# GRDC VIDEO TRANSCRIPT

**Adapting technology with bots – a case study with WA grower Brad Jones**

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

[00:00:12] **Shannon Beattie** Tammin grower Brad Jones was just the third person in Western Australia to bring a SwarmBot from SwarmFarm Robotics into his operation. Hi, I'm Shannon Beattie. SwarmFarm has had investment from GRDC's GrainInnovate program and Brad now uses the bot across his 11,000-hectare cropping program of wheat, barley, canola and just a little bit of lupin and export hay. As an early adapter of new technology and innovations, Brad is always keen to share his experiences which he did at a field day held on his farm as part of the 2023 Australian Precision Agriculture Symposium, which was hosted by SPAA and supported by GRDC. I sat down with him on that day to chat about his past experiences with PA and the future of automation on farm.

[00:00:57] **Brad Jones** We started PA in 2007 when we EM surveyed and radiometric surveyed the farm just to break it down into soil types and management zones. How that happened was I was looking at the helicopter view over the farm and just seeing that we had common seed rate, we had a common fertiliser rate to seed, common rainfall. But the visual coming back to me was very different and that was obviously through soil type. So, that led us into the PA pathway.

[00:01:29] **Shannon Beattie** So we're looking at, what, 16 years down the line? How has your application of precision ag on farm changed over that time?

[00:01:37] **Brad Jones** We have got better with it. Like we've made a few mistakes, no doubt about that, but we are getting better. It's now just a normal part of our process. As new technology comes on, we look at it quite extensively before we make the investment and we're happy with where we're going. It's about risk reduction, that's our primary aim.

[00:01:56] **Shannon Beattie** You've now gone so far with precision ag that you have a robot on the farm which is by far the next step or the next generation of precision agriculture. Can you tell us when you first got the bot from SwarmFarm?

[00:02:09] **Brad Jones** The robot arrived in February 23, in time for some summer spraying, and we've been using it, obviously, all year with both green on brown and green on green applications.

[00:02:21] **Shannon Beattie** And what was the motivation behind getting the bot in the first place?

[00:02:25] **Brad Jones** The primary motivation was just to get used to full automation on the farm because, in my opinion, I think it's where we're going in the future. We'll be more and more automated and it's about building the processes and building the skills with the people that we have on-farm. So, it's not necessarily replacing humans, it's actually upskilling the humans that we have.

[00:02:46] **Shannon Beattie** And what activities have you actually been using it for since you brought it onto the farm in February?

[00:02:51] **Brad Jones** It started when it first got here doing green on brown day and green on brown night, and then we've progressed into green on green, both grass and canola and broadleaf in cereal.

[00:03:03] **Shannon Beattie** And how many hectares would you say it's covered across the farm for you since you brought it on?

[00:03:09] **Brad Jones** Well I know it's done about 800 hours and we're working on effectively 18 hectares an hour, so I'd have to pull my calculator out for that one.

[00:03:18] **Shannon Beattie** I'm not good at maths either so we'll let the the listeners figure that one out for themselves, I think. In what ways has the bot actually helped you and your operation on-farm?

[00:03:28] **Brad Jones** It's just allowed us to do two things at once. You know, like, my wife accuses me of never being able to multitask, but now I'm actually proving her wrong.

[00:03:36] **Shannon Beattie** Very good. And in what ways, you say, you know, it means that you've been able to multitask and do a couple of things at once. Can you give us any examples?

[00:03:43] **Brad Jones** For instance, if we're working, like, say we've got a job in the workshop or even if we're out on the boom doing another application somewhere, the bot can be working in the background and, like, it keeps us updated through the app. And if there's any problems with it, say with its lidar, it comes across an obstacle, it will notify us and we'll be able to go in the camera and have a look at it and then send it around the obstacle, or go and clear the obstacle out of the way. So, it just allows us to do, effectively, two things at once.

[00:04:11] **Shannon Beattie** And have there been any other benefits in terms of productivity or soils or anything else that you can think of that it's been able to help with on-farm?

[00:04:21] **Brad Jones** I think from a soil perspective we actually haven't done enough of it yet to be able to quantify it. One of the things that I'm looking forward to is seeing where we've been doing green on green to see if where the actual wheat plant, for instance, wasn't sprayed, therefore it wasn't trying to process a chemical, whether it's actually healthier and what our quality will be like, as opposed to the stuff that's been sprayed in a broad sense.

[00:04:46] **Shannon Beattie** Can you tell us what the benefits have been in terms of chemical usage?

[00:04:50] **Brad Jones** Yeah. When we were doing green on brown both day and night in the summer, we were only using about 5 per cent. Admittedly, it was a dry summer, so it wasn't a big chemical use, but there was enough out there like fleabane, melons, I don't know how they survived but they did, and we were only using 5 per cent, and that was with a double knock-on fleabane, which is quite difficult to kill. In our wheat program we've been doing, on volunteer canola and radish and capeweed, it was 23 per cent and that is probably high. We had our sensitivity wound right up so we probably could get more refined with that, but we're happy with 23 per cent.

[00:05:27] **Shannon Beattie** I mean, if you think about that purely from a financial perspective, you're talking about a quarter of the chemical cost. So that's not a bad first effort in your first year, really. I believe the machine itself, the robot itself, also has a weather monitor on board. How does that help in your application of chemical?

[00:05:43] **Brad Jones** So we just set the parameters for it to work within, like, wind speed, wind direction, Delta T. So, if we've got sensitive crops effectively next door, we can just make sure that it won't be applying with the wind blowing towards it. And it's constantly reading its weather and if it falls out of the parameters, it just goes to sleep there and then and we don't have to worry about it, it just sits in the paddock.

[00:06:06] **Shannon Beattie** Has a little nap, and then wakes itself back up again when it's ready to go. That's amazing. You've got the bot, as far as I'm aware, on a lease. So how does that lease system actually work?

[00:06:16] **Brad Jones** So it's 100 per cent operating lease. Even though an operating lease will be sitting on your balance sheet as a liability it's still an operating lease. And the benefit of that with advanced technology is, because technology is moving so quickly, in three years’ time some of the things that are on it now will be redundant. So, it can go back and be renewed, and then we'll have the latest in technology, so it's a good system for that perspective.

[00:06:41] **Shannon Beattie** And is it the robot itself that's on a lease? But then the boom and the tech is yours, is that how it works?

[00:06:48] **Brad Jones** Yeah, so effectively the robot is a tractor, and we lease the unmanned tractor. We own the boom and we own the technology, and we lease the algorithms involved with the technology on a per hectare basis, but the actual tractor itself or the robot is on a lease.

[00:07:05] **Shannon Beattie** The technology sounds beyond incredible. Do you think it's safe to say this technology is the future of precision agriculture?

[00:07:12] **Brad Jones** I think this technology will become a large part of agriculture, and it will progress to all sorts of applications. At the moment, we're only doing spraying with it. For instance, I know there's one in central Queensland doing mowing in an orchard. There's one in the vineyard in South Australia, mowing as well. So, the applications for it, we probably haven't even thought about most of them yet, for instance, like firebreaks, where we could just let it do all its firebreaks because that's a painful job.

[00:07:38] **Shannon Beattie** You told me that the robot in South Australia in the vineyard is known as a GoonBot, which I do think, by the way, is one of the most fantastic things I've ever heard, I'm a really big fan of that. Let's move on to the Society of Precision Agriculture Australia Symposium and Field Day. Why was this something that you wanted to be a part of? You've had a bunch of people out onto your farm, you've opened your doors to them. Why was that something you wanted to do?

[00:08:03] **Brad Jones** I think the more people that can be involved in this process, the better off we'll be. And the more people that are viewing it and come up with ideas, it's just a continuous improvement that we're hoping to achieve, which is going to be better for the industry.

[00:08:15] **Shannon Beattie** Part of the day here is having farmers, other researchers, consultants, whoever it is, come out onto your farm, see this bot operating in action. What do you see the benefits of that peer-to-peer learning being?

[00:08:28] **Brad Jones** I think one of the biggest benefits of peer-to-peer learning is actually the confidence that you get because you can see that someone else is doing it and therefore that you're confident that it does work. But the more people that do see it, the better we'll be because there's applications or there's processes that I haven't even thought about, or my team hasn't even thought about yet, that someone here today may suggest, which would be really good.

[00:08:52] **Shannon Beattie** Do you have any advice that you would give to other growers who are looking at potentially wanting to invest in this technology?

[00:08:57] **Brad Jones** Have the confidence that it does work, but it's all about process, and just make sure that you've got a good sound process and be willing to improve your process.

[00:09:07] **Shannon Beattie** Alright, I think that's everything from me. Thank you so much for joining me on the podcast today, Brad.

[00:09:11] **Brad Jones** Cheers, Shannon.

[00:09:18] **Shannon Beattie** That was Brad Jones speaking about how he's been using SwarmBot technology on his farm. 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.