Sugar Research Australia

SUGAR RESEARCH AUSTRALIA LIMITED

ANNUAL OPERATING PLAN

2024-25

Sugar Research Australia Limited

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Acknowledgement of Country

In the spirit of reconciliation, SRA acknowledges the Traditional Custodians of country and their unique cultural and spiritual relationships to the land, waters and seas and their rich contribution to society. We pay our respects to Elders past, present and emerging, and extend that respect to all Aboriginal and Torres Strait Islander peoples today.

Acknowledgements

SRA acknowledges and thanks its investors, including levy payers (sugarcane growers and millers), the Commonwealth Government and the Queensland Government.

Australian Government
Department of Agriculture, Fisheries and Forestry

Queensland Government

Numbers in charts and tables included in this plan may be affected by rounding.

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About
Sugar Research Australia

SUGAR RESEARCH AUSTRALIA

Sugar Research Australia (SRA) is the specialist research organisation for the Australian sugar industry established in 2013 as a company owned by sugar growers and millers. SRA serves as the declared Industry Services Body for the Australian sugarcane industry under the Sugar Research and Development Services Act 2013 (Cth).

SRA was formed through the merger of two previous entities, the Sugar Research and Development Corporation (SRDC) and the Bureau of Sugar Experiment Stations (BSES) who had individually made significant contributions to the Australian sugar industry. By combining their experience, expertise, resources, and knowledge, SRA was created to drive innovation and sustainability in the industry.

Unique to the rural research and development corporation (RDC) landscape, SRA operates an extensive network of research farms, laboratories, and offices throughout the industry's regions. This widespread presence ensures that SRA staff, as well as research and adoption efforts are accessible to all growers and millers.

The primary source of funding for SRA's activities is the statutory sugarcane levy, which is paid by growers and millers to support research and development activities. SRA also receives matching funding and grants for eligible research and development activities from Commonwealth and Queensland government departments and agencies including the Australian Government's Department of Agriculture and Fisheries and Forestry (DAFF).

The strategic direction and governance of SRA are overseen by a skills-based board. The Board is selected by an Independent Director Selection Committee, endorsed by Members at an Annual General Meeting, ensuring a high level of expertise and accountability in guiding the organisation..

KEY RESPONSIBILITIES

SRA's key responsibilities are to:

- Deliver cost-effective research and development services to the Australian sugarcane industry to enhance its viability, competitiveness, and sustainability.
- Carry out, coordinate, and provide investment for R&D activities in relation to the Australian sugarcane industry.
- Facilitate the dissemination, extension, adoption, and commercialisation of results of R&D activities.

KEY CAPABILITIES

With 130 staff across eight research stations and six farms, SRA is uniquely positioned with extensive in-house research and adoption capability across critical research disciplines, including sugarcane variety development, agronomy, entomology, pathology, soil, weed and environmental science.

SRA has an impressive track record of collaboration and an extensive network of international and national partners. SRA draws upon the combined capability of these partners to deliver high quality R&D to the industry and transfer scientific breakthroughs which happen in other sectors, seamlessly into the Australian sugarcane industry. At the time of publishing, in 2024-25 SRA has:

- 10.3 to 1 return on research investments funded by SRA since 2014-15.
- 66 research investment and delivery partners.
- 205 funded research investigators delivering grant projects.
- 14 higher research degree positions funded.

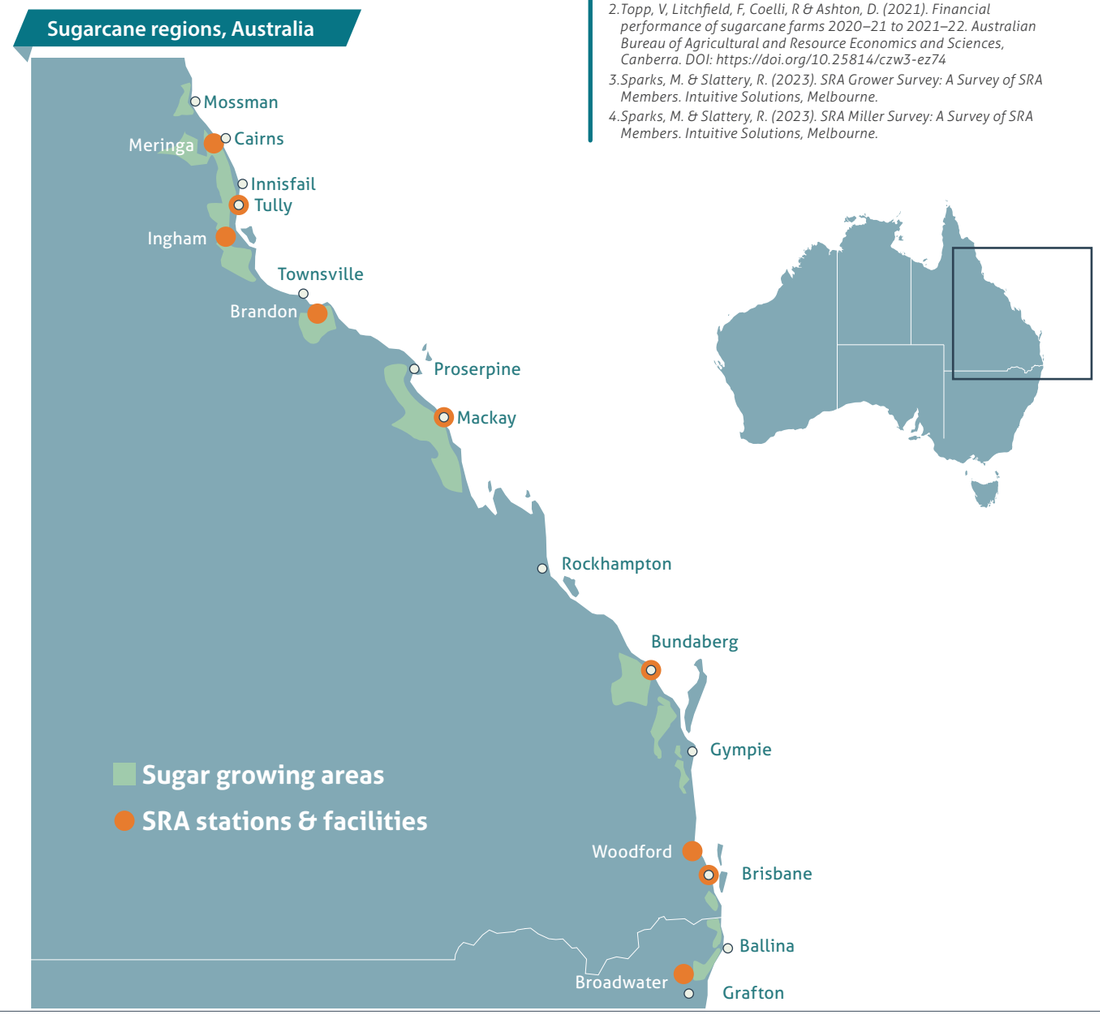
About
the Industry

The Australian sugarcane industry is mainly located along Australia's north-eastern coastline, from Grafton in northern New South Wales to Mossman in Far North Queensland. Sugar production is one of Australia's largest rural industries with 95% of raw sugar produced in Queensland and 5% in northern New South Wales.

Raw sugar production is forecast to increase by 3% to 4.3 million tonnes in 2024-25, driven by yield increases[1]. Export volumes are forecast to rise by 4% to 3.4 million tonnes in 2024–25, marginally below the 10-year average of 3.6 million tonnes up to 2023–24. Higher export volumes are supported by increased production, surplus sugar from previous years stored in terminal facilities, and strong global demand[1].

At the farm level, the average financial performance of sugarcane farms has notably improved. In 2020-21, the average cash income was approximately $190,800 per farm, which is 91% higher than the average in 2013-14[2]. Confidence in the sugarcane industry's future is evident among growers and millers. On a net sentiment scale of -100 to +100 (% positive sentiment minus % negative sentiment), growers reported +78 and millers reported +97 in 2023[3 & 4]. This is the highest recorded sentiment by SRA to date, reflecting the improved economic and operating environment of the industry.

1. *Dahl, E., Killalea, T., Winarta, T., Walsh, J., Cao, A., & Ma, Y. (2024). Outlook for crops. Australian Bureau of Agricultural and Resource Economics and Sciences, Canberra. Available at: www.agriculture.gov.au/abares.*
2. *Topp, V, Litchfield, F, Coelli, R & Ashton, D. (2021). Financial performance of sugarcane farms 2020–21 to 2021–22. Australian Bureau of Agricultural and Resource Economics and Sciences, Canberra. DOI: https://doi.org/10.25814/czw3-ez74*
3. *Sparks, M. & Slattery, R. (2023). SRA Grower Survey: A Survey of SRA Members. Intuitive Solutions, Melbourne.*
4. *Sparks, M. & Slattery, R. (2023). SRA Miller Survey: A Survey of SRA Members. Intuitive Solutions, Melbourne.*



Our Plans

STRATEGIC PLAN 2021-2026

SRA launched a new Strategic Plan 2021-2026, after a significant engagement with key industry stakeholders to ensure we continued to evolve to meet the needs and priorities of growers and millers and the sugarcane industry more broadly. The plan had a transformational focus, providing a vision for progressing and evolving SRA to stay relevant, innovative, commercial, and sustainable.

In February 2023, the SRA Board reviewed the first year of the plan's implementation to ensure we continue to guide those responsible for planning, delivering, and translating research and services to benefit our levy payers and the communities that support the sugarcane industry. The Strategic Plan 2021-2026 Update has narrowed our focus to provide a strategic roadmap, yet comprehensive in addressing the opportunities and challenges that lie ahead for our industry and regional communities.

PURPOSE:

We assist the Australian sugarcane industry to be competitive, productive and sustainable through innovative research and product development.

VISION

Delivering Industry Benefit

A trusted partner shaping the future prosperity of the Australian sugarcane industry and regional communities through innovation and ingenuity.

STRATEGIC PILLARS

1 A High-Performing Research Portfolio
- Deliver higher impact for industry
- Informed research investments
  - Advanced crop protection
  - Sustainable farming and milling practices and supply chain optimisation
  - Future uses for sugarcane.

2 Translation Capability
- Continue to refresh service delivery model
- Make it easier and cost effective for industry to adopt research
- Build industry participation in district planning process.

3 World-class Sugarcane Varieties
- Achieve yield and quality improvement in the variety development program
- Leverage science and innovation in breeding technologies
- Leverage plant-breeding rights and plan for future uses of high-fibre varieties.

4 Growing Research and Delivery Capacity
- Deliver value from our research capability, intellectual property facilities and delivery services
- Create new products and service opportunities from research
- Form research and delivery partnerships and ventures into new markets.

RESEARCH MISSIONS

RESEARCH MISSION 1 — Profitable and Productive

RESEARCH MISSION 2 — Resilient and Enduring

RESEARCH MISSION 3 — Diversified and Adaptable

RESEARCH MISSION 4 — Sustainable and Efficient

RESEARCH MISSION 5 — Resourced and Skilled

FOUNDATION Continue to evolve SRA to keep pace with the changing industry landscape by developing a capable, engaged, and safe workforce and an agile and entrepreneurial organisation with an efficient cost base.

TEN-YEAR R&D PLAN 2024-2034

In June 2024, SRA released its Ten-Year Research and Development (R&D) Plan 2024-2034 to chart our course for investment in research, aimed at addressing key issues and critical challenges faced by Australian sugarcane growers and millers.

The purpose of the R&D Plan is clear: to bolster the industry's competitiveness, productiveness and sustainability through innovative R&D while benefiting the regional communities within which the industry is located.

It aims to steer investment in research on behalf of the Australian sugarcane growers and millers and the Australian government to improve the profitability and sustainability of the industry using an integrated approach across five R&D programs including:

VARIETIES – Create the potential
Step-change in plant breeding.
New varieties with improved production and processing performance.
Correct variety adoption decisions.

AGRONOMY & FARMING SYSTEMS – Achieve the potential
Optimise agronomic inputs.
Improve sugarcane soil condition.
Integrate data, technology, and innovation.
Sustainable production.

CROP PROTECTION – Safeguard the potential
Sustainable management of pests.
Sustainable management of weeds.
Sustainable management of pathogens.
Biosecurity preparedness.
Data and emerging technology.

MILLING & PROCESSING – Deliver the potential
Optimise operations.
Highly skilled and professional workforce.
Opportunities for diversified income.

ADOPTION – Reach the potential
The right information.
Regional approaches.
Industry transformation.

SUGAR PLUS: FUELLING THE FUTURE OF FOOD, ENERGY AND FABRICATION

The industry-led Sugar Plus vision details a roadmap to strengthen and build the Australian sugarcane industry, whilst charting a path to a bigger, bolder future for the businesses and communities at the heart of the industry's future. While some parts of the roadmap are focused on better business-as-usual and adding value to current operations across the value chain, other parts are about the steps required to unlock the vast opportunities presented by the bioeconomy.

ANNUAL OPERATING PLAN 2024-25

The Annual Operating Plan (AOP) 2024-25 details investment in Research, Development and Extension (RD&E) activities and outputs, aligning with SRA's Strategic and Ten-Year R&D Plans, to be managed by SRA over the coming year. It includes all core and contestable funded activities such as grant projects, programs and services, and district productivity plan activities, specifying the delivery provider and aggregate expenditure.

SRA has a balanced and collaborative research portfolio of investments that deliver tangible solutions and options to advance the productivity, sustainability, profitability, and long-term growth prospects for the Australian sugarcane industry. By aligning research investment with the five R&D Programs described above - as opposed to Research Missions as in previous AOPs - SRA will embark on a new method of reporting by R&D program, offering consistency with the Ten-Year Plan.

Our Stakeholder
Engagement

The Stakeholder Engagement Plan 2024 aims to enhance and guide stakeholder interactions to support our vision, purpose and strategy. This comprehensive plan outlines the structured and integrated approach we will employ to communicate, engage, and demonstrate SRA's alignment with our stated goals and activities, effectively to stakeholders. The Plan serves as a roadmap for SRA's communication and engagement efforts, ensuring consistency, coherence, and accountability.

In line with performance expectations under our Department of Agriculture, Fisheries and Forestry (DAFF) Statutory Funding Agreement, we develop engagement plans for strategy prioritisation and development processes to ensure industry stakeholder input is captured and considered in decisions about SRA's direction and investments.

SRA is committed to listening to and responding to the RD&E priorities identified by industry and government stakeholders to deliver impacts for the industry, as well as benefits for the broader Australian community.

In shaping the Annual Operating Plan 2024-25, we gathered feedback about priorities through SRA's R&D Showcase and Feedback session held in March 2024 with representatives from industry peak bodies (millers and growers), industry service providers, and Australian and Queensland government stakeholders. Feedback was also received from industry stakeholders and research partners via written submissions.

The feedback was incorporated into SRA's Ten-Year R&D Plan 2024-2034 and informed funding priorities for SRA's 10th Anniversary Research Fund Call and procurement of existing and new RD&E activities.

TIMELINE

DECEMBER 2023

Draft Plan: Preparation of the Draft R&D Plan by SRA for industry discussion and feedback.

Synthesis and plan review: Incorporation of industry feedback into the R&D Plan.

Develop Annual Operating Plan: Incorporation of industry and government feedback into 10th Anniversary Research Fund Call and procurement of new RD&E activities.

MARCH 2024

R&D Showcase and Feedback Session: An industry forum where growers, millers, levy payers, and government stakeholders gathered to provide insights and input.

APRIL 2024

Plan reviewed: By the SRA Research Funding Panel and recommendation to the SRA Board.

APRIL 2024

Plan endorsed: By the SRA Board.

JUNE 2024

Final Plan: Publication on SRA website and dissemination to industry, government stakeholders, and research partners.

JULY 2024

Publish AOP: Publication on SRA website and dissemination to industry and government stakeholders, and research partners.

SEPTEMBER 2024

Synthesis and plan review: Incorporation of industry and government feedback into the R&D Plan.

Publish updated AOP: Including new contracted RD&E activities following the conclusion of SRA's 10th Anniversary Research Fund Call.

Our Investment
Procurement Process

CONTESTABLE RD&E ACTIVITIES

SRA's 10th Anniversary Research Fund Call was launched in November 2023 to commemorate the 10th anniversary and to procure contestable RD&E investments to commence in 2024-25. With a budget of $16 million, the fund provides additional investment over three to four years to drive innovative research and development in the sugarcane industry, foster greater collaboration across the research ecosystem, and enhance engagement with and delivery to the industry. The anniversary call aligns with objectives outlined in our Strategic and R&D Plans and addresses research priorities identified by industry and government stakeholders during SRA's R&D Showcase and Feedback session held in March 2024.

Procurement for the anniversary call involved a two-stage process. First, providers were asked to submit a concept that detailed an opportunity statement, the proposed innovation, and resources required. Concepts were assessed by SRA and external research specialists and our co-investment partner, the Queensland Government's Department of Agriculture and Fisheries (DAF), before recommendations were made by SRA's Research Funding Panel (RFP) to the Board for review and approval.

In stage two, providers who submitted selected concepts were invited to complete a Full Research Proposal (FRP) including detailed information about the proposed RD&E activity. Providers were required to demonstrate in the FRP alignment between the proposed activity and the priorities outlined in the R&D Plan which included priorities identified by industry and government stakeholders. In addition, providers were required to demonstrate that their proposal would:

- Make a significant contribution to addressing pressing industry challenges
- Present a high-quality approach with a multi-disciplinary team
- Have access to resources and technologies, and
- Have a credible pathway to adoption to benefit growers and millers and the industry broadly.

At the time of publishing, completed proposals have not been received and assessed, and new investments cannot be included in the current AOP. An updated version will be published in September after new RD&E activities are contracted. The stage two assessment will follow the same process as stage one before the RFP make funding recommendations to the Board for approval. RD&E activities are expected to be jointly funded by SRA and DAF, along with activities funded separately by partners based on research priorities.

In addition to the 10th Anniversary Research Fund Call, SRA will continue to invest in existing and new contestable RD&E activities such as Postgraduate Research Scholarships, Small Milling Research Projects, Research Awards, and cross-sectoral programs with other RDCs.

CORE RD&E ACTIVITIES

SRA's Board approved continued funding in 2024-25 of core RD&E activities identified as a priority by industry and government stakeholders. These include:

- Plant breeding and biosecurity programs to produce new varieties for the industry
- Diagnostic services for growers to screen plant material and soil for diseases, pests and pathogens
- Near-infra red (NIR) service for milling companies to automate cane payment
- Chemistry laboratory to provide compositional analyses of soil, plant tissue, water, mill products, and other samples, supporting SRA grant projects and programs, as well as some external clients, and
- District productivity plans including local events and activities to address productivity constraints.

In addition, SRA's core research team will continue to deliver grant projects funded by external providers.

Research Investment
Portfolio 2024-25

PORTFOLIO BALANCE SUMMARY

SRA's research investment portfolio for 2024-25 includes 82 RD&E activities consisting of grant projects, programs and services, and district events and initiatives. Total operating expenditure is forecast to be $50.7 million.

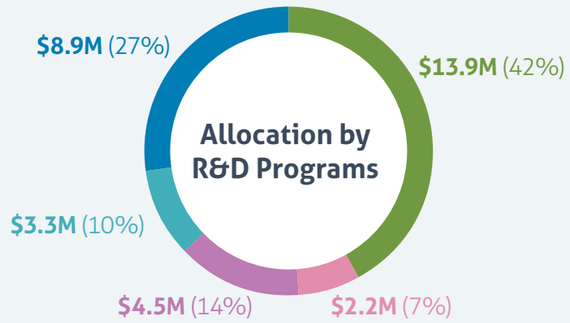
SRA has designed a balanced portfolio that includes an appropriate mix of RD&E activities. Investment allocation is based on several key factors, including industry and government priorities, SRA's strategic objectives, the time and risk required to deliver research outputs, the impact on industry and regional communities, district of benefit, cost, and the funding priorities of research partners.

In 2024-25, the allocation of contestable RD&E notional investment took into account the mix of previously contracted activities. Notional targets were set for new grant projects to address gaps in the portfolio through the 10th Anniversary Research Fund Call. Of the total $16 million provided by the Fund Call, over three to four years, investment allocation included, but were not limited to, the following:

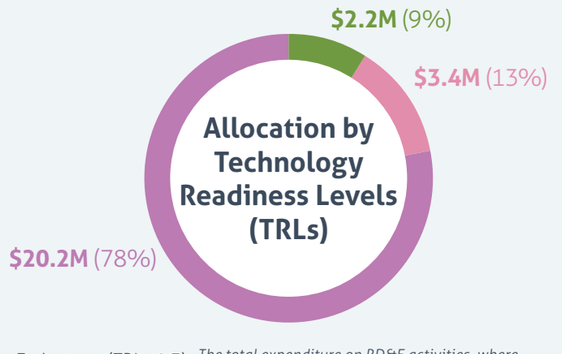
- $2 million allocated for research to advance the industry vision and roadmap, Sugar Plus – Fuelling the Future of Food, Energy and Fabrication. Investment will consider opportunities for diversified revenue streams beyond raw sugar such as bioenergy, sustainable aviation fuels, carbon credits, and the wider bioeconomy.
- $2 million allocated for co-investment with other RDCs for research supporting industry and Australian Government priorities such as biosecurity, climate adaptability, cropping systems, and soils.
- $2 million allocated to addressing future research workforce needs such as higher research degree positions.
- $2-3 million to co-invest in research that addresses objectives shared by SRA and the Queensland Government's Department of Agriculture and Fisheries.
- $1 million for ambitious "moonshots" research that aims to explore challenging, high risk, and innovative research questions with potential to transform the industry.
- $0.5 million to collaborate with industry to investigate the feasibility of a centre of excellence in milling research, with an additional $2.5 million available subject to co-investment by research partners.

Allocation of core RD&E investment was determined based on the aforementioned factors and most importantly, priorities identified by industry and government stakeholders.

The charts below illustrate allocation of RD&E investment across key dimensions. Additional charts, including allocation by Australian Government priorities, are reported on page 26.



The total expenditure on RD&E activities is $32.9 million. The chart excludes $17.7 million spent on corporate support, governance, and strategic initiatives.



The total expenditure on RD&E activities, where TRLs can be applied, is $25.8M. The chart excludes $24.9M spent on other RD&E activities, and corporate support, governance, and strategic initiatives.

SRA uses TRLs to assess the maturity of technologies for deployment to industry.

Early-stage *technologies have a long delivery time requiring ongoing investment to be validated in experimental and commercial environments before deployment. They are defined as high risk in terms of technology feasibility.*

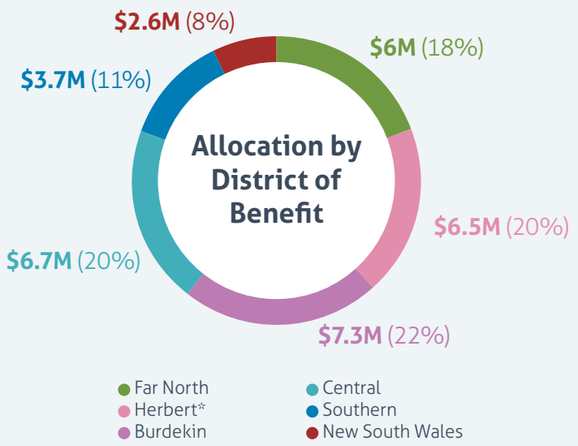
Mid-stage *technologies have a medium delivery time requiring further investment to be validated in commercial environments before deployment. They are defined as medium risk.*

Late-stage *technologies have a short delivery time and are often already deployed or soon to be available as products. They typically require minimal investment and are considered low risk due to their commercial demonstration.*

Allocation by Core and Contestable RD&E Activity

RD&E ACTIVITY	$M	%
Grant projects, awards, scholarships, and research subscriptions		
Contestable grant projects, awards, scholarships, and research subscriptions funded by SRA	10.6	32
Grant projects funded by research partners	0.8	2
Core programs and services		
Plant breeding program	11.8	36
Biosecurity program including development of resistant varieties, quarantine, and disease screening laboratories	1.8	5
Industry operations including NIR and compositional analyses of soil, plant tissue, water, and mill products	1.3	4
District productivity plan activities to address productivity constraints	0.6	2
Research adoption and support		
Activities to support adoption of research outputs	5.5	17
Research support activities such as reporting	0.6	2
Total expenditure	32.9	

The total expenditure on RD&E activities is $32.9 million. The table excludes $17.7 million spent on corporate support, governance, and strategic initiatives.



The total expenditure on RD&E activities is $32.9 million. The chart excludes $17.7 million spent on corporate support, governance, and strategic initiatives.

Allocation by district is estimated based on the district expected to receive the research output upon deployment. Most RD&E activities benefit multiple districts. In such cases, investment allocation is distributed across districts according to the extent of current and planned activities.

**SRA's district productivity plans report the Herbert region as part of the North district which includes Ingham, Tully and South Johnstone mill areas. Refer to the glossary for details.*

In implementing the Ten-Year R&D Plan 2024-2034, integrated approaches across five program areas will ensure SRA's investment is effective in developing valuable solutions to benefit the industry. The plan outlines the rationale, priorities, objectives, strategies, and performance indicators for each of the five R&D programs. It also details program benefits and identifies moonshot investments as highlighted by the industry.

The following section outlines these programs and the current and planned investment in RD&E activities for 2024-25. It includes the types of investments, such as grant projects, programs and services, and district plan activities, along with the research provider. Details are provided on pages 12 to 23.

VARIETIES 12
AGRONOMY & FARMING SYSTEMS 14
CROP PROTECTION 16
MILLING & PROCESSING 18
ADOPTION 20

Varieties
– Create the potential

RATIONALE:

Long term genetic gain is a key lead indicator of breeding program performance. The SRA rate of genetic change has improved from being negative for the six-year period to the 2015 Final Assessment Trial (FAT) series, to a new benchmark of 1.3% with the addition of plant crop results from the 2022 FAT series. The 2% target set in the Strategic Plan 2021-26 is aspirational but not impossible. Continuous improvement in breeding strategy and tactics, along with adoption of new technologies will be required to achieve the target. Year on year genetic improvement ensures that future varieties have materially better performance than current varieties. Alternative products and markets for sugarcane have been contemplated since the domestication of the crop. Global changes in energy markets and sustainability expectations are driving a new focus as recognised in the SugarPlus industry roadmap. SRA is uniquely placed to create different types of varieties and evaluate their productivity in conventional and unconventional situations. Information on the cost and potential production scale of alternative feedstocks will inform commercial planning for new opportunities.

Commercial production of new varieties is a lag indicator of breeding program performance and is a critical step in generating stakeholder value from breeding investment. The proportion of the crop from new varieties increased to 9% in 2023, up from a low point of 3.7% in 2020.

Reliable information on the strengths and weaknesses of new varieties supports faster adoption, provided disease free planting material is available at an acceptable price. SRA has a highly skilled and experienced plant breeding team. Investments are being made to support succession planning and professional development to maintain the people responsible for the pipeline of genetic improvement that will deliver the varieties of the future.

PRIORITIES:

1. New traits, tools, and talent to support step change improvement in plant breeding.
2. Creation of new varieties with improved production and processing performance.
3. Support correct variety adoption decisions through performance information, grower engagement, and availability of planting material.

KEY PERFORMANCE INDICATORS:

OUTPUTS: Achieve 2% long term genetic gain per annum.

ADOPTION: 2% per annum increase in production of new varieties as a proportion of the crop.

IMPACT: 5% yield improvement from adoption of SRA varieties by 2034.

RD&E ACTIVITIES IN 2024-25

Investment ($M)	Activities & Outputs	Outcomes & Impacts
13.9	**Grant projects, Awards, Scholarships, and Research Subscriptions** Funding for the Australian Research Centre (ARC) Training Centre in Predictive Breeding for Agricultural Futures led by the University of Queensland (UQ) which includes SRA staff participation through an Industry Fellowship and two PhD positions (2024002)[5]. Commercial assessment of CEEDS technology to determine the potential role for synthetic seed led by SRA (2023001). Research award: Develop genomics selection software to assess the robustness of clone yield across ratoon crops and enable selection of clones that have more consistent yield across ratoon crops led by the University of Queensland (UQ) (2022402). **Programs and services** The plant breeding program will produce new varieties to make the industry more productive, sustainable and competitive. Starting the 2024 season with over 248,000 yield and propagation plots in the field, 90,000 new potential varieties will be planted in 2024 as families for the first stage of testing. They will join the 90,000 that will be harvested as plant crop, and a further 90,000 are in first ratoon. Selected individuals will progress through the selection program with increased complexity and rigour of testing at each stage. Information from marker assisted selection, genomic selection (PLANDNA), fibre quality assessment (PLANSTH), sugar quality defect testing (PLANCEN), and CCS measurements (PLANSPE) will be consolidated with yield, adaptation and disease resistance data to inform promotion decisions. Around four candidates typically make it through to commercial release after 10-12 years of testing. The six Regional Variety Committees will meet in April/May 2025 to review performance data and make release decisions on the next group of new varieties. A new online reporting tool will be made available to growers and industry advisors providing access to commercial variety performance information and results from SRA field trials (PLANQCS and PLANINT). This will. supplement the Variety Guides, Fact Sheets and direct industry engagement. On-farm engagement opportunities will increase through additional Regional Variety Trials, new grower strip trials, a smut resistance validation trial, and support for regional variety management groups. *More projects are coming in the September update.*	Improved rate of genetic gain in plant breeding. Adoption of new SRA varieties resulting in increased production of new varieties as a proportion of the crop. Increased tonnes of cane and sugar produced per hectare (tonnes/ha and CCS/ha) from adoption of SRA varieties. Increased CCS per tonne of cane crushed (CCS/tonne cane crushed).

5. This Australian Research Centre is funded by a collaboration of five universities and 30 national and international partner organisations performing research across 21 agriculturally important species.

Agronomy and Farming Systems – Achieve the potential

RATIONALE:

The plateauing of sugarcane yield is a persistent challenge confronted by the sugarcane industry since the 1980s. The expansion of cane growing into more marginal soils amplifies this and combined with the escalating costs of production, sugarcane farming profitability is a significant and ongoing challenge. Most sugarcane is grown in the catchments of the Great Barrier Reef (GBR), a World Heritage Area listed under UNESCO. Minimising offsite environmental impacts, especially dissolved inorganic nitrogen, to the water quality in GBR catchments, remains a focal point. Consequently, over the past decade research on nitrogen management has been prioritised and technical knowledge and best management practises for nitrogen management have improved. It is now crucial to shift focus towards understanding other vital nutrient and soil health aspects that may have been overlooked. Actively addressing soil-related issues, including compaction, excessive tillage, poor soil biology, and imbalanced nutrition is required. While certain constraints related to soil health might not be immediately apparent, they can require substantial time for improvements to manifest.

Farming systems research generally involves a multidisciplinary whole-farm approach to overcoming productivity constraints. The application of general rules of thumb and guiding principles need to change to a site-specific focus and consider growers local environments and technology readiness. The opportunity lies in fostering the adoption of research findings, and to address this, research outputs should prioritise practical implementation, avoiding unnecessary complexity or substantial capital investment.

The industry's potential lies in supplying cane biomass for the conversion to emerging industries such as sustainable aviation fuels, bio-based materials and new foods and feed. Globally, evolving sustainability reporting including Environmental, Social, and Governance (ESG) policies poses a significant challenge for Australia, heavily reliant on exports. Other drivers such as emissions reduction targets, are expected to drive demand for data across enterprise, mills, and farms in the coming years. The rising demand for sustainably produced sugar, driven by commitments and sustainable sourcing targets from refiners and end users, intensifies pressure on Australian farmers to adapt to policy changes and investor expectations. To secure market access, insurance, financial support access to capital, farmers must be prepared to report their sustainability efforts, meeting evolving post-farm gate demands. This program combines multiple components, each designed to make incremental contributions towards the overarching goal of overcoming the yield plateau and realising a reduction in production costs. Farming systems refers to the combination of practices farmers use to achieve production goals.

PRIORITIES:

1. Optimise agronomic inputs
2. Improve sugarcane soil condition
3. Integrate data, technology, and innovation
4. Sustainable production

KEY PERFORMANCE INDICATORS:

OUTPUTS: New agronomic knowledge, technologies and guidelines developed per annum. Build awareness of sugar sustainability stories.

ADOPTION: Increased number of growers adopting improved agronomic technologies and practices per annum.

IMPACT: 10% improvement in crop yield or production efficiency gains from adoption of improved agronomic technologies and practices by 2034. 10% improvement in nutrient use efficiency by 2034. Reduce greenhouse gas emissions by 2034.

RD&E ACTIVITIES IN 2024-25

Investment ($M)	Activities & Outputs	Outcomes & Impacts
2.2	**Grant projects, Awards, Scholarships, and Research Subscriptions** Develop a Sustainability Framework for the Australian sugarcane industry to drive improvements in the industry's environmental impact led by Roth Rural (2021008)[6]. PhD scholarship: Develop method to apply mill mud and ash to maximise yield and soil health, and measure soil carbon sequestration led by James Cook University (JCU) (2021101). PhD scholarship: Develop biofertiliser with optimal soil nutrient utilisation to increase yields led by UQ (2021102). Develop best practice, soil specific phosphorus management practices for sustainable sugarcane production led by SRA (2022011). PhD scholarship: Develop an automated system to perform localised in-crop replanting of sugarcane gaps led by the University of Southern Queensland (2023101). Perform sustainability benchmarking and reporting for the sugarcane industry and supporting the operation of the Life Cycle Assessment of Raw Sugar Manufacturing and the Sustainability Framework. (2024006) **Programs and services** SRA's chemistry laboratory provides compositional analyses of soil, plant tissue, water, mill products, and other samples, supporting SRA grant projects and programs such as plant breeding, as well as some external clients (PLANLAB). *More projects are coming in the September update.*	Adoption of SRA developed technologies and management practices. Reduced inputs applied on farm. Increased tonnes of cane produced per hectare (t/ha). Increased profitability ($/ha). Improved water savings (ML per tonne of cane). Improved water quality (reduced Dissolved Inorganic Nitrogen). Contribution to potential avoided loss of value from market closure support by improved environmental impact.

6.This project is funded by Sugar Research Australia and the Department of Agriculture and Fisheries.

Crop Protection
– Safeguard the potential

RATIONALE:

There are a wide range of diseases, weeds, and insects, both endemic and exotic, that do and can reduce the yield of sugarcane. Key endemic threats such as canegrubs, soldier fly, pachymetra root rot, ratoon stunting disease, and parasitic nematodes, each lead to estimated losses of between $25-$80 million p.a.ix Similarly, endemic weeds such as perennial grasses and vines collectively cost the industry an estimated $84 million p.a.x Even modest reductions in the yield losses from each of these threats will together lead to substantial benefits to the industry.

High priority exotic threats include several species of moth borer, grassy shoot and white leaf phytoplasmas and their vectors, and viruses such as sugarcane streak mosaic virus and vectors. Many of these are established in Papua New Guinea and Indonesia, where they cause yield losses of up to 70%xi. With their close proximity to Australia, and the potential for severe crop losses, several of these are rated as an extreme risk to the Australian sugarcane industry. There are also emerging diseases, pests, and weeds, which are becoming more widespread and causing increasing yield losses to the industry. There is the risk that they become major threats in the future, particularly when coupled with the effects of climate change.

It is imperative we improve our understanding of the nature of the key threats facing the industry, to enable the development of improved control strategies for these threats. Surveillance and diagnostic technologies will ensure that incursions are detected in a timely manner and the spread of emerging threats is monitored, and long term management strategies that minimise environmental effects and embrace an integrated management approach will ensure the long-term sustainability of the industry.

PRIORITIES:

1. Sustainable management of pests
2. Sustainable management of weeds
3. Sustainable management of pathogens
4. Biosecurity preparedness

KEY PERFORMANCE INDICATORS:

OUTPUTS: New knowledge/tactics across six priority insect, weed and/or pathogen targets by 2034.

ADOPTION:
1. Increased number of growers prepared for biosecurity threats per annum.
2. Increased number of growers adopting improved sustainable technologies and practices to manage pathogens, weeds, and insects per annum.
3. % increase in weighted average of disease resistance of commercial crop (including 7% improvement for pachymetra and 5% improvement for smut) by 2034.

IMPACT: 10% improvement in avoided losses due to pathogens, weeds, and insects by 2034.

RD&E ACTIVITIES IN 2024-25

Investment ($M)	Activities & Outputs	Outcomes & Impacts
4.5	**Grant projects, Awards, Scholarships, and Research Subscriptions** Obtain validation data sets to support the emergency registration of novel insecticides to control a moth borer incursion led by SRA (2018010)[7]. Obtain validation data sets to support the emergency registration of novel insecticides to control canegrubs led by SRA (2020004)[7]. Establish proof of concept of novel biopesticide to control sugarcane root-feeding pests using RNAi technologies led by UQ (202008)[7]. Update the Sugarcane Industry Biosecurity Plan led by Plant Health Australia (2022002). Develop an artificial diet for soldier fly to accelerate the development of new control options led by SRA (2022004)[8]. Develop a map of weed distribution and severity, and management strategies for navua sedge, balsam pear and itch grass species led by SRA (2022005). Develop resistance screening method for chlorotic streak led by SRA (2022006). Produce novel LAMP and NIR technologies to detect ratoon stunting disease at the mill led by SRA and UQ (2022007 and 2022015). Establish proof of concept of novel biopesticide to control sugarcane root-feeding pests using virus technologies led by UQ (2022016)[8]. New diagnostics for early and accurate diagnosis and rapid response to threats of plant industries, including sugarcane to be developed by the Plant Biosecurity Research Initiative - Phase III led by Hort Innovation (2022604)[9]. Funding for three research awards to develop a new screening method for Pachymetra, research sustainable canegrub management using host plant volatiles, and preparedness for incursion of leafhopper vectors of White Leaf Disease. Funding for the Australian Research Centre (ARC) Training Centre in Biosecurity led by the Australian National University (ANU) includes three projects and one early career researcher and two PhD positions. Projects will explore rust risk, biological controls of moth borers, and remote sensing of priority weeds (2024001). **Programs and services** SRA's biosecurity program develops genetic solutions for endemic diseases comprising smut, pachymetra, red rot, leaf scald, Fiji leaf gall, Mosaic, Yellow Spot and orange rust, by screening breeding germplasm to develop resistant varieties (BIODTLY, BIOPIND, BIOPTLY, BIOPWFD, BUV4700). SRA's quarantine activities facilitate the import and export of sugarcane varieties with other sugar-producing countries such as the United States and Brazil, supporting enhanced genetic diversity of varieties and managing the risk of exotic pests and diseases entering Australia (BIOQUAR). Establishing the baseline risk to the Australian industry from exotic pests will commence with establishing sentinel crops of six varieties in Indonesia (PLANVPD and BUV4000). SRA's subsided screening services for diseases, pests, and pathogens enables growers to test plant material and soil for pachymetra, nematodes, and RSD and avoid related production losses (BIORSDL, BIOSPLY). Specialised diagnostic and response activities to endemic and exotic pests, diseases and weeds identified by industry by SRA (BIOEMER). *More projects are coming in the September update.*	Adoption of SRA developed technologies and management practices. Avoided production losses due to control of disease, pests, weeds, and climate threats. Reduced amount of chemicals used to manage diseases, pests, and weeds on farm.

7. This project is funded by Sugar Research Australia and the Department of Agriculture and Fisheries.
8. This project is funded by the Department of Agriculture and Fisheries and Sugar Research Australia.
9. This project is funded by a collaboration between seven of Australia's Rural Research and Development Corporations including AgriFutures, Cotton Research and Development Corporation, Forest and Wood Products Australia, Grains Research and Development Corporation, Horticulture Innovation Australia, Sugar Research Australia, and Wine Australia.

Milling and Processing
– Deliver the potential

RATIONALE:

Profitability in the milling sector is crucial as it impacts millers' ability to invest in maintenance, capital, and value-adding. Without adequate investment in these areas, operational efficiency may decline, posing risks to millers' viability and affecting the growing and harvesting sectors. The key factor impacting mill productivity is maximising the economic realisation of sugar from cane. Evidence suggests the Australian sugar milling sector faces significant challenges including rising costs, diminishing profits, aging equipment, and high turnover of staff. Pressure on maintenance and capital spending, alongside ownership shifts and declining technical performance among millers exacerbates uncertainties. Prioritising research efforts aimed at reducing costs and energy consumption while producing sugar from cane and increasing revenue from diversified production offers significant potential for productivity gains among millers. Ensuring effective dissemination and application of research findings and efforts to build and maintain a professional workforce within mills are crucial.

Despite ongoing challenges, positive steps towards securing long-term viability have been made, notably through a shift towards participation in the bioeconomy. The emerging opportunities, as outlined in the sugar industry's 2040 vision Sugar Plus, include converting co-products like bagasse, molasses, sugarcane tops and trash into renewable electricity, biofuels like sustainable aviation fuels, green hydrogen, and bio-methane for example. This involves a heightened focus on cogeneration of electricity, including the establishment of large-scale generating plants, and implementing energy-efficient measures in associated mills. Additionally, research into diversifying cane-derived products and a growing interest among millers in this area are evident. Over the last decade, there has been a significant amount of funding in Australia directed towards sugarcane diversification. However, research often occurs separately from the sugarcane industry, limiting its translation into industry benefits. Queensland research institutions excel globally in this area, with strong academic, corporate, and international collaborations. Current research themes include biochemicals, bioplastics, advanced biofuels (including aviation fuels), and alternative proteins. While Australia boasts substantial research capabilities, the sugar industry currently lacks influence in guiding research. However, targeted industry investment can leverage additional funding sources. Aligning industry, policy, and research is crucial for translating research into diversification.

PRIORITIES:

1. Optimised operations for enhanced milling efficiency
2. Highly skilled and professional workforce
3. Opportunities for diversified income

KEY PERFORMANCE INDICATORS:

OUTPUTS: New capability and technologies for mills and processors per annum.

ADOPTION:
1. Increased number of mills adopting skills and technologies developed through SRA's research per annum.
2. Increased number of mills trialling and adopting innovations and technologies to diversify income by 2034.

IMPACT: 25% improvement in milling and processing productivity by 2034.

RD&E ACTIVITIES IN 2024-25

Investment ($M)	Activities & Outputs	Outcomes & Impacts
3.3	**Grant projects, Awards, Scholarships, and Research Subscriptions** Funding for milling research capacity-building and succession-planning for early career researchers led by QUT (2018015)[10]. Develop a machine learning system to measure the extraneous matter mass and billet length on cane consignments that enter mills led by Queensland University of Technology (QUT) (2022012)[11]. Develop training modules for milling personnel as part of phase three of the Australian Sugar Industry Training Program led by QUT (2022014). Build a network of existing and new industry value chain partners to uncover diversification opportunities led by QUT (2022018). Research award: Identify the gene/ enzyme in stingless bees that is responsible for efficiently isomerising the sucrose found in nectar to produce high value alternative sugar trehalulose led by UQ (2022401). Funding for scholarships and bursaries for undergraduate engineering students to build knowledge and experience of milling and to support employment pathways led by QUT (2022601). Deliver Small Milling Research Projects to advance a prototype system measuring billet length using artificial intelligence and computer vision in the Condong Mill, operated by Sunshine Sugar, and integrating data across harvesting and milling platforms in near real-time led by Griffith University (2023203). Deliver SMRP to demonstrate the use of a microwave dry substance transducer for controlling high grade boiling led by Mackay Sugar (2024201). Measure and identify techniques to reduce greenhouse gas emissions from sugar factory boilers with different designs and for different operation conditions led by Wilmar Sugar Australia (2024202). Demonstrate feasibility of hybrid pH control strategies to reduce sucrose losses and control corrosion in sugar factory evaporators led by Sunshine Sugar (2024203). Design pilot thermo-digester engineered to efficiently digest mill mud and operating protocols led by Charles Darwin University (2024204). **Programs and services** SRA's NIR service provides milling companies with an automated Cane Analysis System (CAS) using SRA technology and a NIR instrument to measure brix, pol, fibre, CCS, and more, eliminating the need for manual analysis. SRA's NIR research focuses on maintaining system performance, expanding technology applications, and delivering data to improve farming and milling practices (PLANCAS, NIRDMER) *More projects are coming in the September update.*	Adoption of SRA developed technologies and milling processes. Reduced milling costs and improved efficiency of operations from new technologies such as machine learning, NIR, and SMRPs. Increased CCS per tonne of cane crushed (CCS/tonne cane crushed). Connectivity of collaborative networks among research, industry and government stakeholders. New revenue streams from diversification.

10. This project is funded by Queensland University of Technology, Sugar Research Institute and Sugar Research Australia.
11. This project is funded by the Department of Agriculture and Fisheries and Sugar Research Australia.

Adoption
– Reach the potential

RATIONALE:

The current state of adoption in the sugarcane industry reflects a complex landscape with regional differences. Addressing the challenges in adopting current science, practices, techniques, and technologies requires a robust framework. This framework should provide clear and consistent messaging to growers and millers, improve the quality of information dissemination across the industry including knowledge, products, trials, and demonstrations delivered by multiple organisations. It should effectively connect experts to end-users. Adoption activities need to raise the knowledge and awareness of current science and evidence for best management practices, improve the trust and belief in data and recognise and respond to competing business pressures and regionally distinct adoption challenges. Diverse regional needs and the impact of these barriers underscore the necessity of tailored interventions for successful adoption. Working with industry stakeholders and commercial advisors is critical to success.

SRA's District Productivity Plans have been developed through consultation and engagement undertaken through SRA's Industry Services team. Development of the plans has involved participants across the sugar industry supply chain to identify constraints impacting productivity and profitability at the local level. Different sources of data have been used as inputs including grower ideas and contributions from past strategic workshops held with SRA, ABARES data, mill data, impact assessments and a variety of survey results. The plans highlight specific local issues with proposed solutions and actions to address them and are updated and reviewed annually to drive investment at a local level. Through the development and delivery of District Plans, SRA is actively exploring a regional approach to optimise the impact of research initiatives, accounting for the unique characteristics and capacities of each region and aiming for more effective adoption of sugarcane technologies and practices.

The use of tools such as demonstration plots, workshops, and variety walks has proven effective, enhancing grower confidence, and understanding, while publications like Cane Matters and demonstrations contribute to improved communication and the promotion of the latest research, practices, and technologies. Overall, this program aims to deliver the right information at the right time and in the right form.

Many investments in the Adoption program are funded by external research partners, aligning with SRA's strategy to attract external investment to fund activities to create solutions to local issues that contribute to improved productivity and profitability. This approach avoids reallocating industry and government investment which is predominately used for other RD&E activities.

PRIORITIES:

1. The right information
2. Regional approaches
3. Industry transformation

KEY PERFORMANCE INDICATORS:

OUTPUTS: Engage with 75% of levy payers per annum by 2034.

ADOPTION: >50% of growers and millers adopting knowledge, technologies, and practices from SRA's research by 2034.

IMPACT: 25% improvement in grower productivity by 2034.

RD&E ACTIVITIES IN 2024-25

Investment ($M)	Activities & Outputs	Outcomes & Impacts
8.9	**Grant projects, Awards, Scholarships, and Research Subscriptions** Deliver training and adoption activities for the Cane to Creek Mackay Whitsunday project targeting improved nutrient and pesticide management solutions for growers and enhanced water quality in the Central district led by SRA (2020802)[12]. Deliver training and adoption activities for the Burdekin Irrigation Project targeting improved irrigation efficiency and water quality solutions for growers in the Burdekin district led by SRA (2020805)[13]. Deliver training and adoption activities as part of XXXX Burdekin Smart Irrigation and Lower Burdekin Cane Incentives projects to improve irrigation efficiency and water quality solutions for growers in the Burdekin district led by NQ Dry Tropics (SRA is a delivery partner) (2022801 and 2022802)[14]. Deliver training and adoption activities targeting improved nutrient use efficiency and reduced amounts of Dissolved Inorganic Nitrogen flowing into water waters in the Northern district led by CANEGROWERS (Cassowary Coast Reef Smart Farming Project) (SRA is a delivery partner) (2022803)[15]. Deliver learning modules for the CANEGROWERS-led Smartcane BMP with updated research knowledge to support adoption of management practices (2022804)[16]. Improve seasonal outlook products and services used by growers and other agricultural producers led by the Bureau of Meteorology (2022901)[17]. PhD scholarship: Identify the agronomic and financial drivers that influence and improve nitrogen fertiliser management decisions by sugarcane growers by UQ (2023103). Develop a standardised carbon calculation engine for Australian agriculture, fisheries, and forestry industries, to determine the carbon footprint for both sugarcane farms and mixed farming enterprises, led by Agricultural Innovation Australia (AIA) (2023901)[18]. Funding for the Zero Net Emissions from Agriculture Cooperative Research Centre to foster solutions to reduce agricultural greenhouse gas emissions using innovative research delivered by collaborative partnerships between industry and research organisations (2024901). Funding allocated by the Queensland Government to complete a sugarcane RD&E capability assessment to identify current, emerging, and future skills and capability gaps[19]. **Programs and services** Translate research findings into useful and accessible information packages disseminated to growers and millers via SRA's channels including, but not limited to, Cane Matters, e-Newsletters, SRA website, and district events (BUV3800). *More projects are coming in the September update.*	Adoption of SRA developed technologies and management practices. Reduced amount of inputs applied on farm. Increased tonnes of cane produced per hectare (t/ha). Increased profitability ($/ha). Improved water savings (ML per tonne of cane). Improved water quality (reduced Dissolved Inorganic Nitrogen). Contribution to potential avoided loss of value from market closure support by improved environmental impact.

Continued...

12. *The Cane to Creek Mackay Whitsunday project is funded by the partnership between the Australian Government's Reef Trust and the Great Barrier Reef Foundation with support from Sugar Research Australia, Mackay Area Productivity Services and Plane Creek Productivity Services.*
13. *The Burdekin Irrigation Project is funded by the partnership between the Australian Government's Reef Trust and the Great Barrier Reef Foundation with support from Sugar Research Australia, Farmacist, AgriTech Solutions, Burdekin Productivity Services, Burdekin Bowen Irrigated Floodplain Management Advisory Committee, NQ Dry Tropics, James Cook University and the Queensland Department of Agriculture and Fisheries*
14. *These projects are funded by the partnership between the Australian Government's Reef Trust and the Great Barrier Reef Foundation, and Castlemaine Perkins.*
15. *The Cassowary Coast Reef Smart Farming project is funded by the partnership between the Australian Government's Reef Trust and the Great Barrier Reef Foundation.*
16. *This project is funded by CANEGROWERS.*
17. *This project is funded by a collaboration between 10 of Australia's Rural Research and Development Corporations.*
18. *The AIA Eap has been built by AIA with investment from several of Australia's rural RDCs including Grains Research and Development Corporation, Meat & Livestock Australia, Australian Eggs, Australian Pork Limited, AgriFutures, Cotton Research and Development Corporation, Fisheries Research and Development Corporation, the Australian Meat Processing Corporation and Sugar Research Australia..*
19. *This project will be funded by the Department of Agriculture and Fisheries.*

RD&E ACTIVITIES IN 2024-25		
Investment ($M)	**Activities & Outputs**	**Outcomes & Impacts**
	District productivity plans Deliver local events such as field days and training workshops, and activities to increase awareness and adoption of SRA funded technologies, varieties, and management practices, and address district-level productivity constraints. Key activities include, but are not limited to, the following: **Far North** Activities to improve understanding of ripener efficacy, crop parameters, and management opportunities to maximise profitability (DPF0004). Conduct pot trials and develop management strategies for emerging weeds including balsam pear, navua sedge, and itch grass. Further, investigate the efficacy of registered herbicides for aerial application on vine species (DPF0005). Support the development of a brix/ moisture/ maturity calibration for microNIR for an in-field rapid measurement tool for crop maturity (DPF0006). Working with Mulgrave growers to increase the proportion of cane harvested at optimum maturity, decrease extraneous matter in cane supply, and improve understanding of management practices influencing CCS (DPF0006 and DPF0007). **North** Produce CCS maturity curves for newly released varieties and accelerated clones in the Herbert and South Johnstone areas for optimum harvesting (DPN0002). Refine nutrient recommendations using the SIX EASY STEPS program following application of subsurface banded mill by-products to manage the effect on yield and CCS for growers in the Herbert and Tully regions (DPN0003). Enhance mill by-product use for Tully growers by providing detailed costs and requirements for equipment upgrades or purchases to improve placement and rate control. Review NIR mill mud data to offer better nutrient composition information for refining nutrient inputs (DPN0004). Develop a prototype sterilisation unit to be installed on harvester to manage RSD and conduct testing (DPN0005). Conduct survey across the Herbert region to measure the incidence and severity of Pachymetra and RSD (DPN0008). **Burdekin** Investigate the use of subsurface mill by-products at low rates in the outer regions of the Burdekin district. Measure the response, evaluate profitability, and address economic barriers (DPB0001). Investigate applying liquid imidacloprid in early plant cane as an alternative to granular products to control canegrubs (DPB0002). Install harvester sterilisation unit to manage RSD and coordinate small scale demonstration to contractors (DPB0003). Conduct trials comparing spot spray system and blanket application for targeted weed species (DPB0003). Measure baseline irrigation volumes and energy use, promote the use of IrrigWeb, Opti cane and i – Rat, and automated irrigation systems and tools, and develop demonstration sites, field walks and training workshops for growers and advisors (DPB0005).	

RD&E ACTIVITIES IN 2024-25		
Investment ($M)	**Activities & Outputs**	**Outcomes & Impacts**
	Central Provide a soybean planter to growers in the central region to trial growing fallow crops for adoption consideration (DPC0001). Collaborating with local networks and committees to establish, support and participate in projects in the district, and improve communicatee perceptions of the sugarcane industry (DPC0002). Improve irrigation utilisation by establishing low-cost irrigation control/ automation demonstration sites to raise awareness of available technologies and support growers to adopt low-cost irrigation scheduling tools and system efficiency tools (DPC0005). Improve adoption of new varieties by providing growers with additional information on variety performance. Further, provide growers with an assessment of crop ripeners suitability on farm to improve early CCS (DPC0006; DPC0008). **Southern, Rocky Point and New South Walkes** Deliver the Burnett Mary Agronomy Project including one-on-one extension activities, technical advice, and individual farm reports detailing productivity constraints to 40 growers in the Southern district (DPS0001). Enable access to monitors, telemetry services and data analysis for New South Wales-based growers to view harvesting performance (DPS0003). Contract an agricultural economist to undertake a local analysis of the scale and financial benefit of harvesting one-year-old cane versus two-year old cane in New South Wales (DPS0003). Deliver SIX EASY STEPS program demonstration trials for re-establishment and individual productivity plans for growers-based in in Rocky Point (DPS0004). Undertake research of RSD in the Rocky Point area and promote management strategies to growers to avoid production losses (DPS0004).	

Income and Expenditure Summary

In 2024-25 SRA will invest $33 million in the delivery of RD&E activities. This includes investment in contestable grant projects, core programs and services such as plant breeding and disease screening laboratories, and district productivity plan activities. Expenditure on corporate support, governance and strategic initiatives is forecast to be $17.7 million over the year.

SRA's income streams consist of a levy from sugarcane produced and processed within Australia paid by growers and millers, matched by a contribution from the Commonwealth Government for investment in research, development, and adoption activities as per the Statutory Funding Contract 2021-2031 between SRA and the Commonwealth acting through the Department of Agriculture, Fisheries and Forestry. SRA also receives funding from co-investment partners including, but not limited to, the Queensland Department of Agriculture and Fisheries, the Queensland Department of Environment and Science, and the Great Barrier Reef Foundation.

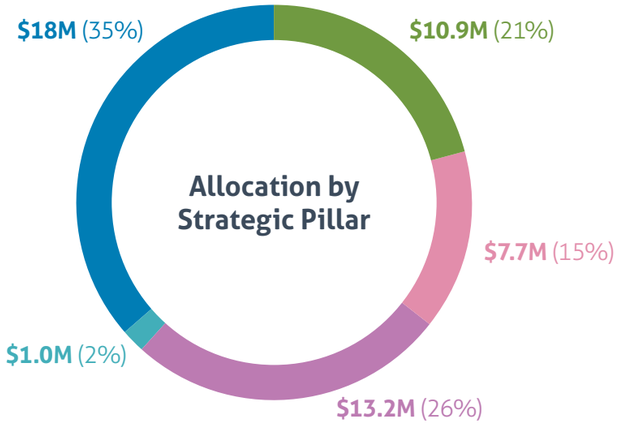
The quantum of funding allocated to contestable RD&E activities in 2024-25 is $10.5 million representing approximately 31% of income from industry investment, and co-investment by the Commonwealth and Queensland governments.

OPERATING INCOME	$M
Industry investment	21
Commonwealth co-investment	9
Queensland Government co-investment	3.6
Collaboration income from research partners	3
Service fee income	0.7
Interest	2
Other income	1
Operating Income Total	40.2

OPERATING EXPENDITURE	$M
R&D contestable - grant projects, awards, scholarships, and research subscriptions	**10.6**
R&D core – plant breeding	11.8
R&D core - biosecurity	1.8
R&D core - district productivity plans	0.6
R&D core – industry operations	1.3
R&D core	**15.4**
R&D – externally funded grant projects	0.8
R&D – Adoption of core and contestable research	5.5
R&D – research support functions	0.6
R&D general	**6.9**
R&D expenditure total	**32.9**
Board and investor relations	0.7
Corporate support	13.5
Corporate total	**14.2**
Operating expenditure total	**47**
Total SRA Operating Result	**(6.8)**
Initiatives such as Enterprise Resource Planning	3.7
Total SRA Result	**(10.5)**

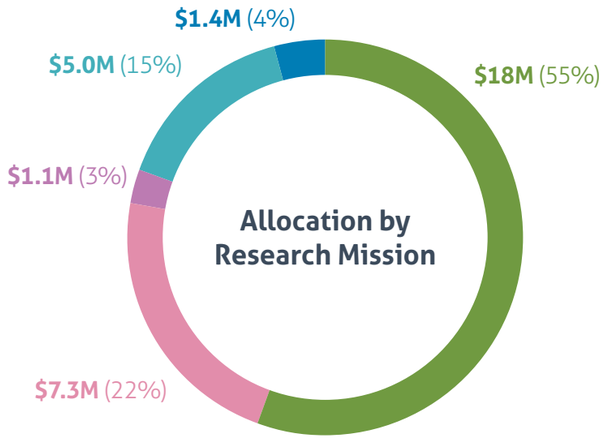
Forecast Expenditure
by Strategic Objective and Priorities

ALIGNMENT TO STRATEGIC OBJECTIVES
Allocation of RD&E investment in 2024-25 is reported below by Strategic Pillars and Research Missions.



- A high-performing research portfolio
- Translation Capability
- World-class sugarcane varieties
- Growing research and delivery capacity
- Foundations

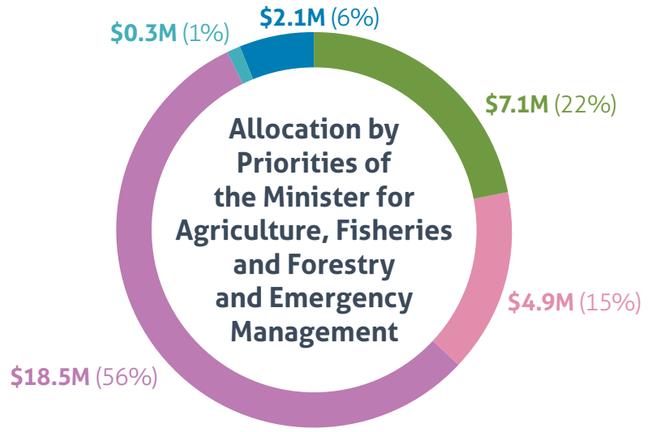
The total expenditure on RD&E activities is $32.9 million.



- Profitable and productive
- Translation Capability
- World-class sugarcane varieties
- Growing research and delivery capacity
- Foundations

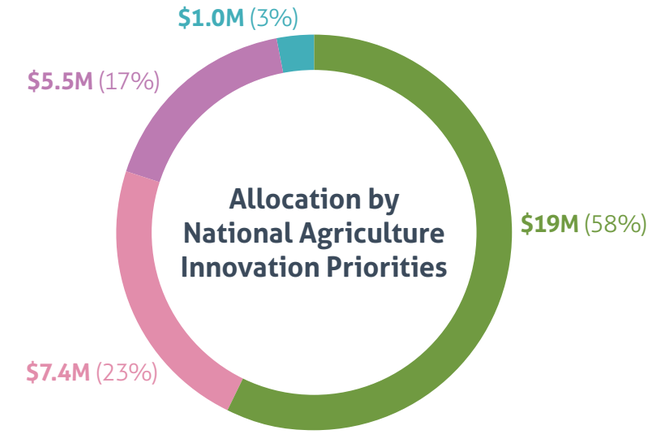
The total expenditure on RD&E activities is $32.9 million. The chart excludes $17.7 million spent on corporate support, governance, and strategic initiatives.

ALIGNMENT TO GOVERNMENT PRIORITIES
Allocation of RD&E investment by Australian Government priorities are reported below.



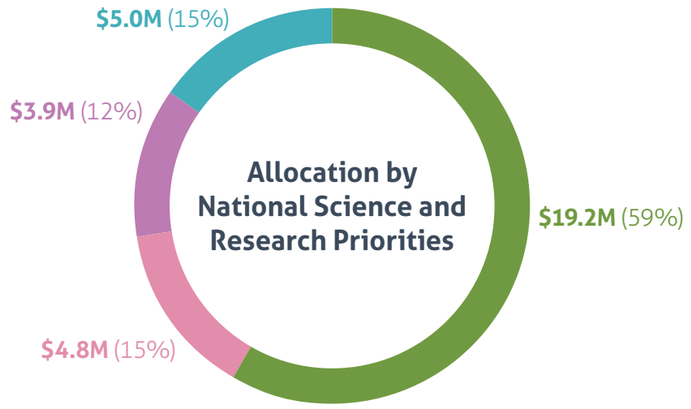
- Biosecurity
- Climate change and sustainability
- Trade
- First Nations engagement
- Workforce

The total expenditure on RD&E activities is $32.9 million. The chart excludes $17.7 million spent on corporate support, governance, and strategic initiatives.



- Trusted exporter of premium food and agricultural products
- Champion climate resilience
- World leader in preventing and rapidly responding to significant pests and diseases through future-proofing our biosecurity system
- Mature adopter, developer and exporter of digital agriculture

The total expenditure on RD&E activities is $32.9 million. The chart excludes $17.7 million spent on corporate support, governance, and strategic initiatives.



- Food
- Soil and water

Transport
Cybersecurity
Energy
Resources

- Advanced manufacturing
- Environmental change

Health

The total expenditure on RD&E activities is $32.9 million. The chart excludes $17.7 million spent on corporate support, governance, and strategic initiatives.

Glossary

Australian Bureau of Agricultural and Resource Economics and Sciences (ABARES): The science and economics research division of the Australian Government Department of Agriculture, Fisheries and Forestry.

Annual Operating Plan (AOP): A plan that details investment in RD&E activities and outputs, aligning with SRA's Strategic and Ten-Year R&D Plans, to be managed by SRA each year.

Cane Analysis System (CAS): A cane analysis system using near-infrared spectroscopy measures sugarcane's chemical composition rapidly and accurately as cane enters the mill, assessing parameters like sucrose, fibre, and moisture levels for quality control, payment, and decision-making in the sugar industry.

Commercial Cane Sugar (CCS): A measure of the sugar (sucrose) content extractable from sugarcane.

District: A defined area of land characterised by specific geographical features, typically associated with multiple mill areas. This term encompasses SRA's District Productivity Plans and other research adoption activities.

District Productivity Plan: A plan that details industry identified productivity constraints and proposed solutions to address these for key sugarcane growing areas.

Dissolved Inorganic Nitrogen (DIN): Nitrogen compounds in water that are not part of living organisms. Measuring DIN is crucial for the sustainability of the Great Barrier Reef, as it helps understand nutrient levels that impact coral health and ecosystem balance.

Final Assessment Trial (FAT): The final stage of testing new sugarcane varieties before commercial release.

Mega Litre (ML): A unit of volume equal to one million litres.

Near-infrared spectroscopy (NIR): A technology that analyses how light interacts with sugarcane and other materials in the near-infrared range to determine their chemical composition and properties.

RD&E (Research, Development and Extension): Activities undertaken to develop new knowledge and technologies, and share these advancements with growers, millers, and other industry stakeholders. SRA's Ten-Year R&D Plan 2024-2034 refers to R&D+E=A, instead of RD&E to highlight that SRA funds research and development and carries out extension activities to promote adoption, the resulting outcome. Researchers focus on creating new innovations (R&D), while extension activities (E) ensure these innovations are effectively adopted by end users. The AOP refers to RD&E for consistency with government investors.

Region: A localised mill area within a larger district, typically associated with a mill area. This term encompasses biosecurity zones, the structure of Regional Variety Committees, and SRA's plant breeding program.

Regional Variety Committees (RVCs): There are five RVCs in Queensland and one in New South Wales, each responsible for managing new variety releases and maintaining recommended variety lists within their sugarcane biosecurity zones. Each RVC has established its committee's composition, structure, and voting requirements for clone progression in the breeding program, new variety releases, and oversight of regional disease thresholds.

Ratoon Stunting Disease (RSD): A disease that affects sugarcane growth and yield.

Small Milling Research Project (SMRP): A targeted research initiative created by SRA to collaborate with sugarcane millers and researchers, to achieve productivity, profitability, and sustainability improvements for milling companies.

Sugar Research Australia (SRA): A research organisation focused on improving the Australian sugarcane industry.

Strategic Plan 2021-2026: An SRA plan developed with industry stakeholders, which sets a foundation for the Australian sugarcane industry's future and strategic objectives for RD&E investment. Reviewed after a year, the plan now includes an updated version with the Sugar Plus vision, focusing on bioeconomy opportunities and operational value.

Sugar Plus: The industry-led roadmap to strengthen and build the Australian sugarcane industry, whilst charting a path to a bigger, bolder future for the businesses and communities at the heart of the industry's future. While some parts of the roadmap are focused on better business-as-usual and adding value to current operations across the value chain, other parts are about the steps required to unlock the vast opportunities presented by the bioeconomy.

Technology Readiness Levels (TRLs): SRA uses the Crop Research TRLs, adapted from the National Aeronautics and Space Administration (NASA), by the United States Department of Agriculture. The Crop Research TRLs have a nine-level scale, with TRL 1 indicating the earliest development stage and TRL 9 indicating full commercial deployment of the technology and active impact on the agricultural economy. There are three levels of progress including: early (TRLs 1 – 3), mid (TRLs 4 – 6), and late (TRLs 7-9).

Ten-Year Research and Development Plan 2024-2034: A plan to chart SRA's long-term research investment, aimed at addressing critical issues faced by Australian sugarcane industry.

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