Over the past three years, the team at Precision Agriculture has researched the implementation of precision agriculture in the rice industry on behalf of the Federal Government’s Rural Industries Research and Development Corporation.

Findings from the project have been released steadily and are starting to reshape the way rice is farmed in this country, identifying significant opportunity to improve productivity and profitability across the industry.

Key to this are implementing precision agriculture techniques, including variable rate application of crop inputs, soil conditioning applications and water management methods.

Who is Precision Agriculture?

Precision Agriculture is Australia’s leading provider of precision agriculture services, offering advice and practical support to farmers and industry looking to improve performance through technology.

With offices around the country and a highly experienced team, we have the knowledge, technology and skills to deliver leading precision agriculture services tailored to each of our customer’s needs.

For more information:

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Why consider variable rate management for rice?

A typical rice crop varies by 3-4t/ha, costing the Australian industry up to $150 million per annum – variable rate fertiliser has proven its ability to close this yield gap between high and low yielding areas, delivering the potential to increase productivity by 10-15%.

Intensive agriculture such as rice production favours variable rate management as poor performing areas in a high cost of production system can dramatically reduce farm profitability.

Many paddocks have predictable yield zones associated with cut and fill maps, offering farmers the ability to develop a variable rate nutrition and soil conditioning program.

**Findings: Soil condition and water**

- Regular levelling of paddocks to ensure minimum grades on each bay will limit the effect of inconsistent water depth, offering superior water management ability.
- Collecting accurate elevation data with RTK autosteer systems can help prioritise which bays may benefit from a regrade.
- Topsoiling when levelling new country can eliminate the detrimental effects of cut.
- Managing soil sodicity with targeted gypsum applications based off yield maps and/or cut and fill maps can improve crop establishment and water quality.
- Strategic GPS-referenced soil testing based off previous years’ rice yield map and/or cut and fill map is important to monitor nutrient levels and soil health.

**Findings: Paddock management**

- Farmers with multiple years of yield data should review all maps and look for consistent trends. If clear production zones cannot be found, there would be little value in pursuing a variable rate management program.
- If a strong correlation between rice yields and cut and fill map can be identified, then proceed with zone management based off these land-forming maps. Do not assume this relationship exists with all paddocks.
- Do not use yield data from non-rice crops in an attempt to define rice management zones as they respond differently to soil/water influences.
- Local paddock knowledge should always be integrated into the paddock zoning process.

**Findings: Measure to Manage**

- Use yield data to quantify the economic variability across each paddock in order to determine the value of variable rate management.
- Yield data should also be used to measure variations and responses to management practice changes (eg. levelling) to see if a positive yield or economic response has been achieved. These management practices do not necessarily need to have a site specific crop management focus.

*Right: Example variable rate fertiliser map*