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FARMER CASE STUDY THEME: PUSHING THE BENCHMARK

Case Study: Pushing the Benchmark

Summary/Purpose

Kerran Glover understands that yield potential is a lot higher than it once was, due to changes in genetics and farming practices. He understands the 'benchmark' will change and needs to be pushed to realize true potential and that inputs must change to match new higher potential. Research Agronomist at EPAG Research, Jacob Giles explains, "deep N testing and the use of soil moisture probes are amongst some of the tools that can help ensure inputs are as accurate as possible." Kerran was interested in learning more about pushing the benchmark. In this case study he shares his learnings based on deep N trials across his paddock and the impacts on input costs and yields.

Context

Kerran's farm *Goldmine Hill Farms* is a 6500-hectare mixed farming enterprise, cropping 4500 hectares and running between 2500 and 4000 Merino sheep situated at Lock on the central Eyre Peninsula.

He was interested in adjusting his prescriptions and fertilizer rates with phosphorus replacement in his cropping as well as nitrogen application. Cropping accounts for 60-70% of his operations and includes wheat, canola, vetch and barley. Kerran was looking at ways to increase profits from his crops, without spending more on inputs.

His business approach is closely aligned to the objectives of the Resilient Eyre Peninsula project in that he is trying to build resilience and achieve the best possible results for the least amount of inputs; by making sure to maximize yield using the same amount of the inputs; "being careful to not waste or spend more money than we needed to get those maximum yields."

Approach and methodology

To date Kerran has applied different rates of nitrogen across the soil types in his focus paddock, based on data collected from soil sampling. He is yet to determine how those different N rates are going to affect yield and protein.

He said the project had been a great “team effort” where Jacob has done all the monitoring and Kerran has got on with farming. While he said he did not bring any technical knowledge to the table, Kerran appreciated being consulted on his practical observations gained over years of experience with his cropping program.

Kerran has been impressed by the project model and the differences he has experienced compared to other research projects he has been involved in, where the farmer is left overwhelmed by additional workload. In contrast, he has felt supported throughout the trial and has not spent additional money on crops as the trials have integrated with regular business operations, eliminating financial risk.

He has appreciated the regular communications and effort on the part of the project team to understand his aims, working collaboratively to come up with solutions and alternative options. He said overall it has been “really seamless.” For example, nitrogen prescriptions came through relatively quickly as a result of access to the project’s network of people. To run these activities on his own, this would have taken a lot longer.

Impacts/Benefits

As of November 2022, Kerran was only just starting to get results in terms of understanding nitrogen levels and soil available water to the plant, but suggested more time is needed to understand how that is driving yields and how the nitrogen is cycling through a whole rotation. He said, “while we are always building a better understanding, I feel like we've got a lot more to learn.” Kerran noted, some of the results relating to deep nitrogen being observed, “have been a bit surprising.” The longer the project can run, the better the data and outcomes at the end of it and, “the better we will understand how that nitrogen cycles.”

He is keen to continue the process to determine how he can replicate outcomes on a broader scale, and potentially include the rotation on other areas of the farm. He explained that following his legume with canola and a wheat crop, his nitrogen levels were “through the roof in that rotation,” without having to apply a lot of nitrogen. He would like to keep tracking this rotation to better understand the build-up in resilience and sustainability that can be achieved as a result.

Yield and deep N at sampling points

Kerran is involved in ongoing discussions with consultants around the amount of plant available water (PAW) stored in in the soil and how to match this to seasonal conditions and nitrogen levels. He has been running trials across sections of paddock where he applies a high rate of nitrogen versus zero, and others with a cross section of different applications to compare.

In terms of how well Yield Prophet® data lines up with yields, Kerran again suggested the need to continue monitoring, to be able to collect more data and more accurately assess outcomes across a period of time. To date, he is satisfied that data is delivering a bit more confidence in the model.

He feels these trials are addressing a knowledge gap and a lack of understanding around stored nitrogen, and how much that can vary between different rotations in farming practices. He said this information is now becoming clearer, “it is also reinforcing the need to do soil tests and deep N tests.”

He explained the importance of understanding how much moisture is stored and how that drives decision making. For example, if the aim is to achieve a certain yield and a deep N test comes back with high nitrogen levels, then there is no need to apply more because it is already present.

Adoption and practice change

Kerran will be looking at how he can use learnings from the harvest of nitrogen test strips to plan nitrogen inputs more broadly. He believes the results will be closely looked at locally, as a lot of growers are seriously looking at their systems and how much it is costing to put crops in. He said, "if we can get some good data out of this, and I think it's going to be, then there will be more uptake of variable rate technology to better match nitrogen inputs and be more cost effective. People will see the benefit if they can see the results in the data."

He commended the project on running focus paddocks across different regions, tailoring objectives to the area. He said involving farmers in the process has allowed the project to be far more focused, "to hit the ground running, because they have connected with the local knowledge and experience of farmers in the district, who know their soils and the long-term ability of those soils." They have also taken the time to ask for input before starting the project, instead of waiting until part way through.

The standard of networking across the project has been exceptional and unlike any project Kerran has been a part of in the past. He said, "I think it is an absolutely perfect model to get the best chance of a good result for the money that is invested in it." He suggested it is a model that should be replicated in future projects.

Relevance to others

Kerran has been pleased to see the level of interest in the project. There has been national interest with consultants visiting his focus paddock from interstate, including CSIRO delegates. He said this was encouraging as it made him feel like the work and effort being put in was noticed and "has some importance. I feel like this is a worthy project to be a part of and am happy to be a part of it."

He also mentioned several farmer groups have visited his paddock. He has presented to local farmer groups and held four meetings over the last two years, with local farmers who are interested to see his paddock. He has been more than happy to open the trial site to anybody that wants to have a look.

He has a diagram which he shares showing "a mud map," of what has been done where; what varieties have been sown; and the timing of sowing. He said this has "created quite a bit of discussion."

With the rise in input costs, including high fertilizer prices, people are looking at what they are spending and trying to get the "best bang for their buck." This is aligned with the objectives of the Resilient EP project.

Kerran explained, change takes time and growers may not necessarily rush home and update their spreader so it has variable rate technology: "the adoption of a technology is quite slow"; it can be costly and takes time to fit into a growers existing program. However, he feels that based on discussions he has had with people, they are certainly looking at it, and next time they upgrade a piece of machinery, they will make sure it can use variable rates.

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Project Partners

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For the full case study report go to www.airep.com.au