# GRDC PODCAST TRANSCRIPT

**Precision fertiliser decisions in a tight economic climate**

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

[00:00:12] **Shannon Beattie** Soaring, skyrocketing, record breaking, historical. These are all the words used to describe the price of imports over the past few years, and there is no denying the effect it's having on growers bottom line. Any option to reduce the amount of inputs being used on farm without impacting yield or productivity can only be a good thing and a series of face to face workshops around Australia have been trying to help growers do just that. Hi, I'm Shannon Beattie. With GRDC investment. The Society of Precision Agriculture Australia has been looking into precision fertiliser decisions in a tight economic climate. The aim was to assist growers to better manage input prices, maximise on farm productivity and environmental efficiencies and build economic resilience within their farming systems in high input cost seasons. The workshops have been the key feature of the investment and have been facilitated across the country by precision ag specialists from Agrarian Management, Farmanco, Pinion Advisory, Ag Logic and Data Farming. At each workshop, a local grower has also spoken about their experience with precision ag, giving their fellow farmers a first hand experience of the pros and cons of on-farm implementation. I caught up with Agrarian Management's Bindi Isbister at the workshop in Meriden, Western Australia, to find out more about precision agriculture and discover her best tips for getting started with variable rate technology on-farm.

[00:01:45] **Bindi Isbister** Essentially, precision agriculture is about using technology and GPS systems to apply the right amount of inputs in the right place.

[00:01:56] **Shannon Beattie** What are the benefits of precision agriculture to growers?

[00:01:59] **Bindi Isbister** The benefits to growers are very varied and I guess it gives them the opportunity to manage variability within their farm business. So precision ag technologies, the different data and information that we can collect allow us to collect information about the farm and I guess paddock or yield performance over time, which is temporal variation or spatially. So how it varies across an area, because for most growers, and particularly in Western Australia, we tend to have multiple soil types within a paddock. So the opportunity with precision agriculture is actually to apply inputs according to those soil types. So they might have different soil properties or fertiliser requirements or different constraints. So precision agriculture allows you to map that and then apply inputs according to those soil types or requirements that you have.

[00:02:52] **Shannon Beattie** And this project that you've been working on alongside GRDC and the Society of Precision Agriculture Australia, you've been looking specifically at precision fertiliser decisions. Why is that something that needed looking into in more depth?

[00:03:07] **Bindi Isbister** The focus has been on precision fertiliser decisions in particular because we've seen in the last few years a really steep increase in input costs and they are becoming a lot more expensive. For example, urea two or three years ago was around the $550 per tonne mark and prices towards the end of last year we saw it up to $1200. So growers are really looking at ways that they can try and improve the profitability of their business and manage the risk. So precision agriculture allows you to actually measure what inputs you might need and adjust it accordingly.

[00:03:45] **Shannon Beattie** Very useful, especially, as you say, when prices of not just nitrogen, but everything is getting higher at the moment. So the ability I can imagine to just have to apply a little less - it's a very much and every little bit count sort of situation that growers are in at the moment. As part of this project, from my understanding, precision agriculture includes lots of different types of technologies, but you've specifically been looking at variable rate technology. What exactly is that?

[00:04:11] **Bindi Isbister** Variable rate technology is actually a term used on equipment. So, ag equipment has a controller in that controls the product rate. So how much is actually being applied in the paddock, bit of spray or spread or a seeder. And the variable rate technology part is a reference to the actual system that controls it. So there's a controller that controls the rates that's connected to the machine, it's linked to a GPS in a position in the paddock and in the tractor we also can put a map with the reference to the position in the paddock. The tractor or implement actually applies the product according to that map. So variable being variable as you go along the paddock as opposed to the traditional way we typically do it is a blanket rate. So a blanket rate is still a very valid way, but the variable rate technology actually allows the map to be in the tractor. So it happens automatically as it goes along and the operator doesn't have to keep changing the rate up and down. So some people actually now do a variable rate in that simple form because they know that, for example, they might have a heavier weed patch coming up or something, so they want to up a rate or back it off or do something like that. So it just allows it to happen automatically and takes like one less operation because often sometimes you can find that the operator then forgets to turn it back on or something and you can get to the end of the paddock and it doesn't actually happen. And I guess with variable rate there are different forms. So there are some that are applied based on a map that you might design using different types of information in the office based on sort of ground truthing and information or there are other sensors that you can get now that will actually measure the change and adjust the rate on the go. And I guess spraying technology is one of those really exciting developments that we're seeing where the sensors are detecting the weeds and making an instant decision to change the rate as we go. And that kind of technology I think is great because it happens in the paddock at the time and it's done. Whereas one of the reasons for these workshops is the variable rate aspect, when you design the map in the office, it can actually take a bit more to get it done. So these workshops have been helping growers I guess have to think about what issues they could manage with precision ag technologies, what software they might want to use, what equipment and different data layers that are available so that they can start to choose the requirements that they might want to do to actually implement a variable rate management strategy across their farm.

[00:06:44] **Shannon Beattie** It's just incredible what they're able to do in a paddock now and how much it's able to help growers. It sounds like this maybe isn't as easy as people ight like it to be. So what tips can you give growers who want to start implementing this VRT on their farm but maybe don't know where to start?

[00:06:59] **Bindi Isbister** Yeah, I think one of the things I've learned in precision agriculture is if someone tells you it's going to be simple, it's going to take you three times longer than you actually think. Because let's face it, everything's simple when you know how. And I think some of the variable rate technology that green on green kind of stuff is super cool and as technology develops and it's able to make those adjustments on the go more automatically without so many button pressing from operators, I think we're going to see a huge uptake of this technology. I guess looking at implementing like variable rate now, a tip, I always say start with a management issue, something that's impacting your farm business that you want to apply. And I guess in the case of this workshop, we did focus on input costs, that fertiliser in particular because that was the higher cost. And I recommend though just starting with one at a time and maybe even just starting on one or two paddocks or a couple of paddocks. Ideally the paddocks that are close to the house, because one of the challenges I've certainly found when you actually take the map out in the paddock to get it in the tractor is it doesn't always work like you want it to. And so often you have to go back and sometimes it might be the map wasn't right or you need to make a phone call or download the manual or something like that and that often requires communications. And that's been, I guess, the challenge in many of our regional areas still that connectivity. So doing it nice and close to the house saves some things and making sure that you ask the right questions of the equipment dealers to actually get the technology working. And I guess also some of it is thinking a bit long term. At the workshops today, there was quite a bit of discussion about what software to use. There are so many different software platforms. So I really recommend that you start with what you've got. I'm a big believer in starting with what you got so often that is like the equipment software that you get, whether it be John Deere or Case IH or something like that. And then having a look and seeing if that's actually going to do what you want it before you go and invest in other technologies. The same goes for when you're looking at data layers. You know, you're mapping has been around for 20 years and today some of the growers made the comment that I've got ten years of yield data, but I haven't actually used it. But that's a layer that they've already got that can help them look to see in the first place if they have variability. And is it actually worth using variable rate technology?

[00:09:20] **Shannon Beattie** It does all sound wonderful. As we've said, it's not as easy as we think it's going to be. What are the pitfalls and the challenges that growers are going to face on this journey?

[00:09:29] **Bindi Isbister** Sometimes it isn't as easy as you think. Sometimes it can be very simple and I guess you can often get too much data. Sometimes I find the more data, layers and information you collect, the more confusing it actually is. So I think it's good to actually look at what you've got first. I think other pitfalls - connectivity and interoperability and data compatibility, I think is a really big challenge for growers. We have many machinery manufacturers and each manufacturer and even software people that design precision ag platforms, they all have their own version of the software and the data comes in and out as different formats. So that can actually be a bit of a challenge. So you need to actually understand what that data format is. And I think another pitfall is we often try and do variable rate when we're busy. For whatever reason, we tend to zone up in February and March, which I think is fine because you're often waiting to get the yield map from last year. But then all of a sudden, you know, it rains and seedings on, so a real pitfall I think can be doing it when you're under pressure. Because when you're under pressure, your brain just hasn't have capacity to troubleshoot. And I think a lot of precision agriculture is about having persistence and perseverance to get it right. And because it's based on technology and software and we all know how quickly that evolves, often you might learn it one way, say I might learn how to do prescription maps and set my machine up for variable rate one year, and then I come back in sort of nine or 12 months later and the software changed or buttons have changed. So when we're really busy and we have a narrow window to actually get things done in the paddock, I think our capacity for our brain to think doesn't always work so well. So being maybe a little bit organised or just testing it on one or two things, rather than spending lots of money and doing a whole variable write program for the farm and then actually realising maybe machinery or the products that you use aren't quite set for what you actually wanted to do. So I think that comes back to choosing a management issue so you have more of a vested interest in getting it to work.

[00:11:37] **Shannon Beattie** Alright, my key takeaways so far have been pick a management issue, take baby steps, and diamonds might be made under pressure, but good variable rate technology plans are not, so I think I think that's some good learnings. There's a lot of information, though. There's a lot the growers need to know. And that's part of what you've been doing lately, is doing these workshops face-to-face with growers to teach them about this technology, how to use it. Part of that, though, has also been a grow at a grow a forum where they can learn from growers themselves. What do you think the benefits are for people to hear from both researchers and growers about how this all works?

[00:12:10] **Bindi Isbister** Oh, look, I think there is no bigger value than sharing that grower to grow experience because it's actually the practical application of it can be the challenge. So I think often precision agriculture is such a vast area and there are so many opportunities and different data layers. So the opportunity that we've seen in these workshops I think is growers actually being able to share what they've done and some of their experiences. And in the case of the workshop that we've seen today, the host grower Mick Caugh, he actually showed them how to create that prescription using the software that he did. So it actually wasn't as complicated, I think, as possible. So often with precision ag, a lot of the things aren't in a manual or in a book, so it's that sharing that kind of information about what they tried and what didn't work or a few tips, I think is a real opportunity that these workshops provided. And today's workshop in the room, we had every part of this chain in the variable rate process from the growers, the researchers, we had the consultants and we had the machinery dealers. So they're all people that are part of the chain. And I think that was a really valuable thing about the workshop today, is that they all got a better understanding of the different components and how they put together to apply variable right in the paddock.

[00:13:32] **Shannon Beattie** Bindi, your knowledge on this topic is an invaluable resource for growers, so thank you so much for sitting down and having a chat with me today.

[00:13:40] **Bindi Isbister** You're welcome. Thanks very much for having me, Shannon.

[00:13:50] **Shannon Beattie** That was Bindi Isbister speaking about precision agriculture and implementing variable rate technology on-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.