# GRDC PODCAST TRANSCRIPT

**Raising the bar on crop nutrition**

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

[00:00:12] **Prue Adams** Raising the bar on crop nutrition in northern New South Wales is the aim of a new partnership between a private ag consulting company and GRDC. Hello there, I'm Prue Adams. Outlook Ag, which has one of the largest footprints in farm consulting in northern New South Wales, has joined forces for the first time with GRDC to improve yield in a range of crops. Field trials have been established to help combat very area-specific problems. In this episode, I speak with three of the lead consultants with Outlook Ag - Mitch Cuell in Narrabri, Central North New South Wales, Greg Giblett on the Liverpool Plains and in the Northwest, Greg Rummery. I begin by asking Mitch Cuell about Outlook Ag.

[00:01:01] **Mitch Cuell** So, Outlook Ag, we're a consulting company based in northern New South Wales. Collectively, as a group, we advise about 330,000 hectares of cropping country. We're winter and summer cropping, dry land and irrigated, so we cover a wide array of crops from cotton all the way through to canola, safflower, wheat, chickpeas, anything grown here in the north, we've got our finger on the pulse with those crops and we're private consultants providing independent advice.

[00:01:31] **Prue Adams** So you've gone into a partnership with GRDC. Tell me a bit about that, why you've done it and what both parties, I suppose, hope to achieve out of that.

[00:01:40] **Mitch Cuell** So we've built a bit of a collaboration with GRDC with the NGN projects that they're running. So the title of our project is Raising the Bar on Crop Nutrition. So, we're really looking for that extra level in crop nutrition to take those gains of our crop yields to the next level. But also gain an understanding of what key elements in our soil are driving yield and what legacies of our starter fertiliser regimes are getting left behind, and how it's affecting our overall rotation of our crops and getting a good understanding of that nutrition capability.

[00:02:16] **Prue Adams** So you've got three distinct regions. Talk me through that. And then perhaps the two Gregs can tell me about the specifics in the regions that they're in, as to what you might be looking at in terms of nutrition.

[00:02:31] **Mitch Cuell** Yeah. So, I'll start with the region I'm in. So, I'm based in Narrabri here and up to Bellata, which is 50 kilometres to the north, and then we also stretch to the west, about sort of 30km, until we run into Greg's patch. But predominantly our patch here, winter summer cropping, very similar soil type across the board, very similar issues. I guess our rainfall pattern compared to, say, Greg out west is probably a lot higher, so our cropping intensity is higher. And then we move to Greg Giblett, whose intense cropping's a bit higher again. In our region specifically, we're just looking to see where we can maximise our use of fertiliser and other elements in that fertiliser regime that we're missing that are adding to the percentage yield increases. And I guess overall, looking towards the sustainability side of things, as well. Is there something in these trials that we can pull out that we can integrate in our farming system in the North?

[00:03:29] **Greg Giblett** So, Prue, Greg Giblett here, working on the Liverpool Plains, which essentially ranges from Willow Tree through Breeza, north to Gunnedah and then west out to Premer. About 680 millimetres rainfall, high cropping frequencies, high grain removal, quite a good base of irrigation country. And it was really the irrigators who first noticed that we couldn't just get away any more with addressing nitrogen and starter fertiliser, there were more issues going on. Particularly potassium was evident and showing up in some of the longer-term cotton country. And I suppose as consultants, our goal is to work with our clients to maximise their returns in a sustainable way. And to do that, I guess you look at rainfall, the landscape, the crop types, the rotation choices, the wheat control programs, and we just try to always find the gains in the system. And when you have a lot of the basics right, I guess we believe that really it's the rundown in our soils, which are probably the most yield-limiting factor at the moment. And I guess that's why we started down this track of figuring out what else may be happening and limiting our yields beyond the standard sort of nitrogen, phosphorus, and potentially zinc that was standard practice across the plains.

[00:04:49] **Prue Adams** And Greg Rummery.

[00:04:51] **Speaker 4** So, Prue, I'm based out at Walgett, so I suppose the key change in the environment between say the Liverpool Plains through Narrabri and then west to Walgett is just a reduced annual rainfall. The key is probably understanding that the rainfall gets more variable. And obviously with increasing variability in rainfall comes increasing variability in crop production. And when you link that to fertiliser use, or nutrition particularly, we're probably the new kid on the block when it comes to fertiliser use, but we have a cropping history now that spans back 50 to 60 years. And so, some of the big picture nutrition use like nitrogen, a little bit of phosphorus, we've got a head around some of those issues reasonably well and how they match with water in the environment we're trying to produce grain in. I think the attraction or the interest, I suppose, in this project from our point of view, is that because of the variability of our environment and rainfall is the biggest driver, on one side of the equation, we've got to learn how to deal with a low yielding crop, but on the other side of the equation we've got to maximise grain yield. You know, we can grow crops that are equal to yield as average crop yields down on the Liverpool Plains. So, the challenge about how you go about managing that production and the production risk, that's a key part of the system and keeping the system productive or profitability, I suppose, is the key. And so, nutrition for us is all about just getting that balance right between how much we spend on nutrition and that's reflected in how much soil water we've got or whatever.

[00:06:24] **Prue Adams** So part of this process will be trials being established in the different regions. How's that going to work?

[00:06:31] **Mitch Cuell** We've already started. So, this year we've established two small plot trials, one at Bellata, north of Narrabri, and one down in Bundella so down on the Liverpool Plains. We were planning to establish one at Rowena but obviously, the weather gods had that in their control, so we weren't able to establish one out there. We've seen some really good results initially. You know, we haven't got any yield results as of yet, but biomass differences within crops, within treatments are really showing through, particularly in the dry year. And these small plot trials, we've contracted Kalyx, a local research company, to sow those plots and we've been performing our own sort of assessments throughout the season to ease out any differences there.

[00:07:16] **Prue Adams** How might precision agriculture help growers implement improved fertiliser strategies? And what's the plan there?

[00:07:24] **Mitch Cuell** Yeah, I guess so, precision ag, like, it's a space we've moved pretty hard in as a company. And from the Liverpool Plains through Narrabri, all the way up to Walgett, no matter the paddock, there's always variability in a paddock. And as an agronomist, we look at what's in front of us, the technology. We've got satellite imagery, yield mapping and there's always that burning question: "How do we, either one, fix that variability, get it to an even state, or how do we get those parts of the paddock up to a profitable margin?" With this trial, we're looking at different elements that are a bit outside the box and can these be integrated in a variable-rate type of fashion. You know, initially, these trials aren't looking at that but that's the way of thinking is incorporating this fashion of nutrition in a variable-rate response and, you know, zonal management and that type of thing. Particularly with the rising cost of fertilisers, which, particularly in Greg Rummery's space out West, very big acres, it's quite a large investment when you start potentially rolling out some of these treatments across a big area.

[00:08:30] **Greg Rummery** Despite the fact that our landscape looks flat and even, it's not. If you look at the variation across the paddocks, it's quite significant. And so it's all about trying to find that way or that pathway through that gives us the biggest bang for our dollar spent on fertiliser. And I think that is particularly pertinent in the West. And so, tools like precision ag and variable-rate seeders or technology, etc., all that's part of maximising the outcome, without a doubt.

[00:08:58] **Prue Adams** Greg Giblett, in terms of your region, what out of these trials will you be most focussed on?

[00:09:05] **Greg Giblett** Prue, I guess, because we're taking off more grain consistently with our higher rainfall, we're probably running into some of the nutritional issues more quickly than the other regions. And I guess we spent a lot of time soil testing and we've done some tissue testing, and we've spent some of our own resources previously doing replicated plot trials. So, we're really looking for what's coming down the track at us nutrition-wise. So once we get beyond the basics, which are essentially growers now spending money on nitrogen fertilisers, starter fertilisers, mainly P-based products, but also some zinc, once we get beyond those three that are well understood, it's what's coming at us next. What's the next thing that we're likely to need to manage? Potassium has already been identified, as I mentioned, but we think there's other things going on with some of the trace elements that haven't been looked at previously. So, we're just really building on the good work that's already been done by people like the DPI, CSIRO, Mike Bell and his team. People have looked at various aspects of the nutrition puzzle but there's many other aspects, particularly with trace elements, that haven't been looked at all. And we believe from our preliminary work that there's things which need to be addressed, which can be having a fairly significant impact on you.

[00:10:25] **Prue Adams** And Greg, just following on from that. Why was it thought that GRDC was a good fit for this partnership?

[00:10:31] **Greg Giblett** I guess we've worked with GRDC for a long time in various capacities. They developed this NGN concept, and we had a lot of help from Vicki Green in developing this NGN idea and because we believe that crop nutrition is probably one of the big yield drags at the moment that needs working on, we thought it was a great opportunity to work with GRDC and try the new system out with Vicki. The process worked really well. We pitched the idea, Vicki road-tested where we were going, we explained the background to the research proposal, the previous data that we'd gathered that basically was indicating that there was more work required. The process worked very well and we were very lucky to end up with a nutrition-focused project over three years. So yeah, very thankful to GRDC for their support and hopefully we'll deliver some very useful information to grain growers sort of over the three-year project.

[00:11:26] **Prue Adams** So when can growers and the broader public, I suppose too, start to see some results out of this partnership and the trials?

[00:11:34] **Mitch Cuell** So the trial itself, we're running for three years. We're going to run it across the life of the rotations. So, you know, we're testing the legacy of these treatments through the rotation and applying them on various different crops. So, I guess, as we go, we're going to extend, have a few field days, extend the work we're doing but in terms of the final results, the end of the project, we'll sort of nut it out with GRDC and see what we've learnt and see what we can extend to the broader community.

[00:12:04] **Greg Rummery** Yeah, I think if I add to that program, I think certainly in the West, the trials will be just tremendous places to gather collectively with growers and look at what we've been able to demonstrate or what we are able to demonstrate. Obviously, in the West, nitrogen and phosphorus are probably the two key elements at the moment. But again, because of the variability of the system, we need to explore some of those other micronutrients. Potassium obviously, over the last 20 years, we've run a reasonably high legume or pulse, we've started to find instances where crops are responsive to potassium. So it's just fine-tuning that and being able to demonstrate those sorts of outcomes to the grain growers of the West so that they can then start to get their heads around how they're going to deal with that from their business model perspective.

[00:12:57] **Prue Adams** Many thanks to Mitch Cuell, Greg Giblett, and Greg Rummery, all from Outlook Ag. This has been a GRDC podcast. I'm Prue Adams. Thanks for listening.