# GRDC PODCAST TRANSCRIPT

**Soil amelioration on irrigated crops**

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

[00:00:12] **Fiona Fagan** Hello, I'm Fiona Fagan. Deep ripping is most beneficial when it breaks up hard soils and provides a pathway for roots to grow deeper, giving them better access to moisture and nutrition. But is it always worth the investment? In Pretty Pine near Deniliquin, in the Riverina region of New South Wales, neighbours Christopher Liphuyzen and Michael Hughes embarked on a GRDC funded trial to test the effects of deep ripping on irrigated sodic soils. The ripping took place in 2019 and in March this year the farmers met up with soil experts and other growers at an organised farm walk at the test site. In order to see what was happening under the ground and compare results, two soil pits were dug, one in the ripped area and one in the non-ripped area. At the farm walk I caught up with one of the growers involved in the trial, Michael Hughes, and asked him to explain more about the project. Okay, so we're standing here in a soil pit, just describe what we're seeing here.

[00:01:16] **Michael Hughes - grower** Standing on a soil pit that's approximately about a metre deep. So got cotton planted and it's fruiting and we're witnessing the roots penetrating to a depth of about 400 to 450 mil, pushing off the plant row probably 300 millimetres each side. So it's giving us a clear demonstration of where the plants accessing the moisture and the nutrients from the soil.

[00:01:34] **Fiona Fagan** So Michael, tell me about this trial. When did it begin and how did it come about?

[00:01:40] **Michael Hughes - grower** The crop preceding this was a canola crop, which was sown in April 2021, and the ripping trial was done just prior to the establishment of the canola crop. Christopher Liphuyzen, my neighbour, purchased the block that year and we sort of conducted a ripping trial before the establishment of his first canola crop, approximately 48 metres wide and about four kilometres long.

[00:02:00] **Fiona Fagan** And you've dug two soil pits today, one you've treated and one is not treated. Is that correct?

[00:02:04] **Michael Hughes - grower** Yeah. Two soil pits today, one in the treated zone and one in the untreated zone, and then comparing the outcomes from the two.

[00:02:10] **Fiona Fagan** So what results have you witnessed so far?

[00:02:13] **Michael Hughes - grower** So the results aren't anything earth shattering. So at the moment we're probably seeing a slight yield deficit to the ripping that we've conducted about a 4% reduction in canola yield and a similar yield reduction in the wheat yield in the following year and then that's obviously why we've done the soil pit today, just have a little bit more deeper to see what the roots and the plants are doing.

[00:02:32] **Fiona Fagan** Are the soils here quite challenging?

[00:02:34] **Michael Hughes - grower** These soils can be quite challenging. Yeah, heavy sodic soils, waterlog easy, don't give up a lot of water establishment can be quite challenging and the actual water holding capacity of the soils is not great, it's not huge, so there are a number of constraints and challenges with these soils, so anything we can do to improve them will be very welcomed.

[00:02:54] **Fiona Fagan** Sam North is a research hydrologist from the New South Wales Department of Primary Industries. He took samples from the ripped and unripped soil pits to examine any differences between the two. Now the soil pit was dug yesterday, you jumped in and had a look today. What did you see in the treated soil pit?

[00:03:14] **Sam North- NSW DPI** Not much difference to the untreated because there's only two pits. A lot of it subjective, you're only going on what you can see there and then, so without some hard numbers on chemistry to back it up, there doesn't appear to be too much difference between the ripped and the unripped pits, but there is some difference. The other bit, too, is there doesn't appear to be any difference in the crop that's sitting on top of it or in root development, which the original reason why Chris wanted to try ripping was to increase the size of the bucket, so to speak - soil water holding bucket, so that it had been leeway in the system in case his linear move irrigator broke down and they took a bit of time to get back on. So he was trying to mitigate risk, under his irrigator by ripping, but it's on sodic country, we've had a wet winter, was done two years ago and that wet winter with that sodicity, with a bit of dispersion that soils melted back down and you can no longer see the rip lines. But as I say, like I do think there is an effect there, but it's not particularly obvious and it's certainly not had an obvious lasting impact on crop growth.

[00:04:25] **Fiona Fagan** Deep ripping can be successful, but in this country the soil is a sodic clay soil. So what part did that play in this trial, not being successful at this stage?

[00:04:35] **Sam North- NSW DPI** It's instrumental and it's the sole reason why it hasn't worked here. It's that factored in with a very wet winter last winter. So sodic soil, a lot of water, a lot of dispersion, and it just melts down the clay loses all bearing strength, so it actually collapses under its own weight once it's fully wet and dispersed. So any rip line or any previous deconsolidation, it just re consolidated. So that's the key reason.

[00:05:02] **Fiona Fagan** Now, today, in conjunction with your inspection of the soil pits, there was a farm walk day with about 15 growers. What's the benefit of having a day like today?

[00:05:11] **Sam North- NSW DPI** Oh, I think it's invaluable. We did a survey as part of a GRDC project a few years ago and we ran that survey three years in a row, and one of the questions we asked was how do you best like to receive information? By and large, over the three years, number one was workshops and field days, with fields generally coming in ahead. The reason being is that you can stand in the paddock, you have the thing or the issue that you're discussing in front of you, and it's not a one way presentation like you do at a conference or a stand up presentation. You have interaction and there's peer to peer learning on that. There's supposed expert farmer learning, but that also runs back the other way. So like I stand in, within that group and everyone's an expert and I'm learning every bit as much as they are and everyone goes away a little bit wiser too. And particularly when you can involve the local farmer, you know, the farmer in that paddock and there's a real risk for that person because it's quite personal, the decisions that they're making and they're opening themselves up to scrutiny. So it's quite a brave thing to have people on your place and open up your practices to criticism and review. But everyone learns.

[00:06:22] **Fiona Fagan** Damian Jones from the Irrigated Cropping Council, says trials like this one that involve growers conducting their own research projects are highly beneficial.

[00:06:32] **Damian Jones - Irrigated Cropping Council** The idea of the project was to look at some of the things that the group wanted to look at and actually give them some budget to actually get out there and do their own stuff, which is a great thing because we're always encouraging people to, especially ideas that are coming from outside to actually see if they work in our patch.

[00:06:46] **Fiona Fagan** So what are the benefits of conducting trials like this one?

[00:06:50] **Damian Jones - Irrigated Cropping Council** I suppose the benefit is that you get to see it in your environment and we're discussing earlier how some of the subsoil amelioration came out of work done in south west Victoria. But it's a totally different system, totally different soil types, totally different rainfall. So what possibly works down there and for whatever reason, you know it's nutrients or drainage or whatever, may not actually work in this part of the world, so it's good to trial things and if you get some co-operators who are willing to try something out new, they're investing their time and money into doing these things but at the end of the day, it might not work so good on them doing the hard work, but it stops their neighbours wasting their money on chasing a sort of potentially…sold as a silver bullet, but it's not working.

[00:07:35] **Fiona Fagan** So there are benefits even if the results aren't what was hoped for?

[00:07:39] **Damian Jones - Irrigated Cropping Council** Oh definitely. And I suppose that's one interesting discussion we've had between, hate to call it technical experts, but yeah, we often have no result. But if you're a grower and you're potentially going to spend money and time on something, you'd like someone else to demonstrate that something doesn't work or does work. One grower a long time ago said, It's great that you blokes at the department or ICC, do some of this work because if you make a mistake, ie. you don't get a result, that's good because that saves us from making that same mistake or no result.

[00:08:11] **Fiona Fagan** So how has GRDC funding helped the Irrigated Cropping Council with their research?

[00:08:17] **Damian Jones - Irrigated Cropping Council** Oh, it's been a great opportunity and along with this project it's looking at the soil ameliorates as well as some of the other agronomic trials that we've been doing over the last three years. It's been a tremendous opportunity to look at new things, but even revisit some of the old things and agronomic practices change. It's good to keep up to make sure that what we're recommending for irrigated crops is still the optimum way of growing those crops.

[00:08:42] **Fiona Fagan** Grower Michael Hughes says although the outcome wasn't what he was hoping for, the trial was well worth it.

[00:08:49] **Michael Hughes - grower** Not disappointed, it's good to know, it's good to have the knowledge now to understand what's happening in the root zone and whether there is benefit? Ripping comes at a fairly substantial cost, so it's good to know that if we're not getting the benefit from ripping, then we possibly won't engage in that process or maybe taking a more strategic approach to when and how we do rip.

[00:09:07] **Fiona Fagan** So would you encourage other growers to dig a soil pit on their properties to examine their own soils?

[00:09:11] **Michael Hughes - grower** Definitely. I think soil pits are a great tool, very simple, cost effective and very informative way of understanding what's happening in your soils.

[00:09:20] **Fiona Fagan** Now, you worked on this trial with your neighbour. What was it like to collaborate with your neighbour on a trial? Did you find that helpful with you being able to share knowledge?

[00:09:28] **Michael Hughes - grower** It's always really good to work in with co-operators, people that are really willing to engage the research component, because within the Irrigated Cropping Council, which I chair, we do a lot of little plot trials, but it's always good to expand those plot trials to a significant footprint like we have here today over a number of hectares to get a better understanding of what's happening and getting the true commercial outcomes.

[00:09:46] **Fiona Fagan** Michael, thanks very much for speaking to me today.

[00:09:49] **Michael Hughes - grower** Thanks for having us, Fiona.

[00:09:57] **Fiona Fagan** That was grower Michael Hughes. And earlier I spoke to Damian Jones from the Irrigated Cropping Council and Research Hydrologist, Sam North from the New South Wales Department of Primary Industries. This is a GRDC podcast. I'm Fiona Fagan. Thanks for listening.