

Does soil and plant testing pay for itself?

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RESEARCH

Key messages

- **2016 GRDC grower surveys indicate there is a low adoption of soil and plant test data to underpin nutrient regimes.**
- **Growers are missing out on the economic benefits of making informed nutrient management decisions.**
- **Soil testing rates are influenced by advisers and agribusiness, as well as individual grower attitude towards the practice.**
- **Improving fertiliser returns will assist in improving the profit margin for southern region growers.**

Why do the trial?

Grower surveys conducted by GRDC in 2016 indicate low adoption of soil and plant testing data being used to inform nutrient decisions, highlighting an opportunity to assist growers to improve their nutrient decisions and create better crop outcomes. (<https://grdc.com.au/FarmPracticesSurveyReport>)

The wider industry often promotes the benefits of using testing to guide nutrient decisions both pre and in-season, however soil testing rates appear to remain quite low. This GRDC investment runs from 2018-2021 and aims to increase soil and plant testing rates. It incorporates a range of extension and communication activities to gauge the barriers to adoption and provide education opportunities. An intensive, high-impact soil and plant testing demonstration program will also be conducted with growers interested in improving fertiliser returns. The economic value of nutrient management practices

in terms of increased nutrient use efficiency, including savings where soil nutrient levels are high, will be widely promoted throughout the duration of the project and beyond its completion.

How will it be done?

The project involves a number of outputs to ultimately give growers and advisers a good understanding of nutrient management decision making processes and the benefits to their operation.

- An economic framework analysing the value of soil and plant testing will involve survey and workshop analysis, farm-scale assessment via fertiliser test strips and existing literature. The framework is designed to be used together with large scale on-farm paddock trials to demonstrate how fertiliser decisions informed by test results can lead to increased profitability. Results from this trial program will be included in the on-going development of the economic framework.
- A precision agriculture and farm management platform will be used for data management, trial paddock setup and will detail procedures for soil and tissue testing. This will ensure consistent results are gathered from 100 growers in SA and Victoria with six paddocks each to be sown to wheat in 2019. Of these trial paddocks, half will have a fertiliser strip trial included. Three years of historical production data will be collected and pre-sowing samples for nitrogen (N) and phosphorous (P) conducted to give a paddock baseline.

Throughout the growing season there will be N and P nutrient strip trials and tissue sampling and grain yields will be collected to assess nutrient responses.

- Promotion of nutrient management best practices using key influencers of practice change in varying communication and extension activities. Initial focus group workshops for growers and advisers participating in the trials will seek feedback around soil testing. This series of workshops will also outline the economic framework established and protocols for soil sampling, demonstration trials and data collection. A survey of more than 200 growers will be conducted with the goal of providing insight into the current attitudes of growers and advisers towards soil and plant testing. This will assist in guiding communication and extension activities which are expected to include promotion and messaging to growers via participating farming systems groups including Eyre Peninsula Agricultural Research Foundation, Hart Field-Site Group, Mallee Sustainable Farming and Southern Farming Systems.

What happened?

The project is in its early stages with grower surveys and workshops underway in early 2019. As 2019 progresses, paddock trial sites will be set up across the southern region to test for pre-sowing soil N and P before fertiliser strips are tested and monitored by NDVI and harvest yield map data. The impact on nutrient use efficiency, profit for each grower (costs, input savings and/or increased income) and soil data will be compiled and trends across the region summarised each year. Soil and plant testing data will provide a useful snapshot of nutrient status and soil fertility in the southern region and will help highlight emerging issues such as

soil acidity and declining organic matter.

Ultimately, the investment aims to improve nutrient management best practice through the increased use of soil testing and provide grain growers in the southern cropping region (Victoria, South Australia and Tasmania) with the confidence, knowledge and ability to make more effective and profitable nutrient management decisions.

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