Camilla Plunkett** And you'll be able to update the table with this info for the next year. So shout out to growers out there to help be part of this amazing research.

[00:09:16] **Rosie Knapp - Cesar Australia** So AGPIP is an initiative funded by the GRDC and we are really lucky and glad to be partnered with the GRDC on this because it's such a great opportunity to do research with growers and agronomists in mind and sort of help have real world impacts and we really just want to try and boost numbers of beneficials as best we can, provide as much kind of up to date relevant information to growers who are wanting to make more use of IPM practices. It's a really great research initiative.

[00:09:57] **Camilla Plunkett** You've been listening to Rosie Knapp from Cesar Australia about the latest AGPIP resource for grain growers - the Beneficials Chemical Toxicity Table, to help preserve populations of natural enemies in Australian grain crops. This research is available to growers at the Cesar website, www.cesaraustralia.com. And if you would like to contribute to this amazing research, Cesar are calling for all hover fly and spider sightings and you can find the details to contact them in the show notes. This is a GRDC podcast. I'm Camilla Plunkett. Thanks for listening.