



Annual Operating Plan 2017-18

Best Practice

CottonInfo Annual Operating Plan 2017-18

Introduction

CottonInfo is the Australian cotton industry's extension program, a joint venture between partners Cotton Australia (CA), the Cotton Research and Development Corporation (CRDC) and Cotton Seed Distributors (CSD), designed to connect Australian cotton growers with research and development (R&D) and help them achieve best practice.

CottonInfo is governed by two strategic documents: a six-year Strategic Plan, and an Annual Operational Plan (AOP). This document – the 2017-18 AOP – aligns the annual extension planning framework with the overarching CottonInfo strategy, and outlines the activities that will be implemented by CottonInfo during the year.

Under the 2012-18 CottonInfo Strategic Plan, the principal focus of CottonInfo is to be an efficient and effective pathway for the delivery of the results of industry R&D and innovation. CottonInfo is designed to meet commercially unmet information needs of growers, and to support efforts to improve practices, productivity, competitiveness and environmental performance, in conjunction with linked industry program myBMP.

The three key goals of the CottonInfo Strategic Plan are to:

1. Improve industry practice through promoting R&D knowledge and encouraging its adoption, including delivery of R&D through the myBMP program.
2. Improve R&D communication by making R&D information, trusted advice and specialist technical knowledge readily available, in part through the provision of regionally facilitated support and by enhancing communication between researchers, growers, consultants, agribusiness, NRM and industry organisations.
3. Improve industry responsiveness by building the capacity of the CottonInfo team, researchers, growers, consultants, agribusiness, NRM and industry organisations to respond to emerging or emergency issues.



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The CottonInfo team

The 2017-18 AOP will be delivered by the CottonInfo team. The CottonInfo team comprises three distinct sub-teams: Regional Extension Officers (the on-the-ground support team, based in the cotton growing valleys), Technical Specialists (specialists in a specific research area and the point of contact to the wider cotton research community) and myBMP experts (team members who can help growers sign up for, and participate in, the cotton industry's best management practice program).

These three teams are coordinated by the CottonInfo Program Manager, and supported by the CottonInfo Communications Manager, the myBMP Manager, and the CSD Extension Team leader (who manages the REOs).

Together, the CottonInfo team delivers the latest R&D to growers, and helps them to improve on-farm practices.

The Regional Extension Officers (REOs) are responsible for:

- Working one on one with growers and consultants to develop trusted relationships;
- Regionally coordinating group extension activities such as workshops and field days;
- Working with local growers and consultants to support regional demonstration sites and trials;
- Building networks with consultants, Cotton Grower Associations (CGAs), research organisations and the regional teams of both CSD and CA;
- Supporting industry R&D projects with regional engagement.

The Technical Specialists are responsible for:

- Being the industry's go-to specialist in their area of expertise, including working with all relevant researchers;
- Leading the extension activity within their area of expertise;
- Reviewing the relevant myBMP modules;
- Coordinating key messages for CottonInfo and to support the communications program.

The Communications Manager is responsible for the development and implementation of the CottonInfo communications strategy, which aims to make R&D information, trusted advice and specialist technical knowledge readily available, and build awareness of CottonInfo as the key source of R&D information. This includes the development of all CottonInfo communications infrastructure, from the website to the industry database, and all CottonInfo materials, from key publications (the Australian Cotton Production Manual and the Cotton Pest Management Guide) to e-newsletters, fact sheets, case studies and video content.

The myBMP manager is responsible for overseeing the updating of modules and continuous improvement of the myBMP program, coordinates the strategy for increasing industry participation and liaises with international stakeholders such as BCI. Targets for myBMP registrations and progress through modules for the CottonInfo program are set within the context of overall aspirational industry targets.



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2017-18 priorities

As CottonInfo covers a wide range of important topic areas, a series of key areas are determined each year to focus the team's activities.

For 2017-18, there are three key focus areas, as follows:

- Managing irrigation to improve nitrogen use efficiency (NUE);
- Tackling the increased threat of pests, diseases and resistant weeds in cotton growing regions;
- Identifying and managing soil constraints and optimising the efficient use of inputs for profit within farming systems.

These key focus areas have been developed by:

- Building on the activities undertaken by CottonInfo in the last year and responding to grower feedback raised through the monitoring and evaluation process;
- Incorporating input from research, development and extension (RD&E) priority setting activities of CA and CRDC;
- Considering input from the CottonInfo Technical Specialists, including the potential for engagement with current CRDC-supported research projects;
- Seeking input and ratification from the CottonInfo Management Committee.

Under the three key focus areas, three flagship projects have been developed. The tables contained within this AOP provide an overview of these flagship projects, including their objectives and intended outcomes, plus targets, activities, key responsibilities and measures of success.

These flagship projects will be delivered via regional and industry wide extension activities, supported by communications activities. While the focus will be on these projects, activity to support all 14 CottonInfo topic areas will continue. These activities are reflected in the Technical Specialist's CRDC project milestones, the REO's individual work plans, and in the communications strategy.

In addition, in this year, the CottonInfo team will also continue to:

- Deliver established CottonInfo extension activities such as the annual

researchers tour, regional end of season reviews, on farm demonstrations and individual grower visits;

- Support CottonInfo partners' activities such as the CRDC strategic forum, CRDC industry specific meetings such as Fuscom, the CA-led Grower of the Year activities at regional and national levels, and CSD's annual E&D roadshow and Ambassador program;
- Respond to the seasonal context, by reviewing activity on a three-monthly basis to ensure relevance and to respond to issues as they emerge.
- Deliver relevant information to support key on-farm decisions, as guided by the Communications Manager and the communications strategy.

Research adoption pathways

In consultation with the CRDC R&D Managers, the development and extension components of new CRDC-supported research projects are considered and supported by CottonInfo. This involves the joint development of a new milestone for each project that identifies the adoption pathway for the research being undertaken. The CottonInfo Program Manager is responsible for developing these milestones in conjunction with the researchers, and negotiating the involvement of CottonInfo team members in those milestones.

To help structure the engagement that CottonInfo has with research projects, the following H.A.R.D. classification system has been developed:

- **Help:** the projects that the CottonInfo team is actively contributing to or helping to deliver.
- **Awareness:** the projects that CottonInfo is helping to raise awareness of among growers and consultants.
- **Resource:** the projects that provide useful resources (technical resources and research staff expertise) to CottonInfo's extension activities.
- **Demonstrate:** the projects closely aligned with the CottonInfo AOP goals, under which CottonInfo will conduct practical demonstrations.

The tables contained within this AOP contain the relevant research projects, classified as per the H.A.R.D. system.



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Communications strategy

Led by the Communications Manager, the communication strategy is designed to support the work of the CottonInfo team in making R&D information, trusted advice and specialist technical information readily available.

Based around the cotton calendar, the CottonInfo communications strategy delivers through tactics including the CottonInfo newsletter, the CottonInfo website, major publications (such as the Cotton Production Manual and Cotton Pest Management Guide), development of fact sheets and case studies and delivery of video content.

It is also focused on building the CottonInfo brand through the implementation of the style guide and development of promotional materials. Additional opportunities are used to leverage CottonInfo communication through other industry sources such as Crop Consultants Australia, the CRDC Spotlight magazine and by working with the communications managers of CSD and CA.

Importantly, communications is a whole of team effort - Technical Specialists have a key role in working with researchers to package findings into resources and myBMP, while the REOs provide direction for regional specific information needs and communicate directly with local growers.

Monitoring and evaluation

CottonInfo's impact is measured through monitoring and evaluation (M&E). The purpose of the M&E strategy is to demonstrate the extent to which CottonInfo has contributed towards the specified targets within the Strategic Plan. It also helps guide future strategic priorities, activities and provides timely feedback to understand barriers and any unintended consequences of extension adoption.

The main M&E tools include YourDATA, the CRDC Grower Practices Survey and the CRDC-supported Crop Consultants Association Survey. The CottonInfo team use these tools to record outputs, such as activities and participation. In 2017-18, the focus will be on improving the M&E of outcomes (such as practice change) and understanding the 'where to from here' issues from the growers' perspective.



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Focus area 1: Managing irrigation to improve nitrogen use efficiency

Issue	Managing irrigation to improve nitrogen use efficiency (NUE)
Assumption	<p>Deep drainage, run off and waterlogging as a result of poor irrigation practices are leading to unnecessary nitrogen losses which is reducing NUE below industry standards.</p> <p>The four pillars of resource efficiency are:</p> <ul style="list-style-type: none"> • Optimising the use of native nutrition and water. • Additional nutrient and water applied using 4R principles. • Losses are minimised. • Plant is managed to optimised conversion of nutrient and water uptake to lint.
Objective	Increase irrigation water use efficiency (WUE) to 2 bales/ML with less than 25kg N fertiliser/bale through optimising the irrigation nutrition interaction.
Monitoring & Evaluation	<p>Achievement of this objective will be measured through:</p> <ul style="list-style-type: none"> • Grower Survey 2017 of nutrient use per ha. • GPS on irrigation use ML/ha and bales/ha. • Evaluation of researchers' tour. • On farm trials implemented and evaluated. • Pillars extension material developed. • Economic assessment of irrigation automation and partial irrigation developed. • Survey post research tour. <p>Existing data shows:</p> <ul style="list-style-type: none"> • 33 per cent of irrigated cotton area had greater than 300 N/ha. 31 per cent of area had less than 250 N/ha. At an assumed 11 bale/ha average, 50 per cent of growers are using more than 25 kg N/bale. Source: CCA 2016. • Irrigation efficiency varied from 1.2 to 2.5 bales/ML, with an average of 1.7 bales/ML. Partial irrigated crops achieved an average of 3.0 bales/ha. Source: GPS 2016. • Cost of fertiliser inputs per hectare increased by 24 per cent from 2015 to 2016. Source: Boyce Report.



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Project linkages (classified using the H.A.R.D system)	H: DAN1505 Benchmarking WUE and crop productivity (Montgomery) D: RRD4P More profit from nitrogen (Schwenke, Baird, Antille) R: UNE1403 Professor of soil biology (Knox) H: DAN1503 Resilient farming systems in irrigated vertisols (Nachimuthu) H: RRD1603 Smarter irrigation for profit (Foley) D: RRD1602 Smarter irrigation for profit (Jamali) R: UQ1502 Impact of irrigation methods on N recovery (Smith)		
Key activities	<ul style="list-style-type: none">• Researchers tour on water and nutrition interactions• Trial irrigation application rate impact on nitrogen movement down the field.		
General activities	<ul style="list-style-type: none">• Support VariWise to grower led commercialisation• Automation conversion economic case studies• Field walks of Baird trial plots at ACRI• Extend basic science of canopy temperature sensors• WUE of furrow through monitoring head ditch, run time, volume, auto rain gauges• Partial irrigation economic case studies• Optimising energy inputs case studies, off grid energy, working with service providers to the cotton industry		
Action plan:			
Strategy	Action step	Responsibility	Timeline
Develop information material	Gross margin analysis	Technical Specialist	Jul–Nov2017
	Coordinate spotlight article/Cottongrower article	Technical Specialist Communications Manager	Spring 2017 Edition
Farm Walk at trial sites	Conduct an on farm walk in collaboration with key researchers (2 sites)	REOs Researcher	Jan-Feb 2018
Irrigation and N efficiency tour	Research tour	Technical Specialist CottonInfo Program Manager REOs Communications Manager	Feb 2018
On farm demonstration of efficiency principles	On farm trials to highlight the efficiency interactions between irrigation and nutrition management	REOs Technical Specialist	Sep-May 2018



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Focus area 2: Tackling the increased threat of pests, diseases and resistant weeds in cotton growing regions

Issue	The increased threat of pests, diseases and resistant weeds in cotton growing regions
Assumption	The impact of disease, pests and resistance weeds in cotton landscapes can be reduced through management both on farm and between farms on a regional level.
Objective	<ol style="list-style-type: none"> 1. Reduce the total area of cotton using less than two alternative tactics by 15 per cent by adoption of multiple tactics to drive down the weed seed bank. 2. To encourage 20 per cent of growers to adopt management options for controlling the spread and impact of regional diseases of concern. 3. To increase 20 per cent of growers' confidence in pest thresholds and early season plant compensation. Implement an awareness program on landscape principles for managing pests and beneficials by workshop participants, resulting in a 10 per cent change in level of understanding.
Monitoring & Evaluation	<p>Achievement of these objectives will be measured through:</p> <ul style="list-style-type: none"> • Objective 1: CCA survey 2017: alternative technologies/products used to control weeds. Evaluation of ICAN workshops. Weed surveys indicate prevalence of resistance. Guidelines for patch management developed. Existing data shows: 34 per cent of irrigated and 38 per cent of dryland cotton area affected by glyphosate resistant weeds. In 34 per cent of area, weeds are controlled with one or less alternative tactics. Source: CCA 2016 • Objective 2: CCA survey 2017: use of Come Clean Go Clean. Grower practices monitored in the disease survey. CCA survey of impact of disease (\$/ha). Existing data shows: 29 per cent of growers do not have vehicle wash down facilities on farm or public facilities available nearby. Source: CCA 2016. • Objectives 3: CCA survey 2017 on confidence in thresholds. IPM short courses delivered. CCA pest management practice (number and type of sprays) tracked. Evaluation of IPM short courses Existing data shows: 38 per cent of mirid sprays were applied below industry threshold, mainly due to timing with other operations. 64 per cent of Silverleaf Whitefly sprays were not consistent with the industry threshold matrix. Source: CCA 2016. Pest management costs increased by 25 per cent from 2015 to 2016. Source: Boyce Report.



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Project linkages (classified using the H.A.R.D system)	<p>H: Cotton industry disease survey (Smith)</p> <p>A: CRDC 1624 A predictive diagnostic test for BRR (Manjarrez)</p> <p>H: Biological control of noogoora burr (Johnston)</p> <p>R: Supporting integration of existing weed tactics (Koetz)</p> <p>R: CRDC 1621 Regional management workshops (Cameron)</p> <p>R: UQ1501 Staying ahead of weed evolution (Werth)</p> <p>A: DAN1601 Developing weed control thresholds (Charles)</p> <p>R: CSP1401 Enhancing IPM in cotton systems (Wilson)</p> <p>D: DAN1501 Establishing Southern cotton IPM (McDougall)</p> <p>R: DAQ1501 Managing Solenopsis mealy bug (Sequeira)</p>
Key activities	<ul style="list-style-type: none"> • Disease surveys in all regions • Come Clean Go Clean push to stop the big three (verticillium, cotton mealy bug, resistant weeds) moving between farms • Weed surveys • ICAN workshops • IPM short courses • Early season pest management webinars • Exclusion tent demos of pest pressure impact • Develop BDI benchmark on previous season
General activities	<ul style="list-style-type: none"> • Rice rotations to reduce BRR (southern NSW) • Verticillium rotation trials field day • Collecting Noogoora bur samples • Promote regional weed case studies • Linkages to commercial herbicide demo sites (Nufarm, Monsanto) • Promote patch management guidelines • Promote herbicide application solutions • Facilitate beneficial drops on mealy bug hot spots • Re-evaluate BDI and extend • Informal crop walks – small groups • Distribution of spray drift information through agribusinesses



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Action plan:			
Strategy	Action step	Responsibility	Timeline
Build greater confidence of the management options for IPM.	Develop a pest management short course 'back to basics' for delivery in 2017 (August) pre-season.	REOs Technical Specialists (Weeds, IPM, Disease/Biosecurity)	Jul-Mar 2018
Demonstrate the impact of pest pressure on retention	Regional demonstrations of pest pressure impact using exclusion tents.	Technical Specialist REOs	Oct-Mar 2018
Develop disease management structured training.	Building on the plant physiology component of the IPM short course, develop integrated disease management short course	Technical Specialist	Jan-Jun 2018
Gain awareness of regional incidences of disease and resistant weeds.	REOs to assist researchers to conduct disease and weed survey, to gain a greater understanding of on-farm impact and regional incidences.	Researchers REOs Technical Specialist (Weeds)	Jan-Mar 2018
Develop case studies to demonstrate best practice for weed resistance management and early season pest pressure.	Develop weed management practice case studies (two irrigated or dryland growers per region) and the early season pest pressure (and tools available) of the previous season (pest roundup)	REOs Technical Specialists (Weeds and IPM)	Dec-Mar 2018
Weed management workshops to build understanding of control tactics.	REOs support the ICAN-delivered masterclasses and regional workshops.	REOs	Jul-Sep 2018
Review international management of herbicide resistance.	Participate in the US study tour of herbicide resistance management and communicate findings.	REO Manager	May 2018
Promote farm hygiene and biosecurity messages.	Develop new messages to promote more relevant farm hygiene practices and engage through relevant delivery pathways.	Technical Specialist REOs	Ongoing



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Focus area 3: Identifying and managing soil constraints and optimising the efficient use of inputs for profit within farming systems

Issue	Managing soil health impacts and inputs within farming systems.
Assumption	Improving capital assets and profitability through soil health and productivity in our farming systems in a digital age through better objective measurement.
Objective	<ol style="list-style-type: none"> 1. To create a network of 30 growers interested in developing cover cropping on their farms. 2. To increase the level of skill of 60 growers and consultants in precision agriculture for decision making. 3. To raise awareness of 200 growers on how compaction is measured, strategies for prevention and options for remediation.
Monitoring & Evaluation	<p>Achievement of these objectives will be measured through:</p> <ul style="list-style-type: none"> • Objective 1: CCA survey 2017 on use of cover crops providing a benchmark of use. P2D focus group results indicated benchmark of precision agriculture use. Cover cropping community of practice developed and facilitated. Cover crop trials initiated in Border Rivers and Southern NSW. Existing data shows: Over 70 percent of grower ranked stored moisture as their number one priority influencing their cotton planting decision. Source: GPS 2016 • Objective 2: Involvement of growers and consultants in precision agriculture on farm trials. Benchmark and measure consultant skills change from Stimulating Private Extension Project Trial 2. Existing data shows: No baseline data exists. • Objective 3: CCA survey 2017 impact of compaction \$/ha trend. Compaction focus groups identify grower metrics of compaction, motivations and barriers of prevention and remediation. Existing data shows: 63 per cent of area with production impacted by soil compaction, with 15 percent being more than a bale/ha impact. Source: CCA 2016
Project linkages (classified using the H.A.R.D system)	<p>H: Kathy Evans, Progressing Precision Agriculture and participatory research (joint REO & E&D)</p> <p>A: David Lawrence, Cover crops in cotton farming systems</p> <p>A: Kaylix dryland cover cropping trials</p> <p>A: RRD4P Stimulating Private Sector Extension Trial 2: Precision Ag capacity building for consultants</p>



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Key activities	<ul style="list-style-type: none"> • Facilitate the progressing Precision Agriculture project with REOs and the E&D team • Support the cover cropping trial work • Facilitate cover cropping champions group, a couple of growers from each region documenting drivers, activities, outcomes and research gaps/needs • Trial two RRD4P Stimulating Private Extension projects on integration of precision agriculture into consulting businesses, with CCA, Sugar Research Australia and Horticulture Innovation Australia. • Extend dryland cover cropping results from Kaylix • Climate and risk management case studies
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Action plan:			
Strategy	Action step	Responsibility	Timeline
Understand the benefits of using cover crops in rotations	Two case studies and field days showcasing people who are doing this well.	REOS	Jul-Oct 2017
Provide access for farming champions of managing compaction and cover cropping to share experience and enable others to share this	Three demonstrations, forums, community practice, training needs identified.	REOs in partnership with CRDC/GRDC Cover Cropping project	Jul-Jun 2018
Work with three growers at three stages of adoption of precision agriculture (beginner, intermediate and advanced)	Benchmarking what growers are doing. Extend the messages and develop a case study	REOs in partnership with UTAS farmer trial project	Oct-May2018
Identify and promote the decision process for assessing precision agriculture options	Work with existing precision agriculture providers to document the process for assessing the suitability of precision agriculture	REOs and Digital Agronomist (CSIRO)	Jan-May 2018
Upskilling and training in the use of precision tools	Stimulating Private Extension Trial two workshops.	CottonInfo Program Manager	Jul-Dec 2017



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Additional Cottoninfo Strategic Plan targets

Objective	Strategy	Actions	Timing	Responsible	Working with	Measure
Improve practices	Promote myBMP and introduce more growers to the program	<p>Integrate myBMP into CottonInfo practice change activities: field days, workshops, farm visits and trials.</p> <p>Promote the benefits of myBMP when engaging with growers and assist with 50 new registrations.</p>	Ongoing	REOs	CA RMs, myBMP Manager, and myBMP customer service coordinator	<p><u>CottonInfo:</u> myBMP Grower registrations increase by 50.</p> <p><u>Industry wide target:</u> myBMP Grower registrations increase by 150 to a total of 700 (75 per cent of growers based on a 5 year rolling average of grower numbers).</p>
	Increase the uptake of innovative practices	Assist growers to benchmark current practices and identify opportunities for improvement and innovation in four focus modules.	Ongoing	REOs	Technical specialists, consultants, CA RMs, myBMP Manager	50 growers have been supported to identify and adopt best management and innovative practices in four focus modules using myBMP as a benchmarking tool.
	Update myBMP modules and resources	CottonInfo technical team works with myBMP Review Coordinator to review and update myBMP modules relevant to expertise within CottonInfo.	As required	Technical Specialists	myBMP review coordinator, myBMP Manager, consultants, CA policy staff	All myBMP modules incorporate the latest research and best management practices
Improve Communication	Make R&D information, trusted advice and specialist technical knowledge readily available.	Develop and implement the CottonInfo website, e-news, major publications, fact sheets, case studies, video content, webinars, social media & joint industry database.	Ongoing	Communications Manager	CottonInfo Program Manager, Technical Specialists, REOs	80 per cent of growers and consultants believe information, knowledge and advice is readily available (measured through industry surveys).



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Objective	Strategy	Actions	Timing	Responsible	Working with	Measure
Improve Communication (cont).	Build awareness of CottonInfo as a key source of R&D information, and a key deliver agent of practice change.	Promote brand through the ongoing implementation of CottonInfo brand and style guidelines; development of promotional material; leveraging opportunities (such as local media around CottonInfo events); and working with CottonInfo partners.	Ongoing	Communications Manager	CottonInfo Program Manager, Technical Specialists, REOs	100 per cent of growers and consultants are aware of CottonInfo (measured through industry surveys). Greater than 80 per cent are utilising CottonInfo to source information (measured through industry surveys). Greater than 95 per cent believe CottonInfo has contributed to changed practices (measured through industry surveys).
Improve responsiveness	Increase uptake of biosecurity best management practice	Increase biosecurity awareness and support practice change 50 growers are supported to complete the biosecurity module and achieve industry standard (level two).	Ongoing	REOs	CottonInfo technical specialist, RMs, myBMP Manager	<u>CottonInfo:</u> 50 growers have completed to Level two of the biosecurity module. <u>Industry wide target:</u> myBMP farms achieving level two status increases by 60 to 210 (18 per cent of farms – industry target)



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