CRDC
COTTON RESEARCH AND DEVELOPMENT CORPORATION

CROP CONSULTANTS AUSTRALIA

QUALITATIVE REPORT

on the 2021-22 cotton season:
A survey of consultants

SOPHIE MORRIS

CONTENTS

CONTENTS
Purpose.
Coverage.
Methodology.
Data Collation.
Acknowledgment.
Disclaimer.

4 THE CONSULTANTS & THEIR CLIENTS
About the Consultants.
About the Clients.

10 ON-FARM PRACTICES & ATTITUDES
Coverage.
2021-22 Season.
Planting.
Farming System.
Crop Protection.
Defoliation.
Nutrition Management.
Water Management.
Yield Impact.

28 CRDC AND COTTONINFO

36 APPENDICES

Appendix 1
Appendix 2
Appendix 3
Appendix 4
Appendix 5

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 60 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 413 cotton growers and covered 285,723 hectares: 52% of the Australia cotton production area for the 2021-22 season (not adjusted for row spacing). This is based on the 2021-22 production figure of 550,541 hectares (Cotton Australia).

METHODOLOGY

The survey consisted of 60 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 August 2022, with questions referring to the 2021-22 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.

ACKNOWLEDGMENT

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 Doug McCollum and Leisl Coggan for Crop Consultants Australia
Design Black Canvas

Cotton Research and Development Corporation
PO Box 282, Narrabri, NSW 2390
Phone: 02 6792 4088
crdc@crdc.com.au

Crop Consultants Australia Incorporated
PO Box 349, Woombye, QLD 4559
Mobile: 0429 925 459
info@cropconsultants.com.au

THE CONSULTANTS AND THEIR CLIENTS

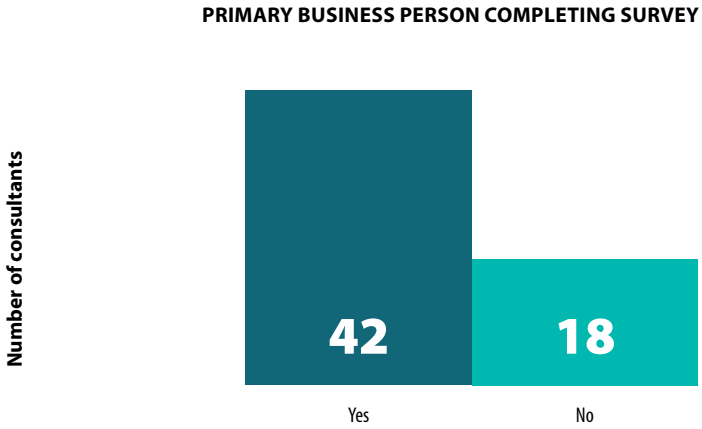
ABOUT THE CONSULTANTS

1

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

60 respondents

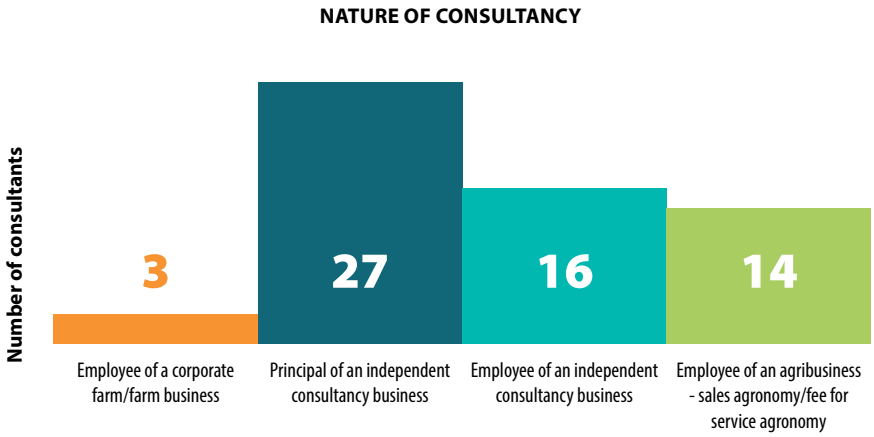
***Note:** 42 consultants completed the survey on behalf of their business or business unit, which involved completing the specific questions relating to staff, hectares and number of clients. 18 consultants completed the survey questions only relating to individual practices and attitudes.



2

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

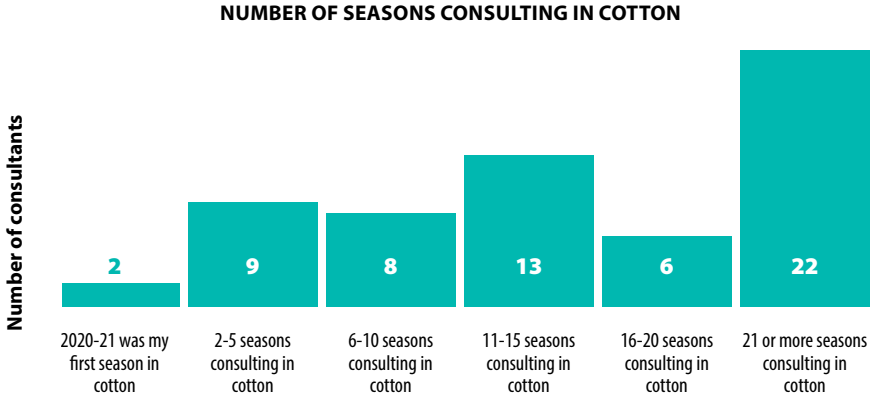
60 respondents



3

For how many seasons have you worked consulting in cotton?

60 respondents

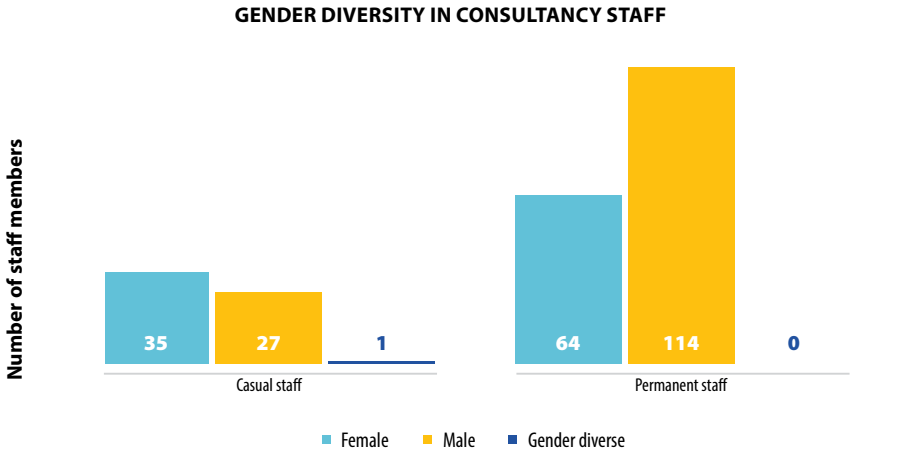


THE CONSULTANTS AND THEIR CLIENTS

4

What was the gender diversity of the permanent and casual staff employed in your business (including yourself) in January 2022?

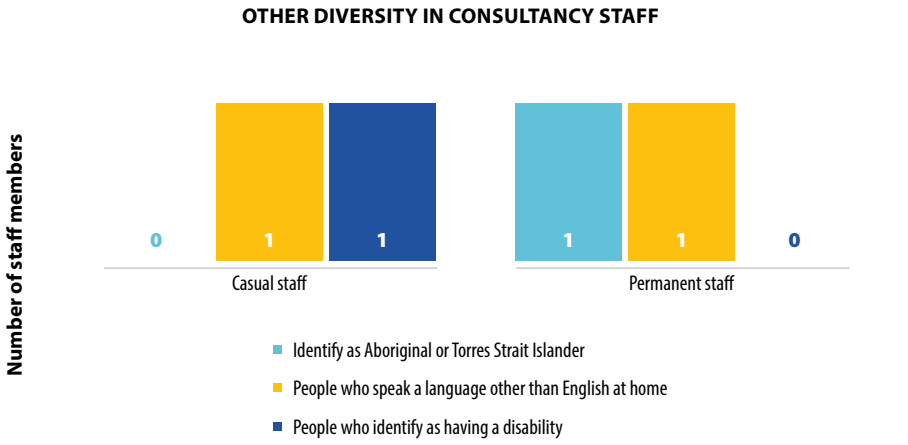
30 respondents



5

How many of the permanent and casual staff employed in your business (including yourself) in January 2022 identify as being in the following demographic groups?

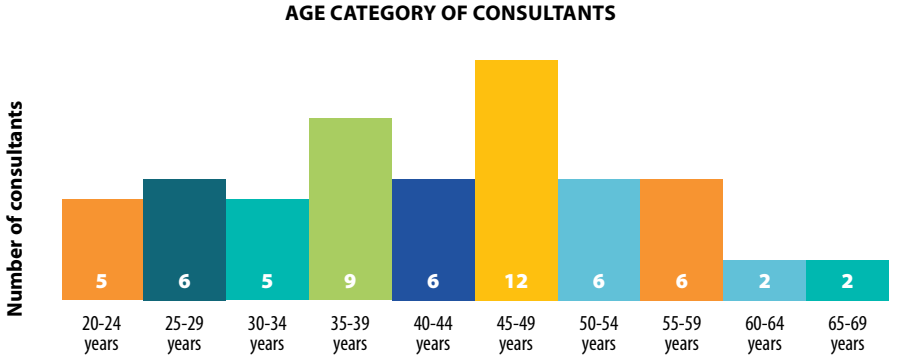
30 respondents



6

What age category do you belong to?

59 respondents



THE CONSULTANTS AND THEIR CLIENTS

7

Please list out any learnings or lessons that you have gained in the 2021-22 season

60 respondents

Low fallow disorder management and pix management.

La-Nina years bring lots of positives and some negatives along the way. You just have to deal with them as they come.

Finding staff has been incredibly difficult.

There is a lot more we need to study in the management of cotton to maximise sustainable yields.

Quality, experienced staff are difficult to obtain.

Organise more pickers.

Hard chemistry is definitely disruptive to beneficial and can flare secondary pests.

Didn't need really hot days to produce yield.
Dryland - reaffirmed the decision to plant mid- November to early December produced the better yields compared to October plantings.
GVB prolific and no soft options for control, then you are on the mite treadmill. Low white fly year, very lucky. Fleabane was massive issue where paddock preparation wasn't ideal.

How to better manage high yielding cotton.

That things can start off slow but still have a strong finish. This cotton season was a great example of this.

It is important to apply at least 60% of your fertilizer prior planting.
It is important to follow all health advise to reduce the risk of catching Covid.
The importance of the role of backpackers in the cotton industry.
The importance of manage the crops for an early picking (Earliness).

No 2 seasons are the same!

Managing people is all about maintaining relationships and building trust. Without trust you can't work effectively, especially in challenging conditions.

It's extremely hard to predict the weather.

The benefits of an IPM system in low insect pressure years producing high yielding cotton without the need for insecticides.

Still seeing record books being broken. One of our wettest picks on record with a large % of crops still not picked. Have seen large problems with quality downgrades and yield reductions from boll rot and frost. Pest wise it has been one of our quietest seasons with minimal insecticide sprays required.

Wet years are challenging.

No real learnings or lessons, but just reinforced that our current varieties are of high quality and have the ability to perform in a wide range of adverse conditions; credit must go the breeding team.

Wet summers need very early weed control.

Don't overestimate yield in a tough year.

More research on the stink bug complex with regard to thresholds and control options would be useful for these cooler & wetter seasons where they become a more common crop inhabitant.
Not owning their own picker a major setback for some growers with later planted crops this season.

Early planted cotton was the best and easiest to manage.
Nutrition is very important and can lose a lot of yield if you get it wrong.

Adjusting accordingly and using new strategies to ensure safety for the crop through changing weather conditions.

Trust your gut!
There is no harm in asking extra questions.
Pix management in cooler years in Bollgard® needs investigating by researchers. Some old teachings did not hold true this season.

Importance of sustainable farm practices.

THE CONSULTANTS AND THEIR CLIENTS

The importance of early PGR applications.
Plant establishment is crucial for the remainder of the season.

To always go slightly harder with growth regulants.
Unlocking variable soils with technology is our next big key into unlocking higher yields.

The increasing potential for insect issues due to grown on cotton. The reinforcement of risk management strategies over pure money greed.

Cold, wet starts slows the cotton down, and makes it more prone to root diseases.

A very challenging season with continued cool wet conditions from start to finish - no two seasons are the same!!
GVB/Potato Bug control proved to be very difficult this season. Eastern crops in particular sustained a lot of damage.
Verticillium Wilt continues to become our major disease of concern. A favourable season has resulted in large yield impacts in certain crops.

Early pix is the go.
Good hard with pix rates.
Variable rate pix is the go.
Don't over irrigate.
Early ground preparation is the go.

In cool cloudy conditions increase water deficits / timing between irrigations. Don't underestimate damage caused by low level GVB numbers. Fusarium and vert is increasing across farms I manage.

Watch out for mealy bug.
Don't plant dryland cotton after 7 December in the Gwydir.

You cannot determine the weather.

The effect too much rain has on the system, preparation, compaction, waterlogging, and the effect therefore on nutrition remaining in the soil.

Consulting is just as much about managing the client as it is managing the crop.

How well cotton seedlings can withstand flooding and being under water for long periods of time.

Staff are getting hard to find particularly crop scouts.

GVB can be difficult to manage with soft chemistry.
Rain forecasts in a La Niña year are very much in the conservative side.

Time management (urgency of jobs and getting the appropriate recommendations sent to growers on time).
Assessing skills and how these skills need to be used differently in a wet/mild year.
Identifying pest and disease issues early.

Pix application timing in dryland can be very tricky due to forecasting weather events and patchy rainfall patterns in the northern systems.

Sometimes it can rain too much!!

Was a very wet year and managing inputs around flooding events is important consideration, also importance of having dynamic irrigation scheduling (deficit) to suit forecast temps and rain.

Re-affirmation that the biggest factor in growing cotton is the weather.

White fly levels did not escalate as per normal, due to the mild growing conditions experienced this season.

That if it rains enough, you can grow the stuff nearly 12 months of the year!

Early cutout as micronaire mitigation tool.

Whitefly not an issue in South NSW the past 3 low day degree seasons.

THE CONSULTANTS AND THEIR CLIENTS

There are still very important gaps in knowledge.

Cannot rely on weather forecasts, wet winter does not necessarily mean high sucking insect pressure.

That prior hill and paddock preparedness make all the difference on the upcoming crop.
Dryland in the Moree region should really be sown prior to the 10th Dec.
Sometimes chasing an extra boll is not worth the delay in picking and opportunity cost.
Techniques gained in irrigation scheduling with a massive rain influence.

Learnings include my increase in personal confidence to make my own decisions. It was rewarding to admit to myself that I know my knowledge and confidence had increased significantly from the 20-21 season to the 21-22 season. I was better informed and equipped to make my own calls instead of having to call the boss every single time.
Other learnings include the importance of having a good mentor to assist me where I can - I have 2 excellent mentors at the company I am with, and they've reshifted my long-term focus and have motivated me to take on a more leadership focus in the company. Because of this I now want the opportunity to mentor someone myself one day.

Resilience - floods, border closures, staff with COVID etc.

High yields can be grown in cool wet years.
Verticillium does have a big negative effect on yield.

Organise staff earlier.

Train more staff.

606 handled the verticillium much better than other varieties.

ANDREW MCKAY

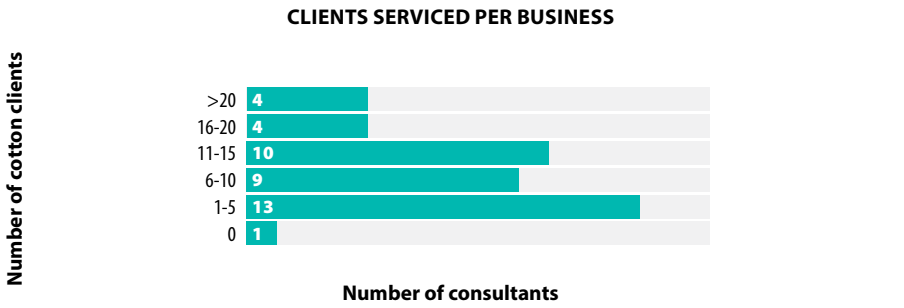
THE CONSULTANTS AND THEIR CLIENTS

ABOUT THE CLIENTS

8

How many cotton clients did the business (or business unit) service in 2021-22?

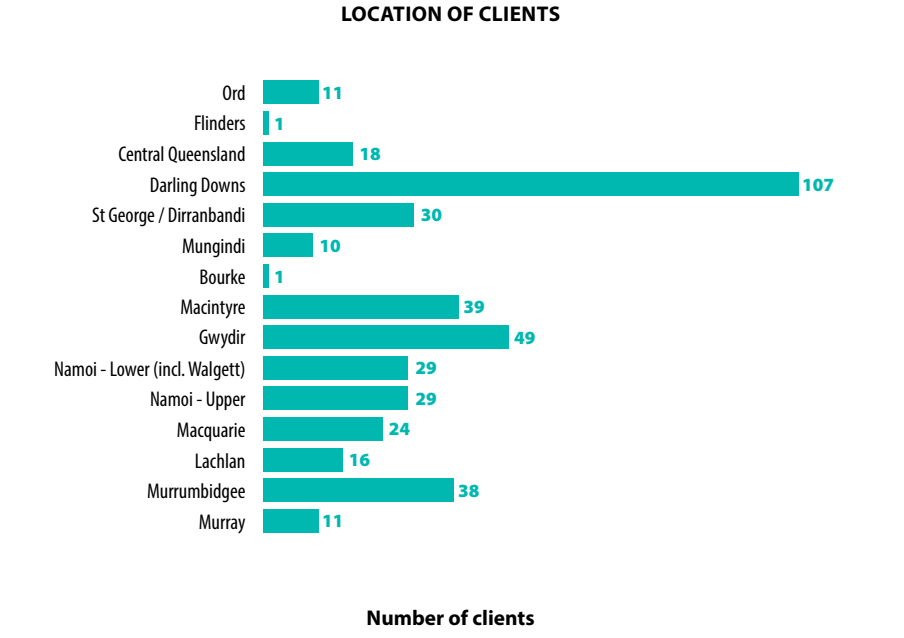
41 respondents



9

In which region/s are your cotton clients based?

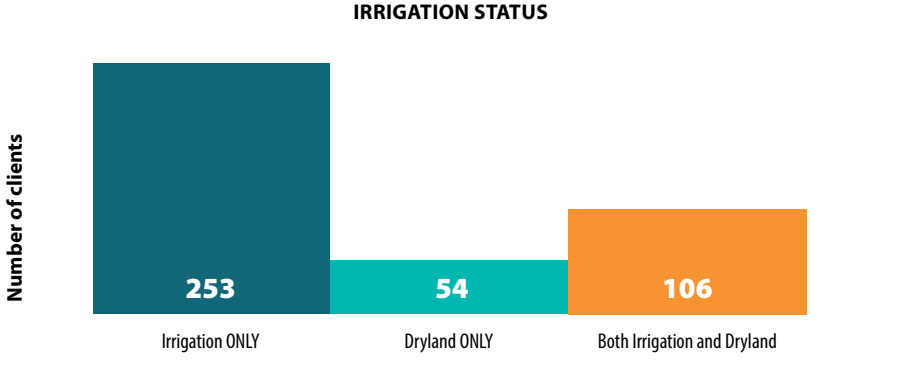
58 respondents



10

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

59 respondents



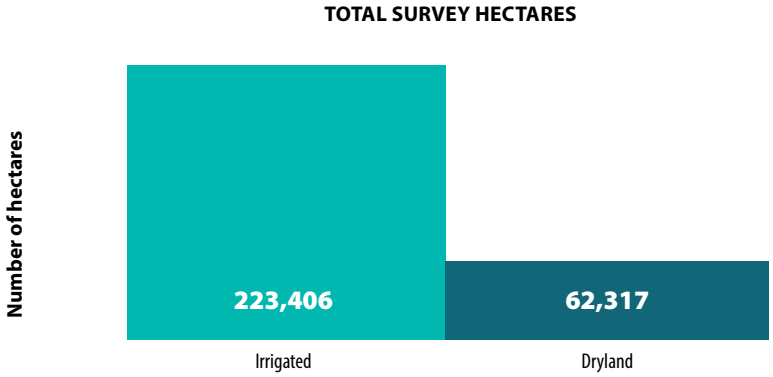
ON-FARM PRACTICES AND ATTITUDES

COVERAGE

11

How many hectares of cotton (total area, not adjusted for row spacings) did your clients grow in the 2021-22 season?

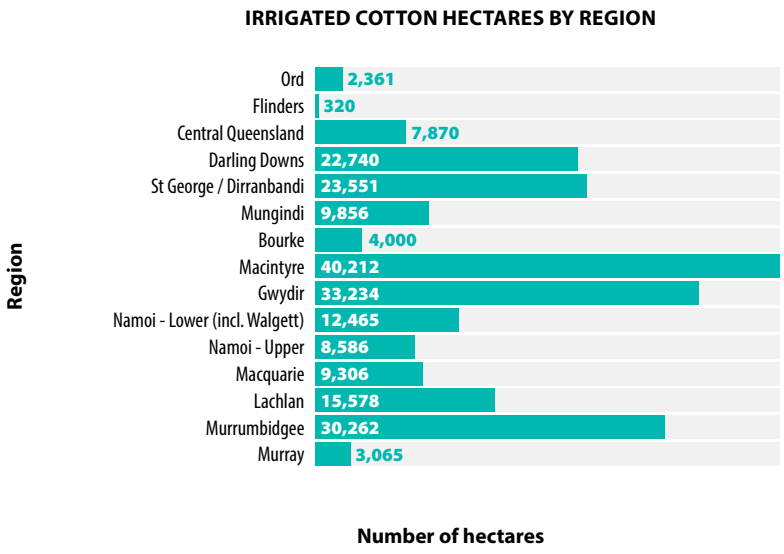
41 respondents



12

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

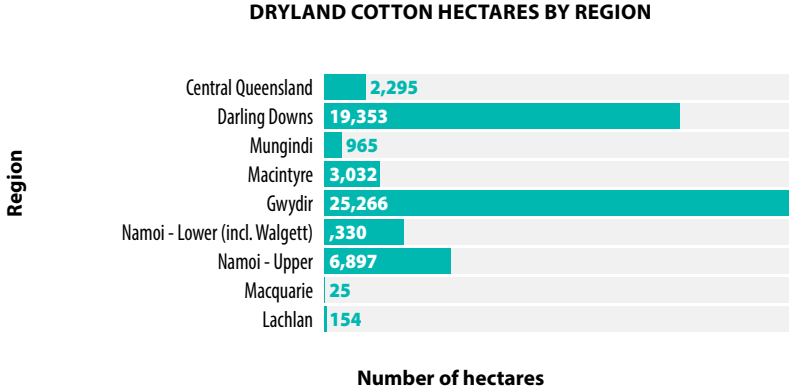
38 respondents



13

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

38 respondents



ON-FARM PRACTICES AND ATTITUDES

2021-22 SEASON

14

Describe the 2021-22 cotton season in THREE words or less.

59 respondents

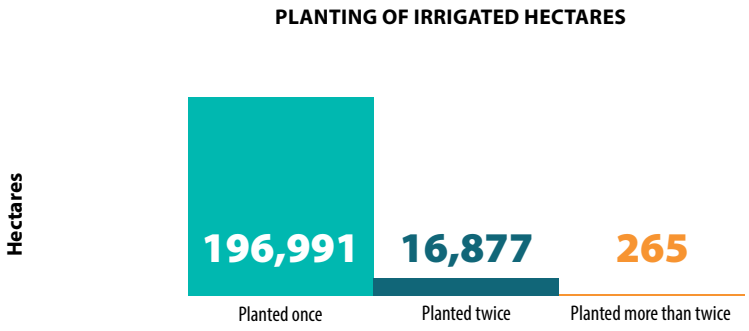
Verbatim responses are detailed in Appendix 1.

PLANTING

15

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

39 respondents



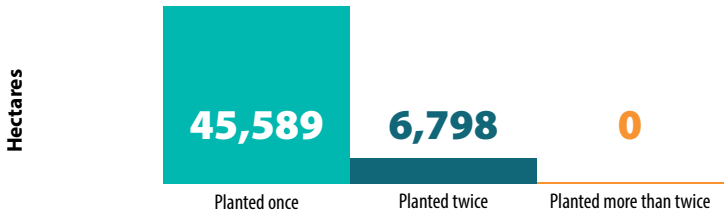
ON-FARM PRACTICES AND ATTITUDES

16

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

39 respondents

PLANTING OF DRYLAND HECTARES



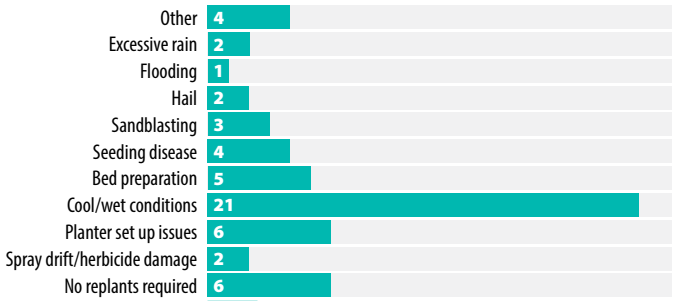
17

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

56 respondents

Other responses included: poor seed vigour, low moisture, hot dry soils,

REASONS FOR REPLANTS



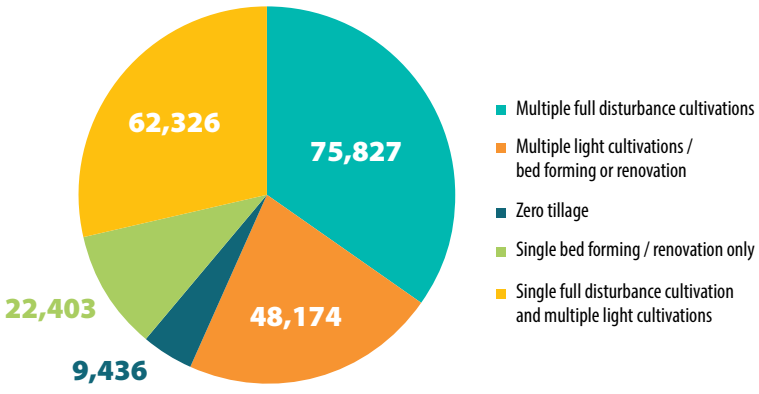
FARMING SYSTEM

18

What reduced tillage practices were used in your 2021-22 irrigated cotton crops? Please allocate number of hectares to each practice.

39 respondents

IRRIGATED AREA (HECTARES)



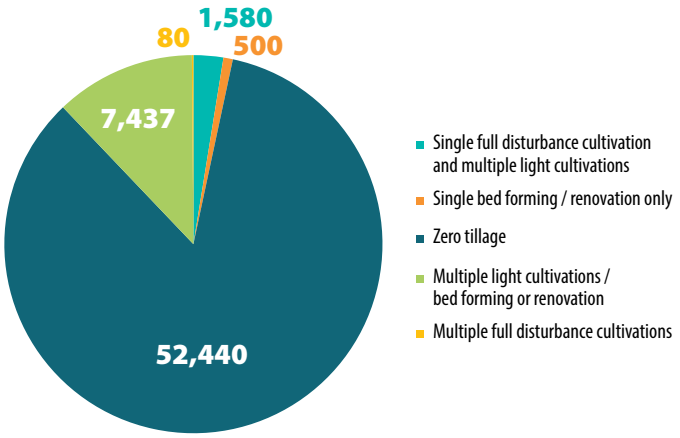
ON-FARM PRACTICES AND ATTITUDES

19

What reduced tillage practices were used in your 2021-22 dryland cotton crops? Please allocate number of hectares to each practice.

39 respondents

DRYLAND AREA (HECTARES)

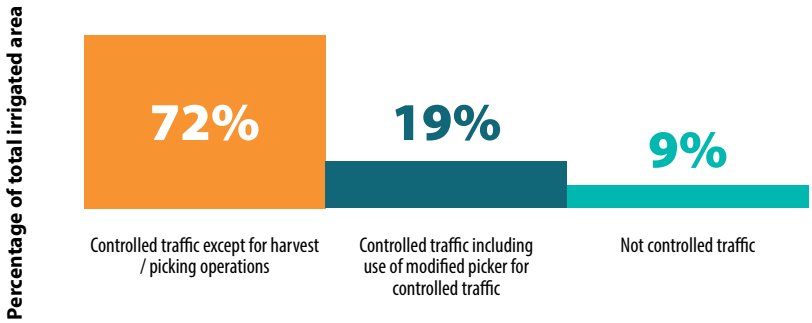


20

Of your irrigated cotton hectares, how widespread in 2021–22 was the use of controlled traffic by your cotton clients? Please allocate number of hectares (to best of your knowledge) to the options listed.

37 respondents

IRRIGATED AREA

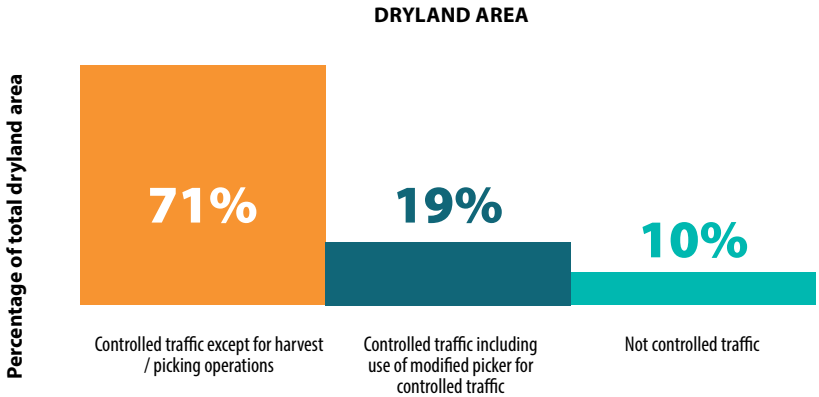


21

Of your dryland cotton hectares, how widespread in 2021–22 was the use of controlled traffic by your cotton clients? Please allocate number of hectares (to best of your knowledge) to the options listed.

37 respondents

DRYLAND AREA



ON-FARM PRACTICES AND ATTITUDES

22

Of your irrigated cotton hectares in 2021-22, how many hectares apply to each fallow situation?

36 respondents and 2 skipped covering a total of 205,807ha

Definitions:

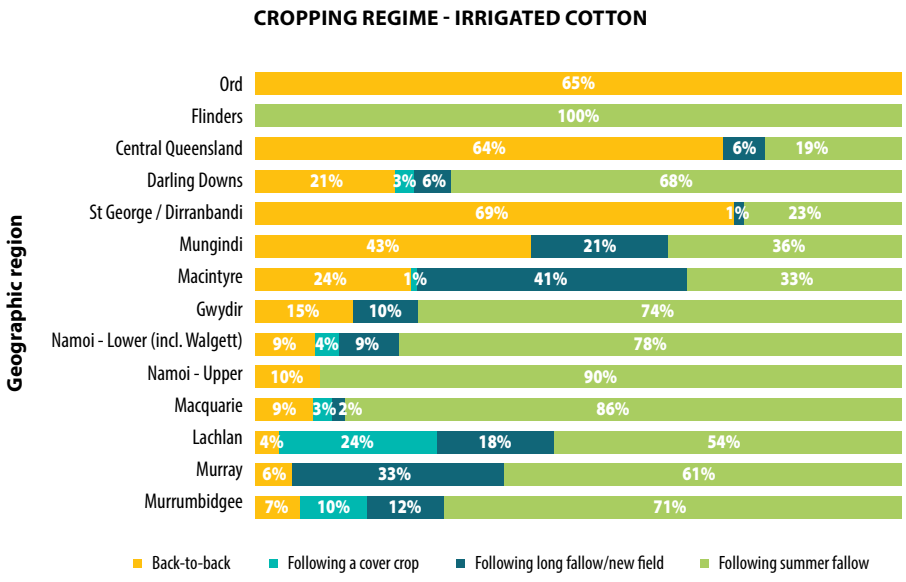
Back-to-back cotton (cotton grown in the same field for the past 2 seasons)

Following summer fallow (no crop in the 2020-21 summer or 2020 winter)

Following long fallow / new field (no crop for previous 2 winter and summer seasons, or longer)

Double cropped (following a 2021 winter crop that was harvested)

Following a cover crop (following a crop that was planted but not harvested)



23

Of your dryland cotton hectares in 2021-22, how many hectares apply to each fallow situation?

22 respondents covering a total of 63,134ha

Definitions:

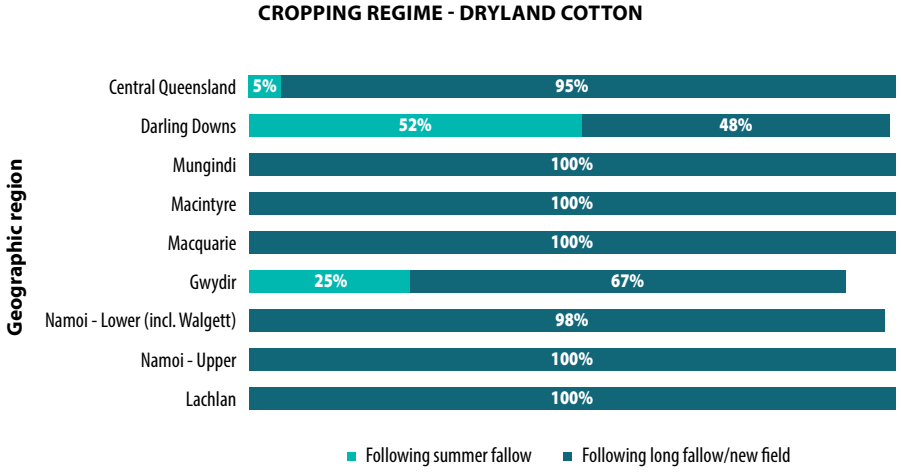
Back-to-back cotton (cotton grown in the same field for the past 2 seasons)

Following summer fallow (no crop in the 2020-21 summer or 2020 winter)

Following long fallow / new field (no crop for previous 2 winter and summer seasons, or longer)

Double cropped (following a 2021 winter crop that was harvested)

Following a cover crop (following a crop that was planted but not harvested)



ON-FARM PRACTICES AND ATTITUDES

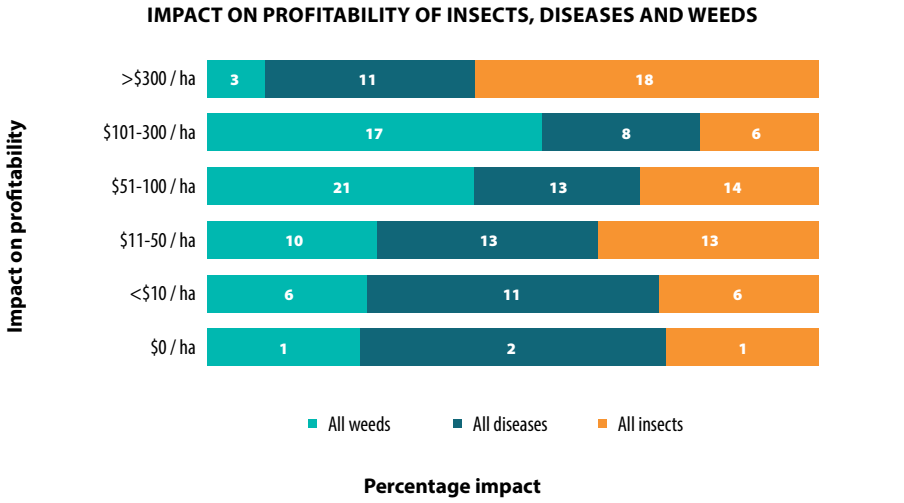
CROP PROTECTION

24

Rate the average impacts you think the following pests, weeds, diseases and disorders had on the profitability of your clients' cotton crops in 2020-21, either through budgeted or unbudgeted costs or through yield loss.

Note: Bollgard® and Roundup Ready® fees are considered budgeted costs.

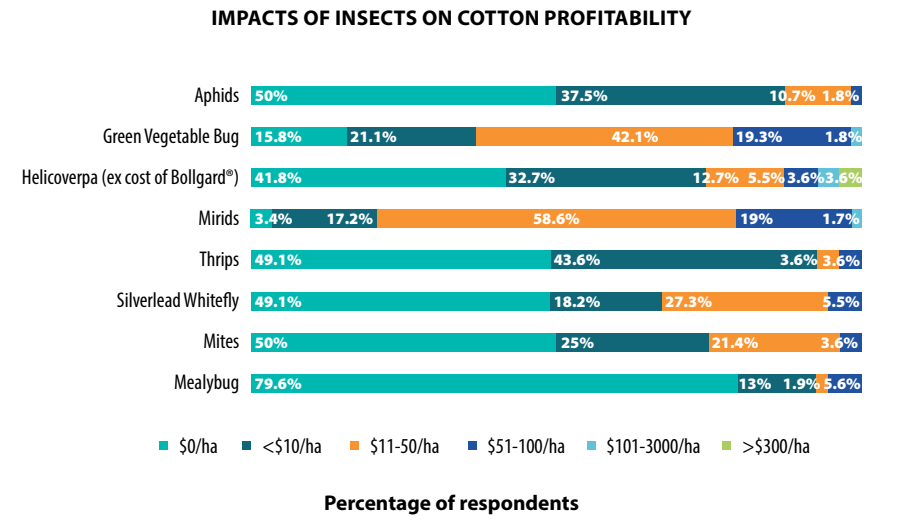
58 respondents



25

Rate the average impacts you think the following pests had on the profitability of your clients' cotton crops in 2021-22, either through budgeted or unbudgeted costs or through yield loss.

58 respondents



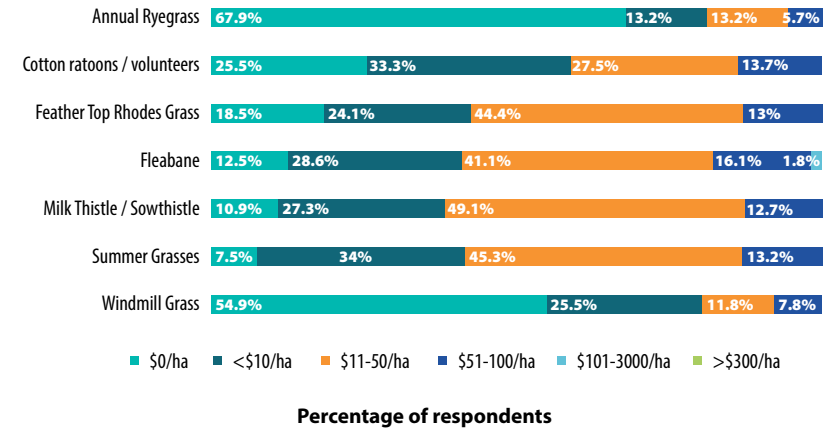
ON-FARM PRACTICES AND ATTITUDES

26

Rate the average impacts you think the following weeds had on the profitability of your clients' cotton crops in 2021-22, either through budgeted or unbudgeted costs or through yield loss.*

58 respondents

IMPACTS OF WEEDS ON COTTON PROFITABILITY

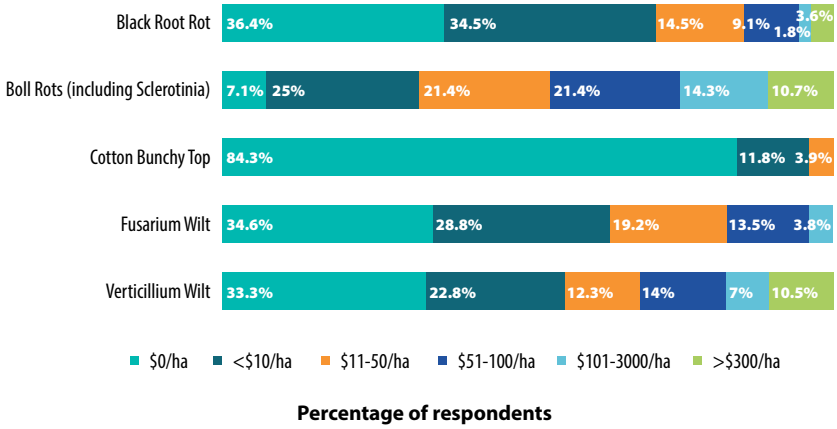


27

Rate the average impacts you think the following diseases and disorders had on the profitability of your clients' cotton crops in 2021-22, either through budgeted or unbudgeted costs or through yield loss.

58 respondents

IMPACTS OF DISEASE ON COTTON PROFITABILITY

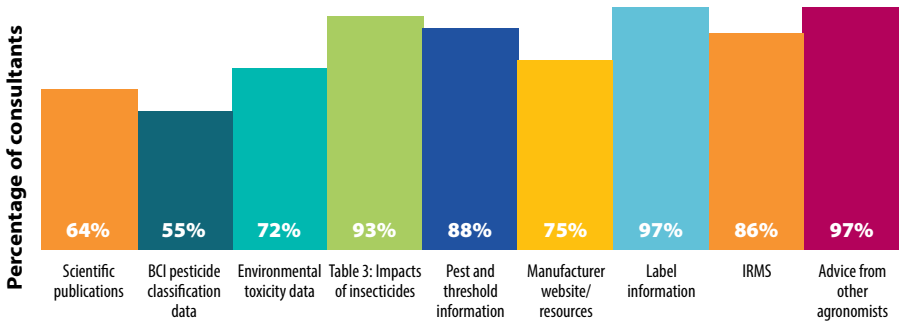


28

If you were considering recommending a pesticide that you had no personal experience with, how important would you rate the following resources to informing your decision?

58 respondents

INFORMATION SOURCES CONSIDERED TO BE OF HIGH IMPORTANCE IN INFORMING PESTICIDE RECOMMENDATIONS



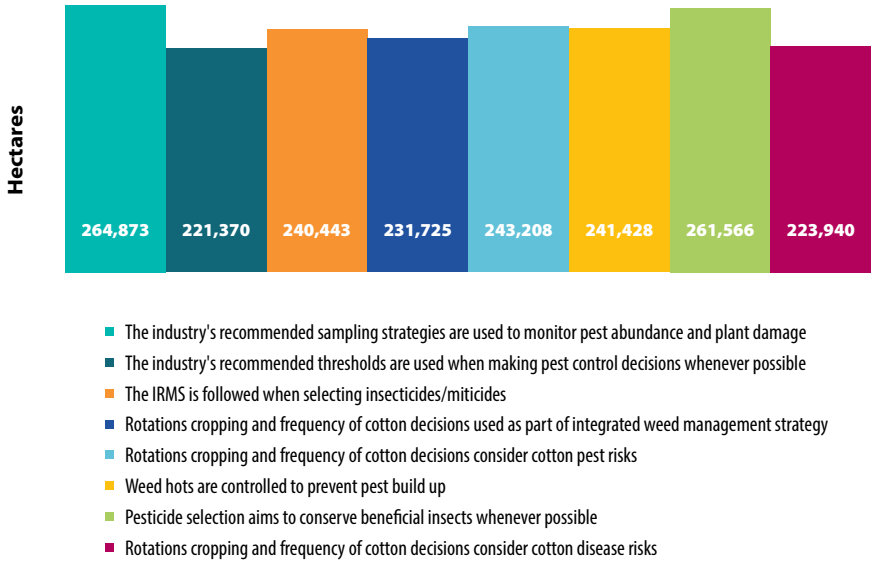
ON-FARM PRACTICES AND ATTITUDES

29

With regards to insect pest management in 2021-22 cotton fields, how widely used (in terms of total irrigated and dryland hectares) are the practices listed below:

40 respondents

INSECT MANAGEMENT PRACTICES (COTTON AREA)

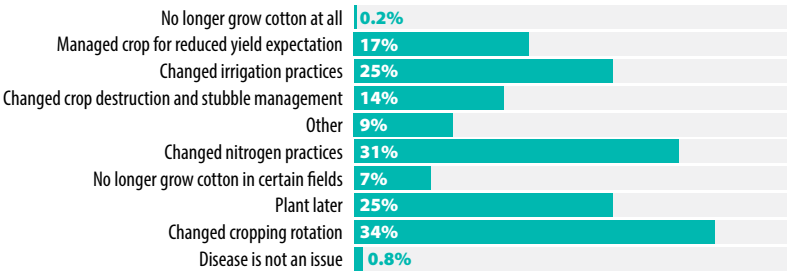


30

Thinking about your clients, please select the options applicable to changes in their practices in the past 5 years due the impacts of disease.

37 respondents

CHANGES IN PRACTICES IN THE PAST 5 YEARS DUE TO THE IMPACTS OF DISEASE



Other options include:

Use of more tolerant varieties.
Most growers have a laser and redesign programme in problem fields.
Come clean go clean (washing bays available to clean vehicles and equipment).
Workers are aware of the risk of spreading the disease in the farm.

Not much change over all but disease issues getting worse after last 2 seasons of cold and wet in irrigated fields and farmers are seeing that something has to change... but prices usually constitute extra plantings on back-to-back fields.

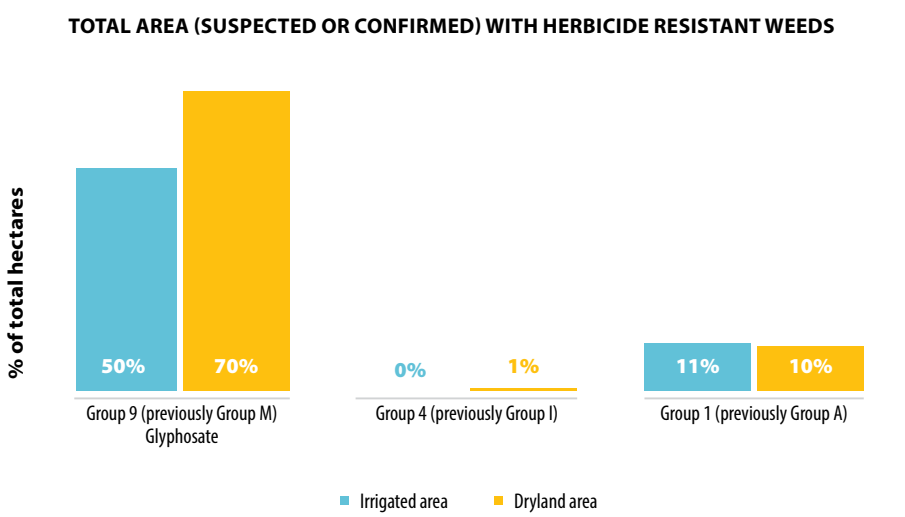
Use Sero-X®.

ON-FARM PRACTICES AND ATTITUDES

31

Of the irrigated and dryland cotton hectares over which you consulted in 2021-22, what is the total area (suspected or confirmed) with herbicide resistant weeds?

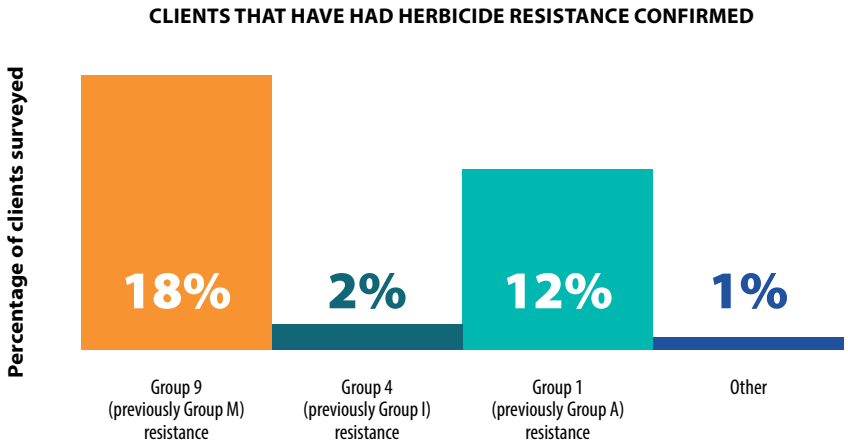
39 respondents



32

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

36 respondents



BILL BACK

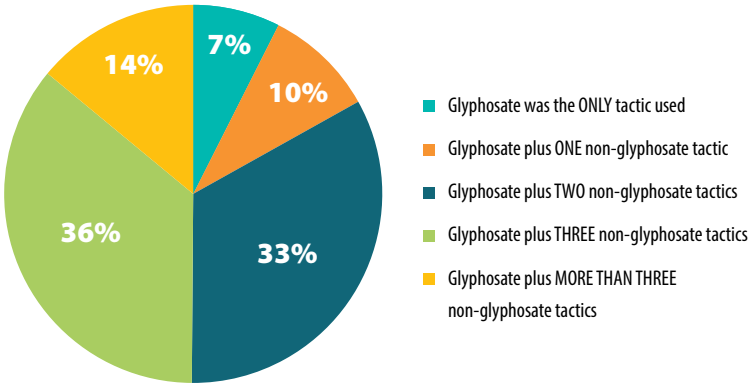
ON-FARM PRACTICES AND ATTITUDES

33

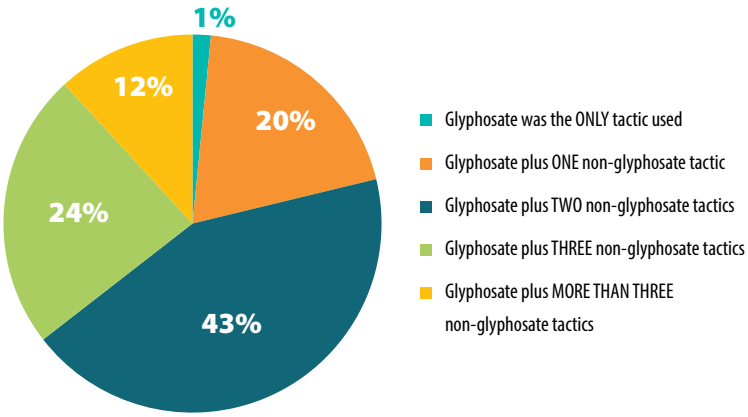
Of the irrigated and dryland cotton hectares over which you consulted in 2021-22, please estimate how many tactics were used for the cotton crop, including in preparation. For this question, a tactic is considered a weed control operation such as cultivation, herbicide, chipping.

39 respondents

NUMBER OF WEED CONTROL TACTICS - IRRIGATED



NUMBER OF WEED CONTROL TACTICS - DRYLAND

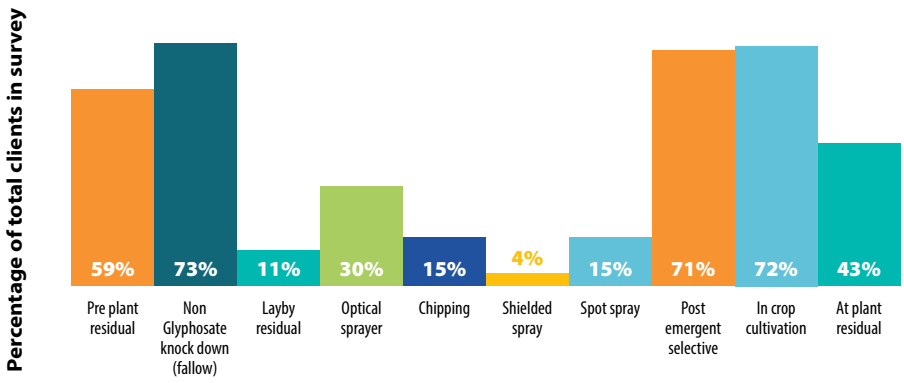


34

Thinking about your cotton clients and how they have managed weeds across their cotton farming system, what weed control tactics do they undertake?

39 respondents

USE OF NON GLYPHOSATE WEED CONTROL TACTICS



ON-FARM PRACTICES AND ATTITUDES

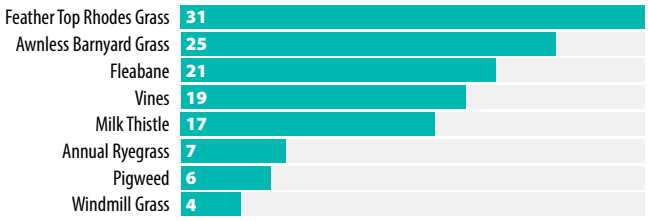
35

In your experience what weed species are CURRENTLY or EMERGING as the biggest challenge to control in the IRRIGATED system?

53 respondents

Note: Number of responses for the major weeds are presented in this graph. Full verbatim answers are presented in Appendix 2.

WEED SPECIES CHALLENGES FOR IRRIGATED COTTON



Number of consultants

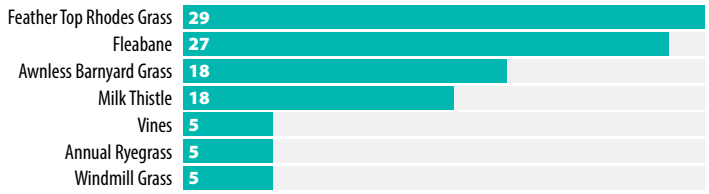
36

In your experience what weed species are CURRENTLY or EMERGING as the biggest challenge to control in the DRYLAND system?

53 respondents

Note: Number of responses for the major weeds are presented in this graph. Full verbatim answers are presented in Appendix 3.

WEED SPECIES CHALLENGES FOR DRYLAND COTTON



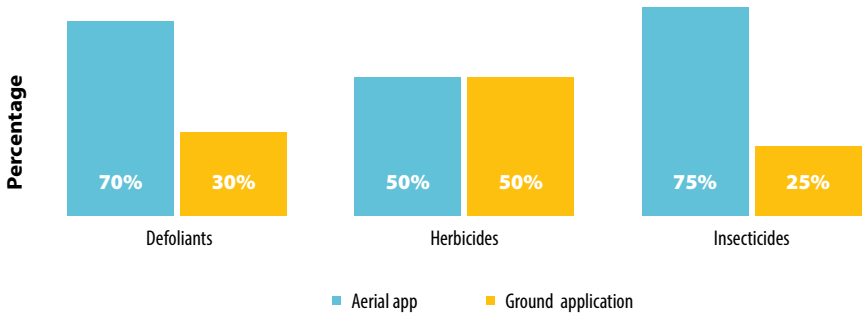
Number of consultants

37

Thinking about application of crop protection products, on average what is the percentage applied by air or by ground application.

39 respondents

AVERAGE PERCENTAGE APPLIED BY AIR OR GROUND APPLICATION



LIZ LOBSEY

ON-FARM PRACTICES AND ATTITUDES

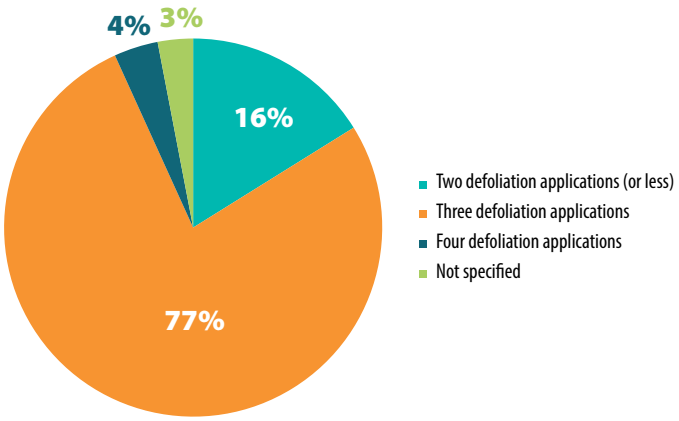
DEFOLIATION

38

Thinking about your irrigated cotton hectares, how many applications of defoliant products were required?

39 respondents

NUMBER OF DEFOLIATION APPLICATIONS - PERCENTAGE OF IRRIGATED HECTARES

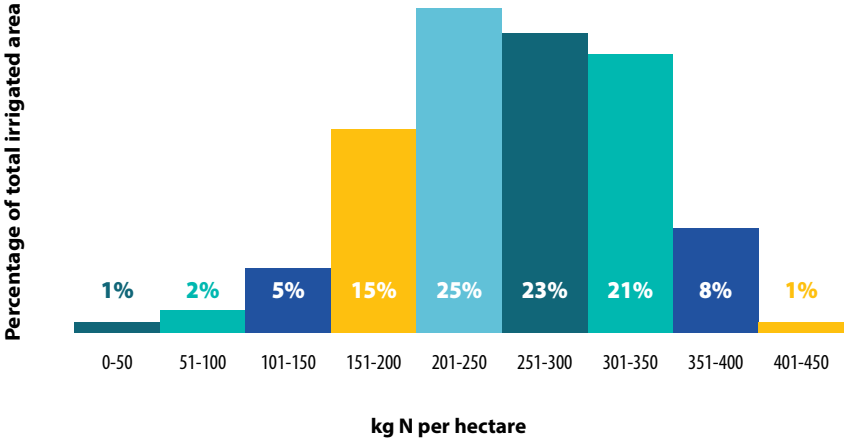


39

What is your best estimate of how much nitrogen was applied per hectare for your total irrigated cotton hectares in 2021-22? Include all applications made in the previous fallow period as well as in-crop applications.

40 respondents covering 213,078 ha

AMOUNT OF NITROGEN APPLIED IN IRRIGATED COTTON



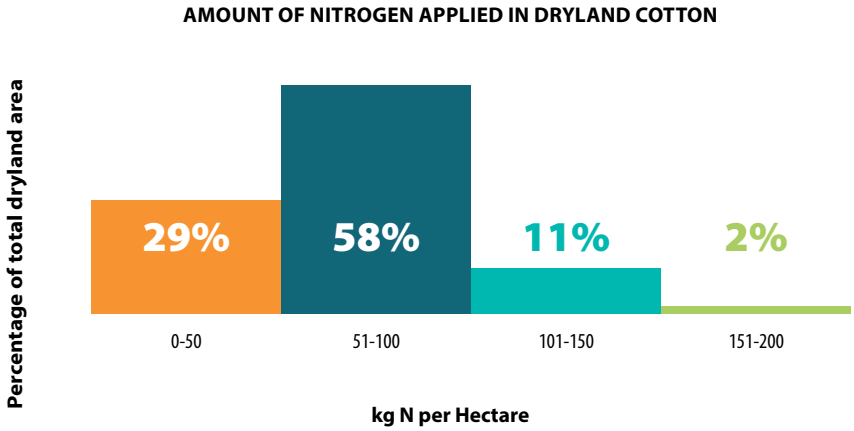
ON-FARM PRACTICES AND ATTITUDES

NUTRITION MANAGEMENT

40

What is your best estimate of how much nitrogen was applied per hectare for your dryland cotton hectares in 2021-22? Include all applications made in the previous fallow period as well as in-crop applications.

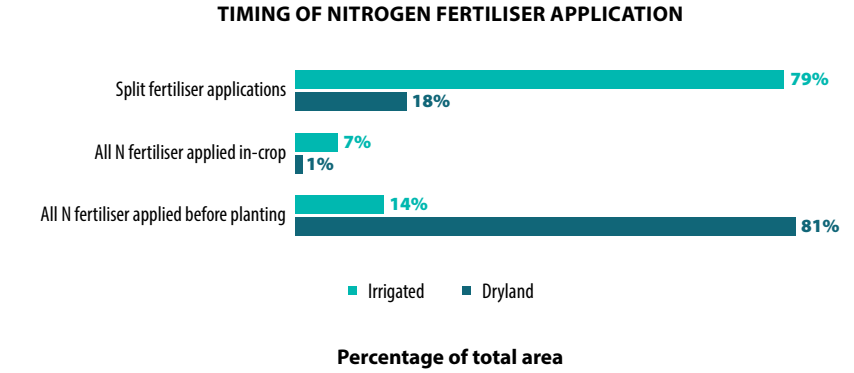
40 respondents
covering 55,054 ha



41

In 2021-22, when were the cotton crops' nitrogen fertiliser requirements applied?

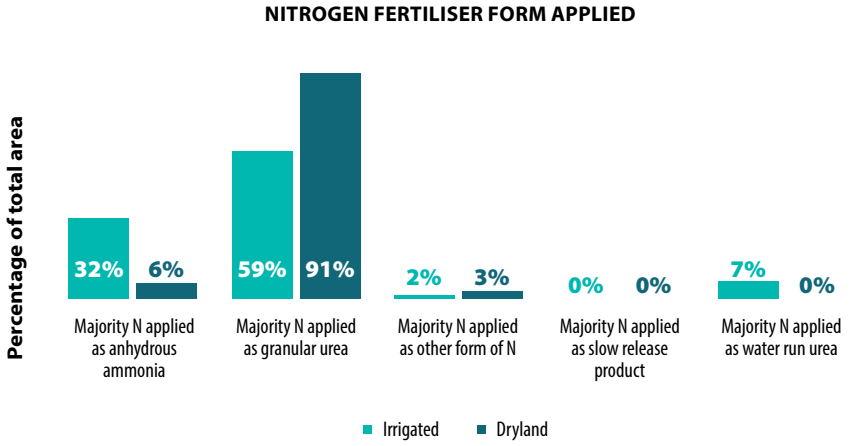
36 respondents



42

In 2021-22, how were the cotton crops' nitrogen fertilizer requirements applied?

39 respondents

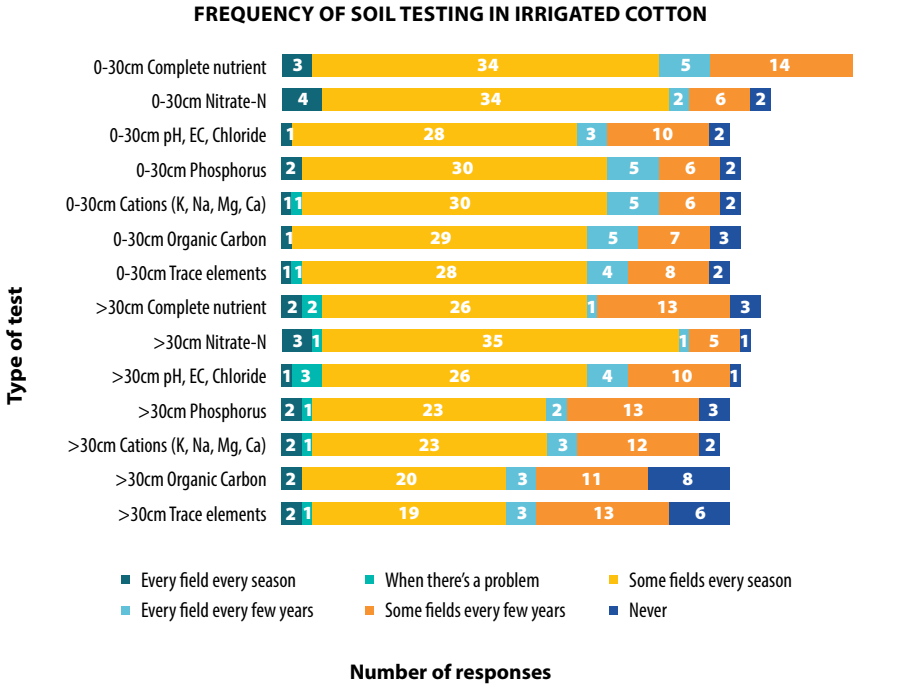


ON-FARM PRACTICES AND ATTITUDES

43

For irrigated cotton, on average how often are soil tests conducted for each of these nutrients/conditions?

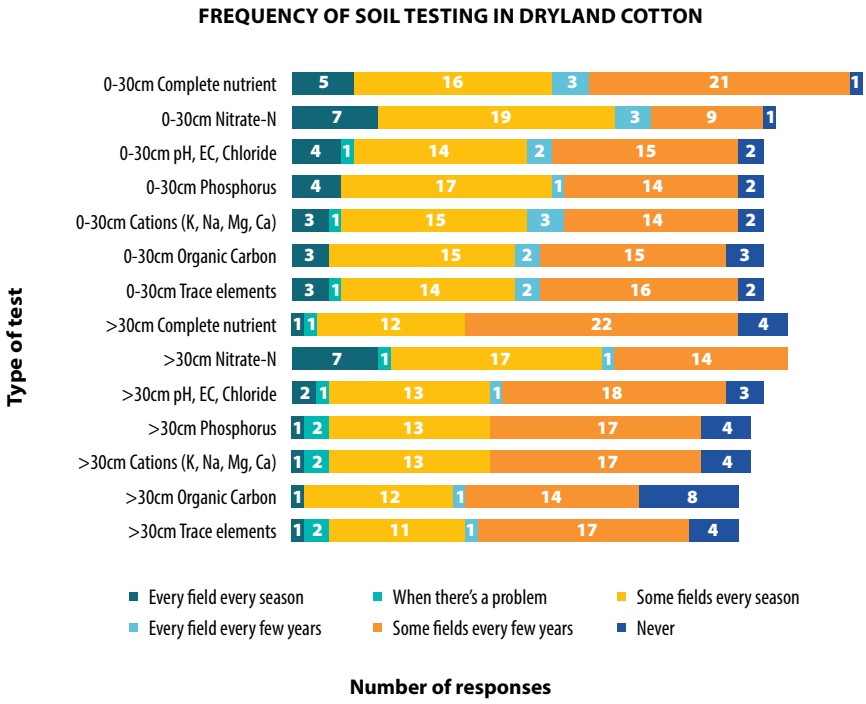
59 respondents



44

For dryland cotton, on average how often are soil tests conducted for each of these nutrients/conditions?

44 respondents



ON-FARM PRACTICES AND ATTITUDES

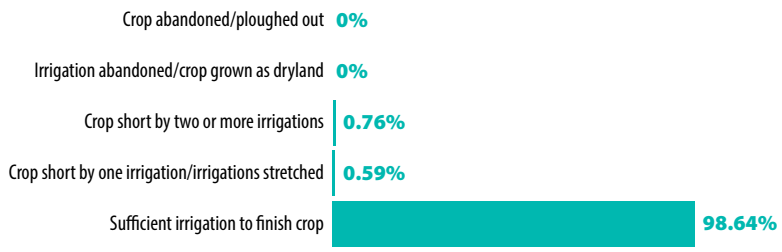
WATER MANAGEMENT

45

For the irrigated cotton hectares over which you consulted in 2021-22, how much area was affected by limited water and what was the average yield in each case?

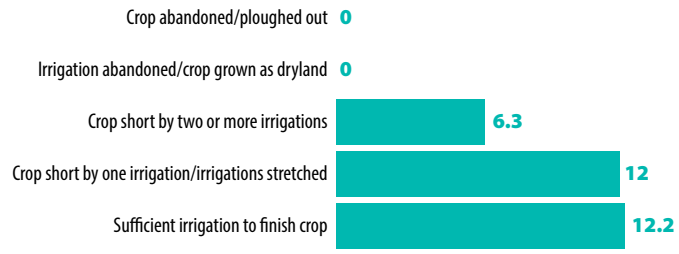
38 respondents

IRRIGATED AREA AFFECTED BY LIMITED WATER

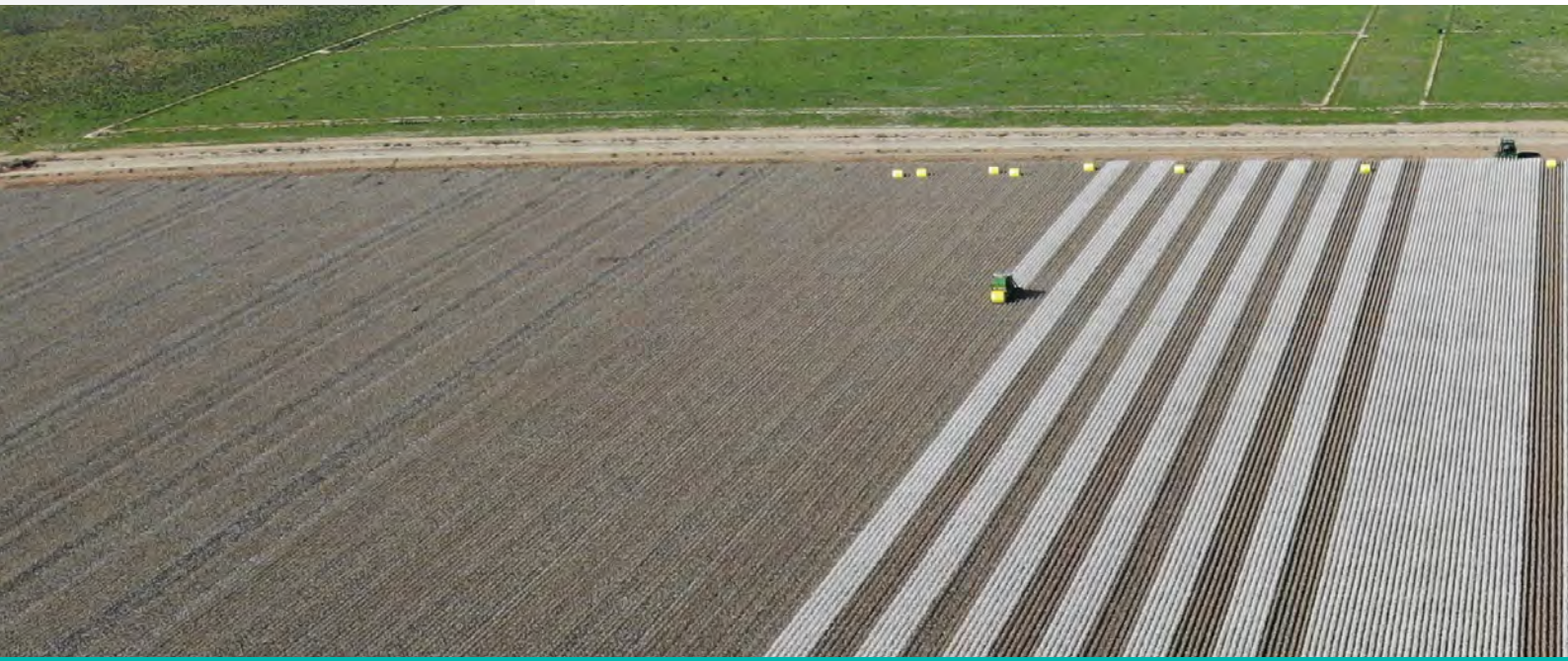


Percentage of total irrigated area

IRRIGATED YIELD AFFECTED BY LIMITED WATER



Yield (bales/ha)



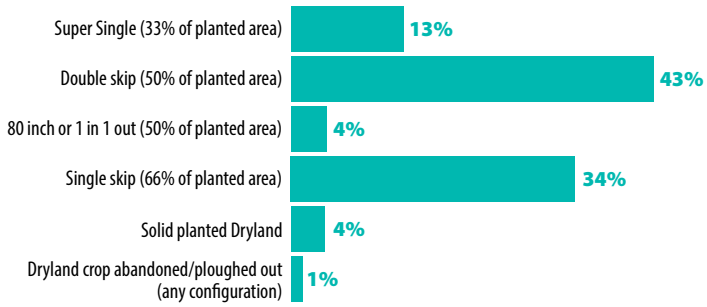
ON-FARM PRACTICES AND ATTITUDES

46

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

38 respondents

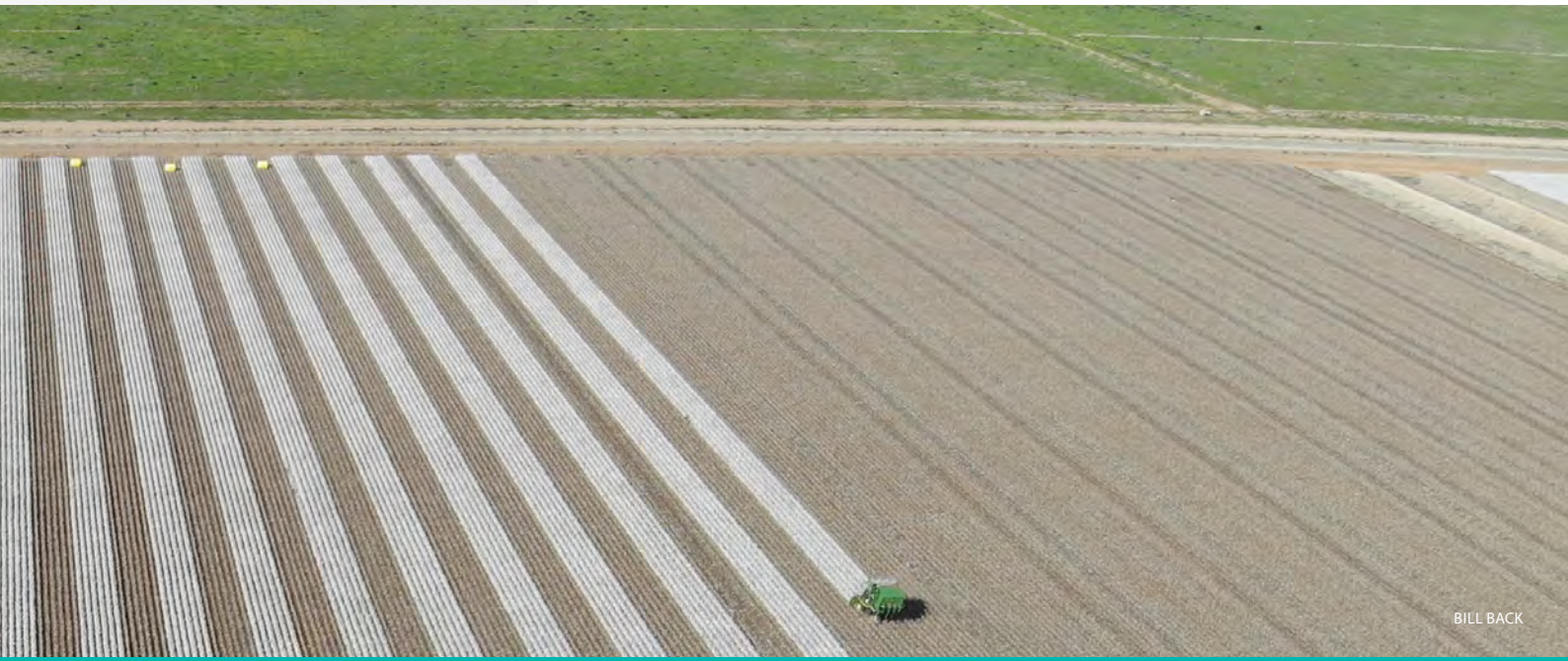
DRYLAND COTTON AREA BY ROW CONFIGURATION



Percentage of total dryland area

DRYLAND COTTON YIELD BY ROW CONFIGURATION

Yield (bales/ha)



BILL BACK

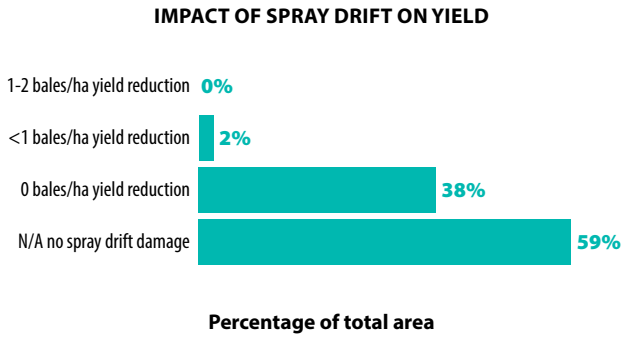
ON-FARM PRACTICES AND ATTITUDES

YIELD IMPACT

47

What yield impacts do you estimate spray drift had on your clients' crops this season?

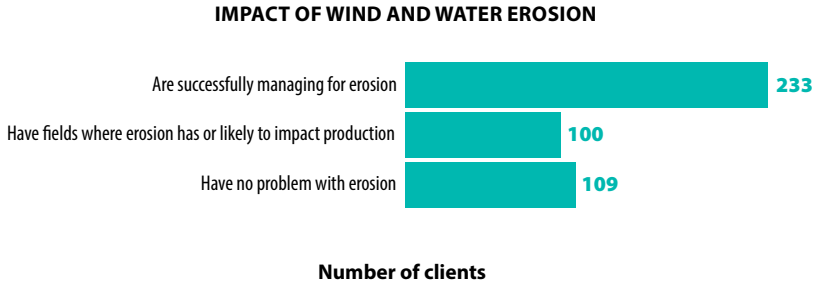
39 respondents



48

Regarding wind and water erosion, how many of your cotton clients fit these categories?

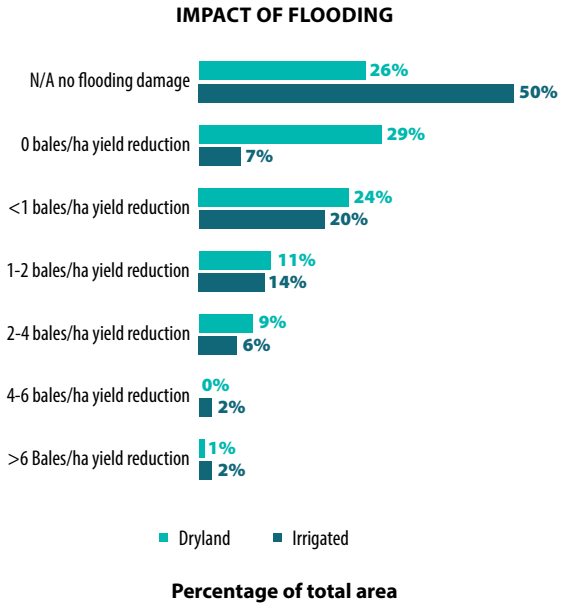
38 respondents



49

What yield impacts do you estimate flooding had on your clients' cotton crops in 2021-22?

38 respondents



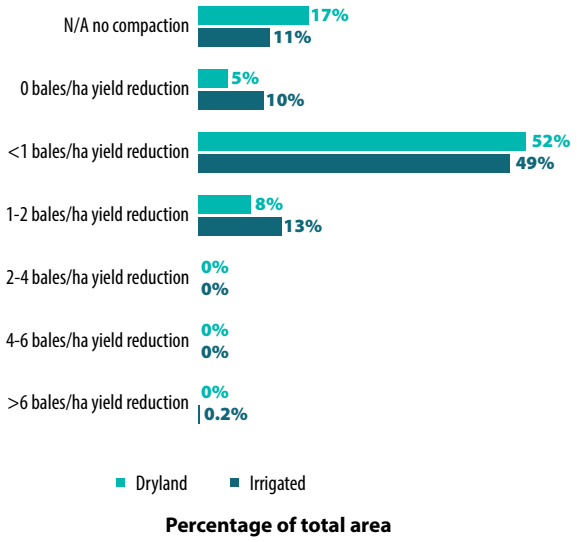
ON-FARM PRACTICES AND ATTITUDES

50

What impact do you estimate compaction had on your clients' cotton yields in 2021-22?

38 respondents

IMPACT OF SOIL COMPACTION ON YIELD



EMMA CHESTERFIELD

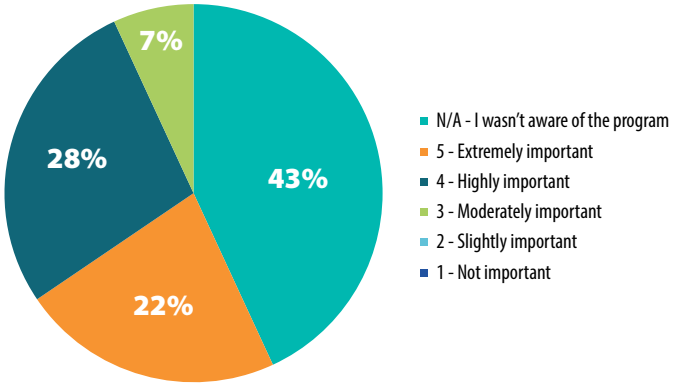
CRDC AND COTTONINFO

51

How important is cotton's "PLANET. PEOPLE. PADDOCK." sustainability program to the industry?

58 respondents

IMPORTANCE OF THE "PLANET.PEOPLE.PADDOCK" SUSTAINABILITY PROGRAM TO THE INDUSTRY

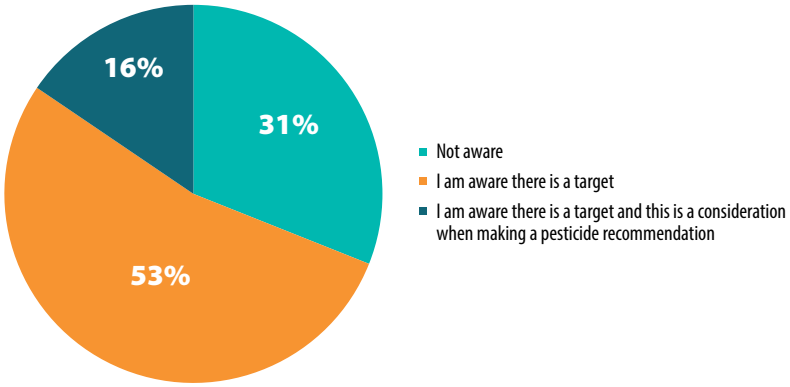


52

Are you aware of the cotton industry targets to reduce the environmental impact of pesticides (as measured by Environmental Toxic Load) by five per cent, every five years.

58 respondents

AWARENESS OF COTTON INDUSTRY TARGETS TO REDUCE ENVIRONMENTAL IMPACT OF PESTICIDES



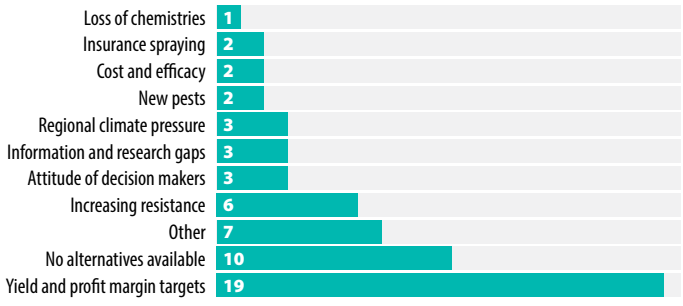
53

What do you see as the greatest challenge to reducing pesticide (insecticides, herbicides, fungicides, defoliants) usage and why?

58 respondents

The verbatim data collected in this question has been summarized below, however full responses are available in Appendix 4.

GREATEST CHALLENGES TO REDUCING CHEMICAL USAGE



CRDC AND COTTONINFO

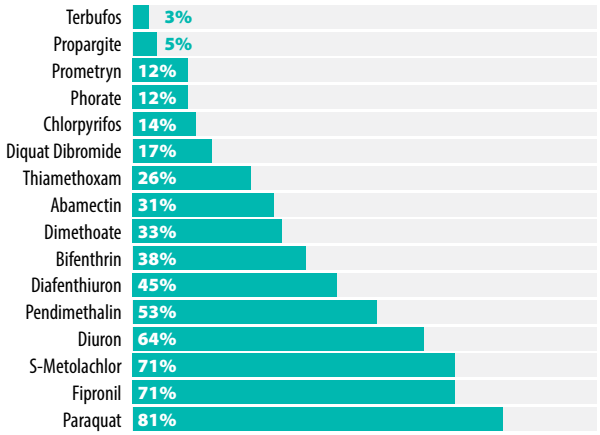
54

Of the following higher hazard pesticides, what do you estimated the impact would be if the use of these actives in cotton was no longer allowable?

58 respondents

Additional comments are attached as Appendix 5.

PERCENTAGE OF CONSULTANTS WHO ESTIMATE THE IMPACT OF LOSS OF ACTIVES TO BE HIGH OR VERY HIGH

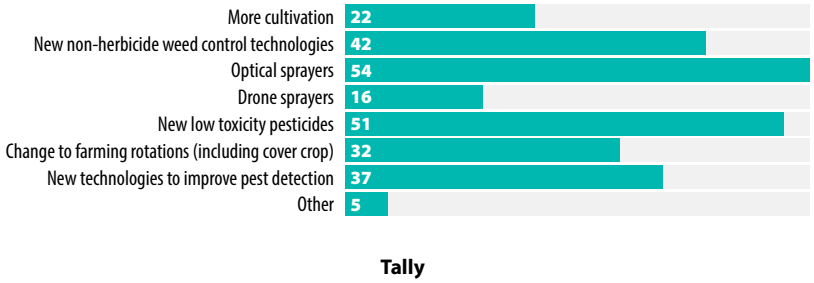


55

What technologies or practices will be important for meeting the pesticide sustainability target?

60 respondents

TECHNOLOGIES OR PRACTICES TO ASSIST MEETING THE PESTICIDE SUSTAINABILITY TARGET

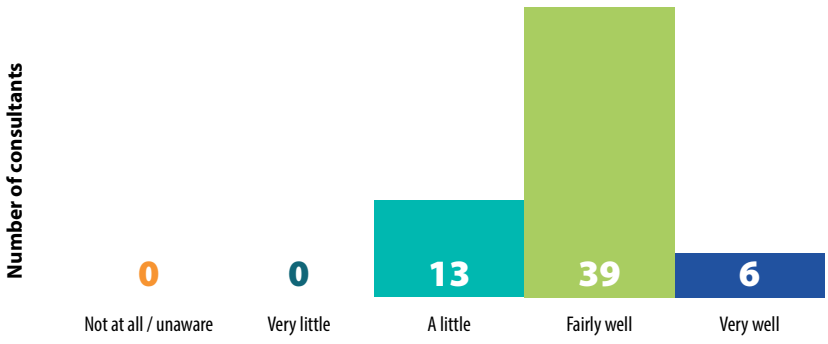


56

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

58 respondents

UNDERSTANDING OF CRDC

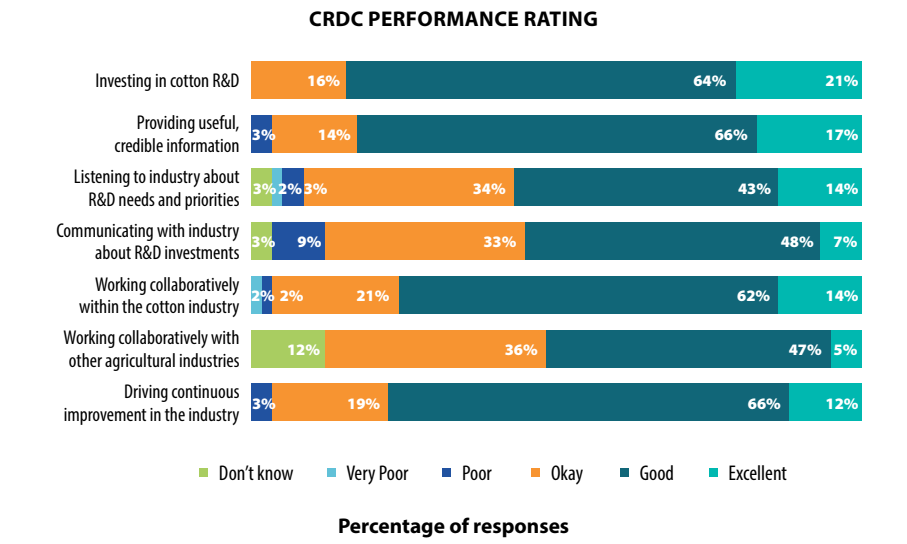


CRDC AND COTTONINFO

57

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

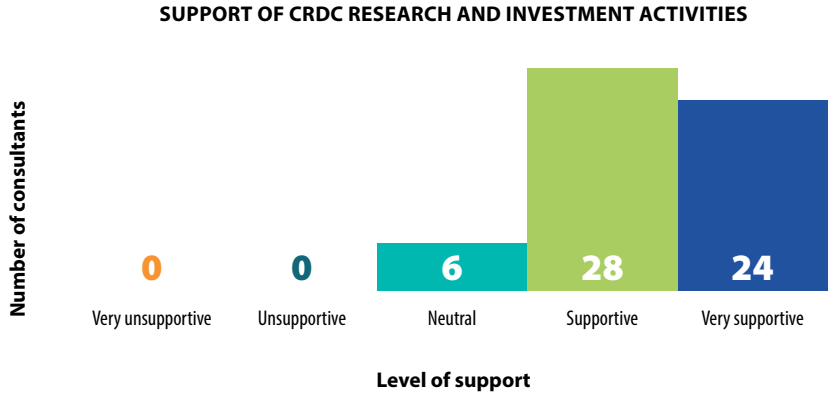
58 respondents

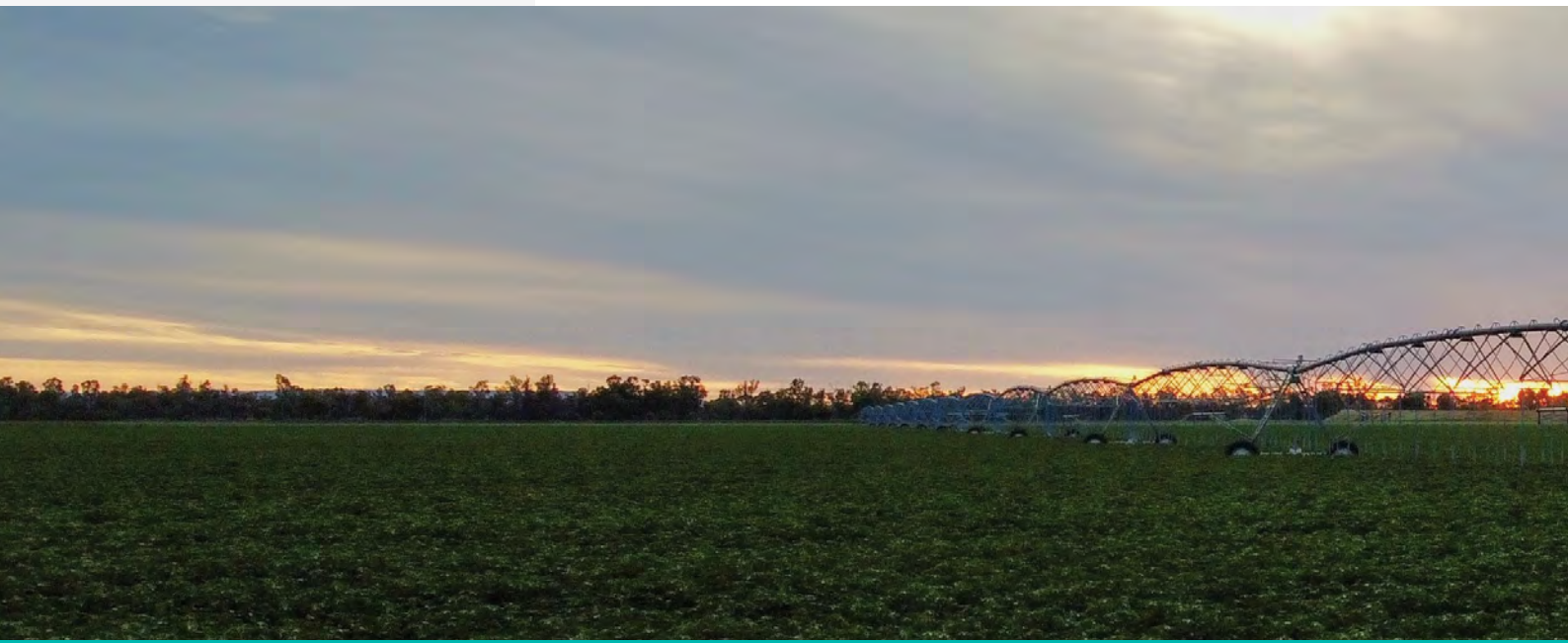


58

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

58 respondents



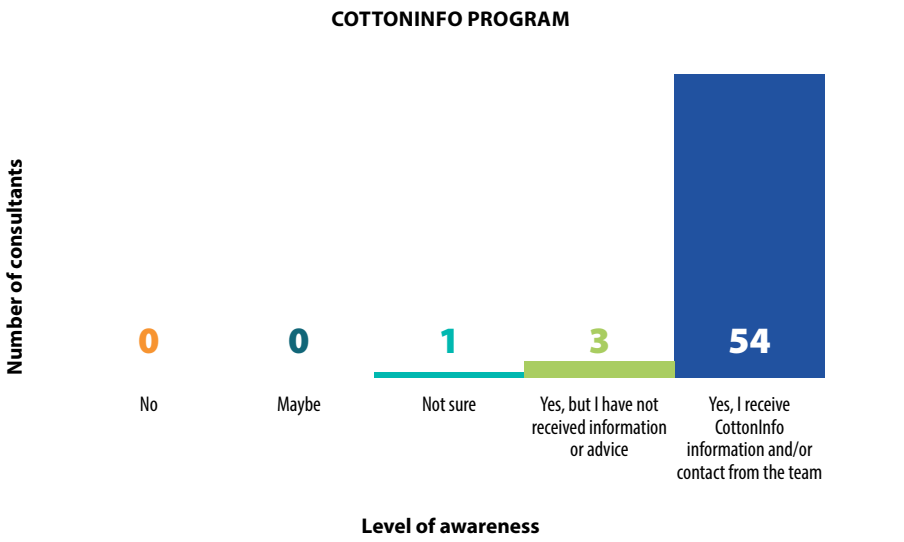


CRDC AND COTTONINFO

59

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

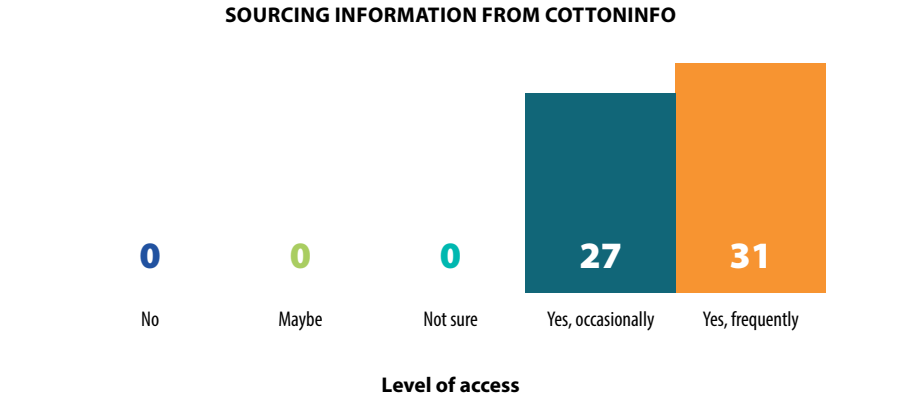
58 respondents



60

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

58 respondents



EMMA CHESTERFIELD

CRDC AND COTTONINFO

61

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

I think the industry does a great job. It is such a competitive space for people's time. The only improvement is trying to make any communications as concise and directed as possible so people can get the information they need. Time poor is becoming more and more a problem.

Greater collaboration between research, agronomists and farmers and more work making the research less 2 dimensional and adding beneficial and economic values to them.

Do the simple things well & don't reinvent the wheel.

More on farm trials. More on farm variety trials.

Having good communication in season coming from the team is useful on current issues and trials. Weekly updates very handy.

Industry network and the updates that CottonInfo does throughout the season of what everyone is finding and doing.

Have extension staff in CQ. Up until recently no cotton extension staff based in CQ and CottonInfo has little to no presence or relevance to the region.

I value the frequent tech info that is provided to us - as a young agro who is still early on in their career, I am always happy to read these updates to not only learn but see what the latest research and grower news is in my region as well as others.

I value off season seminars devoted to research presentations.

Improving access to experts for more isolated growing areas, either face to face or via online means.

Value extension team. More accessible research information in one location.

The diversity of research projects across the industry is great.

Value having extension officer support and having a local contact.

Greater monitoring of future potential flare ups such as an unlimited planting window and wait a while cotton, and resultant green bridges which will ultimately occur.

I value the guides, and the email updates and technical information updates available on diverse platforms such as print, email, web site, you tube and links provided via twitter.
I would like to see a few more cotton development personnel appointed, who are responsible for field evaluation and testing of new research, new products, new ideas across the various major growing regions and perhaps the number of field extension staff could be reduced.

I would like to see more information what the best yield performers are doing differently to archive their results.

They are doing things as well as they can. It's hard to engage those who don't want to be engaged.

Years of interesting projects are available online and are easily accessible.
A greater focus on some smaller on-farm trials i.e. what can actively be done in a season without breaking the budget.

While the electronic age provides some benefits, the best are still face to face contact with researchers, extension staff.

I value hands on, in person workshops/field days.

More interaction/feedback from key researchers on their current research undertakings and also for them to receive industry feed back I think would be beneficial.

Trial work locally in each valley.
Field days to discuss local issues.
Re-visit some of the old work that underpins how we grow cotton, such as plant stand impacts on yield and pix management.

Having contact with representative that knows people that know what I need.

More research field days/updates with consultants.

Unsure.

I value that this information is available to growers as well as consultants, it's all very informative and a great resource for all skill levels, it's also kept updated and kept very relevant!

CRDC AND COTTONINFO

Put more money into SLF nymph camera to detect viable & unviable nymphs.

The production and pest management books are helpful.
Maybe some more short information videos like the cotton info.

Need more contact in the Macintyre Valley it is centralised in the St George area. We need 2 people or someone who is willing to travel more.

More regional people on the ground.

I'll tell you when we get one in CQ.

I would like to see increased involvement from CottonInfo team members at the local level disseminating research outcomes.

I think the cotton pest management guide is still a very valuable tool. I think a lot of the research and information is readily available if you know where to look or who to ask, our problem in CQ currently is that we don't have a local CottonInfo contact so we aren't as engaged as other valleys.

Overall, I think it's good but I'd like more updates and to be asked about what we want researched etc. more field days and trial site visits are always helpful.

Value cotton info communication and staff highly.
Cotton research projects and research findings needs to be communicated to consultants in terms of practical findings better > via CottonInfo to us in easy-to-read communication.

Very happy with extension officers, do a good job. But are they helping out the consultants or just doing what government and researchers what them to do?

More research into rotational crop benefits for agriculture long-term profitability and sustainability.

Maybe even more researcher and grower/agronomist-based communication. There needs to be some independent variety trials done. I think overall the CottonInfo team and CRDC does an excellent job.

I currently value the group and team of leaders that exist in this space. I do like the effort the cotton industry makes to get industry stakeholders involved and to share their thoughts and concerns. I think to address the future targets of the industry and address initiatives such as the plant-people-paddock framework, the industry needs to organise something that brings the leaders of the industry into to engage more with the younger members of the industry. I myself, and I know others have expressed the same thing is the value we get out of having quality mentors around us. We do have regional groups formed, and I am involved in one but there always seems to be an element of disconnection among the group. Opportunities to meet more people and network with them is what should be prioritised.

Ensure the industry invests in experienced long-term knowledge bases in all disciplines - pathology, entomology, weeds etc. A lot of experienced people have retired in the past 5-years and I don't think all voids have been filled.

Extension services need to listen and learn from experienced consultants.
This will allow for research to be conducted into relevant problems/issues.

More support and research for dryland cotton.

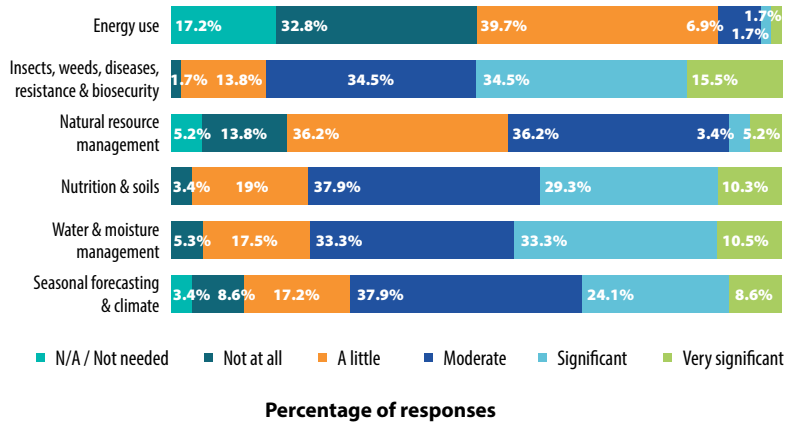
CRDC AND COTTONINFO

62

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

58 respondents

COTTONINFO AND INFORMATION ASSISTING TO IMPROVE PRACTICES

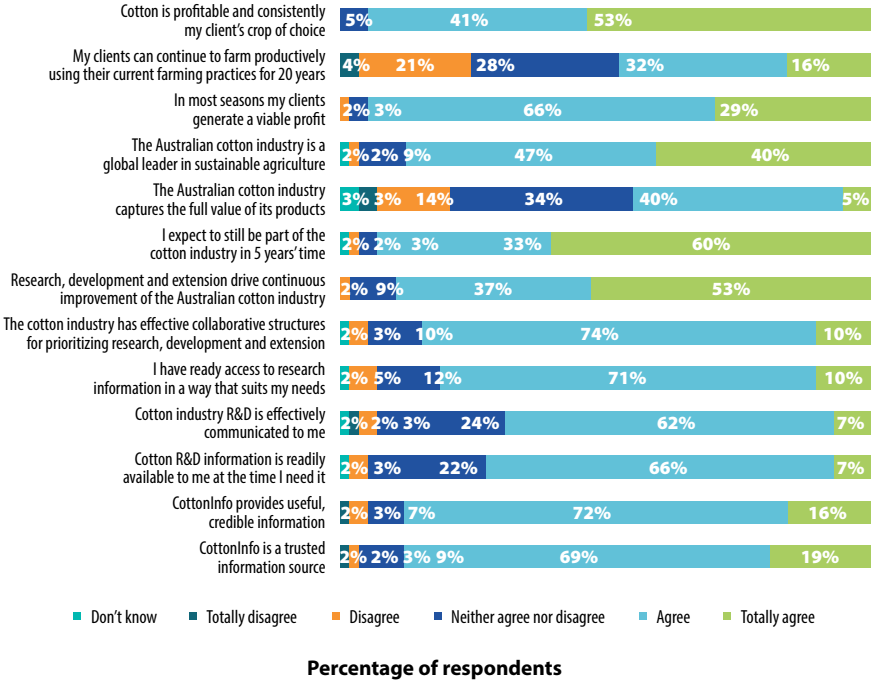


63

Please give your opinion on each of the following statements in relation to the cotton industry.

58 respondents

OPINIONS ON STATEMENTS ABOUT THE COTTON INDUSTRY

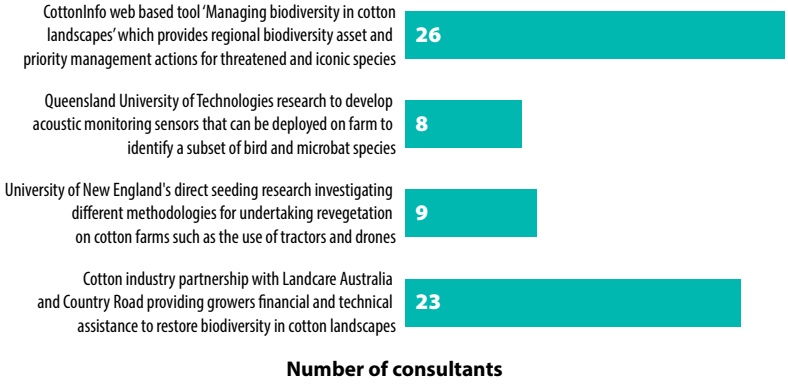


CRDC AND COTTONINFO

64

Please indicate which of the following programs you are aware of?

66 respondents



65

Is there any other feedback or other issues that you would like to provide back to CRDC at this time?

15 respondents

R and D needs to continue to find a balance between innovation and improving the current system. While it is exciting and "cool" to be implementing new technology and getting on the bandwagon of changing the face of the farm, sight must not be lost of continuing to develop the farming system using traditional methods and tweaking management decisions without such technology as this will provide the quickest and biggest gains to the industry. Not every farmer has the intention of being an electrical engineer to drive the innovative tools and systems, nor do they want to trust technology as heavily. We need to ensure that opportunities to strengthen the system with current tools is continually investigated and explored.

Greater monitoring of unlimited planting windows and resultant insect, weed, fungal, bacterial and viral outbreaks.

Reniform Nematode has the potential to be disastrous if they spread throughout the industry areas

Come to local events, such as field days, and tell us what they are doing.

Never heard of the above programs listed in Question 66.

Sustainability is important but you need to not lose focus on production as without that there is no industry.

Don't spend too much time on sustainability without including production, because without increases in production there is no sustainability

Don't forget about supporting the "real time issues", not just the big picture or political requirements. There has been amazing research done in the past to help farmers and agronomists, I worry that is slipping as an older generation retires.

CottonInfo does an amazing job in to the Gwydir and Mungindi.

1. Allocations of research towards Black Root Rot management
2. Industry Leadership development programs to engage young industry members and learn from older/ more experienced members.

My focus is on farm productivity and as such would like continued research into the nutrition of high yielding crops in a more regulated environment. How can we effectively apply the required nutrients and meet environmental regulations to get highest optimal productivity.

Support DCRA

APPENDICES

APPENDIX 1

QUESTION 14

Describe the 2021-22 cotton season in THREE words or less.

59 respondents

Wet cold slow.	Late wet pick.
Long.	Wet, cloudy, cool.
Cold wet long.	Long, wet.
Wet disease high-yields.	Mild, low pest.
Cold, wet.	Minimal insect pressure, wet.
Late, wet, rewarding.	Long, wet, disappointing.
Long, successful, wet.	1 in 50.
Mild, wet, too long.	Wet, yielding, challenging.
Hot Dry Long.	Cool. Good. Wet.
Cotton enjoy mild.	Wet.
Challenging, frustrating long.	Mild, floods, busy.
Cool Wet finish.	Scattered high yields.
Better than 2020-21.	Floods and Mild.
Wet flooded challenging.	Mild wet flooding.
Cool Wet Profitable.	Wet, cold, unending.
Very wet.	Late water.
Wet.	Mild, wet.
Very challenging.	Very very long.
Good.	Black root rot.
Wet.	Wet, Cool, Low insects.
Mild, wet pick.	Long cold wet.
Cool wet challenging.	Challenging, adaptable, rewarding.
Wet - Unusual - Challenging.	Wet, Mild, Good.
Wet, mild, long.	Massive Learning Curve.
Wet.	Floods, Border-closures.
Slow start, cool.	Quiet wet easy.
Cold challenging and surprising.	Long.
Long and wet.	Wet - Cool.
Exhausting.	Mild and wet.
Wet Cool Challenging.	

APPENDICES

APPENDIX 2

QUESTION 35

In your experience what weed species are CURRENTLY or EMERGING as the biggest challenge to control in the IRRIGATED system

Sow thistle, Barnyard grass.

Feathertop, fleabane, milkthistle in wetter years where residuals don't hold up. Nutgrass still very hard to kill.

Glyphosate resistant annual ryegrass, Fleabane, Glyphosate resistant windmill grass, sow thistle.

Feather top rhodes grass, glyphosate resistant milk thistle, windmill grass.

WMG/gly resistant rye/sow/fleabane.

Gly resistant BYG.

Peachvine fleabane feathertop.

Gly resistance barnyard.

Red Banded Shield Bugs in years they are prevalent.

Grower expectations on grow on crops and the RMP changes/challenges in line with that.

Gly and Dim/Fop Resistance Ryegrass, Gly tolerant Feathertop Grass, Gly Tolerant Fleabane.

Feather Top Grass.

Barnyard Grass.

Milk Thistle.

Peach Vine.

Gly resistant Milk Thistle.

Tall Fleabane.

Feather Top Rhodes grass.

Tridax Daisy.

Awnless Barnyard Grass.

Bellvine, cowvine.

Glyphosate resistant Barnyard grass and glyphosate tolerant peachvine.

Finding weeds that have normally been easier to control becoming more difficult with traditional means of Roundup Ready® alone. These include sesbania, peach vine, bell vine, fleabane, red pigweed, milk thistle. Feathertop Rhodes Grass also challenging although is a weed putting greater importance of additional control options with pre emergent and post emergent control strategies.

Resistant peachvine.

Feather top.

Ryegrass.

Feathertop Rhodes Grass.

Barnyard Grass.

Milkthistle.

Fleabane.

Glyphosate resistant feather top rhodes grass.

Gly resistant urochloa.

Gly resistant awnless barnyard grass.

Gly resistant fleaban.

Gly resistant milk thistle.

Feather Top.

Fleabane.

Peachvine, feather top rhodes grass, barnyard grass, milk thistle, pig weed.

Currently, fleabane, getting good coverage and herbicide penetration into the plant is difficult. Crop competition is becoming more important.

Emerging, feathertop Rhodes grass. A relatively new weed in the south, having to learn quickly on the go.

Glyphosate resistant annual ryegrass.

Glyphosate resistant barnyard grass.

Feathertop Rhoades Grass - resistance. Barnyard grass with small amount of resistance. Increasing issues with Red Pigweed, bellvine and peach vine and Sesbania.

Glyphosate resistant barnyard grass.

Glyphosate resistant Feathertop Rhodes Grass.

Red Pigweed.

Glyphosate Tolerant Fleabane.

Bellvine.

Peachvine.

Glyphosate resistant Annual Ryegrass.

Volunteer Roundup Ready® canol.

Windmill grass.

Fleabane.

Pigweed.

Gly resistant feather top, fleabane, Barnyard grass. Increasing Tolerant - bell vine, peach vine, polymeria, rhyncosnia, button brass, sesbania.

APPENDICES

APPENDIX 2

- Gly resistant Barnyard grass.
- Feathertop Rhodes Grass.
- Fleabane.
- Glyphosate and group A resistant barnyard and Rhodes resistance is an emerging challenge.
- Glyphosate tolerant Vines.
- Group A resistant grass weeds.
- Fleabane.
- Windmill grass, ryegrass, feathertop rhodes, milk thistle, fleabane.
- ABG, FTR, fleabane, milk thistle.
- Feathertop Rhodes.
- Glyphosate resistant milk thistle.
- Fleabane.
- Barnyard grass - gly resistant.
- Glyphosate resistant Feathertop Rhodes, Glyphosate resistant milk thistle, glyphosate, Glyphosate resistant barnyard grass.
- Fleabane, Milk thistle (resistant), BYG(both resistant and not), Peach vine, FTR.
- Milk thistle (maybe resistant) , Peach vine, FTR (resistance), BYG (resistance).
- Windmill grass roundup resistance.
- Milk thistle roundup resistance.
- Barley grass roundup resistance.
- Fleabane roundup resistance.
- Glyphosate resistance in theses 3.
- FTR.
- Summer grass.
- Crownbeard/wild sunflower.
- Glyphosate resistant Barnyard grass.
- Feathertop Rhodes Grass, Fleabane, Sweet summer grass, Volunteer RRF cotton.
- Fleabane, barnyard, gly resistant FTRG and glyphosate resistant ryegrass, sow thistles.
- Gly resistant Ryegrass for past 20yrs.
- FTRG starting to appear in cotton fields.
- Awnless Barnyard grass. Resistance, how it grows, speed of spreading. Worse than FTR grass.
- Fleabane.
- FTR grass.
- Ipomea.
- Milk thistle as so prominent.
- Glyphosate resistant Feathertop Rhodes.
- Fleabane.
- Milk thistle.
- Beetle grass.
- Fleabane and peach vine.
- Group A and M resistant Ryegrass.
- Group M tolerant/resistant bindweed - found this to be very difficult to kill this year.
- Group M resistant/Tolerant Milk Thistles.
- Glyphosate Resistant Barnyard Grass, Feathertop Rhodes Grass, Peach Vine, Bellvine, Red Pigweed, Fleabane, Milk Thistle.
- Glyphosate resistant barnyard grass.
- Feathertop Rhodes grass.
- Pigweed.
- Peach vine.
- Fleabane.
- Pigweed.
- Feathertop Rhodes.
- Milk Thistle.
- Barnyard Grass.
- Barnyard grass.

APPENDICES

APPENDIX 3

QUESTION 36

In your experience what weed species are CURRENTLY or EMERGING as the biggest challenge to control in the DRYLAND system?

FTR sowthistle.

feathertop, fleabane, milkthistle in wetter years where residuals don't hold up. Nutgrass still very hard to kill. Windmill grass challenging due to nature of stress. Some pigweed populations a lot more tolerant of gly than others. Gly resistant milkthistle on the rise.

Fleabane, windmill grass, feather top rhodes grass, glyphosate resistant milk thistle and awnless barnyard grass.

WMG/gly resistant rye/sow/fleabane/FTRG.

Gly resistant sow thistle, FTRG, Gly resistant BYG.

glyphosate resistant/tolerant milk thistle, patches of glyphosate feathertop Rhodes.

Barnyard grass gly resistance.

Fleabane.

Heat.

Gly tolerant Barnyard grass, Gly and Dim/Fop Resistance Ryegrass, Gly Tolerant Fleabane.

Feather Top Grass.

Barnyard Grass.

Milk Thistle.

Fleabane.

Gly resistant Milk Thistle.

Tall Fleabane.

Feathertop Rhodes grass.

Gly/paraquat resistant tall fleabane, Qld bluegrass, Gly resistant feathertop Rhodes, fleabane.

FTR grass.

Barnyard grass.

Feather top.

Barnyard grass.

peach vine.

Feather top.

Feathertop Rhodes Grass.

Barnyard Grass.

Milk thistle.

Fleabane.

Feather Top.

Fleabane.

Feather Top.

Fleabane.

Milk Thistle, as soon as it is past the 6 leaf stage a double knock is required.

Resistant Feathertop Rhodes Grass, Milk thistle, Fleabane.

Glyphosate resistant barnyard grass.

Glyphosate resistant Feathertop Rhodes Grass.

Glyphosate Tolerant Fleabane.

Peach vine.

Gly resistant feather top, fleabane, Barnyard grass. Increasing Tolerant - bell vine, peach vine, polymeria, rhyncosnia, button brass, sesbania.

Feathertop Rhodes grass and Gly resistant Barnyard grass.

Feathertop Rhodes Grass.

Glyphosate tolerant or resistant barnyard, Feather top Rhodes and sowthistle.

Fleabane.

Windmill grass, ryegrass, feathertop Rhodes, milk thistle, fleabane.

Fleabane, FTR, ABG, Milk Thistle.

Feathertop Rhodes.

Glyphosate resistant milk thistle.

fleabane.

barnyard grass - gly resistant.

glyphosate resistant Feathertop Rhodes, glyphosate resistant milk thistle, glyphosate,

APPENDICES

APPENDIX 3

glyphosate resistant barnyard grass.	Glyphosate resistant Feathertop Rhodes.
Fleabane resistant to glyphosate.	Group A Resistant wild oats.
Fleabane, Milk thistle (resistant), BYG(both resistant and not), Peachvine, FTR.	Fleabane.
Milkthistle (maybe resistant) , Peachvine, FTR (resistance) , BYG (resistance), Fleabane.	Group I resistant Wild Radish.
Windmill grass roundup resistance.	Group A and M resistant Barnyard Grass and Ryegrass.
Milk thistle roundup resistance.	Glyphosate Resistant and potentially Group 1 resistant Barnyard Grass, Feathertop Rhodes Grass, Fleabane, Milk Thistle.
Barley grass roundup resistance.	Fleabane, roundup resistant barnyard grass, feathertop Rhodes grass.
Fleabane roundup resistance.	Fleabane.
Glyphosate resistance in theses 2	Barnyard g.
FTR.	FTG.
Summer grass.	Liverseed g.
Feathertop Rhodes Grass, Fleabane, Sweet summer grass, ipomea species.	All summer grasses - yes resistance levels the issue.
Fleabane, barnyard, gly resistant FTRG and glyphosate resistant ryegrass. And sowthistle.	Barnyard and Feather Top Rhodes grass.
Fleabane and FTR grass.	Fleabane and Milk thistle.
Fleabane.	
Milkthistle.	

APPENDICES

APPENDIX 4

QUESTION 53

What do you see as the greatest challenge to reducing pesticide (insecticides, herbicides, fungicides, defoliants) usage and why?

Already quite low.

Currently defoliants - no real alternatives unless cotton pickers design change. If we replace defoliants per se, we would need more desicants or herbicide options (not preferred). Reducing herbicides tricky when labour is short and dear (chipping crews).

We need to see novel products being developed to give us alternate options.

Soil applied insecticides are crucial and are a challenge to remove form the system without risking the entire crop. Defoliants are essential and cannot be eliminated but crop management for minimising rates should be encouraged. Some harder to control occasional pests cause issues in crop and can cause ongoing higher pesticide use - more work on damage thresholds and alternate predator complexes should be carried out. Herbicide use will remain an issue as when you reduce non residual use it is normally replaced by a residual.

Yield expectation and margin.

Losing chemistries that are cost effective.

Cost and effectiveness of alternative products impacting the overall profitability.

Lack of soft options that are cost effective.

Lack of products that reduce reliability on glyphosate.

Affordability and reliability of insecticides in general.

Obviously, cost is a major one, but this is always expected to coincide with increases in commodities. The other main challenge is resistance and overuse of our current options, in crop tactics have evolved on from what my mentors were taught, so I feel as young professionals its our job to really progress topics around resistance.

Maintaining management of the pests to a level where yield can be maximised to ensure profitability.

Attitudes.

Insurance spraying of insecticides.

Seasonal outbreaks of pest. Resistance.

Continuing to reach high yield targets.

High yield expectations and pest diversity.

Getting people to adapt rotations.

Potentially, a drop off in production and grower profitability.

Weeds because they are getting harder to control.

Not having better available product choices. If we keep putting pressure on the products we have, whether it be by off label use or resistance, the better options with disappear, become un-usable and the next options aren't as 'friendly'. We need better options.

Grower hesitancy. Some growers would rather spray a product for the sake of it because they are going over the field anyway for peace of mind. It often takes a bit of convincing to prevent this.

(In the south) long season cool climate cotton - exposing the crop and these challenges to longer periods of time.

Grown on cotton! Massively increased time in the ground. The serious potential of stink bug complexes becoming an issue early season due to carry over from having some numbers late season. This is particularly important for Mealy bugs. Potential for growers to use more than 4 applications of Glyphosate. The extremely low cost of Fipronil.

Reducing pesticides will possibly reduce yield and/or quality, which could reduce the financial sustainability of the clients business.

Growers wanting to continue to target higher yields.

There aren't many viable alternatives.

Cotton growers are a bit selfish in that they prioritise profitability over most things.

Monoculture, grower continue to use cheap products, increasing cost of new and improved.

Products, poor mgt green mgt.

Herbicide resistance, insecticide resistance.

Resistance.

The wet years unable to have proper fallow control and being unable to complete proper weed preparation/sprays leading into planting.

Grower attitude. Confidence in pest thresholds.

I don't think using pesticides is bad in itself. I only use it as required. The type of product is chosen with the least off target impact.

APPENDIX 4

Clients who won't be able/willing to adopt these practices (sceptical), initial expenses/outlay.

Consultants program spraying for white fly because the nymph count system, while very effective, is too labour intensive and there is not the crop scouts on hand even if we want to. Need faster, less labour intensive system to count viable and unviable SLW nymphs.

Risk of decreased production and increased input costs.

Risk of decreased production and increased input costs. Business demand. Feeling of no alternative options.

The need to maximise yield and production when there is water availability causing people to push systems requiring increased inputs as a result of poor rotation and IPM.

Maintaining production levels and expectations. We want the yield so we need the control of these things to get it. Growers expectations and profit.

Maintain high level of production (including water and nitrogen use efficiency) without using these tools.

Resistance management.

Ignorance - grower and consultants need to change. the knowledge and tech is there.

Crop requirements.

The two biggest categories that are hardest to reduce the use of is insecticides and defoliants. The high herbicide prices this season caused people to more actively look for alternative weed control options but unfortunately we have limited alternative options for insect control that work and are economical. And we have to defoliate in order to pick that doesn't change the biggest outlier with defoliation and how much chemical we need to use is the weather conditions which are completely out of our control.

Prolonged and more frequent conducive conditions to population increase and damage.

Herbicide resistance > need safer planting herbicides for cool starts in Southern NSW.

Insecticide usage is already low > compare to conventional cotton in late 90's.

Fungicide use is low.

Defoliants > cannot avoid using 3 defol passes in South NSW owed to cold temps.

Lack of scientific support, particularly with the insecticides. The cotton pest management guide does not support what the industry preaches.

Growers wanting to achieve the highest yield potentials, relies on growers being able to control every condition they can to the best they can to avoid yield loss. Higher demand on insecticides, herbicides, fertilisers. More defoliant needed for bigger crops.

The number of efficacious options to kill certain pests. For example - Green Vegetable bug tends to be effectively killed by Bifentrin or another pyrethroid and two spotted cotton mite when plant is past 10 nodes are only controlled well by diafenthiuron.

The greatest challenge will likely be cost. Smaller growers may tend to lean towards the cheaper and not necessarily the most effective (eg IPM friendly option). Same goes for larger corporate operators, if it is cheaper to go the less IPM friendly option compared to a more IPM friendly option and still achieve the same result, the more friendly/IPM compatible option will be foregone.

Same thing with herbicides and fungicides - although they may be more expensive, I am always wanting to try the more effective option even if the price may be slightly greater however because I work in an environment where things are very cost driven, that makes things more difficult.

New pests, weeds and diseases to challenge our production system.

Developing insect problems, being able to control these pests without having to spray multiple times.

Information.

APPENDICES

APPENDIX 5

QUESTION 54

Of the following higher hazard pesticides, what do you estimated the impact would be if the use of these actives in cotton was no longer allowable.

Not all of these chemistries are first choice or the best products available. We do however need access to them to rotate chemicals and help reduce resistance.

Removal of any one product will not have a major impact when alternatives available BUT if majority or all are removed then cumulative impact is large.

Loss of effective chemistry is a significant impact on rotational uses and resistance management and overall cost.

Should be used on a more rotation yearly basis rather than banning products?

It would be devastating if we lost some of these products.

Prefer to keep as many tools in the tool box, where possible.

Natural progress would suggest that the older, harsher products should be phased out naturally, but this won't happen if we don't have better, cost effective options.

Insecticides and some important herbicides could have a large impact on a sustainable farming system.

The introduction of Xtend Flex could help somewhat alleviate this with new weed control options.

Every season is different, never know when these products will be needed.

Low-rate use of fipronil and abamectin underline a crucial role in selective management of Bollgard® 3 pests.

Paraquat and metolachlor are part of battling weed resistance.

Some of these have no real practical alternatives available that is the problem. So while most of us are aware of the potential impacts of these products we don't have much choice but to use them when the need arises.

Fipronil not used as foliar owed to bee impact so not an issue is no foliar rego for me.

However, will need Fipronil (Triplus seed treatment) to replace Phorate for wireworm if Phorate no longer available.

Get rid of the harsh insecticides, better alternatives. They create the problems.

Some of these actives we don't use when consulting for our clients hard to make an estimate on the impact they would impose.

The loss of any of the very high impact pesticides would be devastating.

We have lost products in the past and survived because there was a suitable better alternative. So we need to maintain "suitable better alternatives" or face lower productivities.

Cotton Research and Development Corporation
PO Box 282, Narrabri, NSW 2390
Phone: 02 6792 4088
crdc@crdc.com.au

Crop Consultants Australia Incorporated
PO Box 349, Woombye, QLD 4559
Mobile: 0429 925 459
info@cropconsultants.com.au