

Eyre Peninsula Farming Systems 4 – Maintaining profitable farming systems with retained stubble

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INFORMATION



Key messages

- A new GRDC funded project has begun on upper Eyre Peninsula. The project will run for 5 years, and will produce guidelines to overcome the problems with retaining stubble in EP farming systems.
- EPARF have received funding for the project, and are engaging SARDI Minnipa Agriculture Centre staff to deliver the project. The EPARF Board and sub-committees will provide oversight and direction for project activities.

Project aims

The project 'Maintaining profitable farming systems with retained stubble - upper Eyre Peninsula' aims to produce sustainable management guidelines to control pests, weeds and diseases while retaining stubble to maintain or improve soil health, and reduce exposure to wind erosion. The major outcome to be achieved is increased knowledge and skills allowing farmers and advisers to improve farm profitability while retaining stubble in farming systems on upper Eyre Peninsula (EP).

While providing benefits such as increased ground cover and soil protection, retained

stubble farming systems present unique challenges compared to conventional or traditional farming systems where cultivation/stubble removal has been an important component of pest and disease management strategies. The local management guidelines developed in this project will include strategic approaches to address locally relevant issues on upper EP in retained stubble systems, in order to maintain or improve profitability and sustainability.

Guidelines will be developed with the use of local advisers, growers, collaboration with other low rainfall farming systems groups and past research findings, and further validated and demonstrated through the development component of this project. Supported with economic and risk analyses to determine profitability of practices adapted to local situations, they will be extended to the local farming and agribusiness community via our already established EP Farming Systems networks, publications and events. They will also utilise social media such as YouTube videos, an e-newsletter and the Eyre Peninsula Agricultural Research Foundation (EPARF) website www.minnipaagriculturalcentre.com.au.

Why do the project?

The greatest potential for land degradation on EP is related to wind erosion. There are 834,000 ha (29% of cleared land) in the region with moderate or higher potential for wind erosion (DWLBC 2007). The most vulnerable areas are the sandy soils, particularly water repellent sands, of eastern and upper EP.

The move to conservation farming systems, with reduced tillage and

retaining of stubble residues, has improved soil moisture conservation, which has shown significant yield benefits in dry seasons. More recently, the move to no-till farming systems has further improved moisture and soil conservation across the farming districts. This technology has also significantly reduced soil erosion through lower levels of soil disturbance and higher levels of surface cover. (State of our Resources: Natural Resources Management Plan for the Eyre Peninsula Natural Resources Management Region 2009).

However, on upper EP there are significant issues arising from adopting practices associated with conservation farming systems (based on reduced tillage) and no-till farming. These issues include, but are not limited to, the build-up of snails, fungal disease carryover on cereal stubble and increasing in-crop weed infestation; all with costly but often poor chemical control. Stubble removal by burning and/or cultivation are generally seen by growers and their advisers as short term robust solutions. Growers with a long term history of no-till systems are finding it expeditious to cultivate selected paddocks to remove woody weeds and discourage mice and snail infestations.

Other issues associated with the retention of stubble include the recent occurrence of the white grain fungal disease, difficulty of establishing crops into medic pasture residue and grower and adviser perceptions that burning stubbles sterilises barley grass seed. Growers have also made observations that suggest retaining stubble increases the water repellence of non-wetting soils.

Research and development

The guidelines will be developed from field based activities, using the MAC facility and two regional sites on eastern and western EP, concentrating on specific localised issues. At the major MAC site the development work will be based on demonstrating opportunities to address pest, weed (in particular grasses), disease and crop productivity issues that are considered to be jeopardising the stubble retention systems. Stubble management options will be imposed on a range of field crops at harvest or post-harvest and stubble removal options pre-seeding also tested in representative commercial paddocks. The resultant pest, disease, weed and nutrient outcomes will be monitored and will provide validation for local guidelines and recommendations.

The regional sites will focus on specific local issues limiting profitability in stubble retained situations. On eastern EP the interaction between non-wetting

soils and stubble retention with establishment will be a key issue for demonstration. On western EP stubble retention is being viewed as a constraint to effective herbicide use for summer/autumn and in crop weed control. Stubbles are also increasing snail and mice populations while pasture residues can delay the seeding program, by requiring a mechanical chaining.

At a national level, CSIRO has been contracted to assist groups participating in the Stubble Initiative with research expertise and techniques, to encourage consistency and rigour across the projects.

What has happened so far?

Development sites have been established at three regional locations, Mt Cooper, Lock and Minnipa Agricultural Centre. In 2013 both wheat and pasture trial sites were commenced. Initial treatments included reaping wheat at different heights and in pastures pasture-topping and grazing versus selective grass control

versus hay-cutting. New treatments will then be imposed in 2014 on those previously established and will include comparisons between crop and pasture residue retention, disturbance or removal prior to seeding. Improved establishment options on non-wetting sands will be assessed through a comparative evaluation of seeding rate, depth and position. The project will continue to consult with growers at March meetings as to regional issues associated with stubble retention and where possible assist with developing and delivering regional demonstrations.

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