

## Extension of conservation tillage technology onto the farm South-East Darling Downs, Queensland

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### Background

There is an abundant relevant local research data (1, 2) to support the concept of minimizing tillage and surface retention of crop residues for soil conservation reasons on the Eastern Darling Downs. This work also highlights the agronomic benefits of stubble retention and minimal tillage, such as improved moisture infiltration and fallow efficiency which is likely to result in an increased chance of 'double cropping' or 'opportunity cropping', especially with reliable summer rains following winter crop harvest.

A comprehensive farmer survey (3) has shown that district graingrowers widely accept structural measures for controlling erosion, with 81% of farmers surveyed indicating they had implemented contour banks and waterways. However, the survey also indicated low farmer acceptance of agronomic and soil conservation benefits of stubble retention. While 48% of farmers owned machinery suitable for stubble farming, only 22% used it for this purpose.

### Methods

To enhance the adoption rate of surface stubble retention farming, local extension personnel co-opted the help and resources of a well-regarded Tannymorel graingrower to physically manage a demonstration area on his own farm in close consultation with extension staff on management decisions. We are comparing the following three fallow management regimes in terms of ultimate economic returns per unit area:-

#### *Conventional:*

Stubble cover destroyed. Sundercutting/disc ploughing to bury winter crop stubble, followed usually by 2 to 3 chisel ploughings and a light cultivation.

#### *Herbicide Substitution:*

Stubble cover retained. Blade plough (twice) to control established weeds in early fallow, followed by use of herbicides to control further fallow weed problems.

#### *Stubble Mulched:*

Blade plough once, two chisel ploughings and a light cultivation immediately prior to planting.

### Results

Mean yields and Gross Margins for 1984 and 1985 Barley crop are presented in table 1.

**Table 1. Barley crop yields and gross margins.**

Fallow management	Yield T/ha	Gross Margins \$/ha
'Conventional'	3.25	194.60
'Herbicide Subst'	3.82	230.20
'Stubble Mulch'	3.27	228.30

Local graingrowers are being kept fully informed at field days and meetings of the costs involved in the alternative fallow management systems. Through experience, we are all learning the finer points of herbicide usage in fallows. Sales of Roundup CT<sup>?</sup> and Sprayseed<sup>?</sup> have increased by 137% and 350% respectively in 1984 to 1986 in the district. Both are used almost exclusively in fallow weed management. There has also been a trend towards purchase and modification of planters with improved trash handling capabilities. Farmer enquiries to extension staff in Warwick on usage of herbicides for fallow weed control have noticeably increased since the project commenced, because farmers appreciate the effect of improved fallow efficiency on yield and profitability.

1. Freebairn, D.M. and Wockner, G.H. (1983), Qld. Agric. J. 109:227-34.

2. Freebairn, D.M. (1983). Aust. Field Crops Newsletter, 18:18-19.

3. Chamala, S., Coughenour, C.M. and Keith, K.J. (1983). A study of conservation cropping on the Darling Downs - A basis for extension programming, I.S.B.N. 0867760931, Dep. Of Agriculture, University of Queensland.