Apply granular and liquid fertiliser subsurface

Water quality

The most effective placement of fertiliser is close to the roots of the plant (bioavailability). Proven application techniques include subsurface banding of fertiliser at planting and stool-splitting in the ratoon crop. Loss pathways are also minimised (leaching, volatilisation, denitrification and runoff).

Nitrogen uptake by the crop is more efficient in fertigation systems as they deliver nutrients closer to the crop root zone. However, fertigation only benefits water quality if it occurs as part of an integrated nutrient management plan. This plan will take into account aspects such as the physical and chemical properties of soil, yield potential, block history and possible loss pathways (41S & 28S & 30S).

There were no examples found of the economic impacts (either positive or negative) to a grower of applying granular and liquid fertiliser subsurface. It is anticipated that relevant information may be provided in the near future as further research is undertaken.

Regional studies

Field experiments in the Wet Tropics

A field experiment conducted on Pin Gin soils in the Wet Tropics in 2007-08, showed comparable yields can be obtained where nitrogen application is lower than conventional rates. Comparable yields were demonstrated when nitrogen was applied at a rate of 25-32kg/ha below conventional rates. Trials have shown that nitrogen topdressing is ineffective after a legume crop (35S & 6S).

Farm case study in the Wet Tropics

An Innisfail farmer operating a zonal tillage system modified a fertiliser applicator, application rates were varied according to soil type, drainage characteristics and the sugarcane variety planted. This resulted in a reduction in costs and time in the application of fertiliser and an improvement in the efficiency of nutrient inputs. It was anticipated that an improvement in soil health would be achieved in time. Healthy soils may reduce the incidence of disease and pests, such as cane grubs (2S).

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.

Website: http://www.canegrowers.com.au/page/Industry_Centre/bmp/
**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 fertilizer 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**


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 5 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.


Apply Granular and Liquid Fertiliser Subsurface

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