Water monitoring site containing a flume to capture the water on Lee Blackburn's farm, North Eton, Mackay

Farmers Collaborate to improve Water Quality

By John Agnew and Ken Rohde

Farmers Collaborate to Improve Profitability & Water Quality (John Agnew 1 & Ken Rohde 2)

Local Mackay growers are actively participating in the Australian Governments Reef Rescue program through block-scale water quality trials. The aim is to show that current best practices, which have been promoted and adopted based on improved profitability, will also give water quality benefits.

Detailed water quality monitoring sites have been set up on two North Eton farms (Lee Blackburn and Rodney Lamb) in collaboration with Reef Catchments, DERM and AgriServ Central. Both sites are looking at the effect of row spacing (controlled traffic versus conventional), nutrition (mainly nitrogen & phosphorus) and herbicide options (knockdowns & traditional residuals) on productivity, profitability and water quality.

Blackburn's trial site has five 0.8 ha strips with the following treatments:

- 1.8m single rows fertilised according to a "traditional" recommendation
- 1.8m single rows fertilised according to Six Easy Steps
- 1.8m single rows fertilised according to Nitrogen Replacement Theory
- 1.8m skip-row (cane & peanut strips) fertilised according to Six Easy Steps
- 1.5m single rows fertilised according to a "traditional" recommendation.

Blackburn's herbicide treatments will range from a typical label rate of Diurex & Atradex; a mix of knockdown & low rate of residual to Glyphosate via shielded sprayer.

Lamb's trial has two 1.1 ha treatments: 1.8m single rows, Nitrogen Replacement & knockdown herbicides versus 1.5m single rows, "traditional" fertiliser recommendation and residual herbicide (Diurex/ Hexazinone).

A "traditional" fertiliser recommendation means a generalised approach which includes higher (than currently recommended) nitrogen rates. Six Easy Steps is current best practice and relies on a good understanding of specific soil characteristics and generally

Left: Ken Rohde explains the water monitoring site to industry field trip.

Bottom: Federal Minister for Agriculture, the Honourable Tony Burke, MP with grower John Pastiga on a Reef Rescue field trip to the Mackay Region.

recommends lower nitrogen rates. Nitrogen Replacement Theory is not commercially validated but aims to replace nitrogen taken off in the last crop and has the lowest rate.

To determine the effect on water quality from practices over a larger area, runoff water will also be sampled in a farm drain close to one trial block (blocks from a few farms drain into it) and one further afield (many farms drain into it). To be able to make sense of water samples we must know management practice including the area under controlled traffic, fertiliser and herbicide use. Individual grower practices are confidential and will not be made available to government agencies or any unauthorised persons.

Our detailed trials are on two soil types, whose physical characteristics represent about 44% of Mackay cane soils. A rainfall simulator (which can apply "rainfall" at a controlled range of intensities and quantities) will be used to see how other soil types behave with respect to runoff and drainage. This data combined with results from our block trials will help predict how row configuration, nutrients and herbicides interact on a range of district soils. Computer modelling will also be used to help "scale-up" the block trial & rainfall simulator results to predict effects of practice change over larger geographic areas, in rivers and ultimately in the Great Barrier Reef lagoon.

Growers wanting to know more about the work being done should contact the authors of this article.

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