Healthy Country

managing the land for healthy waterways

FarmFLOW - Saving Soil Loss and Input Costs by Retaining Cover in Horticulture Production

The Healthy Country FarmFLOW project is working with horticultural producers in South East Queensland on various management practices to minimise potential soil and nutrient movement off-farm and into waterways.

Saving soil loss with inter-row cover

Cropping soils are most vulnerable when protective ground covers are removed. Erosion issues associated with row cropping (off-site loss of nutrients, herbicides and pesticides to the surrounding waterways) can be managed using inter-row cover crops to reduce erosivity during bed forming and planting through to canopy closure.

Feed oats were sown as a 'living mulch' to provide inter-row cover in pineapples at a rate of 50-60 kg/ha. Comparisons were made with a control using bare inter-rows (conventional practice) over 14 months.

Photo 1

Inter-row cover crop performance

- In the first storm the conventional plot lost 90% more soil loss than the plot with inter-row cover
- Erosion remained higher in the conventional plot after crop canopy closure (10 months)
- Inter-row cover significantly reduced soil erosion by 54 t/ha over the full crop cycle (14 months)
- The bed consistently retains its height enabling inter-row to perform its principle role of drainage
- Several crops suitable for inter-row cover (oats, sorghum and millet) also provide resistance to root-knot nematodes
- Oats suppress weed emergence and growth with no detrimental effect on crop yield or quality, and reduction in herbicide use;
- Cost savings associated with retaining nutrients, improved pest and disease prevention, and weed control of living mulch ($68/ha).

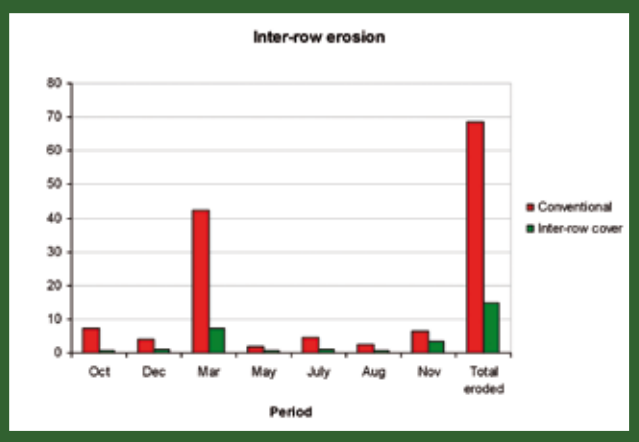

Figure 1
Soil loss comparison between conventional practice and inter-row cover crop for pineapples.

Soils, water and energy – getting more from the farming system for less

Controlled Traffic Farming (CTF) systems can minimise the potential for sediment and nutrient loss by providing opportunities to reduce tillage practices and maintain ground cover. Experience in SEQ shows that when CTF is combined with zero till (eg. green beans) that it can significantly reduce erosion from even steep slopes.

CTF systems restrict machinery traffic to specific tracks, minimising compaction of growing areas and the need for some tillage operations. Controlled traffic farming relies on the use of GPS guidance systems which provides opportunities for other precision operations such as variable rate nutrient and pesticide applications.

The Healthy Country FarmFLOW project is working with vegetable growers to implement CTF. The project is supporting producers through the provision of:

1. Satellite imagery

- Farmers receive high resolution imagery to identify variability across the farming system.
- Specialist consultants and extension officer work with producers to identify management options and responses to optimise uniformity and minimise variability based on satellite imagery.

Figure 3
Satellite imagery of cropping areas in target catchment.

2. Economic evaluation - How does it pay?

Economic evaluation of controlled traffic horticultural systems has identified various opportunities for cost and efficiency gains.

The largest economic benefit is a 40% saving in fuel consumption. This saving is achieved through reduced number of in-field operations and reduced power requirements. This equates to a 344kg/ha/yr reduction in carbon dioxide emissions.

Other potential benefits of CTF to be evaluated economically are:

- reduction in labour hours
- Increase timeliness of operations eg. ease of access after rain and more time for other operations
- Improved soil structure, infiltration and water holding capacity.
- Improved marketable product from gains in precision of operations

Table 1
Economic evaluation of fuel savings on a typical intensive horticulture farm under a controlled traffic farming system.

Annual reduction in fuel usage	**40%**
Carbon (CO_2) emission (kg/ L of diesel)	**2.7**
Total reduction in carbon emission (kg/ ha/ yr)	**344**

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