

## Maintaining profitable farming systems with retained stubble in the Riverine Plains region — project overview

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### Introduction

The Maintaining profitable farming systems with retained stubble in the Riverine Plains region Project was managed by Riverine Plains Inc, and supported by FAR Australia, through an investment made by the Grains Research and Development Corporation (GRDC) as part of an overarching national initiative focussed on maintaining the profitability of stubble-retained systems. This project started during 2013 and concluded in June 2018.

### Objectives

The project sought to:

- investigate, demonstrate and extend cultural practices to assist growers to adopt no-till stubble retention (NTSR) in medium and higher-rainfall environments;
- build on findings from the previous Riverine Plains Inc Water Use Efficiency (WUE) project; and
- extend the frontier of agronomic knowledge for crops grown in NTSR systems.

### Background

It is widely accepted that as rainfall increases across cropping landscapes, the amount of stubble retention decreases. This often is because growers perceive that growing high-yielding crops in stubble-retained systems is more difficult than growing them in paddocks where the previous crop residue is removed (mainly through burning). It is also true to say that much agronomic knowledge has been gleaned from trials that haven't been carried out under a modern NTSR system, leaving a potential knowledge gap.

By addressing the negative impacts and perceptions of NTSR systems, advancing the agronomic frontier and building the capacity of growers and advisors working in these systems, it is anticipated more growers across the Riverine Plains area will adopt stubble retention practices over time, and that the WUE of these systems will increase. Adoption of an NTSR system, or improving an existing NSTR system, is estimated to result in at least \$50/ha of

extra income from cropping each year. Additionally, a cost saving of about \$60/ha per year can be achieved through either reduced nutrient loss, normally seen in stubble removal, and/or a more appropriate allocation of inputs under an NTSR system.

### Research

The research component of the Riverine Plains Inc *Maintaining profitable farming systems with retained stubble in the Riverine Plains region* project was comprised of a series of large and small plot trials. The first trials were established during 2014.

Using large-scale trials (focus farms) the research team evaluated the impact of a single-year, one-off change in stubble management. The result of these trials helped to determine if periodic active management of stubble in an NTSR system increases the sustainability and profitability of the system across the rotation. As different stubble management approaches are likely to perform better under different seasonal conditions, the four years of trials (2014–17) have provided information on crop performance under a range of seasonal climatic conditions.

The focus farm trials in 2014 were located at Henty and Coreen/Redlands, New South Wales and Yarrowonga and Dookie, Victoria. In 2015, a site near Corowa was used rather than Coreen/Redlands, in order to maintain the same rotation position, moving back to Coreen in 2016. In 2017, the farm focus sites included Coreen, Yarrowonga and Dookie, with the Henty site discontinued due to variability.

As a key component of this project was to identify the long-term impact of a one-off change in management, the sites used in 2014 were returned to the farmer for commercial cropping, with new sites (in the same rotation position) established in 2015, 2016 and 2017. These are referred to as 'time replicate 1 (2014 sites)', 'time replicate 2 (2015 sites)', 'time replicate 3 (2016 sites)' and 'time replicate 4 (2017 sites)'.

As 2017 was the fourth and final year of the project, the trial reports include both the experimental results from the 2017 trials, with selected yields also measured on the 2016, 2015 and 2014 sites, to understand if the change in stubble management has influenced the performance of the following commercial crop.



#### Locations of the 2017 large block (focus farm) trials

The range of 2017 Stubble project results from the large plot focus farm trials are presented from page 12 of this compendium and include evaluations of:

- the influence of stubble retention on in-canopy temperature and frost risk (Coreen, Yarrowonga and Dookie), (page 30);
- the interaction between stubble height and light interception in canola, (page 38); and
- nitrogen responses in different electromagnetic (EM) zones of the paddock (page 42).

The precision agriculture component of the 2017 Stubble project also evaluated in-paddock variability (page 54) as well as the economics of variable rate applications of nitrogen (page 66).

#### Outcomes

The overarching outcome from this project will be to increase the adoption of NTSR systems across the Riverine Plains region. Regional guidelines specific to the region have also been developed, which will aid in increasing the profitability and sustainability of NTSR cropping systems. These guidelines are available at [riverineplains.org.au](http://riverineplains.org.au). ✓

#### Contact

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