

## Total Research and Development Investment

PROJECT TITLE	PROJECT NUMBER	R&D PROVIDER(S)	CHIEF INVESTIGATOR	END DATE
<b>Key Focus Area 1 (Optimally-adapted varieties, plant breeding and release)</b>				
AISRF: Genetic control and genomic selection for important traits in sugarcane	2016803	SRA, Sugarcane Breeding Institute - Coimbatore	Prakash Lakshmanan	1/05/2019
Exploiting introgression for the development of productive & regionally adapted varieties for NSW	2013/022	NSW Sugar Milling Co-Operative Limited	Roy Parfitt	1/05/2020
Applying the genome sequence for variety improvement: validation and implementation	2013/030	CSIRO	Karen Aitken	1/08/2020
Sugarcane root systems for increased productivity; development and application of a root health assay	2015/002	CSIRO	Anne Rae	1/07/2018
Impact of stool architecture on ratooning ability	2015/004	CSIRO	Anne Rae	1/08/2018
Leaf sucrose: The link to diseases, physiological disorders such as YCS and sugarcane productivity	2015/016	SRA	Gerard Scalia	30/06/2019
Generation of a high throughput SNP chip for introgression of resistance genes from wild germplasm into sugarcane, targeting Smut, Pachymetra and nematodes, to generate more resistant varieties faster	2015/025	CSIRO	Karen Aitken	1/08/2018
Selecting high value chromosomes from wild introgression material to deliver more resistant varieties faster	2015/026	CSIRO	Karen Aitken	1/08/2018
Improving early stage selection of SRA breeding program by indirect selection of plant vigour	2016/028	SRA	Jaya Basnayake	1/07/2019
Optimising productivity, variety recommendations and mill operations through analysis of mill data	2016/032	SRA	Jo Stringer	1/02/2021
New approaches to identify and integrate Pachymetra resistance genes from Erianthus into SRA breeding program	2016/039	SRA	Nathalie Piperidis	31/12/2019
Licence to Farm: Nitrogen use efficient varieties to meet the future environmental targets	2016/044	SRA	Prakash Lakshmanan	1/07/2019
Reviewing and extending knowledge of fibre quality assessment and effects of cane varieties	2017/001	QUT	Geoff Kent	1/09/2018
Implementing and validating genomic selection in SRA breeding programs to accelerate improvements in yield, commercial cane sugar, and other key traits	2017/002	UQ	Ben Hayes	1/07/2022
Compendium of sugarcane traits and their associated genes	2018/001	CSIRO	Donna Glassop	1/06/2019
Validating root system traits for enhanced nutrient capture in challenging environments	2018/002	CSIRO	Anne Rae	1/09/2021
Impact of stool architecture on ratooning: extending current trial to 4R to strengthen correlations	2018/004	CSIRO	Anne Rae	1/03/2021
Genetic analysis and marker delivery for sugarcane breeding	2018/005	CSIRO	Karen Aitken	30/06/2022
Selecting high value chromosomes from Saccharum species - extension to 2015/026	2018/006	CSIRO	Karen Aitken	30/06/2020
<b>Key Focus Area 2 (Soil health, nutrient management and environmental sustainability - continued)</b>				
Strategies to manage soil-borne fungi and mitigate sugarcane yield decline	2013/101	CSIRO	Paul Harvey	1/09/2018
Improving NUE for sugarcane crops with constrained yield potential	2015/065	SRA	Danielle Skocaj	15/06/2018
Improving management practices of legume crop residues to maximise economic and environmental benefits	2015/074	DSITI	Weijin Wang	30/06/2018

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<b>Key Focus Area 2 (Soil health, nutrient management and environmental sustainability - continued)</b>				
More profit from nitrogen: enhancing the nutrient use efficiency of intensive cropping and pasture systems	2015/907	CRDC	Felice Driver	30/06/2020
SIX EASY STEPS - continuing perspectives in time and space	2017/004	USQ	Bernard Schroeder	1/02/2022
Measuring soil health, setting benchmarks and driving practice change in the sugar industry	2017/005	SRA	Dave Olsen	1/08/2022
Unravelling the impact of climate and harvest time on nitrogen fertiliser requirements	2017/009	SRA	Danielle Skocaj	4/03/2022
Seeing is believing: managing soil variability, improving crop yield and minimising off-site impacts in sugarcane using digital soil mapping	2017/014	UNSW	John Triantafylis	1/10/2020
Decision support for choice of enhanced efficiency fertilisers - Herbert catchment pilot study	2017/015	CSIRO	Kristen Verburg	28/02/2019
Implementation of root system diagnostics to deliver a field-based measure for root health	2018/ 003	CSIRO	Anne Rae	1/08/2021
Greenhouse gas emissions from sugarcane soils: strategies for increasing NUE and reducing environmental pollution	2018/007	QUT	Peter Grace	30/06/2021
Establishing sugarcane farming systems to improve soil health	2018/008	SRA	Barry Salter	1/03/2023
Complete nutrient management planning for cane farming (Funding provider: Queensland Government Department of Environment and Science)	2016804/ RP161/ EHP16032	SRA/Farmacist	Frikkie Botha	30/06/2019
Improved water quality outcomes from on-farm nitrogen management. (Funding provider: University of Queensland)	2016805/ UQ_NESP	SRA	Danielle Skocaj	30/12/2018
Cane farmer trials of enhanced efficiency fertiliser in the catchments of the Great Barrier Reef (Funding Provider: Commonwealth Department of Environment and Energy and Queensland Government Great Barrier Reef Innovation Fund (Reef Trust 4))	2016807	CANEGROWERS / SRA	Barry Salter	1/05/2021

<b>Key Focus Area 3 (Pest, disease and weed management)</b>				
Integrated disease management for sugarcane streak mosaic in Indonesia (Funding provider: Australian Centre for International Agricultural Research)	2013802	SRA	Rob Magarey	31/12/2018
Soldier fly management	2015804	SRA	Andrew Ward	31/12/2019
Cane to creek: Russell Mulgrave growers and the nitrogen story (Funding provider: Queensland Government Department of Environment and Science)	2017801	SRA	Belinda Billing	31/07/2019
Feeding behaviour of Soldier fly	2017808	SRA	Andrew Ward	30/06/2019
Development for an improved commercial assay for ratoon stunting disease (RSD)	BIOBRSD	SRA	Rob Magarey	30/06/2020
Modern diagnostics for a safer Australian Sugar Industry	2017809	SRA	Nicole Thompson	30/06/2022
Solving Yellow Canopy Syndrome	2014/049	SRA	Dave Olsen	30/06/2019
A Novel Polyphasic Framework to resolve Yellow Canopy Syndrome Paradox	2014/082	UWS	Brajesh Singh	1/09/2018
Using Remote Sensing to improve canegrub management in North Queensland cane fields	2015/038	SRA	Nader Sallam	1/12/2018
Field ready, optimised precision weed identification sensor system	2015/055	USQ	Steve Rees	1/04/2019
Identifying new-generation insecticides for canegrub control as contingency for loss of amenity with the existing product.	2016/003	SRA	Andrew Ward	1/01/2020

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<b>Key Focus Area 3 (Pest, disease and weed management - continued)</b>				
You can't manage what you can't identify - Managing threats from exotic moth borers through accurate identification	2016/041	SRA	Andrew Ward	1/07/2018
Molecular assay of major soil-borne pathogens for better exploitation of commercial varieties	2016/047	SRA	Rob Magarey	1/07/2018
Investigation of biotic causes of yellow canopy syndrome	2016/064	UQ	Andrew Geering	1/12/2019
Keeping our chemicals in their place - in the field	2017/008	SRA	Emilie Fillos	1/07/2021
Delivering solutions for chlorotic streak disease	2017/010	SRA	Kathy Braithwaite	30/06/2020
Development of commercial molecular biological assays for improved sugarcane soil health and productivity	2018/009	SRA	Rob Magarey	30/06/2021
Moth Borers – how are we going to manage them when they arrive?	2018/010	SRA	Andrew Ward	1/08/2021

<b>Key Focus Area 4 (Farming systems and harvesting)</b>				
A non-pneumatic cane cleaning system with no cane loss.	2014/035	QUT	Floren Plaza	1/06/2019
Increased Harvest Recovery: Reducing sugar loss and stool damage	2014/048	SRA	Joseph Bonassi	1/05/2019
Assessment of new management strategies for marginal soils	2015/007	SRA	Barry Salter	31/12/2019
Bio-prospecting for beneficial endophytes of sugarcane	2015/051	AgResearch	Stuart Card	1/02/2019
Sugar from space: improved data access, yield forecasting and targeted nitrogen application for the Australian Sugar industry	2016/062	UNE	Andrew Robson	1/01/2020
Understanding Interactions Between Basecutters and Other Forward-feed Components with the Cane Stalk, and Determining Practical Strategies to Minimise Damage as Harvester Speed Increases.	2016/952	Norris ECT	Chris Norris, Phil Hobson	01/04/2020
Commercial Scale Economic Evaluation of Post-Harvest Cane Cleaning to Maximise the returns to the Supply Chain.	2016/953	QDAF	Stephen Ginns	30/06/2019
Adoption of practices to mitigate harvest losses	2016/955	SRA	Phil Patane	30/06/2019
Southern Sugar Solutions	2017/012	DAFQ	Neil Halpin	1/01/2021
Improved irrigation system selection and operation for increased sugarcane productivity and profitability	2018/011	USQ	Michael Scobie	30/06/2021
Cane Cleaning Project ( <b>Funding provider: Queensland Government Department of Agriculture and Fisheries</b> )	2016808	SRA	John Panitz	1/05/2019

<b>Key Focus Area 5 (Milling efficiency and technology)</b>				
Real time harvest and transport system	2014/037	QUT	Geoff Kent	1/09/2018
Investigation into modifying pan boiling techniques to improve sugar quality	2015/013	QUT	David Moller	30/05/2019
Increasing capacity to undertake cane preparation research through modelling and experimentation	2015/018	QUT	Geoff Kent	1/04/2019
Online analysis systems to measure the available nutrients in mill mud	2016/019	SRA	Steve Staunton	1/03/2020
Reducing boiler maintenance costs and deferring capital expenditure through improved technology	2016/020	QUT	Floren Plaza	1/07/2020
Evaporator Liquor Brix Sensor	2017/003	Wilmar	Robert Stobie	31/12/2018
Managing aspects of raw sugar quality in the Australian sugar industry Part II	2017/006	Griffith University	Chris Davis	30/06/2019
Investigations to mitigate the effects of juice degradation in factory evaporators on sugar recovery and quality, corrosion and effluent organic loading	2017/007	QUT	Darryn Rackemann	1/12/2020

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<b>Key Focus Area 5 (Milling efficiency and technology - continued)</b>				
Pan design and operational changes to suit Australian pan stages operating on low pressure vapour	2018/012	QUT	Ross Broadfoot	1/10/2021
Evaluation of the Neltec Colour Q for measuring the purity of magma from C centrifugals	2018/201	Isis Central Sugar Mill Company Ltd	David Pike	1/05/2019
Improving the impact of evaporator calandria noxious gas bleeding arrangements on evaporator rate and condensate quality at Racecourse Mill	2018/202	Mackay Sugar Limited	Brett Bampton	14/05/2019
Understanding the cause of high colour sugar - intrinsic cane colour, extraneous matter or factory practices?	2018/203	Wilmar Sugar	Robert Stobie	1/04/2019
Activated Sludge Plants – Optimizing Operations and Technology	2018/204	Wilmar Sugar	Robert Stobie	1/04/2019

<b>Key Focus Area 6 (Product diversification and value addition)</b>				
A profitable future for Australian agriculture: Biorefineries for higher-value animal feeds, chemicals and fuels	2015/902	QUT	Ian O'Hara	1/02/2019
Manipulation of carbon partitioning to enhance the value of sugarcane (ARC LINKAGE UQ collaboration with SRA contribution)	2016801	UQ (SRA contribution)	Frikkie Botha	30/12/2019

<b>Key Focus Area 7 (Knowledge and technology transfer and adoption)</b>				
A boiler simulator for improved operator training	2016/001	QUT	Anthony Mann	1/07/2018
Protecting our chemicals for the future through accelerated adoption of best management practice	2016/002	SRA	Belinda Billing	1/08/2019
Development of an Intelligent Tool to allow real time evaluation of harvesting practices as part of a framework for improved harvester payment systems.	2016/951	Norris ECT	Stuart Norris, Rob Crossley	30/06/2019
Productivity improvements through energy innovation in the Australian sugar industry	2017/011	Ag Analytics	Jon Welsh	30/06/2020
Pathways to water quality improvements in the Myrtle Creek sub catchment ( <b>Funding provider:</b> Queensland Government Department of Environment and Science)	2017810/EHP17066	SRA	Phil Ross	30/05/2020

<b>Key Focus Area 8 (Collaboration and capability development)</b>				
Sugarcane for water limited environments: Characterization of a selected sugarcane germplasm for transpiration efficiency and high biomass production for the sugarcane growing regions in Australia	2014/102	UQ	Sijesh Natarajan, Shu Fukai	15/10/2018
Investigation of genetic control of sugarcane accumulation within the sugarcane culm (stalk)	2014/107	UQ	Patrick Mason	1/06/2018
Soil nitrogen dynamics - a microdialysis approach to quantify nitrogen cycling in sugarcane soils	2014/108	UQ	Scott Buckley	1/03/2018
Statistical data mining algorithms for optimising analysis of spectroscopic data from on-line NIR mill systems: improving system calibrations for quality measures and variety discrimination	2014/109	JCU	Justin Sexton	1/02/2019
Combining controlled release and nitrification inhibitor properties to deliver improved fertilizer nitrogen use efficiency in high risk environments	2016/101	UQ	Chelsea Stroppiana	31/03/2020
Development and modelling of novel controlled release fertilisers for improved nutrient delivery efficiency	2016/102	UQ	Ian Levett	1/09/2020
Integrated standardised competency based training for Sugar Milling operations	2017/103	QUT	David Moller	1/12/2019