

RD&E Project Outputs & Outcomes^{1,2}

Outputs – the products or services generated from RD&E activities.

<i>Type</i>	<i>Description</i>	<i>Examples</i>
Reports	Reports on topics including but not limited to research findings, literature reviews, tools, methods, processes, products, and survey findings, that have not been submitted for peer review publication.	Final report about best management practices of nitrogen application. Technical review of operating standards for autonomous systems in broadacre cropping. Report about a new method to quantify the effectiveness of cover crops.
Publications	Journal articles on topics including research, reviews and case studies that have been submitted for peer review publication.	Literature review on irrigation automation technologies published in the Australian Journal of Agricultural Research. Research article about reducing excess nitrogen using riparian zone management submitted for publication in Soil Biology and Biochemistry.
Presentations	Presentations on topics including but not limited to research findings, products, and methods.	Presentation on biosecurity preparedness delivered at a seminar run by Crop Consultants Australia. Presentation of PhD research findings at the University of New England.
New/ updated standards	New or updated standards of an industry practice including <i>myBMP</i> .	Updated <i>myBMP</i> training module on human resources and work, health, and safety. Updated guidelines in WEEDpak Herbicde Damage ID guide.
Training and learning programs	New or updated formal training and learning programs that include competency-based accreditation.	Revised module in the Integrated Pest Management (IPM) short course.
Products	New or updated technologies and tools, including prototypes, developed for farm and industry practices and broader societal use.	Updated NutriLOGIC tool to help interpret soil and leaf analyses for major nutrients. Digital agricultural maturity index online tool. Silverleaf whitefly counting app.

¹ Commonwealth Scientific and Industrial Research Organisation. (2015). Impact evaluation guide: November 2015. Available at: www.csiro.au

² Commonwealth Scientific and Industrial Research Organisation. (2020). Impact evaluation guide: February 2020. Available at: www.csiro.au

Patents and agreements	Knowledge and products that can or have been patented, commercialised, or protected by intellectual property.	Patent on novel insecticide.
Extension resources and services	Extension resources and services delivered to industry including but not limited to technical support, research and development communication and resources, and informal training and learning.	Natural Resource Management (NRM) field day. Fact sheet on fibre quality developed for growers. Workbook developed for the project 'Supporting change for Resilient Communities in Cotton Regions'. Article on post-harvest disease produced in the CottonInfo e-news.
Scholarships, travel, and learning programs	Completed scholarships, travel and learning programs which support the cotton industry.	Completed PhD exploring farm-wide microgrid decision support systems for the cotton industry. Completed Honours scholarship investigating spread of cotton plant disease by insects in Australia. Travel to Ag Tech conference in USA for a learning program.

Outcomes – the changes or differences that directly result from RD&E outputs.

<i>Type</i>	<i>Description</i>	<i>Examples</i>
Extension services and training accessed	Extension services and training accessed by growers, industry stakeholders and others.	Namoi growers participate in NRM field day. Growers sign up for the CottonInfo Moisture Manager e-news.
Increased knowledge about practices and products	Increased knowledge about practices and products by growers and industry stakeholders.	Namoi growers experience increased learning about riparian zone management practices.
Adoption of practices and products including behaviour change	Adoption of R&D outputs such as farm management practices and products by growers, industry stakeholders and others. Adoption includes the number of users and the total land area.	St George growers manage spray drift using best management practices. Total area under best management practice. Gwydir growers use NUTRIpak to inform soil and fertiliser management.
Adoption of research findings, methods, and techniques by other researchers	Adoption of research findings, methods and techniques by researchers, organisations, and others.	Publication on increasing yield through improved management of soil constraints is downloaded and cited by other researchers. Publication on novel biopesticides is cited by other researchers.
Adoption of research findings, standards and processes by industry and government	Adoption of research findings, standards and processes by industry stakeholders, organisations, and government.	Final report about promoting community resilience is cited by industry bodies. Research publication on IPM is used by state governments to update guidelines.
Commercial agreements made	Patents/ licenses/ agreements sold.	Agreement for use of novel insecticide sold.
Collaboration	Industry stakeholders, organisations, and research groups established and collaborate on future projects and activities.	Southern NSW working group on weed management established. Collaboration between research partners on next phase of climate variability program.
Industry capacity building	Knowledge and skills of project stakeholders increased and employment opportunities produced.	Researcher develops greater knowledge in exploring sustainable water extractions by completing a PhD. Graduate of a Summer honours scholarship gains employment in industry.