CRDC
COTTON RESEARCH AND DEVELOPMENT CORPORATION

CROP CONSULTANTS AUSTRALIA

QUALITATIVE REPORT

on the 2017-18 cotton season:
A survey of consultants

MELANIE JENSON

CONTENTS

PURPOSE

The Cotton Research and Development Corporation (CRDC) commissions this survey each year to provide current and longitudinal knowledge of on-farm practices and attitudes, to aid the research, development and extension effort within the Australian cotton industry.

COVERAGE

Data was collected by Crop Consultants Australia Inc. (CCA) from 63 cotton consultants, who answered most or all of the questions about their own practices and attitudes, as well as those of their grower clients.

The consultants represented 494 cotton growers, and covered 293,785 hectares: 56% of the Australia cotton production area for the 2017-18 season (not adjusted for row spacing). This is based on the 2017-18 production figure of 525,640 hectares (Cotton Australia).

METHODOLOGY

The survey consisted of 72 quantitative and qualitative questions, which sought to draw out both the details of actual agronomic practices and consultants' views of those practices.
It was conducted from May to July 2018, with questions referring to the 2017-18 cotton season.
Questions that collected data on clients or areas were only made available to one participant from a consultancy to avoid duplication.

DATA COLLATION

The online Cvent survey program (www.cvent.com) was used to compile the data. Interpretations are up to the user. An asterisk indicates questions that are recurrent over time to identify trends.

ACKNOWLEDGEMENT

Thank you to the consultants who took the time and effort to complete this survey. The data in this survey provides valuable information for researchers and industry organisations in planning and carrying out projects. Thank you to Crop Consultants Australia and Black Canvas graphic design for the compilation of this report.

DISCLAIMER

Publisher CRDC
Editor Liz Otto for Crop Consultants Australia
Cover image Melanie Jenson
Design Black Canvas

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THE CONSULTANTS AND THEIR CLIENTS

ABOUT THE CONSULTANTS

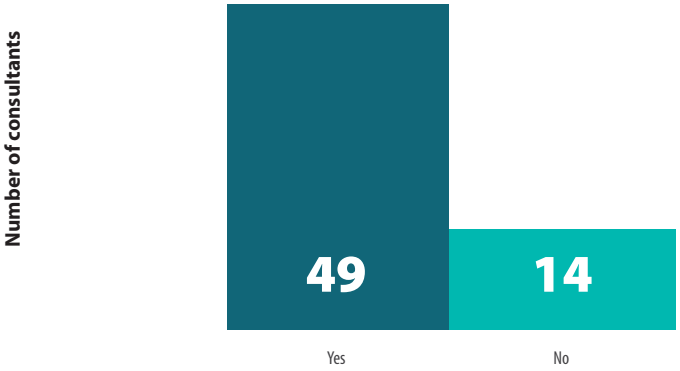
1

Are you completing the survey on behalf of the business or business unit?*

63 respondents

Note 49 consultants completed the survey on behalf of their business or business unit, which involved completing the specific questions relating to staff, hectares and clients. 14 consultants completed the survey questions only relating to individual practices and attitudes.

PRIMARY BUSINESS PERSON COMPLETING SURVEY

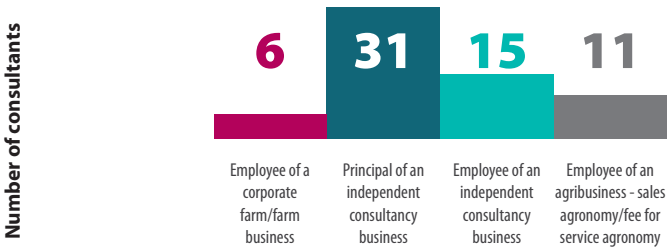


2

Which of the following best describes your employment as a consultant?*

63 respondents

NATURE OF CONSULTANCY

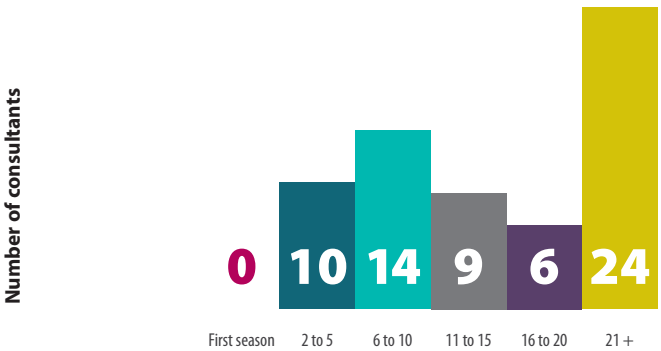


3

For how many seasons have you worked consulting in cotton?*

63 respondents

NUMBER OF SEASONS CONSULTING IN COTTON



THE CONSULTANTS AND THEIR CLIENTS

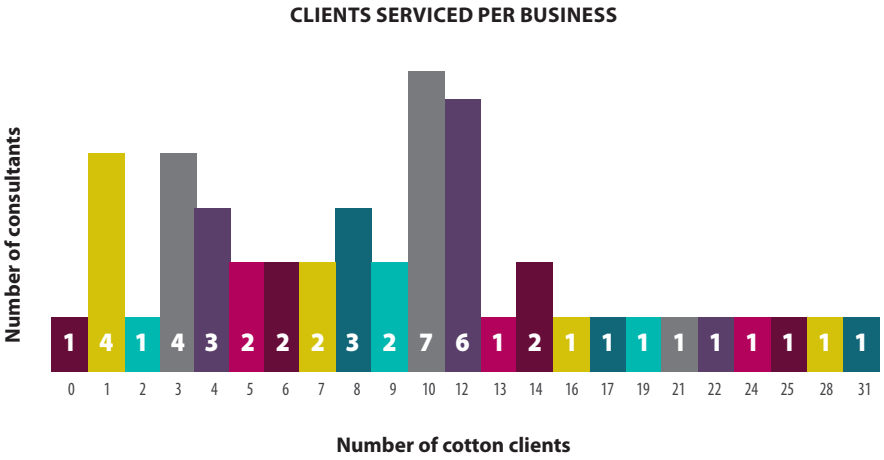
ABOUT THE CLIENTS

4

How many cotton clients did the business (or business unit) service in 2017-18?*

49 respondents

Note A total of 494 clients were represented in the survey.

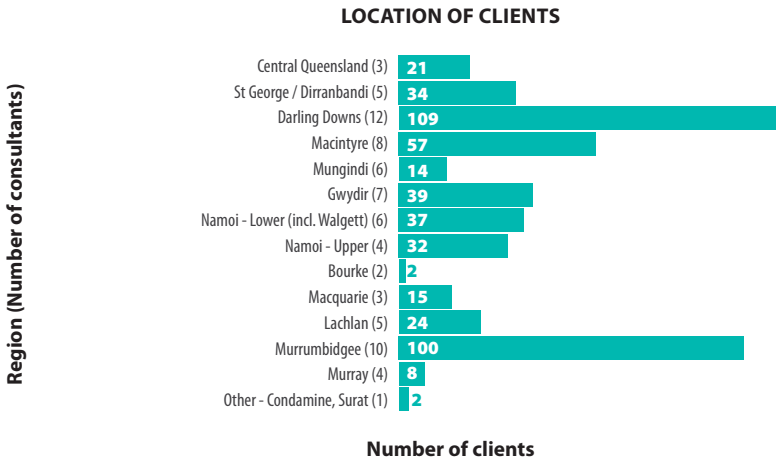


5

In which region/s are your cotton clients based?*

49 respondents

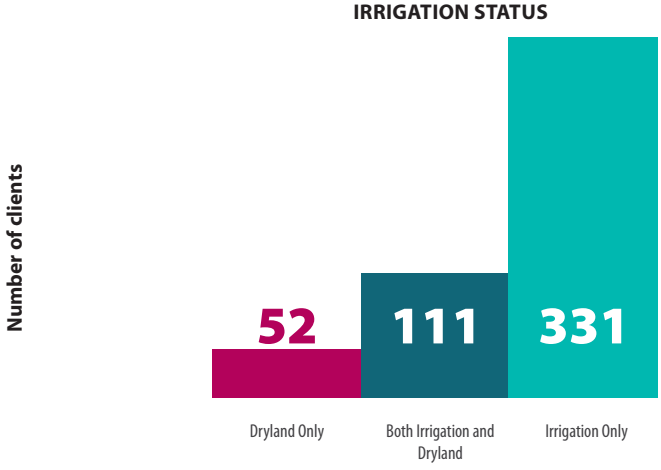
Note Some consultants have clients in more than one region, hence the total number of consultants is higher than the 49 respondents across the regions.



6

How many of your cotton clients have dryland only, irrigation only, or both dryland and irrigation?*

48 respondents



ON-FARM PRACTICES AND ATTITUDES

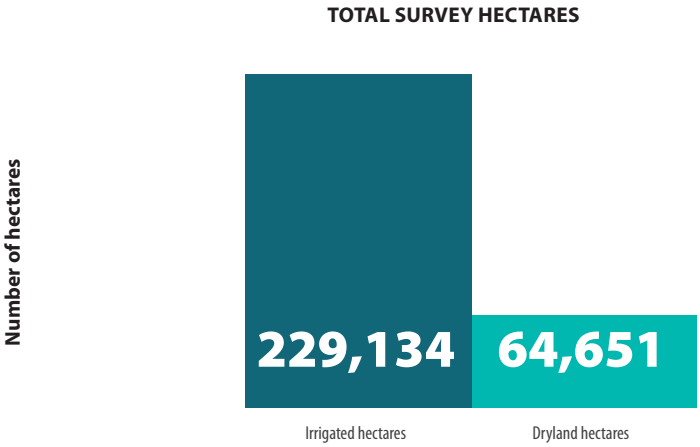
COVERAGE

7

How many hectares of cotton (total area, not adjusted for row spacing) did your clients grow in the 2017-18 season?*

49 respondents

Note Clients grew of total of 293,785 hectares of which 229,134 were irrigated and 64,651 were dryland.

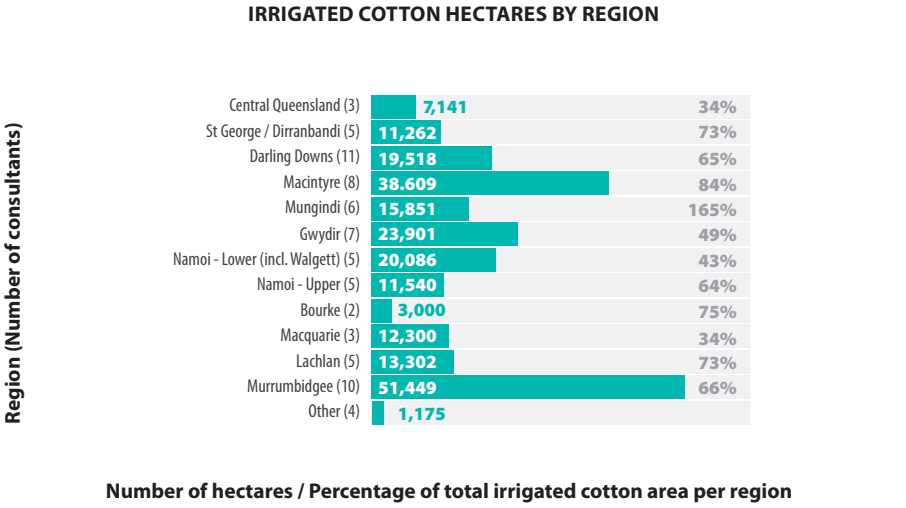


8

In which region/s are the irrigated cotton hectares of your clients situated?*

48 respondents

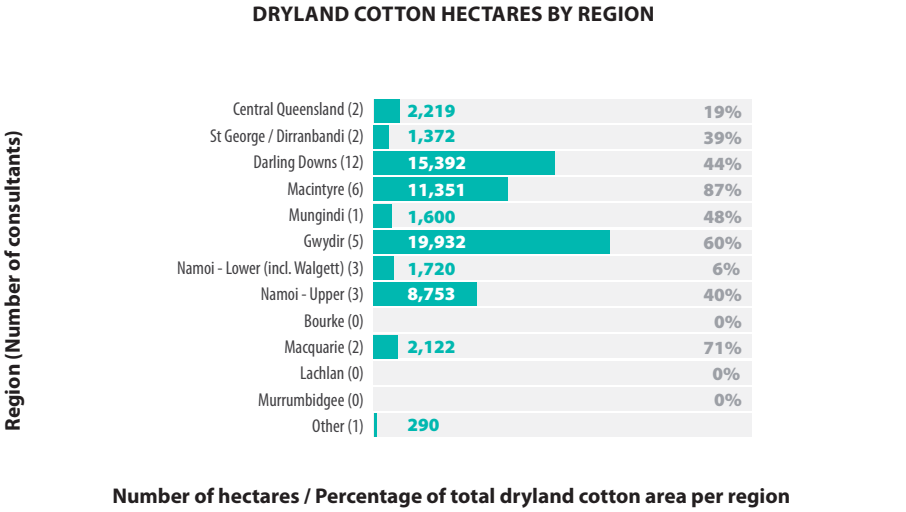
Note Due to interpretation of region boundaries and operating areas of consultants, the coverage of cotton may vary to the region statistics provided by Cotton Australia used to determine percentage of total cotton area per region. This accounts for the high percentage recorded for Mungindi.



9

In which region/s are the dryland cotton hectares of your clients situated?*

36 respondents



ON-FARM PRACTICES AND ATTITUDES

2017-18 SEASON

10

Describe the 2017-18 cotton season in three words or less.

63 respondents

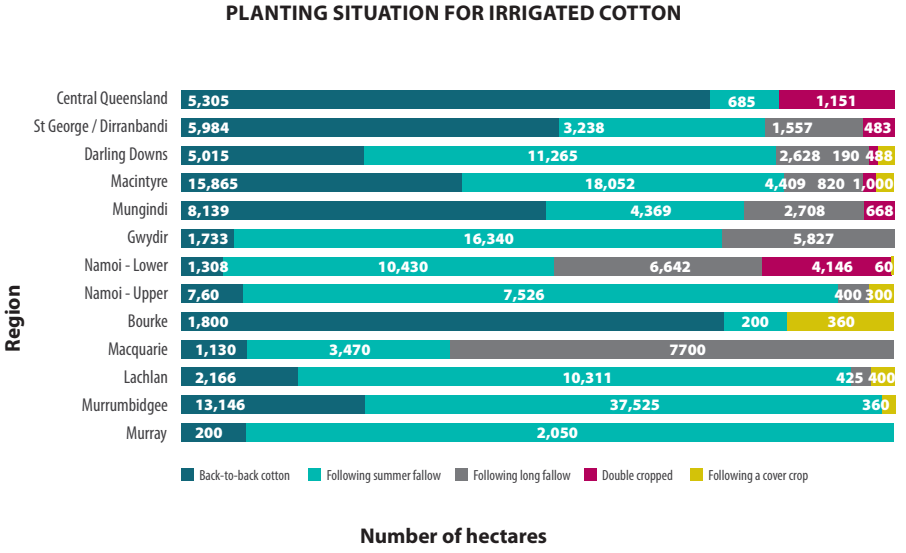
This was an open question. Please see the appendix for full individual responses.

PLANTING

11

Of your irrigated cotton hectares in 2017-18, how many were back-to-back cotton, following summer fallow, following long fallow, double cropped, or following a cover crop?*

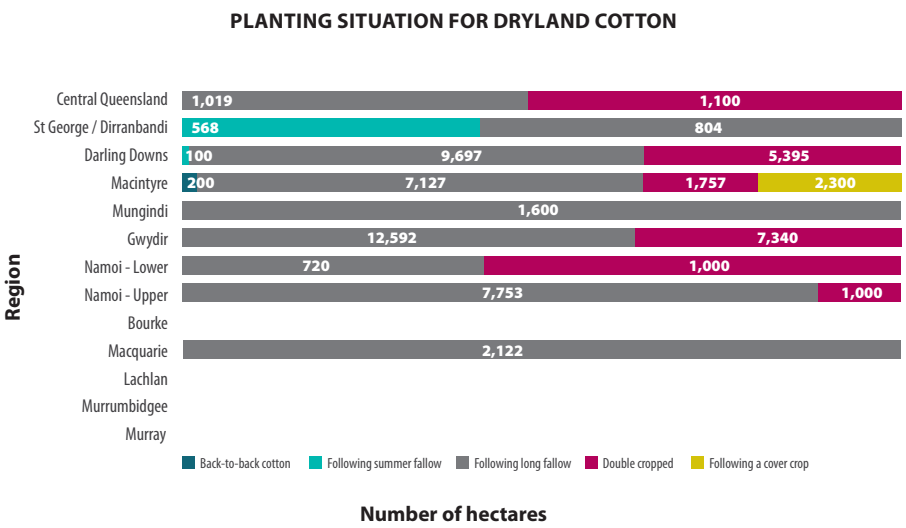
48 respondents



12

Of your dryland cotton hectares in 2017-18, how many were back-to-back cotton, following summer fallow, following long fallow, double cropped, or following a cover crop?*

48 respondents



ON-FARM PRACTICES AND ATTITUDES

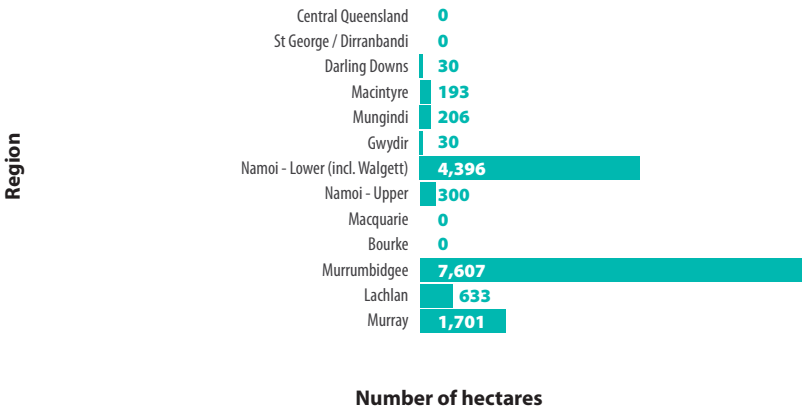
13

Of the irrigated cotton hectares, how many were planted in new fields, i.e. never had cotton grown there previously?

45 respondents

In total, 15,096 hectares were planted in new fields.

NEW IRRIGATED COTTON FIELDS (NO PREVIOUS COTTON)



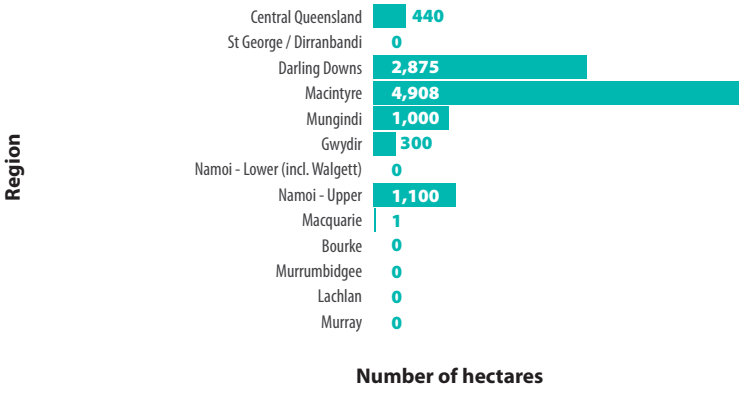
14

Of the dryland cotton hectares, how many were planted in new fields, i.e. never had cotton grown there previously?

31 respondents

In total, 10,624 hectares were planted in new fields.

NEW DRYLAND COTTON FIELDS (NO PREVIOUS COTTON)

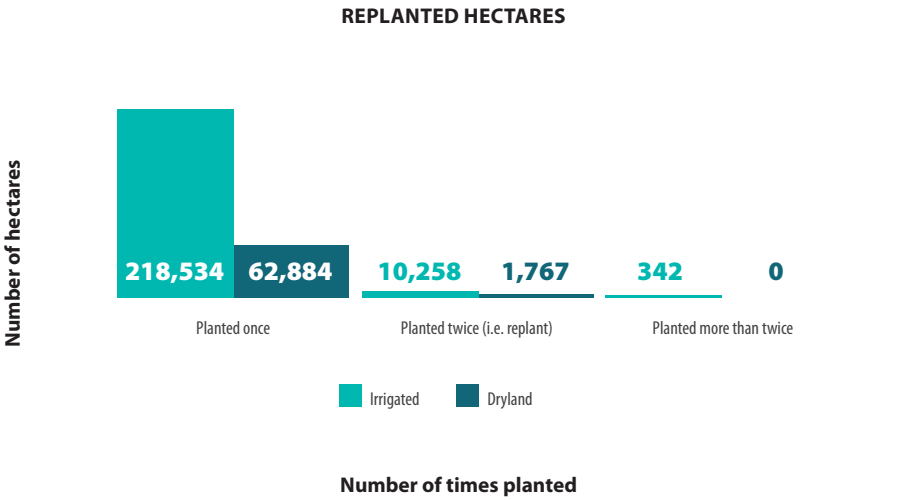


ON-FARM PRACTICES AND ATTITUDES

15

Of the irrigated and dryland cotton hectares, how many were planted once, planted twice or more than twice?*

48 respondents

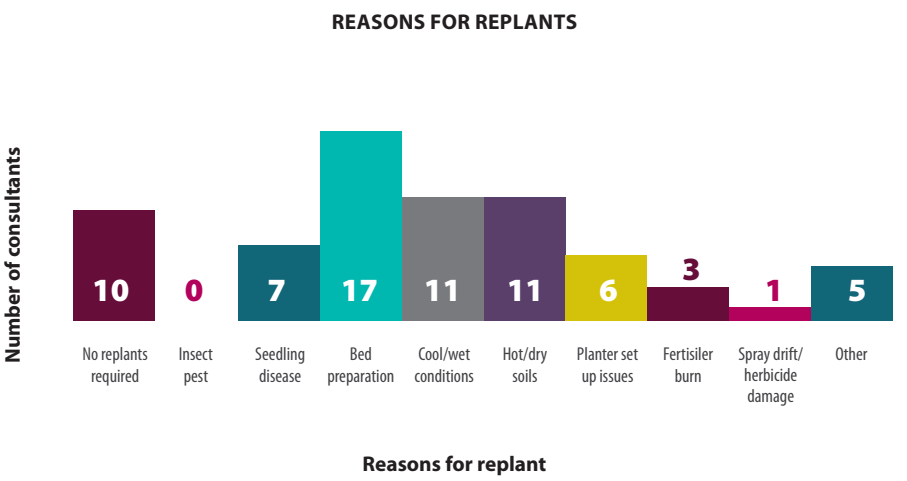


16

Select the reason/s why replants were required (select multiple as required):*

39 respondents

Note Other responses included: crusting/germination issues as a result of heavy rain (2), hail storm, rain during watering up, delayed watering led to seedling death, residual herbicide damage.



ON-FARM PRACTICES AND ATTITUDES

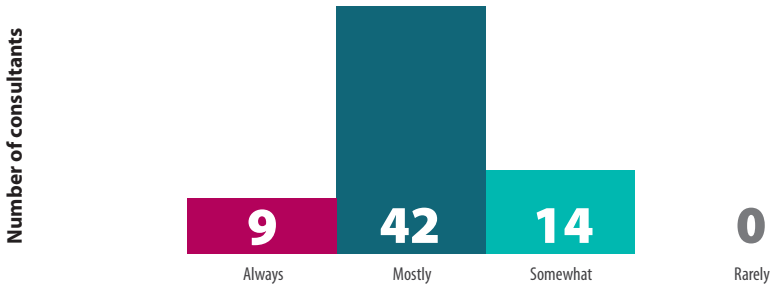
INTEGRATED PEST MANAGEMENT

17

How well does industry Integrated Pest Management advice fit with the objectives of maximising yield potential?

63 respondents

INDUSTRY INTEGRATED PEST MANAGEMENT ADVICE FOR MAXIMISING YIELD POTENTIAL

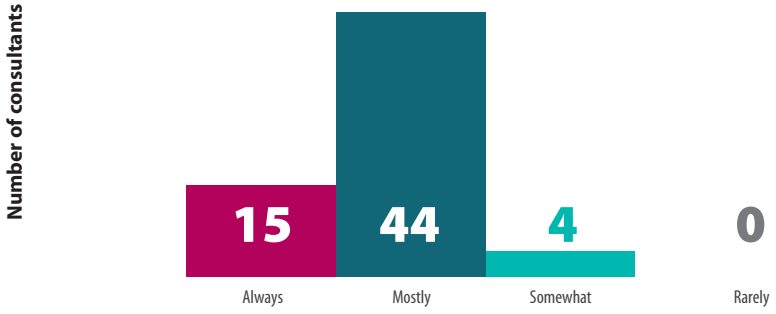


18

How well does industry Integrated Pest Management advice fit with the objective of sustainable pest management?

63 respondents

INDUSTRY INTEGRATED PEST MANAGEMENT ADVICE FOR SUSTAINABLE PEST MANAGEMENT



19

What are the current weaknesses or strengths of current industry IPM advice?

58 respondents

This was an open question. Please see the appendix for full individual responses.

ON-FARM PRACTICES AND ATTITUDES

20

Are there any pests (insect, weeds, diseases) or situations where a lack of product registration is limiting your ability to provide advice?

53 respondents

This was an open question. Please see the appendix for full individual responses.

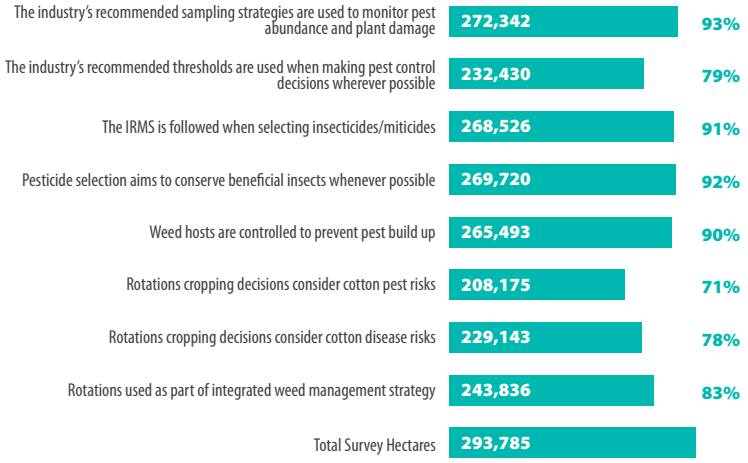
CROP PROTECTION

21

With regards to insect pest management in 2017-18 cotton fields, how widely used (in terms of total irrigated and dryland hectares) were the practices listed.*

49 respondents

EXTENT OF PRACTICES USED



Number of hectares / Percentage of total survey hectares

22

Of your cotton clients, how many provide wash down facilities for your vehicle wash down?

48 respondents

CLIENTS PROVIDING VEHICLE WASH DOWN FACILITIES

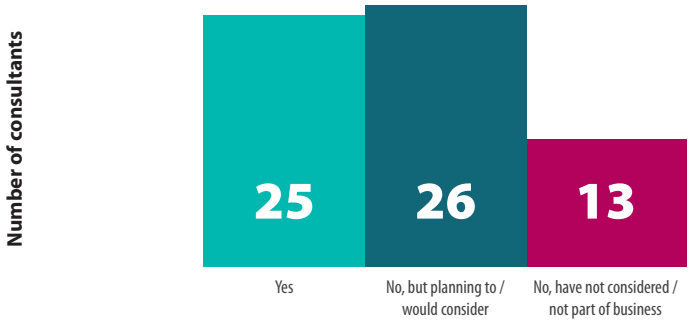
ON-FARM PRACTICES AND ATTITUDES

23

Do you provide support to clients to develop farm biosecurity plans?

63 respondents

SUPPORT TO DEVELOP FARM BIOSECURITY PLANS

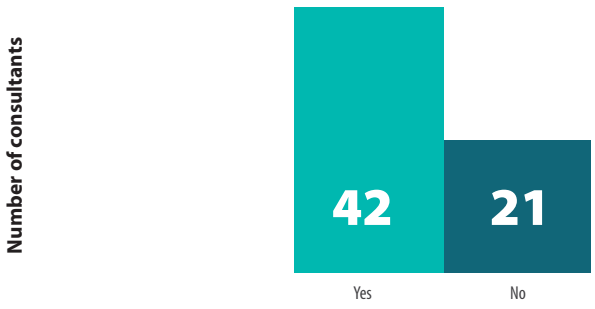


24

As a consultant, do you have a biosecurity plan or set biosecurity processes?

63 respondents

CONSULTANTS WITH A BIOSECURITY PLAN/PROCESS

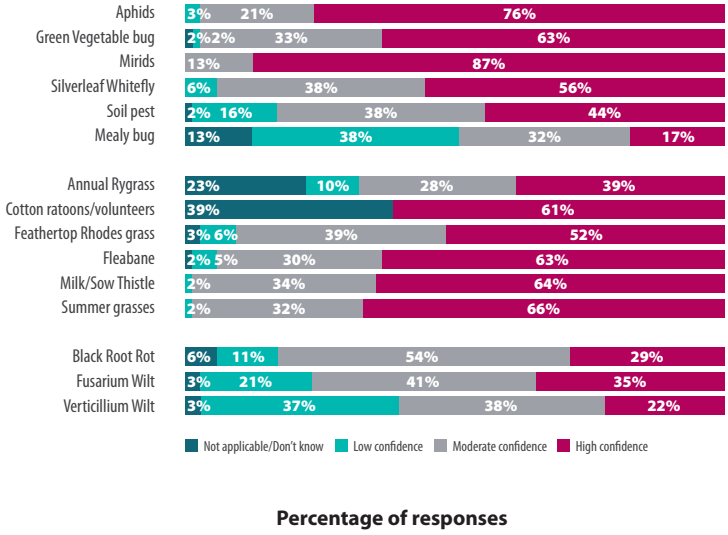


25

How confident do you feel in providing advice on managing the following issues in cotton?

63 respondents

CONFIDENCE PROVIDING ADVICE ON ISSUES IN COTTON



ON-FARM PRACTICES AND ATTITUDES

CROP PROTECTION

26

Can you briefly describe your approach/philosophy for Silverleaf Whitefly management?

61 respondents

This was an open question. Please see the appendix for full individual responses.

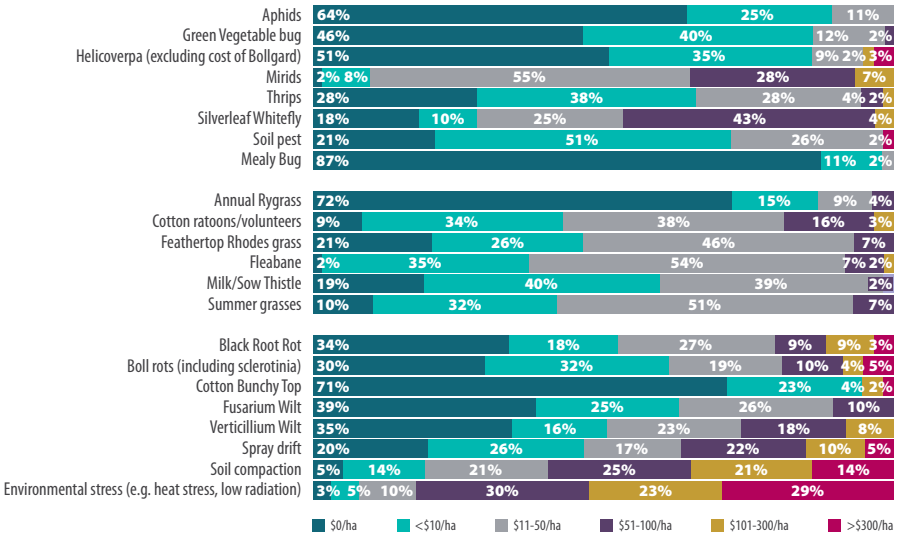
YIELD IMPACTS

27

Rate the average impacts you think the following pests, weeds, diseases and disorders had on the profitability of your clients' cotton crops in 2017-18, either through budgeted or unbudgeted costs or through yield loss.*

62 respondents

ESTIMATED FINANCIAL IMPACT OF INSECTS, WEEDS, DISEASES/DISORDERS



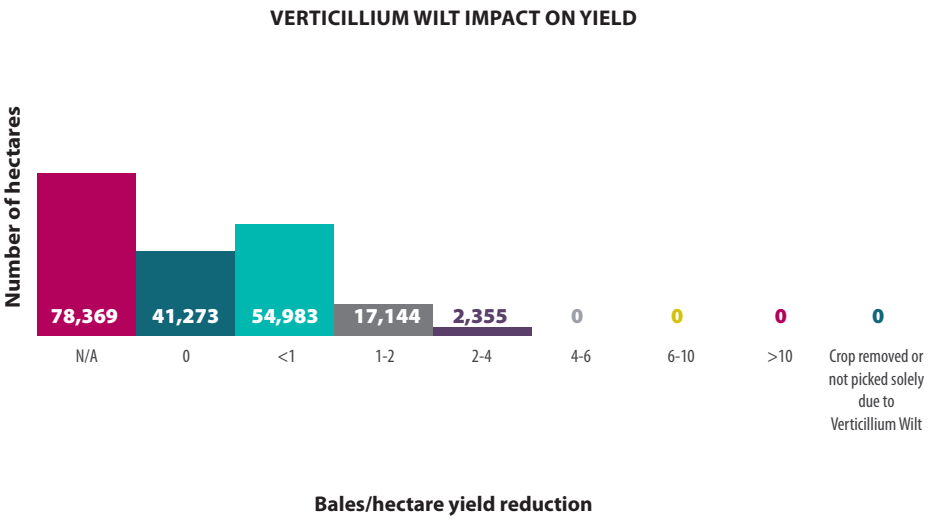
Percentage of responses

ON-FARM PRACTICES AND ATTITUDES

28

What yield impacts do you estimate VERTICILLIUM WILT had on your clients' cotton crops this season? Please indicate your best estimate.*

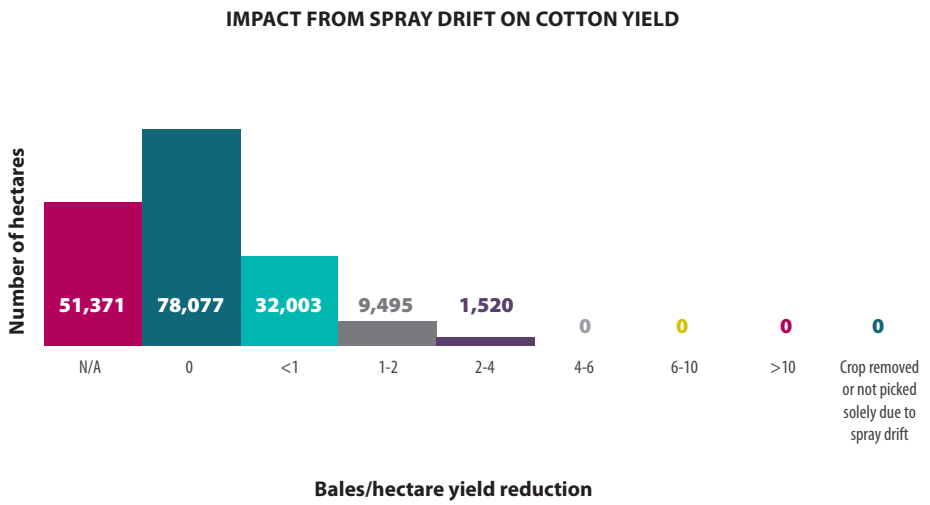
45 respondents



29

What yield impacts do you estimate SPRAY DRIFT had on your clients' cotton crops this season? Please indicate your best estimate.*

47 respondents

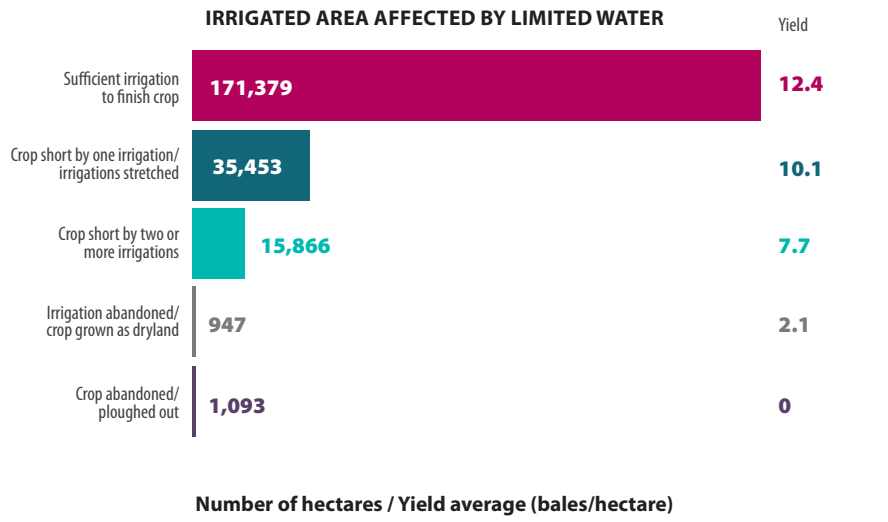


ON-FARM PRACTICES AND ATTITUDES

30

For the irrigated cotton hectares over which you consulted, how much area in 2017-18 season was affected by limited water? Please also indicate your best estimates of yield in each situation.*

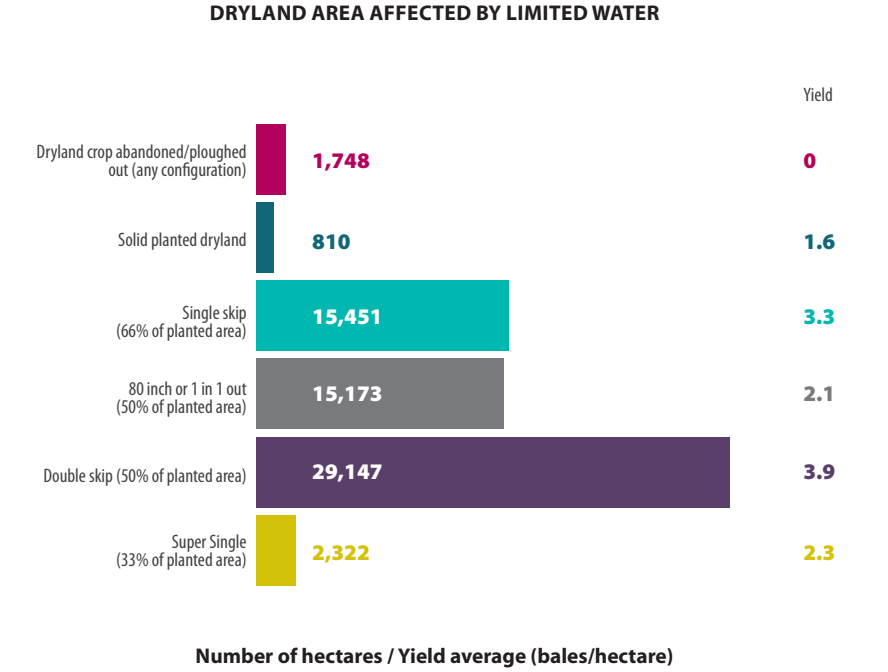
47 respondents



31

For the dryland cotton hectares over which you consulted, please indicate your best estimate of yield for each situation.*

31 respondents



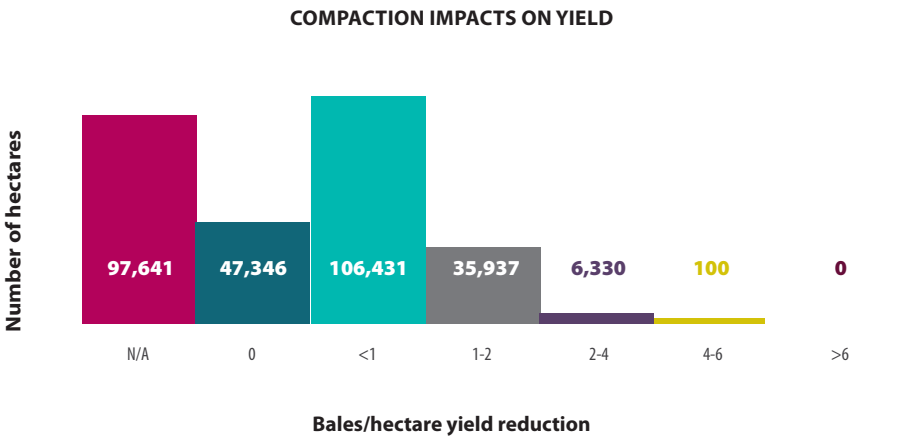
ON-FARM PRACTICES AND ATTITUDES

PLANT MANAGEMENT

32

What impacts do you estimate COMPACTION had on your clients' cotton yields this season?* Please indicate your best estimate of total hectares for your irrigated and dryland cotton.

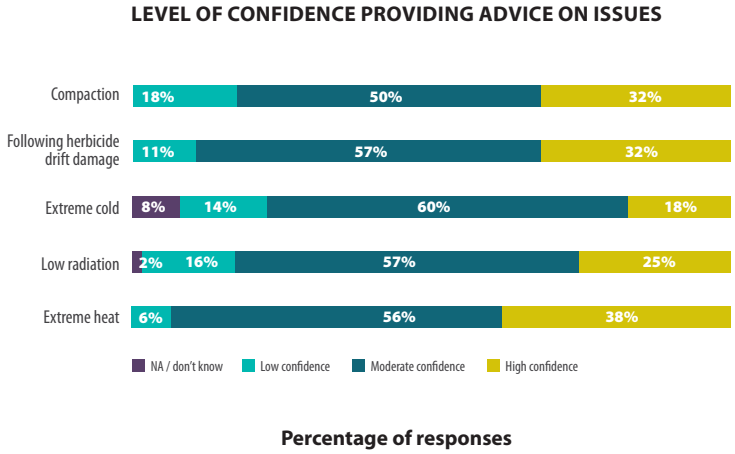
48 respondents



33

How confident do you feel in providing advice on managing cotton in the following situations?

63 respondents



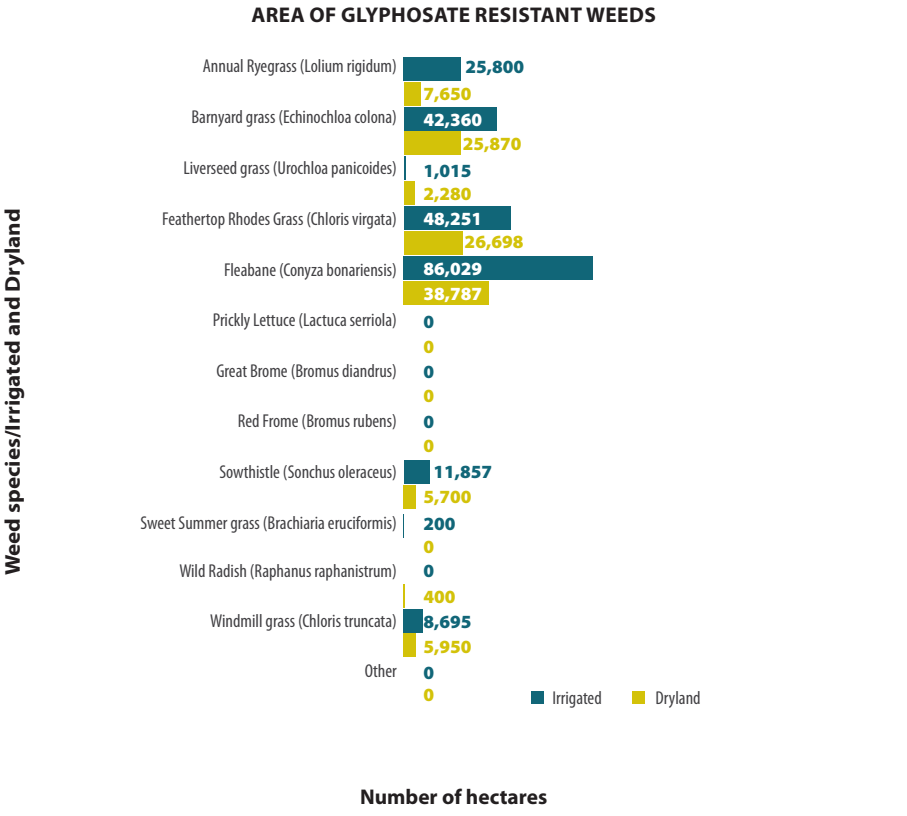
ON-FARM PRACTICES AND ATTITUDES

WEEDS

34

Of the irrigated and dryland hectares over which you consulted in 2017-18, please estimate the total areas you believe to contain populations of glyphosate resistant weeds.

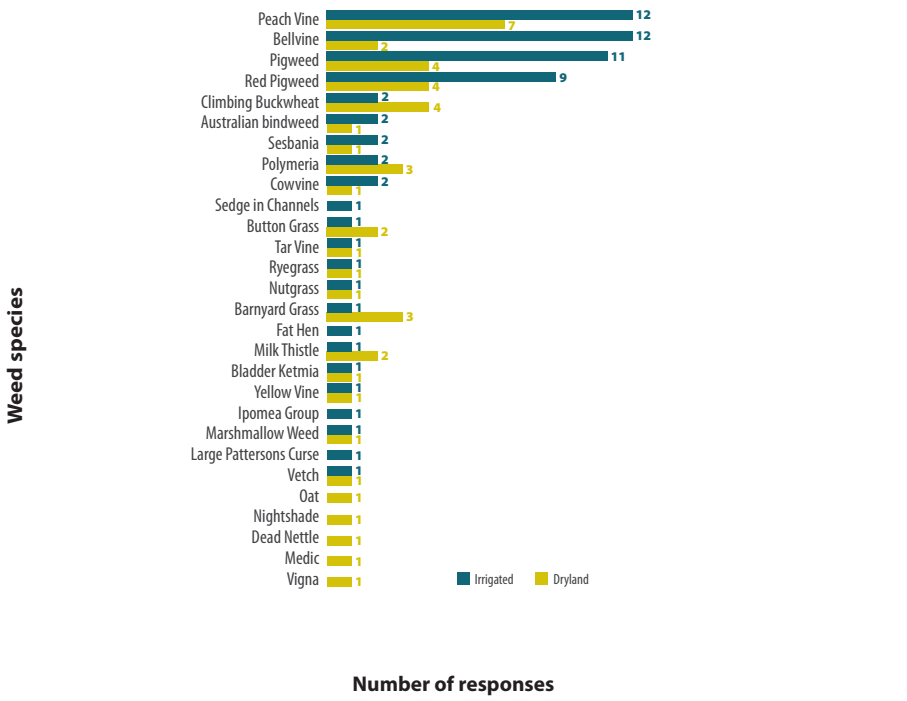
46 respondents



35

Aside from weed species known to have glyphosate resistance (as listed in previous question), what other weed species are becoming more challenging to control in the irrigated and dryland systems?

42 respondents



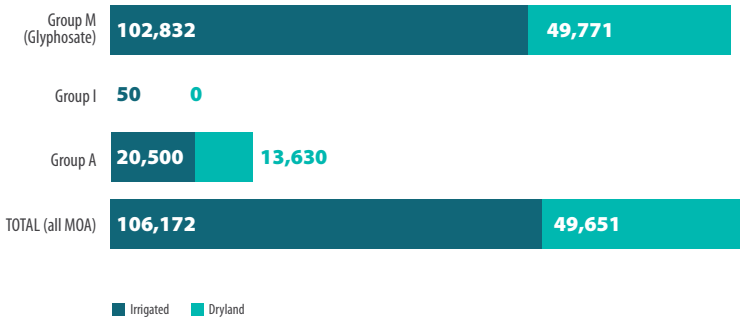
ON-FARM PRACTICES AND ATTITUDES

36

Of the irrigated and dryland cotton hectares over which you consulted in 2017-18, what is the total area (suspected or confirmed) with herbicide resistant weeds?

43 respondents

AREA WITH HERBICIDE RESISTANT WEEDS



37

How many of your cotton clients have had herbicide resistance confirmed?

46 respondents

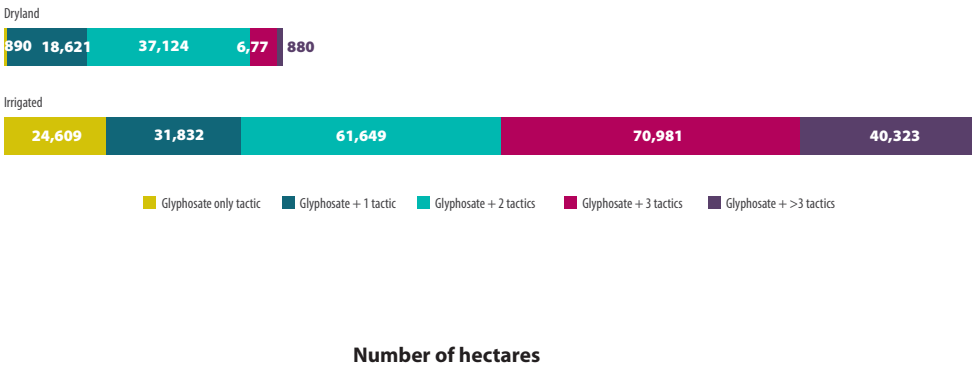
116 clients (represented by 29 consultants) have had herbicide resistance confirmed.

38

Of the irrigated and dryland cotton hectares over which you consulted in 2017-18, please estimate how many tactics were used for the cotton crop, including in preparation. A tactic is considered a weed control operation such as cultivation, herbicide, chipping.

48 respondents

WEED CONTROL TACTICS

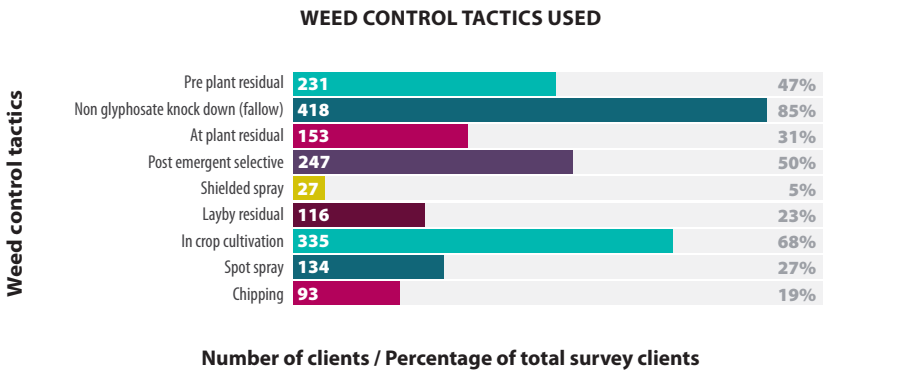


ON-FARM PRACTICES AND ATTITUDES

39

Thinking about your cotton clients, and how they have managed weeds across their cotton farming system, how many use any of the following weed control tactics?

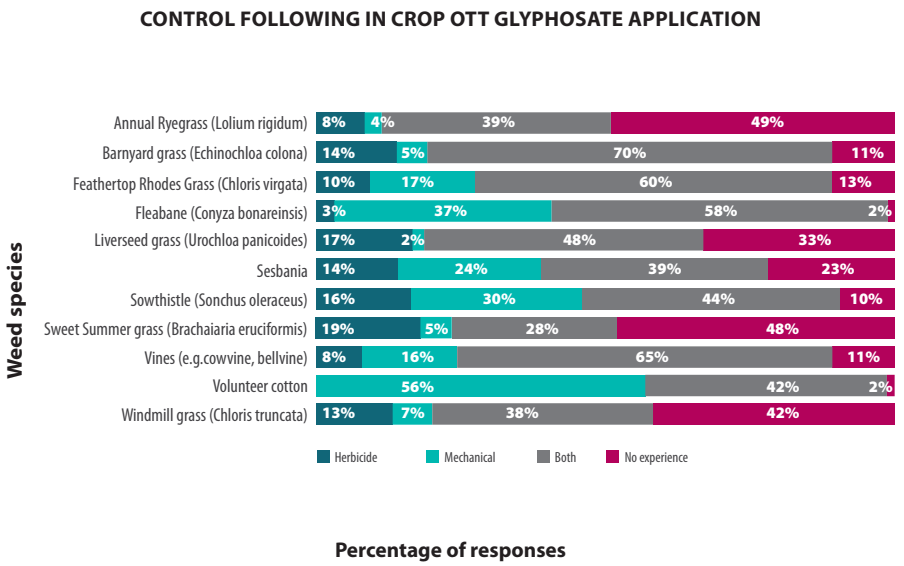
48 respondents



40

In your experience, what is the best strategy to control the following weed species that survive in crop over the top (OTT) glyphosate application?

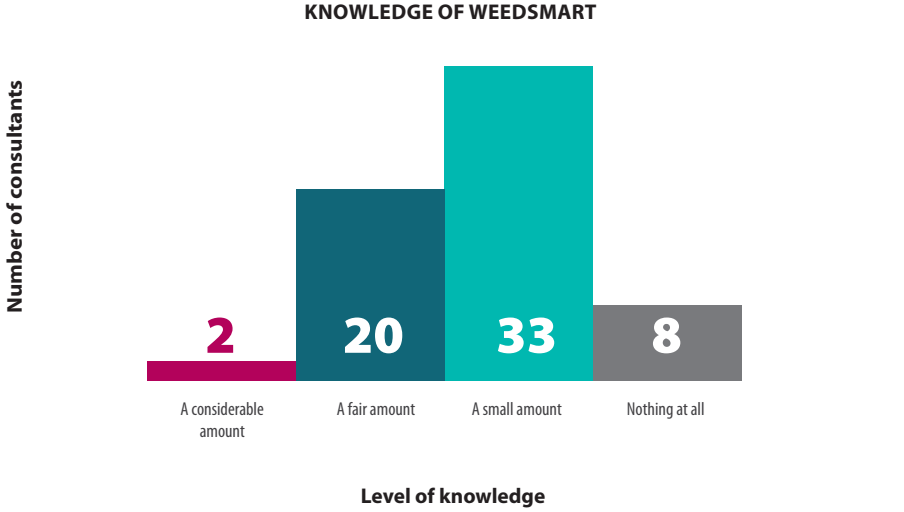
63 respondents



41

How much would you say you know about what WeedSmart does?

63 respondents

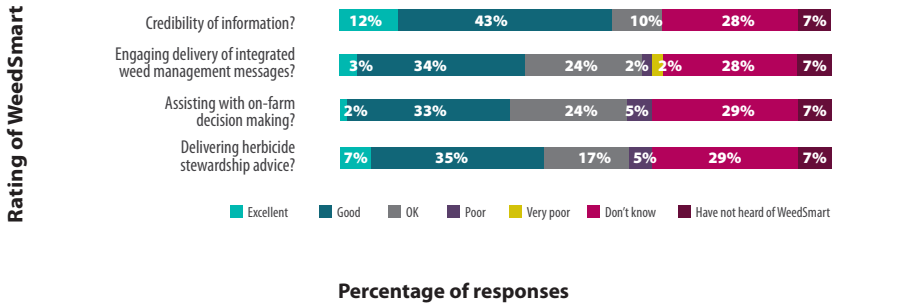


ON-FARM PRACTICES AND ATTITUDES

42

If aware of WeedSmart – How would you rate WeedSmart on the following?

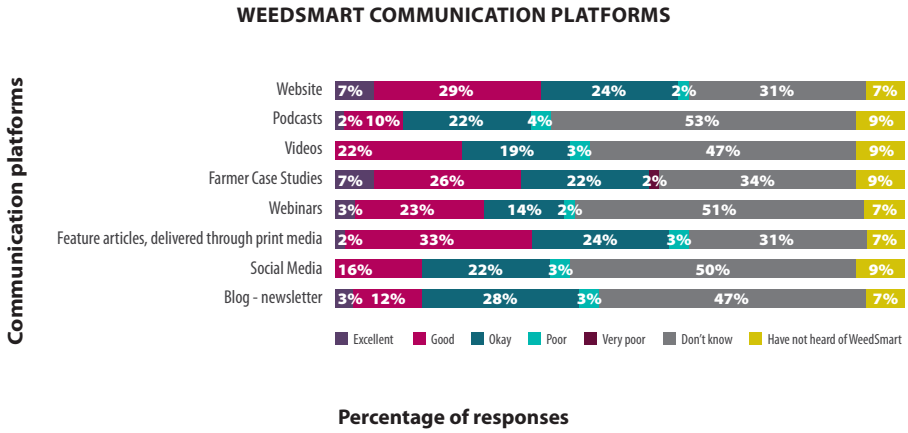
58 respondents



43

How would you rate the following WeedSmart communication platforms?

58 respondents

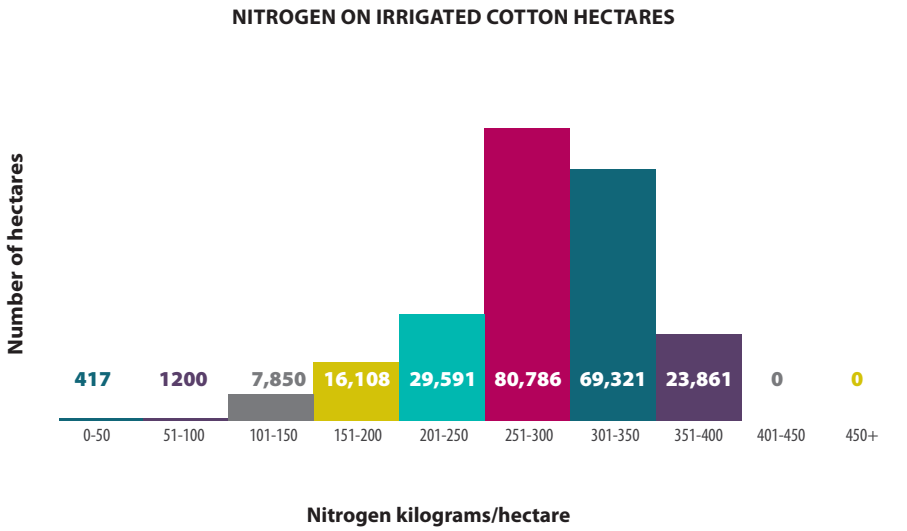


NUTRITION MANAGEMENT

44

What is your best estimate on how much nitrogen was applied per hectare for your total irrigated cotton hectares in 2017-18?*

48 respondents

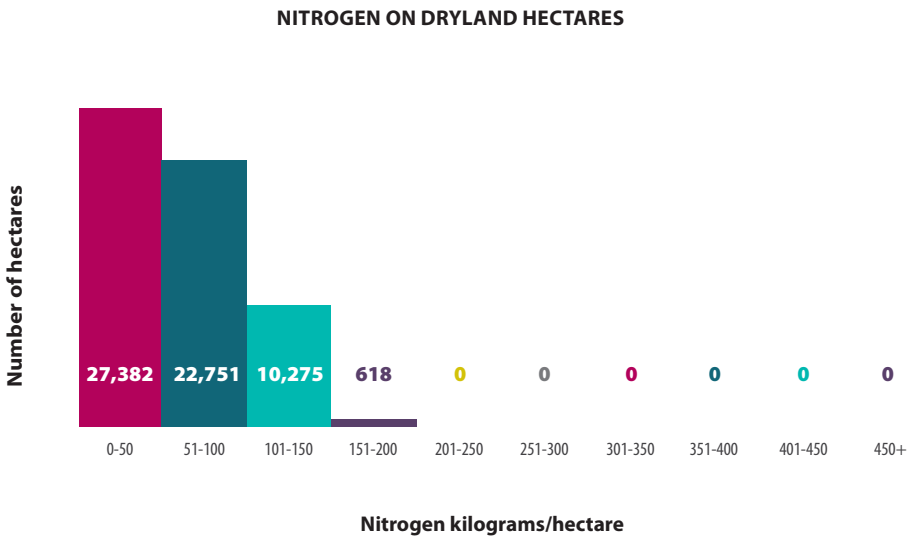


ON-FARM PRACTICES AND ATTITUDES

45

What is your best estimate on how much nitrogen was applied per hectare for your total dryland cotton hectares in 2017-18?*

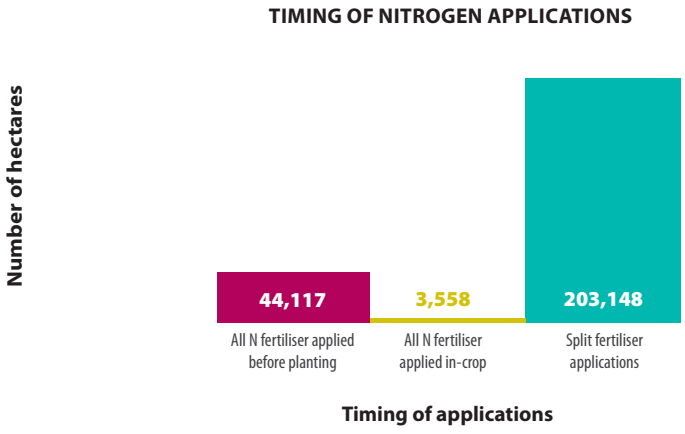
33 respondents



46

In 2017-18, when were the cotton crops' nitrogen fertiliser requirements applied?*

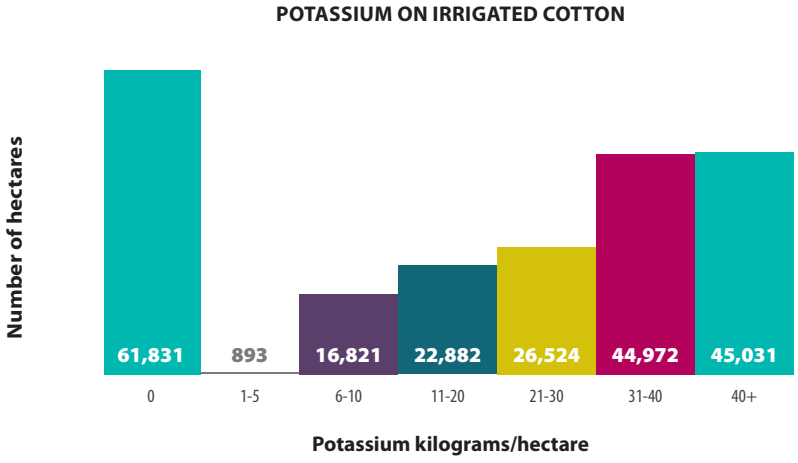
46 respondents



47

What is your best estimate on how much potassium was applied per hectare for your total irrigated cotton hectares in 2017-18?* (Kg K applied, not fertiliser product)

47 respondents



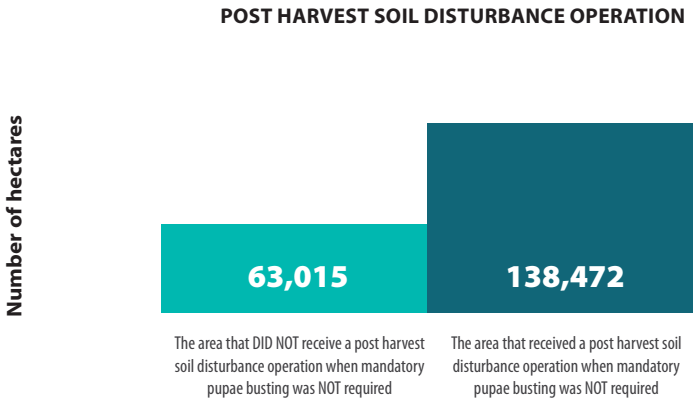
ON-FARM PRACTICES AND ATTITUDES

POST CROP MANAGEMENT

48

Of the irrigated and dryland hectares over which you consulted in 2017-18, please estimate: the area that did and did not receive a post harvest soil disturbance operation when mandatory pupae busting was not required?

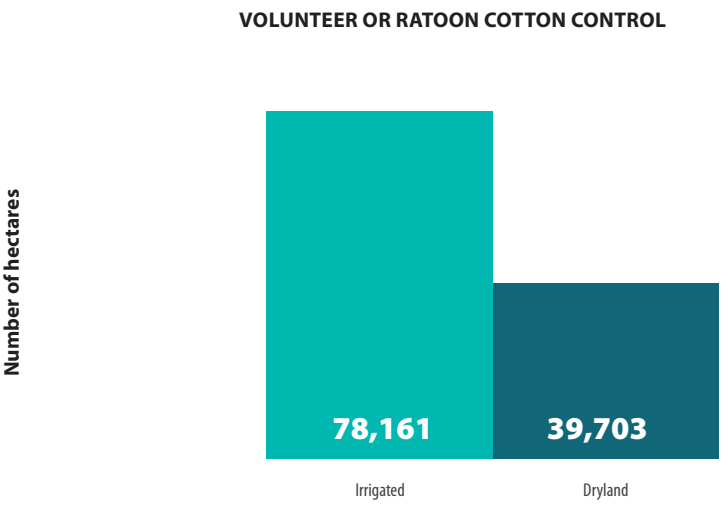
48 respondents



49

Of the irrigated and dryland hectares over which you consulted in 2017-18, please estimate area that requires/ required control of volunteer or ratoon cotton post cotton crop destruction?

47 respondents

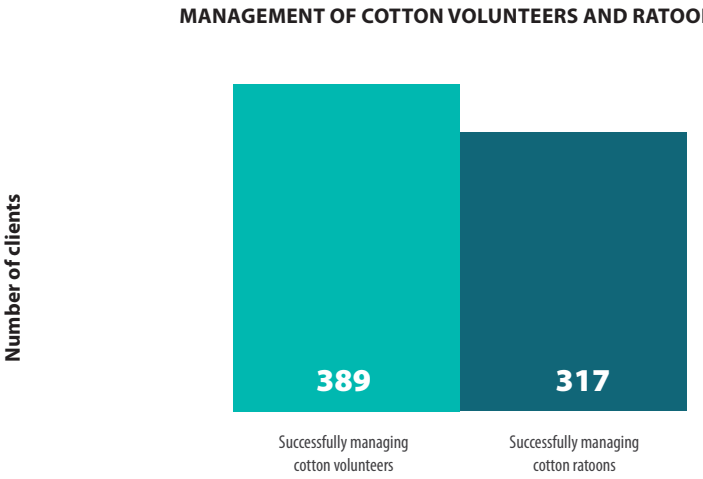


ON-FARM PRACTICES AND ATTITUDES

50

Of your cotton clients, how many do you think are successfully managing cotton volunteers all of the time?

48 respondents



51

In what situation, if any, are there most likely to be inadequate crop destruction or failure to control ratoons?

54 respondents

This was an open question. Please see the appendix for full individual responses.

INDUSTRY PERFORMANCE

52

Are you aware of the Cotton Research and Development Corporation (CRDC)?

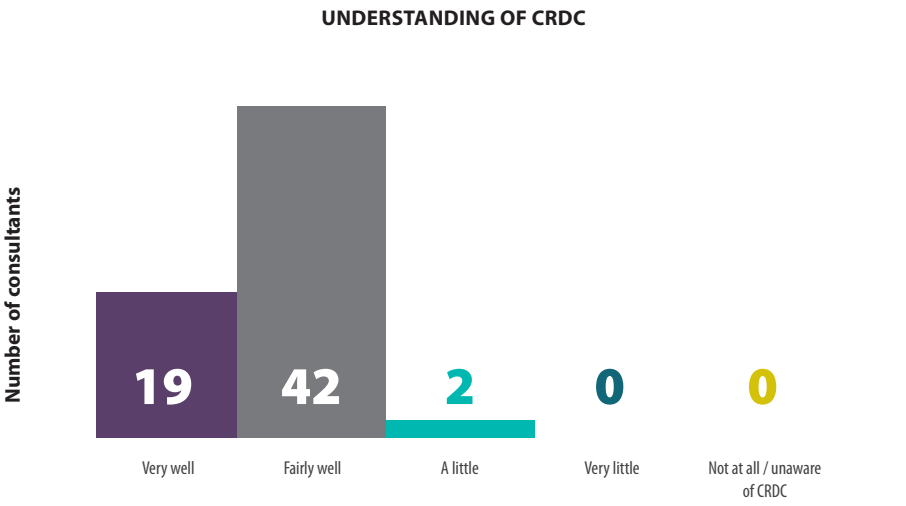
61 respondents

All respondents answered 'yes'.

53

How well would you say you understand what the Cotton Research and Development Corporation (CRDC) does?

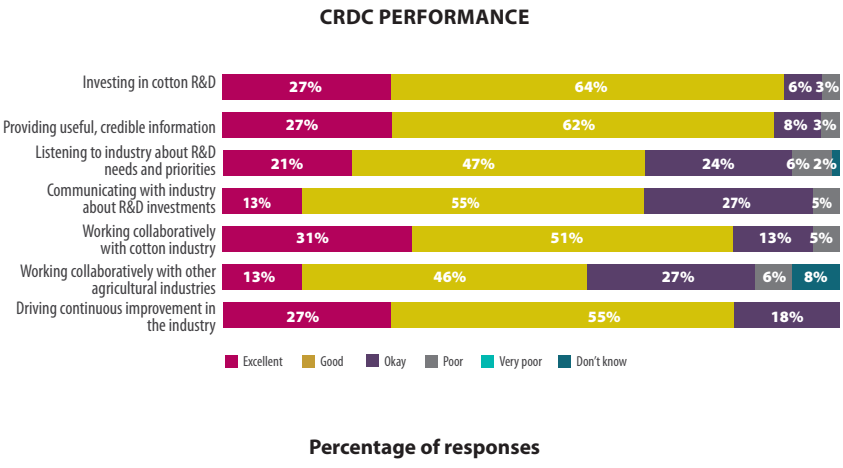
63 respondents



54

How would you rate the Cotton Research and Development Corporation's (CRDC) performance?

63 respondents

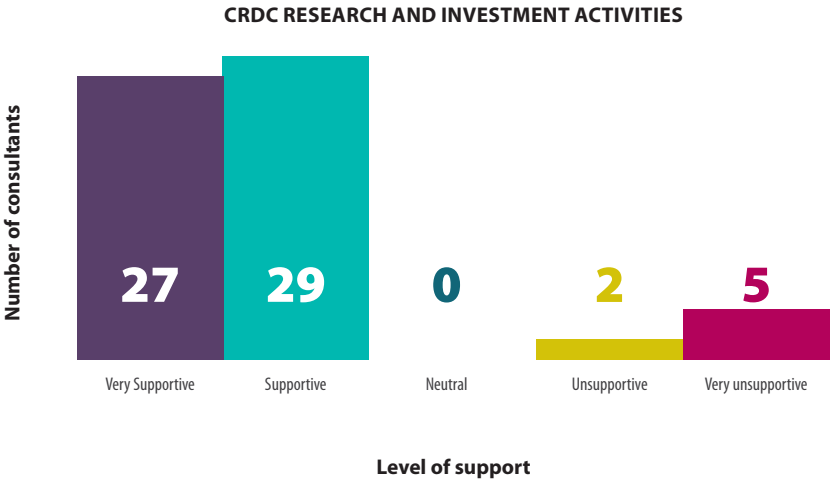


INDUSTRY PERFORMANCE

55

Overall, how supportive are you of CRDC's research and investment activities?

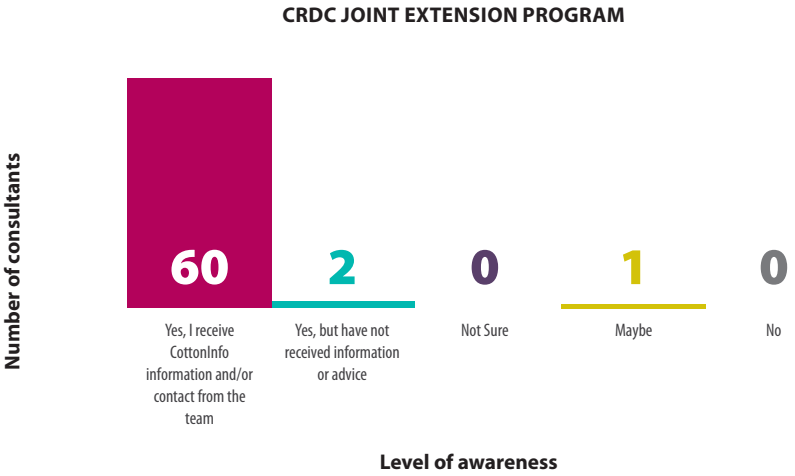
63 respondents



56

Are you aware of CottonInfo - the cotton industry's joint extension program (consisting of regional development officers, technical specialists and *my*BMP)?*

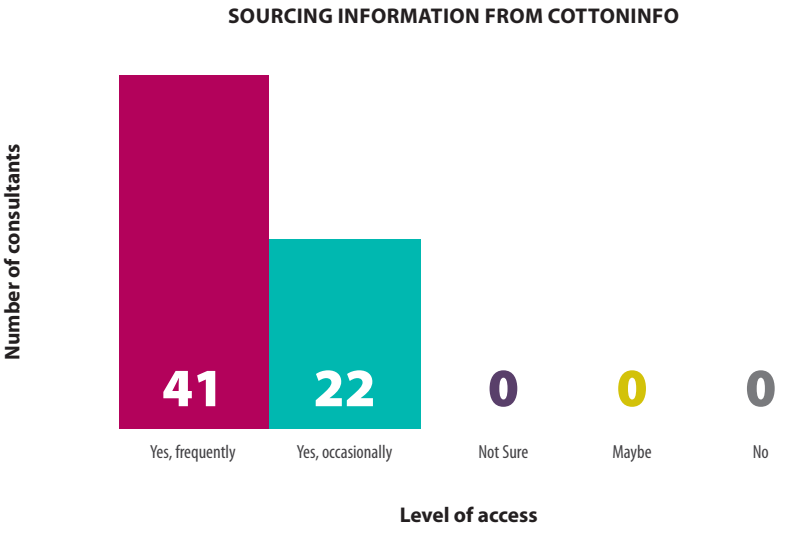
63 respondents



57

Do you source information from the CottonInfo team or information resources (e.g. Cotton Pest Management Guide, Cotton Production Manual, *my*BMP etc)?*

63 respondents



INDUSTRY PERFORMANCE

58

Thinking about industry extension services and your ability to access research, what do you value and what would you like to see the industry do differently?

44 respondents

Engaging more specialists in the CottonInfo team to support in the ground works with growers and consultants - particularly in the light of the retirement of key entomologists Lewis Wilson and Hugh Brier.

Keep up the good work. Liaise with GRDC more.

Value the ease to get in touch with them. Needs to be better cross industry collaboration.

I'm pretty happy with it. All the resources are there, and the researchers happily take call to discuss their work when contacted.

Maybe notifications about new publications of research papers and trial results (particularly those that don't make the headlines). I feel like there is a lot of research we don't hear the results of...but maybe I am not subscribed to the right networks!?

Ongoing presence extending things that are important to each district.

I still feel extension is not listening enough to consultants. Really, we are the greatest observers in the paddocks (more than farmers) and we see the greatest amount of issues that should be addressed. I think research is under a lot of time and economic issues, I have lateral thinking ideas to help get around that.

One on one contact to discuss issues and mgt options based on recent research.

Continue to provide easily accessible information that is up to date.

I value the ability to source sound and timely information via a variety of channels, i.e. print, web, YouTube. I also highly value that it is also possible to contact a specific researcher directly to follow up on issues, if and when required. The industry would be well serviced if adopted a more of an extension/development officer model. That is rather than have CottonInfo team members that are primarily extension facilitators, move towards, or put the money into some specialist skilled cotton extension/ development roles that can conduct field experiments/demonstrations. For example, these roles could look at different insecticide choice options in the field side by side over a season in relation to level of pest control...

Possibly more regional meetings with key research speakers.

More time and $ required on Black Root Rot focusing on fast tracking genetics of BRR tolerance.

Value the AWM meetings that are taking place. The Dryland Cotton Research Association (DCRA) does a great job voicing grower and consultants concerns and are doing a great job in coordinating relevant research.

The local REO is necessary to keep each valley informed on updated info and continue with local research.

I value that information is easy to access and the industry provides relevant up to date information.

Need more data made available. We don't want to have chase it up all the time. More effective extension valley based and season based.

I value the local IDO, they are essential link between research and the grower and consultant.

Value the wealth of knowledge that they offer through years of research and experience.

Value all the readily free information e.g. Cotton Pest Management Guide etc, emails. Has to look at why some areas that are spraying Bollgard, and find out why, and what info they need to be confident about not spraying Bollgard. If it is all about chasing unsustainable yields then that needs to be addressed for the good of the whole industry. Also why the industry is going from one secondary pest issue to the next.

I value being able to directly talk to researchers when needed. There are some great publications with useful information.

I would like to see more trials conducted on a local level in various valleys. Need to remove some of red tape that reduces time for CRDC and RDO's to conduct 'on the ground' work that has real/direct benefits to growers. CottonInfo RDO's work hard to get results for growers and they more support. The Cotton conference needs to have more practical research data instead of big picture stuff or information about things growers/consultants aren't concerned about.

Generally its good, I believe it could be tailored to suit the areas a little better.

Unsure.

INDUSTRY PERFORMANCE

Cotton research updates. GRDC do a great job with updates, the cotton industry we are failing with adequate updates.

CCA newsletters.

Organise industry events such as demonstration days, CCA days, cotton conference. Send out publications such as weekly moisture manager.

More area wide management groups.

Internet site is very handy. Love the hand outs.

More practical work for issues we face in the paddock.

A stand out for the CottonInfo team has been Janelle Montgomery and the excellent work she did this year conducting and co-ordinating the AWM meetings for Moree and Mungindi areas and the constant supply of information throughout the growing season and the winter.

Greatly value having a local RDO. Value local trial work. Value local field days and AWM groups.

The ability to talk to someone about issues in cotton that can direct you to the best person to talk to.

Value information about pests/disease/nutrition/irrigation/climate. Info via email is good.

The cotton industry does most of this very well and very hard to fault.

Qualification program for inexperienced agronomists. With agronomists with less than 3 yrs experience not making recommendations without a second opinion.

Appreciate the ease of access to the work being conducted by all extension teams. More inter industry collaboration on certain issues such as spray drift in areas with a large number of annual and perennial crops.

Get to the bottom of how to prevent BRR and other disease issues from impacting on the cotton crop yield in southern NSW. Obtain more rego and permits for mgt of these. More local trials.

The cooperative nature of the extension.

I value the CottonInfo team as they coordinate meetings and extension services based on issues affecting our valley and are a great starting point for getting data or in contact with relevant researchers.

Need to get better at delivering the messages.

Accessing researchers can be tricky and I sometimes feel I have to do all of the foot work. Funding and competition for funding between NSW and Qld (for Verticillium research for example) has resulted in researchers working against each other and not with. THIS NEEDS TO CHANGE. Its the growers that suffer with inconstant results and having to broach multiple people to find reliable results that can help with better management with future farming practices.

I would like to see more local on farm trials.

Janelle Montgomery on the Cotton Info team was instrumental in facilitation of the Gwydir Valley Area Wide Management groups, to great success. Greater access to researchers for these meetings would be ideal. Industry research needs more activity in responding issues that are more acute in nature. Quicker answers to problems consultants are seeing at the commercial field level.

More engagement with our local CottonInfo team.

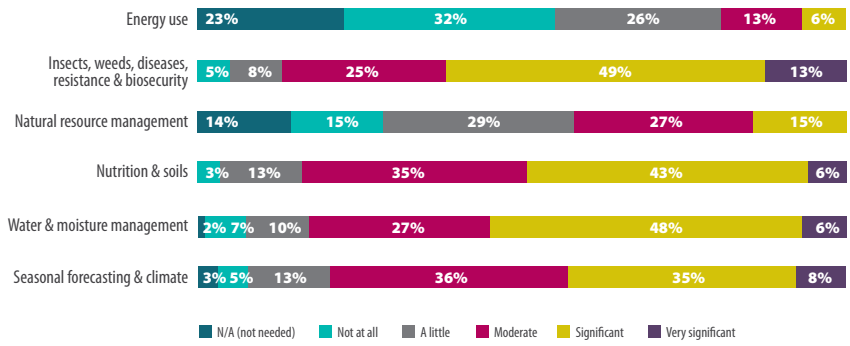
INDUSTRY PERFORMANCE

59

To what degree have the CottonInfo team, information resources and *my*BMP assisted you to improve practices on your client's farms?*

63 respondents

COTTONINFO AND INFORMATION ASSISTING TO IMPROVE PRACTICES



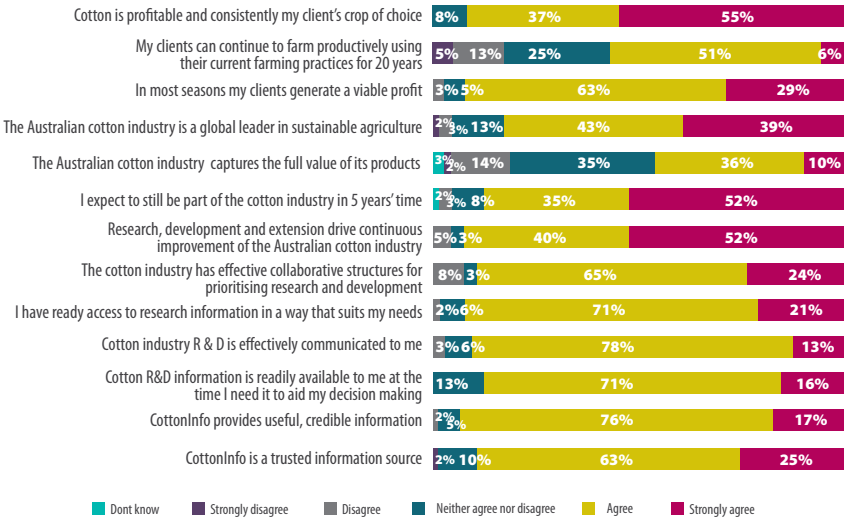
Percentage of responses

60

Please give your opinion on each of the following statements.*

63 respondents

OPINIONS OF COTTON INDUSTRY



Percentage of responses

MELANIE JENSON

APPENDIX

WHAT IS INCLUDED IN THE APPENDIX?

Following on from here, you will find individual responses to Questions 10, 19, 20, 26 and 51 as these responses expand on, or add to an understanding of, graphed information.

QUESTION 10

Describe the 2017-18 cotton season in three words or less.

Dry	19	Hot dry finish	1
Hot	10	Ideal	1
Average	3	Ideal growing season	1
Challenging	3	Ideal with water	1
Tough	3	Just average	1
Good but hot	2	Late	1
Long	2	Long mild finish	1
Low pressure	2	Loss potential	1
Slightly above average	2	Low insect year	1
Trying	2	Maturity	1
Variable	2	Mild	1
Warm	2	More seedling disease	1
Above average	1	Nearly excellent	1
Above average temperatures	1	Price	1
Average season	2	Profitable	1
Average to below	1	Quality ok	1
Better than last	1	Quiet	1
Busy	1	Rewarding	1
Challenging but successful	1	Simple	1
Challenging for dryland	1	Slightly easier	1
Clear	1	Successful	1
Cold	1	Surprising yield	1
Disappointing	1	Testing	1
Excellent and poor	1	Tight water year	1
Extended	1	Too much heat	1
Generally disappointing	1	Water	1
Good enough irrigation	1	Water demanding	1
Good steady season	1	Waterlogging compaction	1
Good water efficiency	1	Yield	1
Hard	1	Yields bit disappointing	1
High Yields	1		

QUESTION 19

What are the current weaknesses or strengths of current industry IPM advice?

Some recommendations for thresholds are not cumulative/dynamic in nature.
Advice is great, always looking for better products to implement the strategy. Thresholds for spraying need continued research and scrutiny to match yield and quality expectations of 2018.
Lack of cheaper softer options.
Doesn't take into account the practicality of some management options.
I still question the industry not spraying thrips in the south. They are one pressure we can remove. Consistently at picking it's the tipped out plants that we don't have all the open cotton on.
IPM has become a loose term that now encompasses products and possibly some practices that are not a true fit to the name. The lack of available products that are truly soft options. Pricing of softer chemistry. The lack of area wide management.

APPENDIX

Practicality of checking in the field and commercial realities do not always meet the requirement for optimum pest sampling, especially in regards to mobile pests such as mirids and GVB.

It's pretty good. The main weakness is some agronomists trying to reinvent the wheel and ultimately learning the hard way. These poor outcomes ultimately hurt neighbours as well.

Weaknesses include: Thresholds are too linear throughout crop development. Poor company communication on chemical "softness" to parasitoids. Lack of grower and consultant's knowledge on science of IPM. Complacency bought about by Bollgard. Short term economics and management i.e. mixing roundup and insecticide. Soft control of GVB, staner bugs etc. Drift from non-cotton crops! How the world has changed.

PGR management for bollard 3, Whitefly management. GVB softer options, management of aphids with bungee top background.

No weaknesses come to mind. The industry provides easily accessible information for both growers and consultants.

Strengths include that is based on sound science. However, there are still some weakness in the system, such as a lack of 'soft' options for plant bug control e.g. GVB control. There are still issues with the industry IPM advice regarding mirid control at the early squaring stages of crop growth, and mirid thresholds in general for hot areas.

We don't have enough non-disruptive chemical options available, in particular for the large sucking bug pests. We need more soft products for Heliothis control. Too much reliance is being placed on Altacor and Steward.

The weakness is that people still want to spray just in case. And most younger agronomists do not understand the need or benefit of IPM.

Mirid control options are very disruptive.

Weakness - mirid threshold. Strengths - SLWF window worked well in Mac Valley this year.

Lack of "soft" options for sucking pest control in BG crops.

Not spraying your crop with any nasty products for mirids for example does not mean you will have high levels of Beneficial's in the crop unless the neighbours also have the same strategy (AWM). Conversely, spraying thrips on young cotton doesn't necessarily mean you will have a whitefly problem if done early enough and thrip reinfestation is good. Season length considerations are important with those decisions.

It would be good to have more information on the beneficial species that have the most activity on the secondary pests that we are seeing more regularly.

Strengths are that they are widely circulated and communicated to as many parties as possible. Weakness is when repeated insect pest pressure requires repeated control.

Results from last season where IPM was practiced with regards to SLW control.

Weakness include: Mirid thresholds are too high and too variable to monitor. Still need more work done on monitoring whitefly accurately in the field. Strengths include: Changes to whitefly matrix and the AWM approach to this problem have been positive.

Not all advice is adapted by all and implemented. Needs to be more research done in areas of predators and parasiticides and how they can be more effectively utilised in the cotton industry.

IPM advise is good and I follow it most of the time. Need to understand why people are not using the IPM advice by looking at what is happening in the field in summer when the decision is made to not go with IPM recommendations. There is need for more documentation of situations where grower and consultants are using IPM and still getting top yields, and also situations where more spraying is happening and what yields are achieved. Need for information, case studies to show that yield and economic return can be maximised without high pesticide usage.

Whitefly needs more work. Worried about potential of Mealy Bug infestations.

There no truly soft chemicals for mirid control which means that treating mirids will always set back beneficial populations.

Mirid thresholds need more detail, such as including nymphs and ongoing retention through season. Silverleaf whitefly monitoring and threshold is not clear enough. Green Vege Bug threshold monitoring needs more detail.

Some of the information is based in the Northern areas where time is plentiful.

Lack of viable options for Heliothis and Tipworm control in non BT cotton early season.

Late planted crops struggled to get an Admiral spray on before window shut.

APPENDIX

Peer consultants advising their growers to spray Fipronil, thus flaring Whitefly for the rest of industry.

No real weaknesses as such, just the randomness of seasons and what to expect from particular pests e.g. big whitefly year or not etc.

"Soft" herbicide is still causing damage to beneficials. There is still a need to control pests when they get to "threshold" levels and managing this in IPM is difficult. There are people pushing a no spray at all approach which isn't IPM as IPM includes chemistry.

Incomplete knowledge of the effect of many insecticides on specific beneficials (e.g. new insecticides on parasitoids). Incomplete knowledge on which beneficials are actually working in each area (related to the above). Incomplete knowledge of the effect of insecticides on beneficials (parasitoids) growing in eggs or nymphs. Incomplete knowledge as to where our beneficials and hosts are coming from (breeding in our own crops or coming in from outside).

Releasing beneficials. Unknown around when they do come and what conditions they like.

The Admiral spray window has encouraged program spraying.

Overall IPM works well, although economic thresholds may need to be checked more often and new feeding habits of pests communicated.

The strength of IPM is obviously the reduction in the number of insecticides needed during the season and the need for less harmful chemicals. The biggest strength is the fact that IPM allows us to develop through lower insecticide use combined with less harmful chemicals a much cleaner and safer environment and community in which to raise our families and in which to work. The major limiting factor of IPM is the higher level of confidence required to push out thresholds when the risk of lower yields is still a factor in the minds of agronomists which have not gone down the IPM path.

The weakness is the unrealistic expectation of sampling protocols.

Need more information on insecticide softness.

Relying on beneficials to control whitefly and mites.

Whitefly advice has improved this season. Mirids generally ok. Mealybug could still use some more information.

Pre-season advice is great, but in season can be a little slow.

Weaknesses - timing of IPM advice. Strengths - robustness of the IPM program.

Cost of products and grower's application issues.

Increasing damage and favouring climatic conditions can often lead to lower thresholds being adopted.

Whitefly window not workable for the Southern NSW.

Current IRMS for Admiral use. Lack of early season thrip chemistry. Neonicotinoid use at planting.

Main weakness is numbers based evidence, mostly is $/ha to show growers and some consultants how important IPM is.

The advice is only as good as the implementation across the valley, open lines of communication between growers and consultants is key. New and updated thresholds are needed with consecutive seasons of economic impact for various insects, e.g. mirids. A bit off topic but we need to look into late season thrips, what losses are we incurring, what soft options do we have?

Limited 'in-field' trial results or data. The majority of research is done in labs/greenhouses which do not represent the variables experienced out in the field.

The weakness is that growers and or Consultants believe that it doesn't work or will not work.

People not adhering to the principles of IPM is a major weakness. Only takes one rouge to stuff the entire system.

Not enough information on whitefly thresholds. Matrix and data collection information is dated. Mirid thresholds are too high. They do not take into account of the cost of lost early season positions (i.e. more season is needed to compensate which more water, more end of season whitefly issues, risk of cold/wet/late pick).

Most of the data collected are relevant to the area where the research station is situated. Some of the recommendations are not very practical to carry out.

Weaknesses: Thresholds and fruit retention for maximising yield on reduced water allocations, cost of softer products. Strengths: Not flaring secondary pests, resistance management.

Adherence to the strategy.

Research is arguably out of date and needs revisiting.

APPENDIX

QUESTION 20

Are there any pests (insect, weeds, diseases) or situations where a lack of product registration is limiting your ability to provide advice?

All ok, only limiting factor is product availability with regard to whitefly and current resistance levels.

Alternaria, Sclerotinia, Black Root Rot.

Below label rates in Queensland.

Beneficial insects.

Black root rot control. Alternaria control.

Black Root Rot.

Can still offer advice, but more registrations for mealy bug may increase options if required.

Disease #1 issue - BRR and Alterneria and Sclerotinia for sprinkler irrigation. SLWF - Primal rego.

Diuron use in fallow prior to Cotton.

Fleabane.

Green vege bug, red banded shield bug, these have registrations, but they provide weak control.

Group A herbicides in Cotton for control on Feathertop Rhodes Grass.

GVB - very few registered options, none are IPM friendly.

Mealy bug.

Mealy bug but that is being worked on.

Mealy bug control.

Mealy Bug, Feathertop Rhodes Grass.

Mealybugs if they were to become an issue one season.

Mirid, GVB thresholds.

Mirids.

Mirids and GVB's. We still do not have adequate soft products available and the spraying we are doing is creating more sprays. The work that Robert Mensah has been doing seems to be lost as industry. Has not ensured his products have been supplied to the cotton industry at a realistic price or timeline!!!

More registered products are required for rhizoctonia. Primal needs registration at 300-350 ml/ha for mirid and SLW control. More registered products are required for Green Vege Bug control that are effective and not broad spectrum.

Need an IPM friendly product to provide both knockdown and residual control of GVB.

No X 8.

Not at this stage but we could in the future if the pressure of Mealy Bugs increase.

Not really. The registration of Applaud for whitefly this year will give us an even softer option for the preservation of beneficials such as wasps in the battle against whitefly.

Pigweed in cotton. Fleabane in cotton. Rhizoctonia at establishment - little success with current registrations. Windmill grass in channels and paddocks - most work has been done of FTR grass not windmill. Mirids - Always looking for a soft option that works effectively.

Red banded shield bugs.

Reduce the price of Dropp Ultra Max substantially.

Sclerotina fungicides. Alternaria fungicides. Thiadazuron+Diuron defoliant mixing. Whitefly.

Sclerotinia needs more understanding and registered products. Verticillium needs more understanding and control measures. A variety to tolerate Vert better is required.

Sedge in channels, Black Root Rot, Combination pest thresholds.

Silverleaf whitefly - having another IGR to take the pressure off pyriprixifen is important.

Soft options for thrips particularly. Mealy bug - not present yet.

Softer options of mirids - both available chemistry and rates of registered products.

Some gaps - Rough Bollworm.

Thrips - control measures either phorate but for growers set up with liquids options aren't adequate, if

outbreak occurs harsh dimethoate Spray needed. Alternaria - lack of credible registrations.

Verticillium wilt is causing significant issues for the local area.

Whitefly has improved beyond purely using Admiral for control, but we are still limited in terms of effective late season alternatives. Buprofezin registration would ease selection pressure on whitefly resistance. Late season thrip control. Sucking bugs (stink bugs). Soil pests (symphylid).

Whitefly, Fleabane.

Whitefly, Mirids.

Whitefly, Thrips, Stink bug/GVB/piezadorus.

Whitefly.

Whitefly.

Whitefly. More so rate than product selection - our active equivalent at label rate is significantly less for many chemicals when compared with America.

Windmill grass - Quizalafop not registered anymore. Other options present like stomp, dual, diuron if adequate rain and timing. Diseases - yes plenty of room for improvement. Plant pathology team aware of this at plant pathology review in Sydney recently.

Yes. Knockdown options for FTRG in fallows and along head ditches and supply channels. Inability to rotate IGR modes of action for SLWF control due to unavailability of a buprofezin permit in Queensland.

QUESTION 26

Can you briefly describe your approach/philosophy for SLW management?

Soft with their biological control in mind for all spray decisions. Trying to avoid the use of other disruptive sprays.

Low intervention early on mirids to delay SLW populations. Softest chemistry first, harshest last. Canopy Oil before crop canopy closure. Admiral as required.

Go as soft as possible early.

Try and avoid letting the pest get to a level where they are an issues by careful early season pest management, monitoring and early intervention when required.

We base it on DD compared to previous season experiences. If we are tracking high will use softer chemistry. If low DD season will use the broad spectrum insecticides. Typically it's the bigger biomass and later planted fields we have issues with.

It's a gut feel!! If honey dew is starting, temperatures are likely to remain high and cotton is starting to open, nymph numbers are high/building and I can foresee a problem I will treat. If there is still 3-4 wk or more before defoliation will commence, I will use Admiral or Pegasus.

Management of the population and beneficials is the key. Preserve beneficials from day one and in most years they will not be a problem. When you must spray, do so before the population gets too high with a selective insecticide.

Beneficials insects are the platform for management - nothing else will work well without them providing background control. All other pest management decisions must revolve around this.

Chemical spraying a last resort. And if so would use an oil first. Have never had to spray. Parasitoids have kept numbers at acceptable levels. Aim to avoid products early season which give residual damage to the parasitoids.

Allow to breed to threshold numbers then control with the most cost effective chemical.

Try and minimize sprays for all pests, and conserve beneficials. When do a mirid spray look to select a 'softer' option and add an oil. Try and wait as long as possible before commencing to treat for SLWF, if needed. However, when treatment is required I also try aim to apply a treatment before the population starts to explode i.e. takes off on the J curve. I monitor using the industry guidelines, but also make assessments of the population in the lower canopy, and assess the presence and absence of any honeydew, and rate the level. I avoid the neonic SLWF knockdown control options and instead rely on the IGR's and look to obtain some bio residual from the beneficials.

Ensure all cotton volunteers, ratoons and other host weeds are destroyed. Be IPM focused. Thorough crop monitoring. Encourage beneficial population build-up. Always use the softest option when controlling pests.

APPENDIX

Minimise spray applications that promote Whitefly build up. This is somewhat compromised by required Mirid control. Mirid sprays growers are prepared to pay for premium softer products e.g. Transform owed to Whitefly risk.

As the Matrix does not work, we will monitor closely and if numbers start to build quickly with a strong nymph background we will aim to apply Admiral. We are using earlier now as we have tended to apply to late in the past for this product to full control the pest.

Maintain beneficial insects as long as possible through a soft insecticide program. Talk to neighbours and other consultants in an AWM approach.

Work with the matrix to assess the levels and timing. Adhere to the Admiral spray window.

IPM approach. Only control sucking pests with insecticides when it is essential. To spray as little as possible and use as soft as possible insecticides when required to allow for the build-up of predators. Monitor using industry guidelines.

Too many unanswered questions with Verticillium, Fusarium and Black Root Rot too to tick high confidence. Generally preserve beneficials as much as possible. Lot of rechecking and factoring in weather forecasts, overhead irrigation systems - ability to wash honey dew off etc. Admiral rarely needs to be used if this is done depending on the summer, surroundings, and insecticide use.

Indirect management - only spraying secondary pests who necessary and chasing products that are the softest option on beneficial insects. Direct management - utilising the SLW threshold matrix for timing and product selection.

Conserve beneficial early, treat SLW early with IGR, allow parasites and predators to clean up the remaining SLW population. Also manage weeds in a timely fashion to inhibit the build-up of the pest on the weeds prior to spraying.

Preserve beneficials.

We follow the IPM matrix from the cotton insect and pest guide. And usually lead with Admiral as the first choice of insecticide and like getting this on as soon the numbers justify its application.

Soft chemistry early, close monitoring and releasing of beneficial insects to aid control/suppression of SLW.

Generally only have 1 or 2 pesticide applications for other pests, and being in area where SLW is generally not a regular pest makes it not really an issue. So approach is control hosts such as volunteer and ration cotton and limit insecticide usage in general.

Softly, softly early with a spray (Admiral) if rate of increase warrants it.

We try to use "soft chemistry" for pest control in order to preserve beneficial insects. We sometimes use targeted sprays for whitefly control.

However, truly non disruptive chemistry for mirid control is not available. Reliable options for chemical whitefly control are not available.

Monitor closely from first square. Use chemistry that has minimal impact on beneficials. Use products that have some control of SLW when numbers appear like they may become an issue. Send infested leaves away to evaluate parasitism levels so that we know if SLW numbers are about to crash, which happened this season. Continue trialling a range of products. Use Admiral if numbers explode early. Use Pegasus if it looks like we won't make it to defoliation.

Avoid flaring insect populations, but in some instance because of other crops adjacent look to control with soft options and progress.

Maintain the use of soft chemistry for as long as possible. Monitor beneficial numbers in relation to Whitefly numbers.

Maintain beneficials, monitor closely and avoid spraying unless absolutely necessary according to the control matrix.

Must conserve beneficial insects as much as possible. Need to ensure IGR spray goes down before infestation gets to high.

Try not to spray early to prevent late flare ups. Look lower in the plant to estimate if pest is building up. Use of Admiral when required.

Go as soft as possible trying to cause minimal disruption to beneficial insects.

It is all about conserving beneficials to allow a build-up of predators and parisatiods to a level that can mitigate influx of whitefly populations. Using Admiral or Pegusus later in the season if required.

APPENDIX

Weekly checks on population growth. Consider other factors such as surrounding crops/green areas, weather etc. My boss makes the end decision.

Stay as soft as possible and only spray mirids as a last resort. Use Admiral earlier than previously as a budgeted spray.

Monitor the whole canopy. Mainly 5th node sampling, twice weekly. Watch the increase. Maintain beneficials.

We have taken on the nympth counts on 8th true leaf as well as maintained adult presence/absence method on 5th true leaf. This has given us a lot more confidence to not program spray.

Manage early pests such as thrips and mirids when thresholds are reached, taking into consideration crop damage and conditions with low fipronil rates, at squaring consider the use of softer chemicals such as transform. Trying to preserve Beneficials throughout the season. Keep in contact with local consultants to coordinate were possible an area wide admiral application in the regions window.

Aim to have the least possible impact on beneficials insects within the crop and before the season begins so as to not flare whitefly. I would never use SP's on winter crops such as chickpeas due to the impact that this would have on beneficial numbers building for the cotton season. I generally work on higher mirid thresholds in crop such as 4/m rather than the industry threshold of 3/m for warm areas. I only use low rates of Transform and normal rates of Mainman for mirid control as these are much less disruptive than low rates of Regent. This past season we have begun conducting wasp releases on farms. With this program I have only had to spray 20-30% of my St George ha's for whitefly during the past 3 seasons whereas Mungindi with higher ...

Try to preserve beneficial by judicious treatment of early/mid season pests (mirids) apply admiral if necessary in the industry recommended window, apply Pegasus late season if required. Have a low tolerance for honey dew and do not expect that rain will tidy up a sticky crop. Sample for the pest with a mixture of industry guidelines and personal experience.

Attempt to minimise hard chemistry and encourage beneficials, spray on damage then threshold levels of other sucking pests, monitor closely and apply a targeted admiral if all else is failing to minimise whitefly levels (Dryland only).

To be as soft as possible early in the season and try to maintain beneficials to control population.

Retain beneficials, use soft options for control of other pests.

Generally follow industry guidelines. For fields/farms where we tend to get hot spots consistently almost every year, I am controlling earlier now - this will usually be below thresholds for the main part of field/farm. However worked much better than waiting until main part of field or farm was at thresholds (with hot spots then difficult to control).

Monitoring from Jan onwards is very important.

Difficult as we do not get the numbers or the pressure historically because of our cooler environment. Generally by the time the numbers are there temps have cooled and we don't have to worry about them. Have not sprayed for them at least in the last three years. Having a robust IPM strategy plays a large part in managing your beneficial numbers to ensure no late season flare ups of SLW. If you had to spray however managing early numbers successfully generally gets the upper hand.

Go soft early, reduce plants overwintering Whitefly. Avoid harsh chemistry as much as possible.

Soft on beneficial insects at all times. To treat SLW affected paddocks earlier then threshold states. Aim to reduce the weed build-up outside the paddock all year round.

Has been constantly changed over the past three seasons. Now includes a soft strategy thru the season and using Admiral earlier in the season than previous. Thresholds and sampling advice still somewhat confusing and time consuming.

Treat sub thresholds with systemic chemistry like Admiral.

With any insecticide used in crop I consider the potential impact to SLW down the track. Controlling cotton volunteers around fields and the farm.

IPM. When selecting chemistry use soft options to conserve beneficials and parasites in the cotton crop and rotation crops. Manage weeds in fallow to minimise overwintering. Work in conjunction with growers across the valley to employ IPM practices. Canopy management for penetration of products.

To closely monitor both nymph and adult numbers throughout the season in accordance with industry recommendations. Both mine and my client's attitudes are that if threshold levels are reached and numbers are persisting then we are more likely to treat. First preference is to go as softly as possible to preserve beneficial numbers (e.g. IGR), then other knockdown options are considered if re-treatment

is required or if Whitefly incursion does not occur until later in the season. Adherence to area wide management group decisions are also followed.

Softest approach with regards to control of other pests.

Keep it soft early season and you won't have issues later on. IPM is key, let the beneficials do their jobs.

Monitor parasitism and predation during the season on instar in addition to monitoring instar and adult SLWF numbers. Honey dew is a poor indicator of MGMT of SLWF thresholds. I feel industry needs to provide more of a service to growers and consultants on monitoring SLWF instar parasitism in order to predict crashes in SLW populations.

Good farm hygiene on fields and farm in general. Good control of weeds and volunteer cotton. Usage of low impact chemicals. Good communication with other consultants in the District.

Soft chemicals to be used for the entire season for all pests. Early and alternative chemistry for whitefly. Parasite release. Comprehensive monitoring. Area wide management group - active participation.

Don't spray suckers early season and you won't have an issue.

Soft early season approach to conserve beneficials.

QUESTION 51

In what situation, if any, are there most likely to be inadequate crop destruction or failure to control ratoons?

Zero till planting of cereals/winter crop.

Wet weather affecting quality of root cutting. Poor hills affecting root cutting. Areas of poor winter crop establishment behind cotton.

Prolonged wet period at/after picking.

Wet weather. Poor tillage equipment or setup.

When it's too wet in winter.

Where root cutting has not occurred - i.e. tillage was used to remove plants rather than root cutting. Farming systems on the flat - in my case this is some overhead irrigation systems.

Extended wet weather.

A lot of volunteers out of the plant line don't get root cut. Tend to survive a long time. Inadequate soil preparation machinery. Long periods of poor land preparation weather - either too wet or too dry.

Very odd cotton plants in fallow. Non cultivated areas such as roadways.

Lack of care factor by grower, dry/wet conditions post-harvest.

Very wet seasons.

When soil conditions are wet due to rain post picking and the root cutter isn't set deep enough. If a centre busting operation isn't carried out there can be ratoons/stub plants emerge along the plant line where the root cutting operation hasn't been 100% effective. Also, in a back to back situation there are generally plants outside the plant line that a root cutting operation will not get and that a centre busting operation may not get, and in these cases a side-busting tillage operation can be required to be confident of removing these plants.

Incorrect setup of root cutter machines.

Channel banks of back to back cotton fields.

Very wet winters.

Dryland systems where cotton is on the flat and difficult to get a good root cutting job.

Wet weather. Poor tillage equipment or setup.

Fields which do not require pupae busting and are not root cut.

Wrong gear, dryland systems, or overhead irrigation.

Mostly in drylands systems - inadequate tillage equipment/dry conditions. Grower attitude towards cultivation can also be a mitigating factor.

Too wet to traffic following picking (excess rain). Too dry following picking (drought - difficult to effectively till the soil).

Poor tillage equipment options or setup, especially in dryland or overhead irrigation.

APPENDIX

Extremely wet condition end of cotton season OR wet spring.
Where there is no side busting or centre busting or relying on herbicides to control cotton stubs. And going with the new early defoliation no pupae busting practice.
Dryland, dry conditions.
If full soil disturbance is not required for pupae busting (defoliation window) and moisture is available to plant a winter crop in that field.
When the crop was planted on the flat (no beds). Drip irrigation. Poorly set-up root cutter. Root-cutting when it is too wet or dry.
Wet summers of other sensitive crops nearby.
Very dry/hard or very wet conditions.
Wet weather.
When double cropped, and the second crop fails. Results in an abandoned crop that leaves weeds and diseases thrive.
Usually manage dryland, and long fallowed irrigation so not normally an issue.
Farm hygiene, volunteer cotton on roads and channels, field edges.
Inadequate machinery usage.
Dry, hard conditions.
Nil.
Wet winters.
Extremely dry period post crop.
Kelly chains.
In fields where in crop cultivation was poor. Fields very hard at time of mulching/root cutting or side busting. Anywhere the planter has run off to the side of the hill.
Wet winter.
Dryland crops defoliated prior to March 31st if they don't get the situation right.
Summer rainfall where ratoons not attacked quick enough.
Wet conditions.
Poor root cutting.
Field edges and irrigation systems.
Wet weather over winter.
Laziness/can't be bothered/timing.
Any crop that doesn't need pupae busting. Dry years.
When beds are left very dry and tillage equipment occasionally moves off plantlin resulting in some escapes.
In years with wet conditions at picking time. In the dryland crops with inadequate pupae basting. In irrigation or dryland country where no pupae basting is not required.
Very wet autumns.
Wet winter.
Dryland systems.

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