# GRDC PODCAST TRANSCRIPT

**Getting the most out of deep ripping**

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

[00:00:12] **Debra Bishop** Deep ripping can be an expensive investment. It's also a slow process, so it's really important to do it right the first time. And whether you're new to deep ripping, or you've applied the practice over considerable time, it's something that can always be done better, every time. Hello, I'm Debra Bishop. There's a lot to consider regarding deep ripping and knowing your soil constraints, clearly, is where it begins. But what do you look for when investing in a machine to do the job? And what job do you actually want it to do? Things to consider include horsepower, the design you need for certain conditions, tine spacing, the experts to discuss your setup and advice on necessary adjustments, and do you know what you want to achieve? Decompaction or decompaction and mixing? The list goes on. I spoke with engineer Peter Nunn from Nufab and grower Brady Green, and he's been ripping for a while now, about choosing the right machine for the right situation, setting it up properly and using it and adjusting it correctly, to get the best possible outcome every single time. Brady kicks us off, describing what he's up against in WA's challenging northeast.

[00:01:29] **Brady Green** So, we're 60km north-east of Geraldton, Mid West, Western Australia. We're on a predominantly yellow sand plain which covers most of the areas around here. So, it's a hard setting, so it recompacts and we've been deep ripping this soil type ever since we've been farming it. So, we've progressively changed our deep rippers to suit the current time and at the moment we're running a six-metre-wide deep ripper and we're trying to get down to 600mm.

[00:01:54] **Debra Bishop** And what about your cropping rotation here? What are we looking at?

[00:01:57] **Brady Green** So, we run three crop types; we've got wheat, canola, and lupins. Wheat and canola are definitely in focus in the last few years and, being canola, pushing its hectares up at the cost of lupins. But, by the same token, it was lupins that really developed this soil type, so we're well aware of the need for them to remain in the rotation.

[00:02:14] **Debra Bishop** We're also joined here by Peter Nunn. Now, Peter, as a manufacturer of deep ripping machinery, what role do you see deep ripping play in regions such as the one that we're in here today, with these very sandy plains?

[00:02:26] **Peter Nunn** I think just pure profitability and, the numbers that are coming back on that are crazy, and getting better, as guys are getting better at doing what they're doing. Added to that, it's all part of the whole big picture of soil amelioration. We've got very poor soils, very prone to erosion, very prone to compaction, low pH. So, all this work all comes in and it's just deep ripping is really just topping it off.

[00:02:51] **Debra Bishop** Are you seeing a change in attitude towards deep ripping? I mean, Brady's saying here, you've been deep ripping in this family for a few decades now, it sounds like. Has there been that attitude shift or is there still some resistance despite the benefits, Brady, clearly, that you're seeing here in your own farm?

[00:03:06] **Brady Green** Yeah, I think people have become very aware of soil erosion now, and I think that was probably less so, back when we were farming under different systems. Whereas now, we really want to make sure we target the areas that are able to hold stubble cover because we know we're going to get a big wind before our first rain events. And so, we're trying to improve the soil type, for that to happen, we need to have good cover and get rid of erosion, yet still be able to deal with the compaction issues. And further to that, once we've ripped the paddock, it's obviously very soft and we go back in there. And we're in a controlled traffic farming system, so those tramlines, they become quite deep and a lot of people look to renovate those and try to re-level them, but because of the benefit we get in deep ripping, by the time it comes to renovate those, we're getting back in there with the deep ripper again to level all that soil type and basically start the cycle again which we can extend that out to, you know, four seasons before we got to be in there and ripping. Or less than that, probably every three years would be ideal.

[00:04:02] **Peter Nunn** So I can put that in otherways, when we designed the machine, it's designed so that when you're on your controlled traffic runs, you can pull those tines out of the ground and not rip those wheel tracks. But Brady, you're actually ripping those wheel tracks every two or three years and eliminating the need for having these ruts and stuff you have to deal with.

[00:04:20] **Brady Green** So it's another pass, which is dealing with deep tramlines and we're dealing with that whilst we're dealing with our compaction issues.

[00:04:27] **Debra Bishop** Okay, we’ve watched the ripper going up and down a few times in the paddock this afternoon. You're driving alongside, we've had some stops and starts and Peter, you were saying earlier this is a hands-on approach to deep ripping, that it's not a static process. You don't set it up and let it go. But what were you doing those times? Take us through what is required to get that ripping right?

[00:04:46] **Peter Nunn** The machine was a little bit out of level and so Brady adjusted the level and only probably a couple hundred metres from where we're standing, he was going up a fairly steep hill, and it was some pretty tough going, and he was having to lift the machine out probably 100mm, Brady? And dropped down a gear. So, we made a slight adjustment to the machine, and he went up that hill at the same speed and the same depth. So, you know, you can't just walk away and leave it.

[00:05:08] **Debra Bishop** No. For growers generally, Peter, what are the key attributes that growers should perhaps consider when choosing a ripper, depending on what they want to achieve, of course?

[00:05:16] **Peter Nunn** I think probably, the most important thing is to measure where your compaction is to start with, and the cheapest and best investment you can make is the penetrometer, which costs four or five hundred bucks or something.

[00:05:27] **Debra Bishop** Take us through what that does.

[00:05:28] **Peter Nunn** So basically, that's a probe that you push into the ground. It measures the effort taken to push the probe into the ground and it's just got a basic pressure gauge on it and if you go over a certain point, you've got a compaction zone that's going to inhibit plant growth. It's as simple as that.

[00:05:44] **Debra Bishop** And the investment in deep ripping, Brady, I mean I know that the time that your family's been involved with it, again, take us through that. It's an expensive investment, can it be a slow process, but, and this is why you do need to get the design and the equipment and the approach and the thing working right.

[00:05:59] **Brady Green** So, one of the things we have always run on is a 12-metre control traffic system. So, our machines are 12 metres wide and so they don't take the large horsepower tractors that a deep ripper takes and so what makes us a little bit unique is that we've got a tractor specifically for deep ripping. So, a lot of people will be using their seeding tractors and there becomes a time where they've got to take them off and they have to put them on their seeders whereas, our deep ripper will work right through till the end of seeding. And basically, we keep ripping as much as we can until the seeder bars catch in. But that also allows us to run an older machine. And they vary greatly in price, and we think we're quite efficient, we've done 12,000 hours on an old tractor that's in the shed and it's still functioning just fine. But we bought this tractor this year for $170,000 and you can easily spend $1,000,000 on the same machine that'll do the same job. And so, as a value of the input for us is that we don't think that deep ripper will ever lose its value, so we can sell that tomorrow for the same price we bought it for. So, there's a few consumables, but it effectively was $30 a hectare about probably six years ago. That's closer to $50 now, with this machine, because we're ripping deeper, but that can return up to $400 on that $50 investment, so that's why we're continually going down this path.

[00:07:08] **Debra Bishop** So let's talk about that bottom line and in particular, what crop type do you find that deep ripping has attributed to greater yields for you?

[00:07:16] **Brady Green** We've always targeted wheat, so we've got to deal with canola stubble and wheat goes onto canola stubbles and that's another way to break that stubble down so that our seeder bars can get through it. But we'll also see benefits in canola, so that's where we are now. We're deep ripping a wheat stubble that's going into canola this season and lupins probably much the same, but you can't rip every paddock. So, I know people have been ripping lupins, it's not common by any means because you get your biggest profit from a wheat or a canola crop, but it just goes to show how quickly our soil does re-compact and as I said, we're under a control traffic system, so this soil isn't trafficked and yet we're still getting a benefit from it.

[00:07:49] **Peter Nunn** So, Brady, you said dealing with the canola stubble. Is that because, just the fact the rippers going through there, disturbing it a little bit, and the crumble roller doing the job on the stubble?

[00:08:00] **Brady Green** That's right. It's breaking the stubble down; it's cracking the stubble. So, we've got paddocks that we ripped during harvest, so the stubble was quite green, and that's still all sitting on the surface and standing up. So, it's a lot different to the heat and the dry that we're working in now, the stubble crumbles away and makes it very easy to deal with at seeding.

[00:08:15] **Peter Nunn** So that's the other one Brady, you were saying earlier, that you showed us a photo of, what do you call it?

[00:08:20] **Brady Green** The biomass image.

[00:08:23] **Peter Nunn** Biomass image, of some stuff that you couldn't get to rip last year, tell us about that?

[00:08:27] **Brady Green** Yeah, so that was, we caught up to the deep ripper last year and he hadn't quite finished all that we were hoping to get done. So, we left a block in the paddock that wasn't entirely suited to deep ripping, but it had hills and hollows in it. And again, the hills are just too vulnerable, so we only ripped the hollows, and at that point of year I wanted the ripper in the ground all the time, so we just moved him on to the next paddock. We monitor the crop throughout the season, along with, not just a harvest yield map, but also the biomass imagery and the difference was chalk and cheese. There was two different crops in that paddock and one had been starved. And we went through a dry spell in July, so basically, towards the end of July it started raining and we had a nice soft finish, but the crops ran right out of moisture right up to that point and the areas that weren't ripped just fell over first.

[00:09:08] **Debra Bishop** Peter, I suppose, getting the message out to growers in the region, how are manufacturers in particular working with those grower groups to create the best model designs to get the greatest outcomes and can you measure it?

[00:09:19] **Peter Nunn** Yeah like what we're here today with Brady and just making a few adjustments and machine to make a little bit easier to pull. We've worked very closely with the Ag Department; we've worked very closely with a lot of the agronomists. So quite often we will say to the guys, and send our instruction manual, "This is how you operate the machine, but the details of deep ripping, use your agronomist because he's the guy that's on the ball". We've learnt a lot over the past, what have been six or seven years or something? We've been building those machines by working closely with a lot of the leading soil scientists and so, some of those soil scientists have had input into our design as well.

[00:09:53] **Debra Bishop** I think a lot of growers and those listening to us right now, Brady, are probably thinking "How the heck do you actually fit deep ripping into your management system?"

[00:10:00] **Brady Green** You know, it can get really hot this time of year and so It's difficult to run this machine around the clock, but we start early and if we've got subsoil moisture, it just makes life a whole lot easier. But it's a long process. I think we're working on three hectares an hour, so it's worth it.

[00:10:14] **Peter Nunn** And what Brady, is it 60-80 litre an hour, that sort of range?

[00:10:18] **Brady Greene**Yeah, that's right, yeah, so it's around 20 litre of fuel per hectare.

[00:10:20] **Peter Nunn** And then the other thing is, you've got a two-track, John Deere.

[00:10:24] **Brady Green** Yeah.

[00:10:24] **Peter Nunn** Tell us about the setup of the tractor.

[00:10:26] **Brady Green** Yeah. So, it's ballasted with the nose weights.

[00:10:29] **Peter Nunn** I think they're 190kg each, so you've got about two and a half/ three tonne hanging out front.

[00:10:33] **Brady Green** And then we've got saddle weights as well and weights on the front idlers. So, it's weighted it up and, I don't know the exact weight of the machine, but those two tracks put the power on the ground and it's really well balanced, that machine, and it's done a good job.

[00:10:45] **Peter Nunn** But it's one of the things we get asked a lot by farmers when they're buying a ripper, "What tractor, how much horsepower do I need to pull it?" So, it's not about the horsepower, it's about putting it onto the ground and, generally speaking, tracks are way, way in front of rubber tyres. And I've seen the biggest tractors you can buy, just get pulled up, like there's no horsepower at all. And you see some smaller horsepower, 350 horsepower tractors doing the same job as Brady is today, but very well balanced, set up properly. You don't need the biggest, flashest tractor to do it. And as Brady indicated if you're a smaller farmer and you don't have to buy the biggest, flashest tractor just to pull the ripper, keep your best tractor for your seeding, which these days, don't take a lot of horsepower.

[00:11:26] **Brady Green** But engine hours have become really significant, has changed a lot in the last couple of years and now they're a real consideration when it comes to the cost of ripping.

[00:11:34] **Debra Bishop** So just in conclusion, Peter, can you give us, in a nutshell a bit of a shopping list, if you like, a checklist for growers who might be out looking for that deep ripper and the particular design elements that really are the priorities to focus on and get yourselves moving in this?

[00:11:48] **Peter Nunn** I think where a lot of the variation comes in is the actual crumble roller on the back, it's a very important part of it. The tine assemblies on our machine jump out to full 90 degrees. So, when you're ripping up a lot of rocks, another consideration we didn't talk about, and Brady doesn't have to deal with it, but a lot of farmers, have got to deal with the rocks that they are pulling up. And in some cases, it means they're turning poor or average cropping country into a really good cropping country. They've got to get those rocks off. So, whether the machine can handle those rocks and if it's going to fall apart because it starts hitting rocks, ask your neighbours and buy the service, the backup that goes with it. If you said to me, where are the trends going? We're seeing average-sized farmer buying a second ripper because of that time frame issue and they've got that tractor there, so, we might as well hook a ripper onto it. For $150,000 bucks, capital cost, I can hook that onto the tractor that I've already got, I've got staff, I can pick my window when I want to do it. When we first started, all the agronomists and the soil scientists were saying in this part of the State, we'd expect to go back maybe every four years, maybe five years. Some guys are going annually, some guys are going bi-annually, but the frequency of ripping is becoming more, wouldn't you say Brady?

[00:12:59] **Brady Green** I was going to say as well, the template we laid out for amelioration is very different, it's quite separate to this path. So that changed the face of cropping on this soil type, but then it's the ripping following the amelioration that is almost dealing with the last constraint. And so, I think that's a vital part of finishing off your amelioration program.

[00:13:19] **Debra Bishop** And Brady, in conclusion, for you, on behalf of growers, of course, yield response is a bottom line for all of you guys and that's what this is delivering for you.

[00:13:27] **Brady Green** Yeah, well, it's giving us better access to nutrition, better access to moisture and inevitably more yield. So, we know the cost of it, we monitor that closely and that's a major part of our program.

[00:13:37] **Debra Bishop** Brady Green and Peter Nunn, thank you so much for talking to us.

[00:13:40] **Peter Nunn** Thank you very much.

[00:13:40] **Brady Green** Thanks.

[00:13:48] **Debra Bishop** We've been listening to Peter Nunn from Nufab and grower Brady Green. More information can be found by heading to the GRDC website. I'm Debra Bishop and thanks for listening.