# GRDC PODCAST TRANSCRIPT

**MAXIMISING THE PROFITABILITY OF FALLOW**

[00:00:05] **Sally Maguire** This is a GRDC podcast. What are the reasons to use fallow in rotations, and just what is the economic value of this farming practice? Hello, I'm Sally Maguire. These are just some of the questions asked by growers in the West, questions that are now being answered by a current GDC investment. Maximising the profitability of fallow. Joining me to tell us more is Dr Darren Hughes from Lakonic, which is leading this investment. Darren in the world of agriculture, is fallow a dirty word?

[00:00:42] **Dr Darren Hughes** No. If you look at it from the perspective of a cash accounting method, growers and some advisors can get put off in that it doesn't necessarily pay if you use a gross margin analysis, yes, right it doesn't compare with a wheat on wheat situation, but the research will tell us that if we continue to use a wheat on wheat sort of farming situation, eventually we're going to run into problems, weeds or disease. Fallow is a strategic investment. It does have value in the farming system, and we need to use the right analysis method and it does add real value.

[00:01:16] **Sally Maguire** Okay. That that makes perfect sense. Tell us a bit about how this investment came about. I believe it was due to some GRDC National Grower Network meetings, it was mentioned?

[00:01:28] **Dr Darren Hughes** Yes, so this project originally started from some issue raised by GRDC's NGN network across the low rainfall zone in Western Australia. Growers originally in the Kwinana East port zone, I guess, raised the issue of fallow. They had questions around what is the best crop to plant in fallow, so is it a brown out method? Should they be planting a legume, should they be letting the weeds grow and then spray it out? There was also questions around the economics. So originally GRDC scoped up a project looking for six sites through the Kwinana East region. Lakonic established those in 2022. The issue continued to be raised through the NGN network. So in 2023, GRDC extended the project and we added an additional eight sites. So now here we are going into 2024. We've got 14 sites ranging from east of Banu, in the north of the state through to north of Salmon Gums in the south of the state.

[00:02:26] **Sally Maguire** Okay, that's pretty extensive. So tell us a little bit about the methodology that you're using.

[00:02:30] **Dr Darren Hughes** So the way we've set these trials up is using sort of what we call farm scale on farm trials. What we wanted to do is to set up a trial plot big enough to be reflective of the actual farming system that the growers are going to be adopting fallow. So we've set these trials up on a plot width roughly 30 to 50m wide. So the width of the plot matches the growers boom, and all the plots are 200m long. So total trial area of the plots is about 14 hectares. So they're very big trials to be representative of the large areas the growers are likely to be adopting fallow.

[00:03:09] **Sally Maguire** It is a bit early in the day but give me an idea of results so far.

[00:03:13] **Dr Darren Hughes** So the original six trials that were established in 2022, we've had two years of really good data out of those now. Early indications are the best fallow option for growers is to be using the brown out option. So I imagine that we just keep the paddock completely free of weeds over the summer and the winter. That rotation, that fallow option will give growers the most amount of stored soil moisture and will conserve the most amount of nitrogen to be available for the following crop.

[00:03:45] **Sally Maguire** You mentioned weeds. Does fallow contribute to weed control?

[00:03:49] **Dr Darren Hughes** For weed control in fallow can be very challenging. So, if we sort of look at the summertime period, if we're managing fallow, a lot of growers say I'm out there, what seems like every second week spraying fallows, which can be a bit of a case because you've got all that stored soil moisture, you do have to keep on top of that. There's some fantastic technology sitting around the green on brown situations, the robot sprays that are really helping growers manage weeds in those sort of situations. As we move into the winter period, I guess the recommendation to use the brown out fallow is that if you go out and keep your fallows bare during that winter period, it is more than likely you're going to come across a lot of glyphosate resistant ryegrass. It's actually quite scary, the numbers that are out there. So one of the key findings that we've found out of this project is that if growers are going to be adopting the brown out option, if you're spraying call it late June, early July, chat with your local agronomist and get some advice on what chemistry to use. Can you use a paraquat and a spike as opposed to using a glyphosate to control that resistant rye grass, because I can almost guarantee there'll be some out there.

[00:04:57] **Sally Maguire** One of the questions that you mentioned earlier, one of the things that growers wanted to know, was best crop to plant after fallow.

[00:05:04] **Dr Darren Hughes** So I guess, quick summary go with the brown out option in the trials we have looked at the vetch as an option. So vetch is a really good option, very expensive on the seed side, if you can get farmer sourced seed and bring down the cost of vetch it might be valuable. Looking at the trial results, it was giving us about 25 to 30 units more nitrogen was being put into the soil from the vetch side of things. If you considering it, vetch has a fallow break crop, it can be very difficult to kill in that late August early September period. So once again have a bit of a discussion with your local agronomist and think about some chemical options that you've got to be able to kill the vetch, because it will take a lot of chemical to kill. We've also looked at lupins. The lupins were established in the trials last year as you could kind of imagine, low rainfall trials last year. We didn't get a lot of growth on the lupins, so I've got no real conclusive evidence on what growers should be doing on that at this stage. The other one that we have looked at is a mechanical treatment. So mechanical is really interesting. So we looked at it from the point of view of cultivating that sort of zero to 100 mil, so just breaking up the soil surface and killing any weeds that are on there and we've got one site up in Banu where we put the deep ripper through. Where we've cultivated the sort of zero to 100 mls and just kept it weed free, I haven't noticed any wind erosion on any of the plots to date. We haven't actually lost any moisture when we compare the mechanical treatment plots to the brown out plots, which gives me some confidence that growth can go in and I guess mechanically, till the soil and still maintain some moisture at depth. The really interesting finding from the mechanical treatment out of last year is the site up in Banu where we were able to go and deep rip down to 600 mls. At the beginning of October, we measured down to 600 mls to work out how much moisture was underneath the deep rip treatment versus the brown out treatment and surprisingly, they were exactly the same. I would have expected that because we put a deep ripper through, we would have dried the profile out. What this kind of result gives us confidence in is that if growers are thinking about fallow it's more than just storing water and getting nitrogen. It also opens up the opportunity for growers to increase machinery utilisation. So, rather than trying to deep rip in the summer, you can deep rip in the June-July period and you won't lose your moisture. Still, really only one year of trial results out of that, I've just finished and done another round of soil testing to see what the soil moisture is in those treatments prior to the 2024 crop going in. I haven't got those results back, but I'm really keen to see what they are and see if we've lost any moisture.

[00:07:53] **Sally Maguire** So where is the project going to now?

[00:07:56] **Dr Darren Hughes** The original six sites we set up in 2022, they've had their first two years of establishing the site and one year of crop, GRDC has just extended that project for another two years. We have just gone through and taken the first round of soil tests for each of those plots, we've sampled down to 300 mls to work out how much nitrogen is under each treatment. Those original six trials will be planted as per grower practice any time in the next couple of weeks. The eight trials that were established last year, those will be sown again as per grower practice, and then those trials will be continued to be monitored again in 2025 and 2026. So I guess the total fallow project that's running with GRDC doesn't end until early 2027. So we'll get some really good immediate effects of the impact of fallow on the farming system, and we'll get some other long term effects or benefits of fallow on the farming system, which is some of the key questions that growers were asking about fallow.

[00:09:01] **Sally Maguire** At the beginning of the project, one of the aims was improved knowledge of fallow management and the economic value of fallow in cropping rotations, and you have mentioned some of that stuff along the way, but can you just really summarise that for growers listening out there?

[00:09:16] **Dr Darren Hughes** If you're considering fallow for this year, my recommendation based off the trial results, is to use what we call the brown out fallow, so keep that free of weeds all the time. What you're likely to see is a point four of a tonne, increase in the yield of the cereal crop next year. You will likely end up storing on a loam sort of soil type, about 20mm of water and having about ten kilograms of nitrogen stored. Looking at the trial results, growers adopting the brown out option are spending around that 80 dollars a hectare to keep them weed free over the entire year and if we do some sort of quick sums, growers are spending about four dollars a hectare to save one millimetre of plant available water. If you've got a, I guess, a water use efficiency of around that 12 to 15kg of grain per millimetre of water growers are then able to do the sort of value calculations on that. One thing that we also remind growers to do is, yeah, check for that glyphosate resistant ryegrass. If you're going into your fallows, always go with controlling weeds in that late August early September period, just before seed set. The recommendations coming out of the trial work so far is to always budget on a two spray strategy because of that glyphosate resistant ryegrass if you're going to leave a paddock out, take that time to kill the ryegrass, go with the glyphosate and come back with a paraquat option but always discuss those specific chemical recommendations with your local agronomist.

[00:10:45] **Sally Maguire** Darren any final words for growers heading into this season?

[00:10:49] **Dr Darren Hughes** We're looking at a sort of tight start to the year again. I'm aware that many growers in the sort of low rainfall zone where these trials are located, had a bit of a tight year last year, haven't necessarily got a lot of soil moisture again this year. Fallow doesn't have a benefit in terms of a cash return to the grower, but it will deliver your benefit over time. So if any growers are interested in thinking about how they start changing their crop rotations given the start to the year, please feel free to reach out to me. Always happy to chat to any grower that might want to know a little bit more information.

[00:11:29] **Sally Maguire** That was Darren Hughes from Lakonic. And for more information about maximising the profitability of fallow head to our websites grdc.com.au and groundcover.grdc.com.au. I'm Sally Maguire. This has been a GRDC podcast. Thanks for listening.