Schedule irrigation based on soil properties, crop growth requirements, and monitoring of soil moisture and weather forecasts

**Water quality**

In all irrigation systems the frequency and amount of water applied should be matched to plant requirements. Soil moisture monitoring equipment, including tensiometers can be used to inform decisions about how often to irrigate and how much water to apply. This minimises water logging and the amount water lost through runoff and or deep drainage (10S & 39S).

**Costs and benefits**

There were no examples found of the economic impacts (either positive or negative) to a grower how applies an integrated pest and weed management plan. It is anticipated that relevant information may be provided in the near future as further research is undertaken.

**Regional studies Wet Tropics**

Overhead irrigation is very site specific and your circumstances should be individually assessed. The benefits of use include:

- saved labour in irrigation management and tractor operations
- fertigation may be possible and its efficiency benefits may increase profitability
- reduced demand on water resources
- improved water efficiency, reduced deep drainage and run-off
- reduced loss of nutrient from deep drainage and denitrification
- adoption of adopt green cane trash for nutrient benefits (furrow irrigation restricts this) (26S)

**Field experiments of overhead irrigation in the Burdekin**

In early 2007 a site was established in the lower Burdekin to investigate the use of overhead irrigation as an alternative to furrow irrigation. The study also examined its integration with new farming system practices, including green cane trash blanketing. Although environmental and social benefits were found to exist, preliminary economic analysis indicated that an overhead low pressure irrigation system was not a financial benefit to the farming business. A combination of high capital costs and other offsetting factors resulted in the benefits not being fully realised. A
different outcome could be achieved if the farming business was able to realise the value on the water saved (26S).

**Mackay-Whitsunday**

Where supplementary irrigation is used in a predominantly rain-fed sugarcane production system yield potential can be maximised through a scheduled irrigation plan. This plan should take into account a grower’s water allocation, plant needs, soil types and seasonal weather predictions. Understanding crop water use based on canopy cover crop factors and average daily evaporation rates will assist in determining crop water requirements. Once a crop is fully canopied, stalk growth measurements and tensiometer readings can be used to determine the daily growth rate of the cane in relation to soil moisture. Selection of irrigation systems should be determined by a number of criteria such as topography, slope and labour considerations (1S).

**Sugarcane extension services**

**Smartcane BMP**

This program assists growers to ensure their practices on farm are at industry standard. It was released in December 2013. It was developed by CANEGROWERS and funded by the Queensland Government.


**Fertcare**

This program is a joint initiative of the Australian Fertiliser Services Association and the Fertiliser Industry Federation of Australia. It provides training, quality assurance, certification and accreditation. The training program delivers training in managing food safety, environment and occupational health and safety risks associated with the storage, handling and use of fertiliser and soil ameliorant products.

Website: [www.fifa.asn.au](http://www.fifa.asn.au)

Phone: 02 6230 6987 (Canberra)

Email: fertilizer@fifa.asn.au

**Project Catalyst**

Project Catalyst is a partnership between Reef Catchments NRM, the Coca-Cola Foundation, WWF and Mackay Whitsunday sugarcane farmers. The project has also expanded into, both, the Wet Tropics and Dry Tropics NRM regions. It aims to improve water quality and reduce the impact of pollution in the Great Barrier Reef, using innovative land practices.


Phone: 4043 8000 (Terrain Innisfail)

Email: info@terrain.org.au and/or belinda.billing@reefcatchments.com
Sugarcane economic tools

Farm Economic Analysis Tool for sugarcane

Developed by the Department of Agriculture, Fisheries and Forestry, this excel spreadsheet is designed to assist growers in assessing the profitability in changes to their farm management practices.
Phone: 13 25 23 (DAFF)

Supplementary resources

SmartCane Best Management Practice booklet series

Developed by BSES, Canegrowers and EPA, this series of seven booklets provides an overview of general principles of best management practice related to various aspects of a crop cycle.
Phone: 3331 3333 (BSES Brisbane) 3864 6444 (Canegrowers Brisbane).

Wetlands management handbook

Farm Management Systems (FMS) guidelines for managing wetlands in intensive agriculture. Developed by the Australian and Queensland governments, as part of the Queensland Wetlands Program. The guide provides information to landholders and extension officers on:

- Identifying wetlands
- Wetland management
- Artificial wetland creation
The guide was designed to complement other industry FMS programs, for holistic farm management.
Phone: 13 74 68.

Why consider improved practices?

There are expected economic benefits for farmers in transitioning towards a system of improved management practices. This is based on economic analyses that have been undertaken on farming system practices in each of the sugarcane producing regions of the Wet Tropics, Mackay-Whitsunday, Lower Burdekin and Burnett-Mary.

Economic analyses have shown that it is possible for a farming enterprise to improve profitability whilst operating with improved management practices. It is recommended that you assess your specific farming circumstances before undertaking any practice changes.
Is there any evidence that improved practices have a benefit for my farm?

Wet Tropics study one

Economic studies in the Tully region have indicated that adopting improved management practices may be economically viable. Benefits included a higher gross margin and positive net present value. This was demonstrated when the farm transitioned from C class to B class management practices over a five to 10 year period (26S & 23S).

Wet Tropics study two

In 2004, modelling of a typical farm near Cairns showed that incorporating improved practices of reduced tillage, legume fallow and reduced nitrogen application leads to an increase in income levels. Although this analysis indicated a small reduction in crop yield, financial returns were enhanced through a reduction in tillage operations, increased efficiencies and inputs over a full crop cycle. Overall, operating with these combined improved practices provides important economic benefits to a farmer at the plot level and provides positive effects on profitability (30S & 32S).

Mackay-Whitsunday

Economic analysis of a 150ha demo farm in the Mackay region indicated that transitioning to a system of improved management practices may have a negative impact on profitability over the short to medium term. Results demonstrated a higher farm gross margin when adopting practice changes. However, the substantial capital costs may result in a negative return on investment in some instances. It is recommended you assess your specific farming circumstances before changing any management practices (5S).

Burdekin

Economic analyses of demo farms in the Burdekin region have indicated that adopting improved management practices may be economically viable. Benefits included a higher gross margin and positive net present value. This was demonstrated when a farm transitioned from C class to B class management practices over a five to 10 year period (21S & 22S & 24S & 25S).

Burnett-Mary

A 2006 case study of a mixed cropping farm in the Burnett-Mary (943ha cane and 160ha peanuts), showed there are benefits in adopting improved management practices. The changes included controlled traffic with GPS, reduced tillage, scheduled flood irrigation and fallow legume cropping. The peanut crop was slashed, left on the ground and worked into the soil prior to planting the sugarcane. The study indicated a significant increase in gross margin over a projected 10 year timeframe with increases in labour efficiency and reduced tractor hours. Retaining peanut residue on the surface provided approximately 60 kg/ha of nitrogen. The tillage requirements for seed bed preparation were significantly reduced (11S).
More information

If you would like to contact DAFF about the information presented in this factsheet, contact us on: 13 25 23, for the cost of a local call within Queensland, or 07 3404 6999, or email us at; ReefPlan@daff.qld.gov.au
References


3S) Department of Agriculture, Fisheries and Forestry (2007), Bundaberg Grain in Cane, Canegrowers Case Study. Department of Agriculture, Fisheries and Forestry, Canberra.


Schedule Irrigation

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