



# Retained Stubble Systems: Benchmarks



## Background

Every individual farming system is different. Machinery, crop sequences and enterprise mix are all going to vary depending on the individual situation.

Stubble management is no different. There are no right or wrong ways to manage stubble, it is an individual choice that will depend on your system.

These guidelines aim to provide you with information to assist in making decisions in retained stubble systems. They highlight potential local issues across the South-East region of SA and on Kangaroo Island and provide information around management of these issues in retained stubble systems.

Decisions on farms are often made using the head, the heart and the gut<sup>1</sup>. A mixture of knowledge, facts and rational thinking (the head), emotional aspects which are often based on farmer values, goals and beliefs (the heart), and intuition (the gut) which is shaped through a farmers experience and own knowledge.

The point at which each individual is going to decide that the stubble load is too large and needs to be reduced, or that the issue in the retained stubble system needs alternative action is going to vary considerably and be a very personal decision.

The following guideline contains a summary of the issues that were looked at by the MFMG and AgKI through the GRDC Stubble Initiative and shows the level of interaction between each of the issues to increase awareness of the implications of each part of the system on the Stubble Cycle.

## Introduction:

This guideline has been developed for the MacKillop Farm Management Group (MFMG) as part of the project “Maintaining Profitable Farming Systems with Retained Stubble in the South-East and KI regions”, funded by the Grains Research and Development Corporation (GRDC) as part of the Stubble Initiative.

The Stubble Initiative involves farming systems groups in South Australia, Victoria, southern and central New South Wales and Tasmania, collaborating with research organisations and agribusiness to address challenges associated with stubble retention, including weeds, pests, disease, nutrition and the physical aspects of managing stubble.



Figure 1. Stubble paddock, Keith March 2018





## The Stubble Cycle

There are three key timings of the stubble cycle

- ⇒ Harvest Management
- ⇒ Fallow Management
- ⇒ In-crop Management

Within these timings, there are a range of factors that affect decisions around how to manage each of these. The stubble cycle is shown in Figure 2. This shows some of the interactions of each of these issues that have been addressed by MFMG and AgKI throughout the project, the overlaps between the different issues and the complexity of the system. In addition to this, there are environmental factors that can end up over-riding all best laid plans.



**Figure 2.** The stubble cycle showing the interaction and timing of some of the factors addressed by the Stubble Initiative.

Planning starts before harvest, and having an idea (albeit a flexible idea) can make the whole process a lot smoother.

Some of the key drivers that may change the way that you deal with the stubble and prompt removal or reduction in stubble are outlined below for each of the key timings.

- 1. Harvest**
  - ⇒ Weed control; the use of the harvest process for weed control requires the stubble to be cut low. This will assist in reducing the stubble load. Conversely, if a large amount of weed seed shedding has occurred already, then the crop may be harvested high and a full burn in the fallow period considered to try and reduce weed seed numbers.
  - ⇒ Seeding systems; the required harvest height with a tyned seeder is 1.5 times (and up to 2 times in heavy stubble loads) the bar height to allow for adequate clearance and trash flow. If the crop is harvested high, then reduction in stubble height after harvest or during the fallow period will be required to reduce seeding issues.
  - ⇒ Fallow management; if you are looking to narrow windrow burn or bale straw, this needs to be determined prior to harvest so that the cut height and narrow windrow chute can be fitted to ensure that these processes are successful.
- 2. Fallow**
  - ⇒ Herbicide application; management during the fallow period needs to be monitored so that a fairly upright stubble with minimal trash on the ground remains to ensure good coverage of the soil with pre-emergent herbicides.
  - ⇒ Disease management; the desired type of crop to be planted (i.e. cereal, pasture or pulse) and understanding the potential disease load for this crop will assist with management and decisions around crop rotations and varietal selection.
  - ⇒ Pest management; the fallow period is a critical period for monitoring and managing snails and slugs. Cabling, rolling, tillage and full removal through burning may all be considered depending on the pest load (and species) present.
  - ⇒ Seeding Systems; removal will depend on the ability of the individual farms seeding equipment to pass through the stubble and for the seeding process to occur in a timely manner.



### 3. In-crop

- ⇒ Nutrition management; in-crop nutrition will depend on the remaining stubble load at sowing. Additional nitrogen may be required at seeding (dependent on soil sampling) as the stubble may have caused a tie-up of nitrogen.
- ⇒ Disease management; stubble borne diseases that are more paddock specific may be able to be reduced by a break crop and full removal of stubble (eg. eyespot). The management of stubble will also determine the risk of disease and may assist in determining fungicide strategies.
- ⇒ Weed and Herbicide management; depending on the crop rotation, removal prior to sowing may assist in allowing better penetration into the standing stubble canopy post-sowing.
- ⇒ Pest management; if not managed properly, snails and slugs can decimate young seedlings (particularly canola) as they are emerging. The risk should be established based on seasonal conditions, paddock history and monitoring prior to sowing and if action is required to remove stubble and reduce pest numbers, then it should be taken.

## Acknowledgements

- MacKillop Farm Management Group, Farmer co-operators, members and sponsors
- Andrew Ware, Amanda Pearce and SARDI New Variety Agronomy Team, Struan
- Jenny Stanton, Keith Bolto, AgKI
- John Kirkegaard, Tony Swan, Therese McBeath, Rick Lewellyn, Gupta Vadakattu, Sarina MacFadyen, CSIRO Sustainable Agriculture Flagship
- Michael Nash
- Trent Potter, Yeruga Crop Research
- Sam Kleeman, Chris Preston & Peter Boutsalis, School of Agriculture, Food and Wine, Adelaide University
- Andrew Etherton, GRDC

## References

- <sup>1</sup>SFS00028 "Farm decision making" 2015

## Further Information

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