

# LEADA



## LEADA Stubble Guidelines

### Managing Stubble – when to reduce stubble loads

Local Management Guideline for the GRDC Stubble Initiative (LEA0002)

Growers across Lower Eyre Peninsula (LEP) embraced stubble retention as part of a system change that started to evolve in the 1990's. It was driven by reducing tillage, coupled with more herbicide options that made more timely and cost efficient operations, leading to increased profitability.

While stubble retention remains a key aspiration for LEP growers there are situations where the removal or reduction of stubble may need to be considered. The challenges for stubble retention on LEP can be categorised as physical, pests, weeds, disease, and nutrients.

#### Physical

Strategic use of stubble removal/reduction techniques such as baling, grazing, tillage and burning need to be considered when the impacts of stubble retention reduce crop profitability, outweighing the short to medium term benefits.

Machinery blockages can slow the seeding process, leave with paddocks un-trafficable clumps and inhibit crop establishment.

Growers on LEP have demonstrated that it is possible to harvest crops yielding 6-8t/ha of grain (12-16t/ha biomass) at heights of around 15cm or lower, using harvesters with stubble mulching ability and then sow into directly into the stubble inter-row using tined

seeders on 12inch (30cm) spacing, with little or no blockages. However, harvesting high yielding crops at low heights can slow the harvesting process, possibly exposing the crop to down grading from weather events.

Growers need to evaluate the risk of harvesting in a timely manner, and compare that to harvesting at a height that will allow them to sow directly into the stubble. Post-harvest stubble options such as slashing also need to be evaluated for their cost and time effectiveness. Many LEP growers are finding it is possible to achieve harvesting at low heights in a timely manner through purchasing large capacity harvesters, but this will not suit everyone.

Growers need to plan their stubble management so that machinery blockages are avoided. This involves assessing their seeders' ability to handle differing stubble loads prior to seeding. Worst case scenarios occur when stubble does block machinery during seeding and paddocks have to be burnt in a hurry.

#### Pests

Carefully monitoring establishing crops is a key management strategy to assist with managing pests in high stubble systems.

Snails are the most endemic stubble related pest on Lower Eyre Peninsula, however outbreaks of slugs, slaters, millipedes and other insects are known to occur sporadically.

Recent research conducted on LEP found that baiting as a sole management strategy for snails produced poor results, but when combined with cultural controls such rolling on a hot day and an improved knowledge of snail behaviour, snail control improved dramatically.

Rolling and cabling are important cultural management strategies, particularly when planning to plant high risk crops such as peas or canola. Burning stubble is likely to work equally as well, but is not necessary to achieve satisfactory control.

#### Weeds

Annual ryegrass is one the key management drivers for growers on LEP. Controlling ryegrass requires the combination of a number of cultural and chemical control options.

Harvest weed seed collection (through a range of methods) has proven to be a very effective management technique to reduce weed burdens. Windrow burning has proven particularly effective in reducing ryegrass seed burdens in following canola crops, as high proportions of weeds seeds are captured and the windrows destroyed when windrows are burnt.

New research into the efficacy of chaff lining as a tool for effectively managing weed seed burdens is indicating minimal losses in harvester capacity and time saving operations.

The use of cultural management techniques will become an increasingly important strategy for ryegrass control, in the face of increasing herbicide resistance, however using some of these strategies may mean that stubble needs to be partially removed on occasions.

### Disease

Blackleg in canola and yellow leaf spot and eyespot in cereals are all yield loss causing diseases on LEP.

There is genetic resistance, fungicide and other cultural solutions to each of these diseases that in general are more effective than any stubble reduction techniques (more detail can be found in LEADA disease management guidelines). These should be considered as part of an overall management strategy.

### Nutrients

Nitrogen is a key driver of grain yield on LEP. The large proportion of canola/ cereal grown in the region means that high nitrogen inputs are required to maximise yields.

The process of breaking down stubble will also draw on soil nutrient supply (particularly nitrogen), making it unavailable to the crop as the residue/ stubble is being broken down.

Allowing an additional 5kg/ha N per 1t/ha retained stubble can allow for the nitrogen that is being tied up in the mineralisation process.

Burning stubble will reduce the nutrient draw down that occurs while the stubble is being broken down, however this risks the loss of other critical crop nutrients such as potassium and phosphorous during the burning process.

### Options for LEP growers

Stubble management on individual farms will vary depending on the following factors:

- Stubble load at harvest
- Mixed farm (including grazing) or continuous cropping
- Sowing system – Disc or Tyne (and the individual machines' capabilities)
- Weed, disease and pest threats.

High stubble loads will require some level of management (either harvesting low, mulching, grazing, or burning) to allow for successful seeding, with careful consideration required for weed, pest, disease and nutrient management.

Grower attitude and available resources will determine how stubbles are managed in their farming system. The best guiding principle in managing stubble is to ensure that the key drivers of profitability aren't compromised, being; summer weed control, timely sowing, adequate and even crop establishment, in-crop weed control, managing the impact of foliar and root diseases, and nitrogen management.

#### Disclaimer

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