



## SRA nitrogen research investment

*A science-based approach to maintaining productivity and improving water quality*

As the lead research agency for the Australian sugarcane industry, Sugar Research Australia (SRA) plays a pivotal role investing in and researching activities related to nitrogen use and other issues concerning nitrogen use and the interaction between farming systems and water quality.

SRA provides robust and independent research in this field and assists our industry investors to optimise productivity and profitability while also moving towards meeting water quality targets.

SRA investment ensures logical, scientific research in this area. SRA will continue to leverage its research funds to maximise research impact.

To achieve these objectives, SRA partners with a range of credible research agencies and co-investors, including USQ, CSIRO, UQ, JCU, Qld government departments DES, DAF, and DSITI, as well as productivity services organisations, private sector companies, and others.

In 2014, SRA brokered and managed the production of a review of NUE in sugarcane which was funded by the Federal government Department of Environment (DoE).

The report found that there is significant potential for the industry to refine nitrogen application rates through continued use and evolution of the SRA SIX EASY STEPS® guidelines, to better match nitrogen application to the crop requirements via precision agriculture farming techniques, and to evaluate enhanced-efficiency fertilisers that will reduce nitrogen losses from the farm.

There is also potential to look at how different sugarcane varieties perform in relation to nitrogen use efficiency and to benchmark new varieties as they progress through the SRA plant breeding program, as well as to undertake more research on validating SIX EASY STEPS across a range of soil types, farming systems, and climatic conditions.

SRA supports a sound and scientific-based approach to any industry change in farming practices. Prospects identified include refining tools such as SIX EASY STEPS and SafeGauge, better accounting for all available N sources to the crop, progress towards calculating realistic yield potentials for different farm management systems and the development and use of enhanced-efficiency fertiliser technologies.

- SIX EASY STEPS is a science-based nutrient management tool that enables the adoption of best practice nutrient management on-farm. It is acknowledged as industry best-practice for nutrient management to optimise productivity and profitability without adversely influencing soil fertility or causing off-farm effects.
- SRA is committed to improving the productivity and profitability of Australian sugarcane growers and millers.
- SRA undertakes robust, science-based research into nitrogen fertiliser application.
- SRA partners with a range of highly credible external agencies to leverage the investment made by industry and to deliver research outcomes for the industry.
- SRA's participation in this research ensures that the industry has a credible and science-based voice at the table that can inform policy discussions.
- SIX EASY STEPS requires further validation across a range of soil types, farming systems and climatic conditions.

## The industry:

Sugarcane land is  
**1.3%**  
of the Great Barrier  
Reef catchment

## The challenge:

The Reef Water Quality science program and 2013 Scientific Consensus statement identified that:

- 56% of dissolved inorganic nitrogen (DIN)
- 18% of particulate nitrogen
- 94% of PSII herbicides

## Continued improvement:

The 2015 Reef Report Card showed a 17% reduction in DIN.

The Reef 2050 Plan water quality targets are seeking:

- Reducing DIN levels by at least 50% by 2018 and to achieve an 80% reduction by 2025
- Reducing pesticide loads by at least 60% in priority areas by 2018.

## The solution:

These reductions do not necessarily mean a proportional 50–80% reduction in N fertiliser application.

Targeted research can help the industry increase productivity and profitability, optimise N application, and make progress toward water quality targets.



Source: Reef Water Quality Protection Plan (2013).

## Nitrogen research portfolio (recent and current projects):

Project	Researchers	Ends	Contact
<b>SRA investment</b>			
Sustaining mill mud reuse: improving practices and protection of the GBR	CQG Consulting, ASMC	2015	Patrice Brown: 07 4922 9252
Role of controlled release fertiliser in sugarcane systems	CSIRO	2017	Kirsten Verburg: 02 6246 5954
Measuring the profitability and environmental implications of BMP (as represented by Smart Cane)	QDAF	2017	Mark Poggio: 07 4776 3907
Modelling extreme yields in the Wet Tropics to improve NUE (pilot project)	JCU	2015	Yvette Everingham: 0459 023 671
Boosting NUE in sugarcane through temporal and spatial management	USQ, SRA	2017	Bernard Schroeder: 0408 194 191
Licence to Farm: Nitrogen use efficient varieties to meet the future environmental targets	SRA, UQ, and UNE	2019	Prakash Lakshmanan: 07 3331 3374
SIX EASY STEPS - continuing perspectives in time and space	USQ	2022	Bernard Schroeder: 0408 194 191
Unravelling the impact of climate and harvest time on nitrogen fertiliser requirements	SRA	2022	Danielle Skocaj: 07 4088 0703
<b>SRA-DES co-investment</b>			
Improving NUE for sugarcane with constrained yield potential	SRA, USQ, Farmacist	2018	Danielle Skocaj: 07 4088 0703
Decision support for informed N management: Soil mineralisation tests and assessment of soil N contribution to crop requirements	DSITI, USQ	2018	Phil Moody: 07 3170 5706
Spatially explicit estimation of Achievable Yield Potential – an improved basis for fertiliser management	CSIRO, HCPSL	2017	Rob Bramley: 08 8303 8594
Improving management practices of legume crop residues to maximise economic and environmental benefits	DSITI, QDAF, HCPSL, BBIFMAC	2018	Weijin Wang: 07 3170 5768
How much N will that crop need? Incorporating climate forecasting to improve N management in the Wet tropics	JCU, CSIRO, USQ, SRA	2018	Yvette Everingham: 0459 023 671
Nitrogen fertiliser requirements for representative soils of the Lower Burdekin cane-growing district	SRA (DES-funded project RP20/14C)	2017	Julian Connellan: 07 4783 8623
Cane farmer trials of enhanced efficiency fertilisers in Catchments of the GBR (EEF6o) (ReefTrust IV)	SRA and CANEGROWERS	2021	Barry Salter: 07 4963 6802