



Australian Government
Cotton Research and
Development Corporation



QUALITATIVE REPORT

on the 2013–14 cotton season:
A survey of consultants



CONTENTS

- 3 THE CONSULTANTS & THEIR CLIENTS
About the consultants.
About the clients.
- 6 ON-FARM PRACTICES & ATTITUDES
Planting and crop constraints.
Insects, weeds and diseases.
Spray application.
Nutrient management.
Water management.
- 32 RESEARCH, DEVELOPMENT AND EXTENSION INVOLVEMENT
- 37 APPENDIX

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. from 51 cotton consultants, who answered some or all of the questions about their own practices and attitudes, as well as those of their grower clients.

The consultants represented 519 growers, ranging from 1 to 26, with a mean of 11.5 clients, and covered 276,717 hectares: 67 percent of the Australian cotton production area for the 2013-14 season (not adjusted for row spacings). This is based on the 2013-14 production figure of 414,000 hectares (Cotton Australia).

METHODOLOGY

The survey consisted of 68 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 in May and June 2014, with questions referring to the 2013-14 cotton season. Questions that collected data on a number of 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 trouble to complete this survey. The data in this survey provide valuable information for researchers and industry organisations in planning and carrying out projects. Thank you to Helen Wheels Consultancy, Weemalah Writeability and Black Canvas graphic design for their assistance in the compilation of this report.

DISCLAIMER

The Cotton Research and Development Corporation (CRDC) provides the information in this publication to assist understanding of the agronomic performance of the Australian cotton industry. CRDC accepts no responsibility or liability for the accuracy or currency of the information contained in this publication, nor for any loss or damage caused by reliance on the information and management approaches surveyed. While the 2013-14 survey contains information that should be of value to extension officers and researchers in defining future industry needs and as an information source in seeking to improve industry management practices, users of this publication must form their own judgement about the information it contains.

Crop Consultants Australia took all care in the gathering and collating this data; however, the data was provided by individual consultants and agronomists and therefore is subject to the associated constraints.



Australian Government
**Cotton Research and
Development Corporation**

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



Crop Consultants Australia Incorporated
PO Box 349, Woombye, QLD 4559
Mobile: 04 2992 5459 Fax: 07 3036 6357
Email: info@cropconsultants.com.au



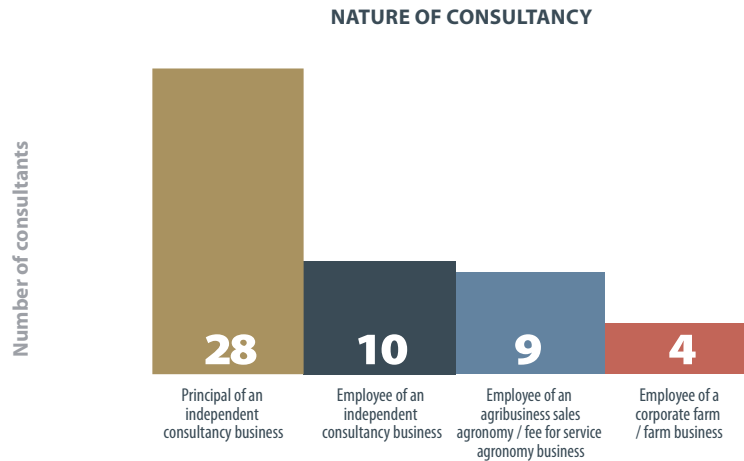
THE CONSULTANTS AND THEIR CLIENTS

ABOUT THE CONSULTANTS

1

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

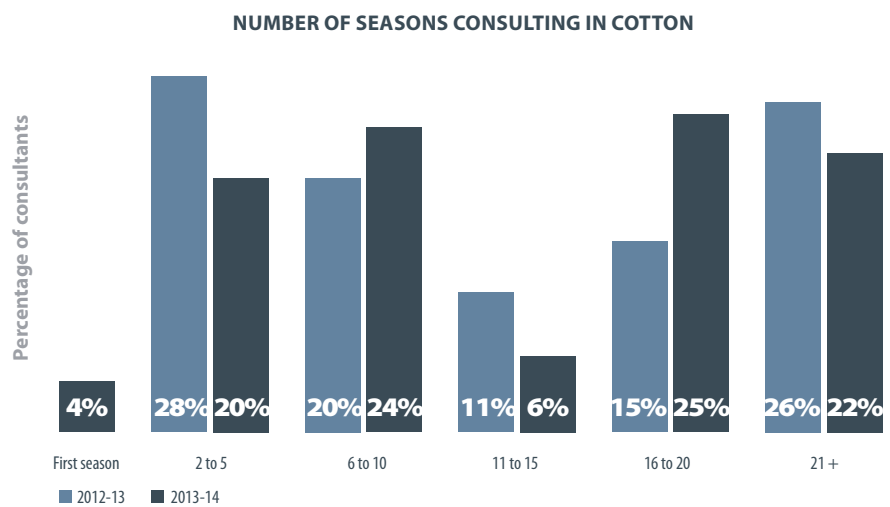
51 respondents



2

For how many seasons have you worked consulting in cotton?

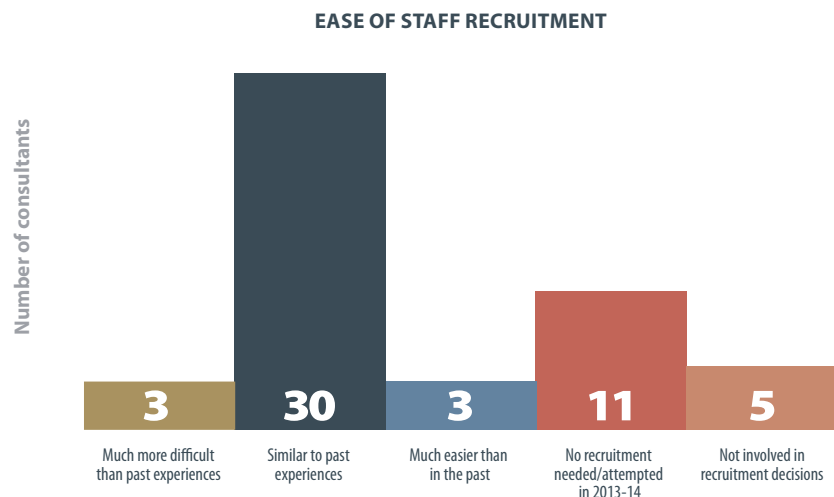
51 respondents



3

With reference to recruitment for the 2013–14 season, how hard was it to find suitable applicants to fill positions?

51 respondents





THE CONSULTANTS AND THEIR CLIENTS

ABOUT THE CLIENTS

4

In which region/s are your cotton clients based?

45 respondents

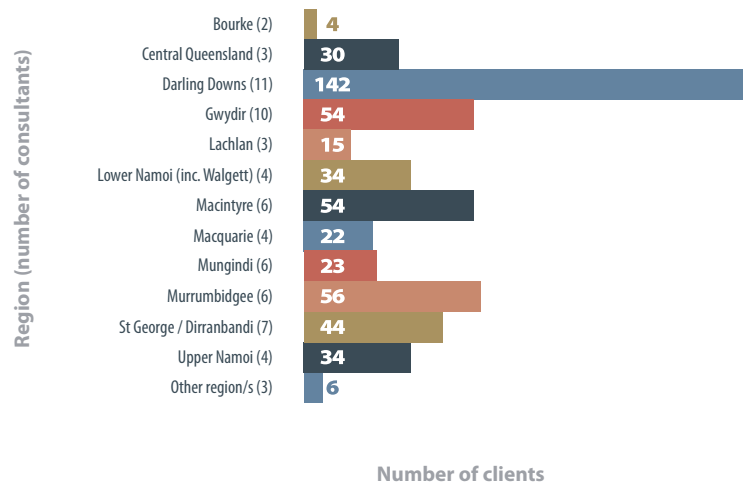
Note Some consultants have growers in more than one region, hence the total number of consultants is higher than the 45 respondents across the regions. A total of 519 clients were represented in the survey.

5

Where were 'other' clients in Question 4 located?

3 respondents

LOCATION OF CLIENTS



One consultant had a client in Cunnamulla (although lack of water meant there was no cotton in the 2013–14 season), one consultant had four clients in the Murray region and one had a client in Byee.



THE CONSULTANTS AND THEIR CLIENTS

6

How many hectares of irrigated cotton (total area, not adjusted for row spacings) did your clients grow in the 2013–14 season?

45 respondents

Clients grew a total of 252,024 hectares of irrigated cotton.

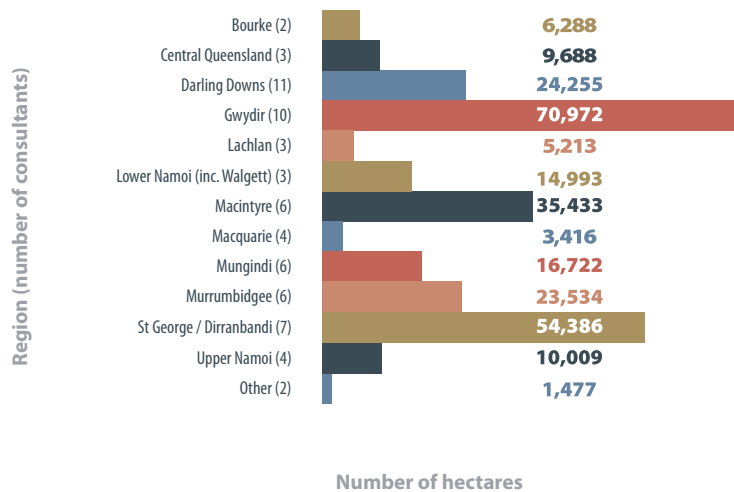
7

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

45 respondents

Note Some consultants had clients in more than one region.

IRRIGATED COTTON BY REGION



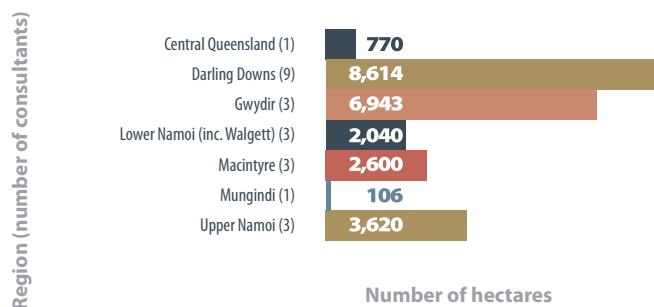
8

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

21 respondents

Clients in the survey grew a total of 24,693 hectares of dryland cotton. There was no dryland cotton in Bourke, Lachlan, Macquarie, Murrumbidgee or St George/Dirranbandi represented in the survey.

DRYLAND COTTON HECTARES BY REGION





ON-FARM PRACTICES AND ATTITUDES

PLANTING AND CROP CONSTRAINTS

9

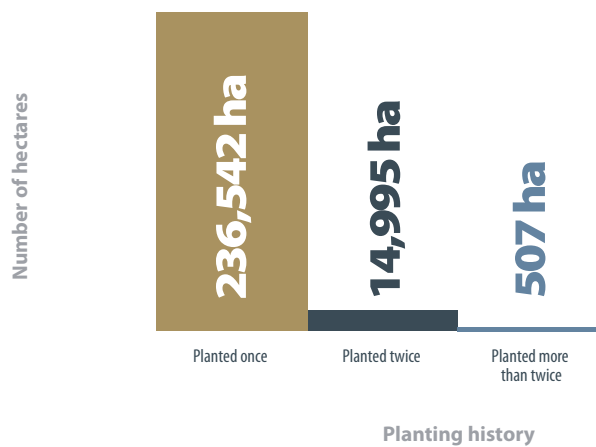
Of your irrigated cotton hectares, how many were in these categories?

45 respondents

Comment In total, 15,502 hectares were planted more than once, including 507 hectares that were planted more than twice. The majority of the reported replanting (twice or more than twice) was in:

- Bourke (84 ha)
- Central Queensland (536 ha)
- Darling Downs (1,904 ha)
- Gwydir (6,506 ha)
- Macintyre (542 ha)
- Macquarie (250 ha)
- Mungindi (2,638 ha)
- Murrumbidgee (1,867 ha)
- Namoi (1,660 ha)
- St George/Dirranbandi (215 ha).

PLANTING HISTORY: NEED FOR REPLANTING



10

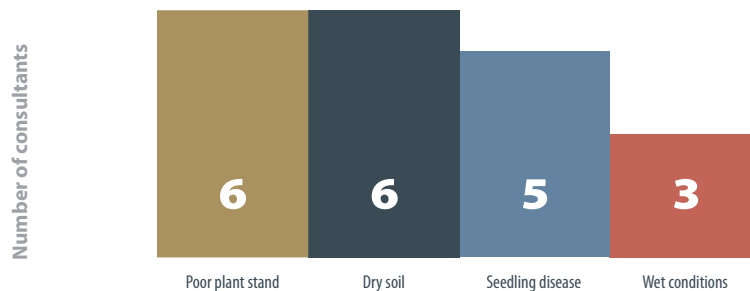
If replants were required, please list the reasons.

33 respondents

This graph shows the principle responses. In addition, there were a number of individual, and some overlapping, responses.

Please see the appendix for full individual responses.

PRINCIPLE REASONS FOR REPLANTING





ON-FARM PRACTICES AND ATTITUDES

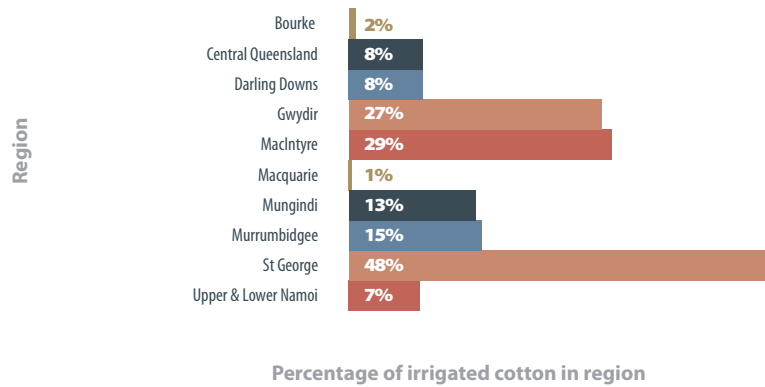
11

Of the irrigated cotton hectares in 2013–14, how many were back-to-back cotton: i.e, cotton grown in the same field in the 2012–13 and 2013–14 season?

45 respondents

A total of 158,909 hectares (63 percent of survey hectares) were back-to-back cotton.

BACK-TO-BACK IRRIGATED COTTON BY REGION



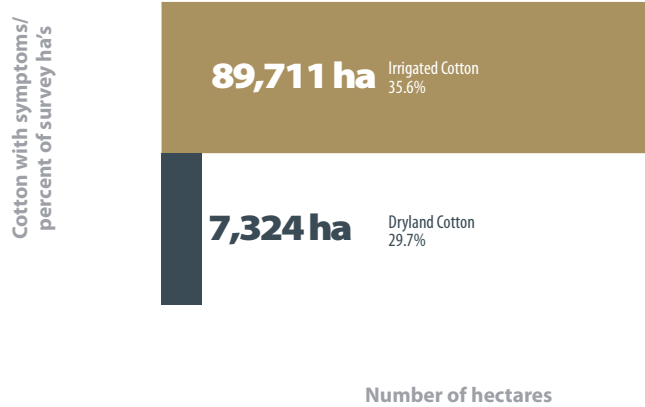
12

How many hectares of cotton crops exhibited symptoms consistent with soil compaction at some stage during the 2013–14 season?

43 respondents

Note Percentages shown in the graph are of, respectively, irrigated cotton hectares and dryland hectares represented in the survey. Please see Q15 for more on compaction.

COTTON WITH SOIL COMPACTION SYMPTOMS





ON-FARM PRACTICES AND ATTITUDES

INSECTS, WEEDS AND DISEASES

13

In comparison with the 2012–13 season, what was the prevalence of insects, weeds and diseases in the 2013–14 season?

51 respondents

Comment Of particular note in the 'more prevalent' category were the following:

- *Helicoverpa in Bollgard*
Of 24 consultants, five were from Gwydir.
- *Feathertop Rhodes*
Of 18 consultants, six were from Darling Downs.
- *Verticillium wilt*
Of 12 consultants, six were from Gwydir.

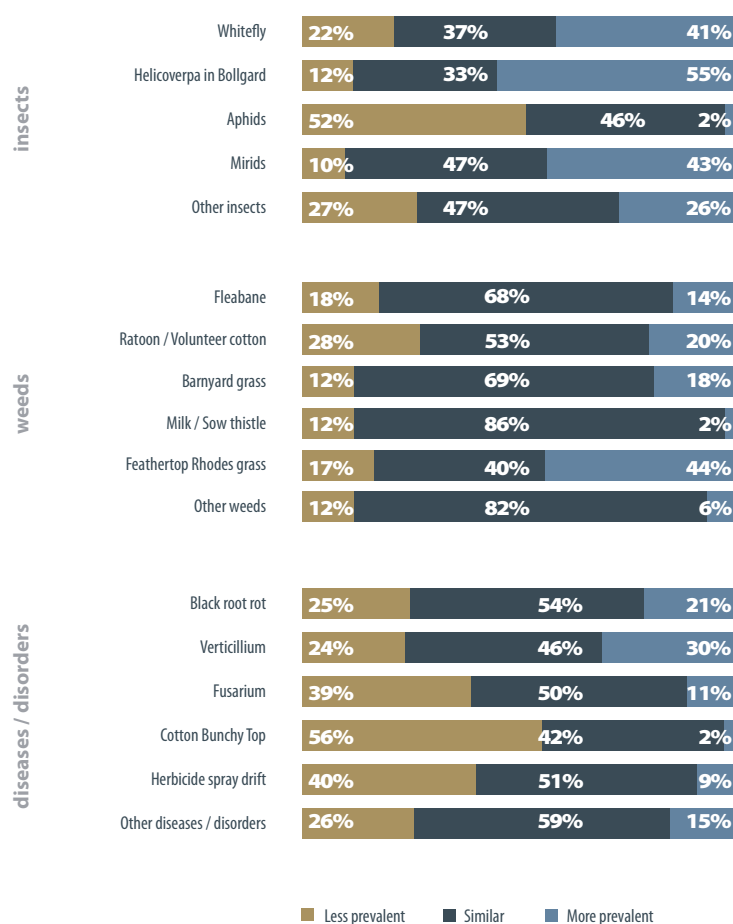
The remainder of more prevalent insects, weeds and diseases were spread more evenly across the regions.

14

Other insects, weeds and diseases specified.

15 respondents

PREVALENCE OF INSECTS, WEEDS AND DISEASES / DISORDERS



INSECTS Three consultants reported that Cotton stainers and mites were more prevalent. Four consultants reported Green vegetable bug as more prevalent, while three found it less prevalent. Two consultants also reported higher prevalence for Thrips tabacii (late season), Brown flea beetles, Mealybug, Earwigs and Pirate bugs were each reported by one consultant, with distinctly higher numbers of spiders in fields with overhead irrigation reported. Lower Soldier beetles were observed by one consultant and one consultant found wireworms present in very high populations at planting time.

WEEDS One consultant each reported Cowvine and Takeall.

DISEASES Three Consultants reported Alternaria, one reported Rhizoctonia and one reported Pythium as more prevalent than in the previous season.



ON-FARM PRACTICES AND ATTITUDES

15

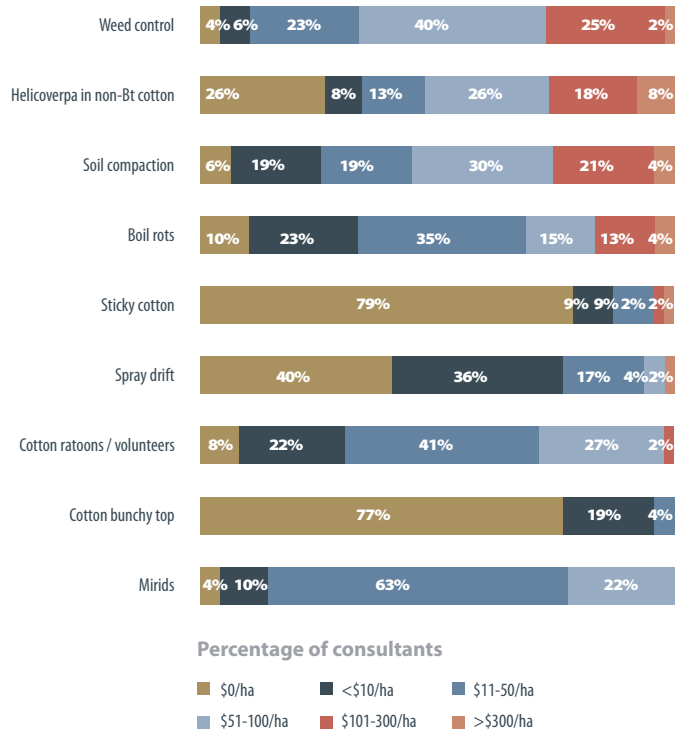
Rate the average impacts you think each of the following pests, weeds, diseases and disorders had on the profitability of your clients cotton crops in 2013–14 (either through budgeted or unbudgeted costs or through yield loss and quality discounts).

49 respondents

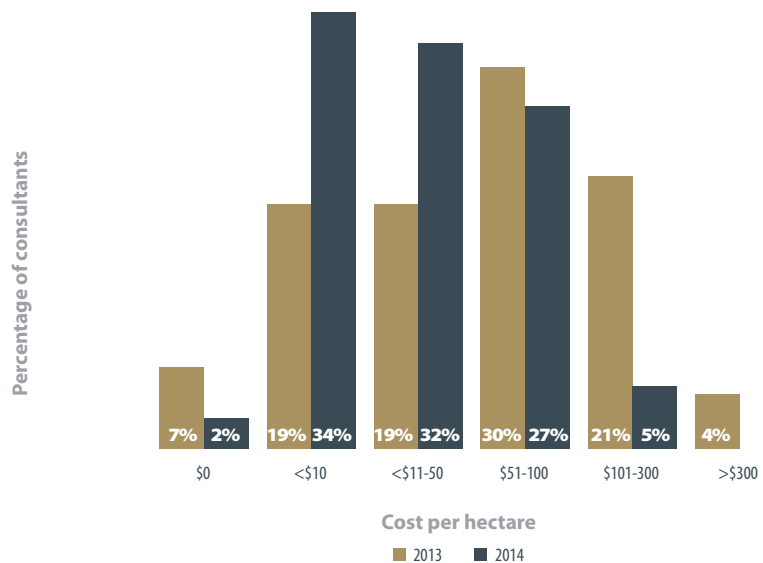
Comment The results for sticky cotton, Cotton bunchy top and spray drift are encouraging, with 79 percent, 77 percent and 40 percent, respectively, reporting no financial impact. The remainder report significant financial impact to varying degrees with, for example, 63 percent of consultants estimating a financial impact of between \$11 and \$50 dollars per hectare for mirids.

The graph, bottom right, shows a two-year comparison of the cost of soil compaction.

ESTIMATED FINANCIAL IMPACT OF INSECTS, WEEDS AND DISEASES / DISORDERS



COST OF SOIL COMPACTION: A COMPARISON 2013 AND 2014





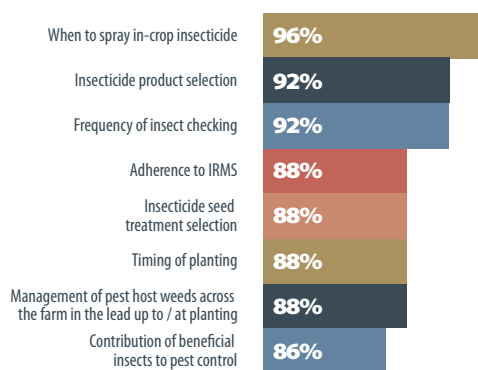
ON-FARM PRACTICES AND ATTITUDES

16

Which statements represent the areas of pest management in which you provide advice for the majority of your clients?

50 respondents

PEST MANAGEMENT ADVICE PROVIDED TO A MAJORITY OF CLIENTS



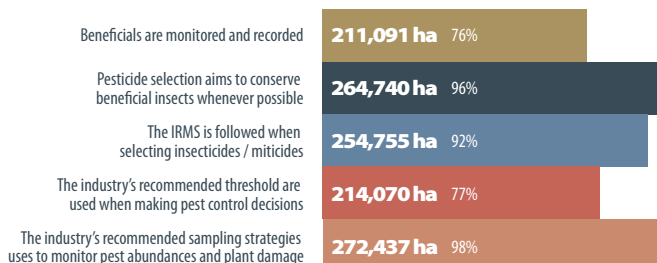
Percentage of consultants

17

With regards to insect pest management in 2013–14 cotton fields, how widely used (in terms of hectares on which the practice was used) are the practices listed.

45 respondents

USE OF INSECT PEST MANAGEMENT PRACTICES



Number of hectares (percentage of survey hectares)



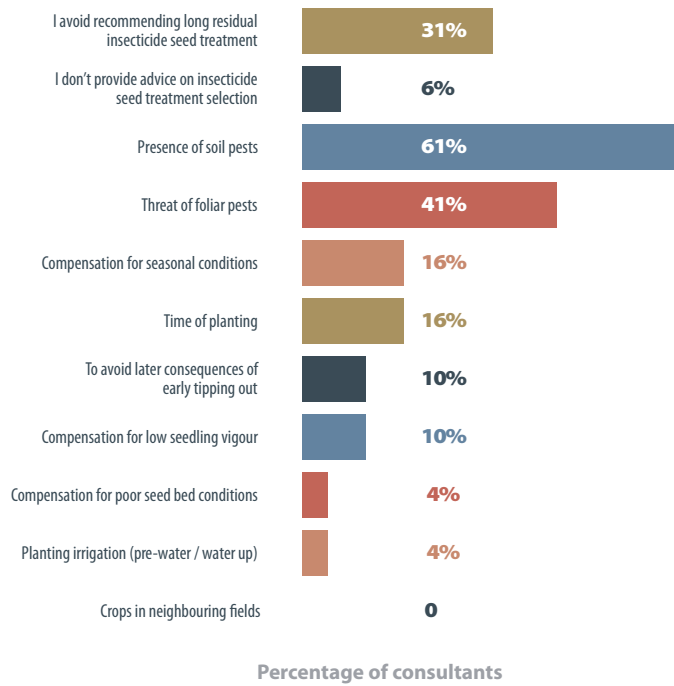
ON-FARM PRACTICES AND ATTITUDES

18

In planting situations where you are recommending the use of a long residual insecticide seed treatment, what are the issues that most strongly influence these recommendations?

49 respondents

ISSUES INFLUENCING USE OF A LONG RESIDUAL INSECTICIDE SEED TREATMENT

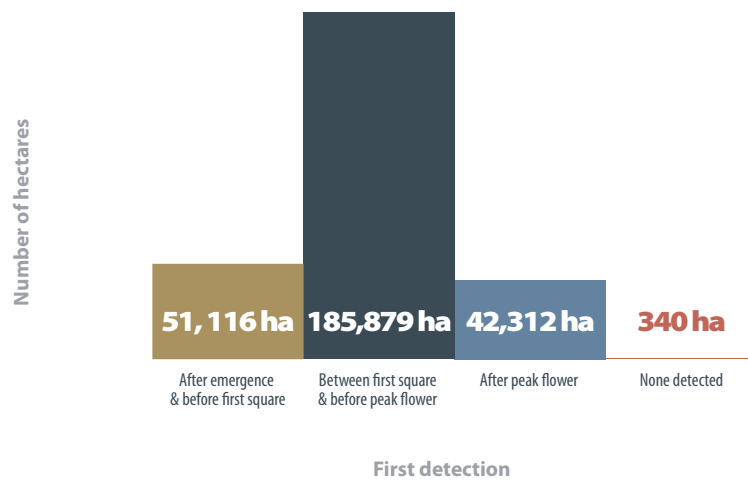


19

Thinking about 2013–14 cotton crops over which you/the business consulted, across how many hectares were mirids first detected in fields when crops were at the following stages of development?

44 respondents

FIRST DETECTION OF MIRIDS





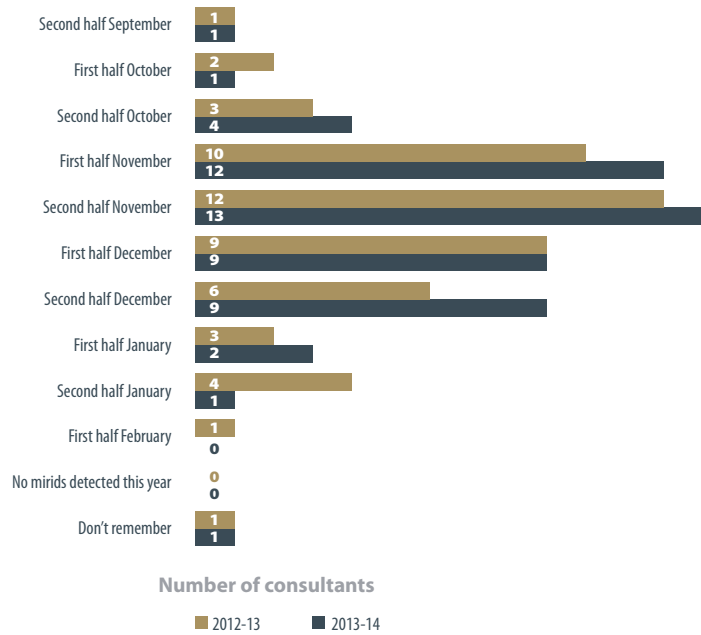
ON-FARM PRACTICES AND ATTITUDES

20

Thinking about 2012–13 and 2013–14 cotton seasons, when was the earliest detection of mirids in cotton across all farms and fields. Select one 'time' for each season.

49 respondents

FIRST DETECTION OF MIRIDS 2012-13 AND 2013-14





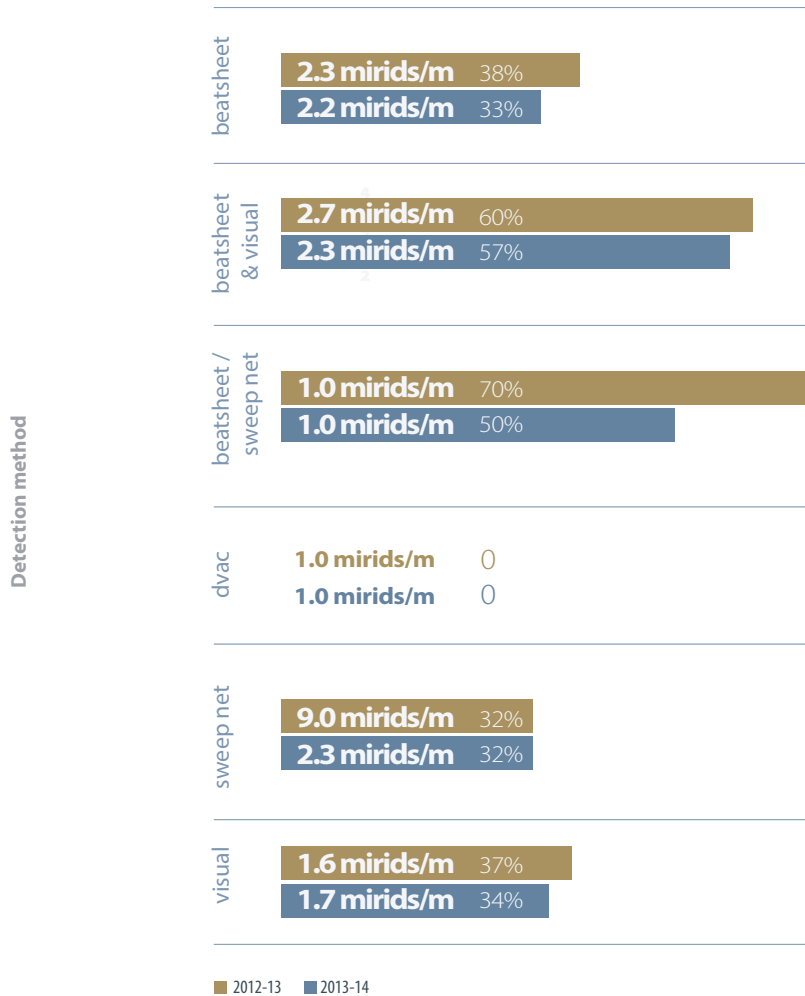
ON-FARM PRACTICES AND ATTITUDES

21

What was the approximate density of green mirids at the time they were first detected in a given season? Please record the density and indicate the percentage of nymphs and sampling method.

49 respondents

DENSITY OF MIRIDS (INCLUDING PERCENTAGE OF NYMPHS) WHEN FIRST DETECTED



Average mirids detected per square metre / average percentage of nymphs

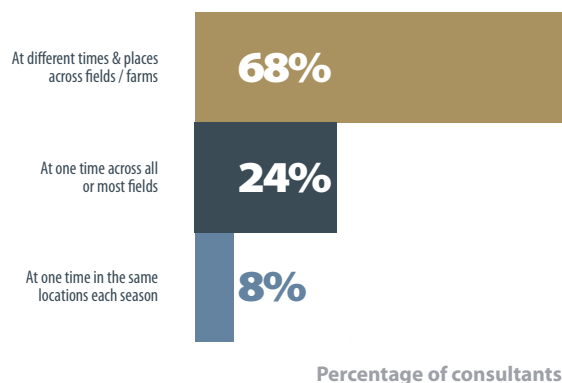
When sampling mirids, the majority of consultants (33) used beatsheet (29) or beatsheet plus visual (3) or beatsheet plus sweep net (1). The remaining consultants reported sampling with visual only (10), sweep net only (3) and one consultant used Dvac. In interpreting these results, it is important to remember that the mirid thresholds are dependent on sampling method.

22

Thinking about the arrival of green mirids in cotton in a given season, which statement do you agree with the most?

50 respondents

ARRIVAL OF MIRIDS





ON-FARM PRACTICES AND ATTITUDES

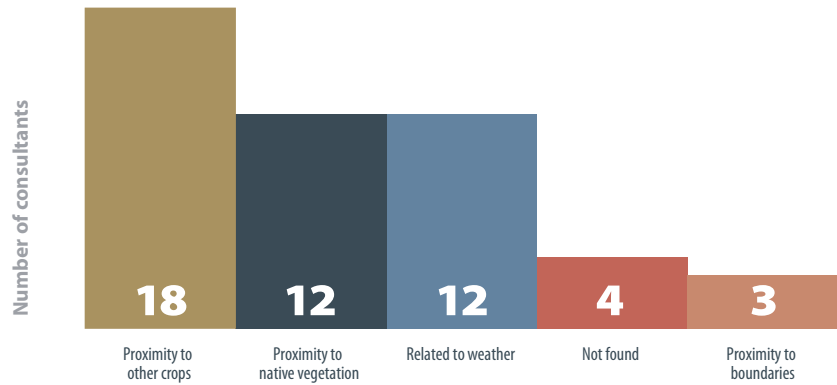
23

From your experiences, describe the situations where you are most likely to find the earliest mirids of the season (eg. proximity to other farms, crops, vegetation, wind)?

44 respondents

Note Some consultants nominated more than one category. Please see the appendix for full individual responses.

WHERE EARLIEST MIRIDS ARE LIKELY TO BE FOUND: MOST COMMON RESPONSES



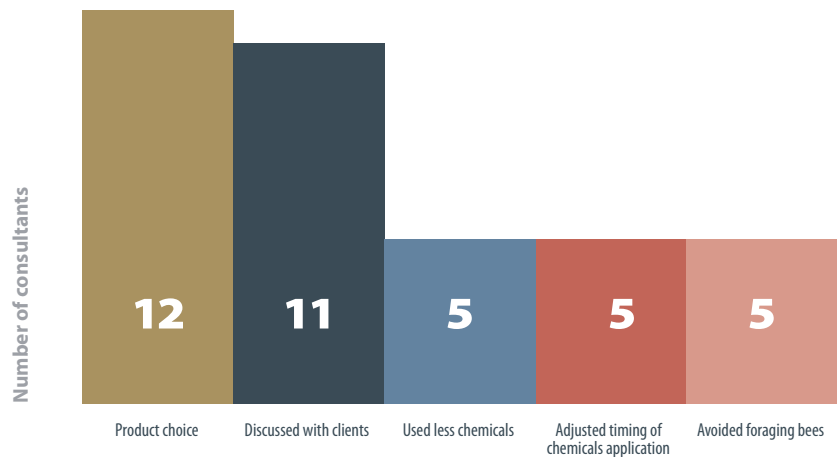
24

Please list any actions you took during the 2013–14 cotton season, on behalf of yourself or any of your clients, which had the specific purpose of protecting bees.

29 respondents

Comment This graph shows the most common responses. Please see the appendix for full individual responses.

MEASURES TAKEN TO PROTECT BEES





ON-FARM PRACTICES AND ATTITUDES

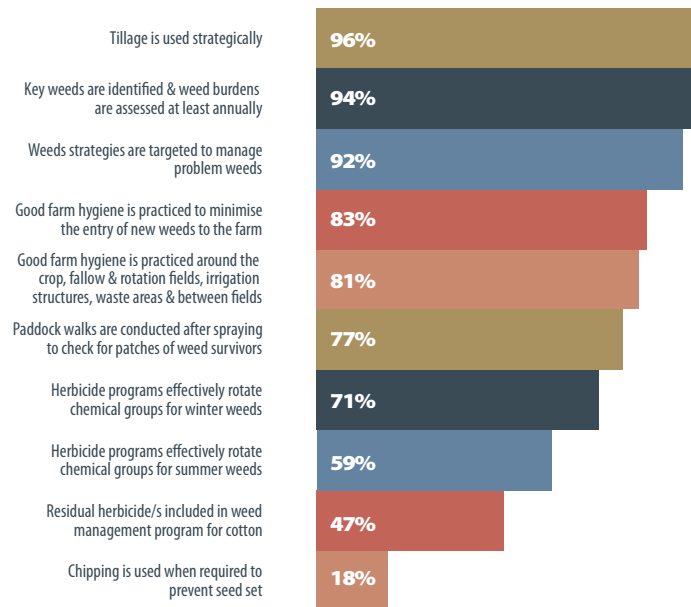
25

With regard to weed management in the fields used for irrigated cotton in 2013–14, how widely used are the practices listed below?

45 respondents

Comment 17 consultants reported no chipping on any cotton they consulted on.

WEED MANAGEMENT PRACTICES FOR IRRIGATED COTTON



Percentage of survey hectares

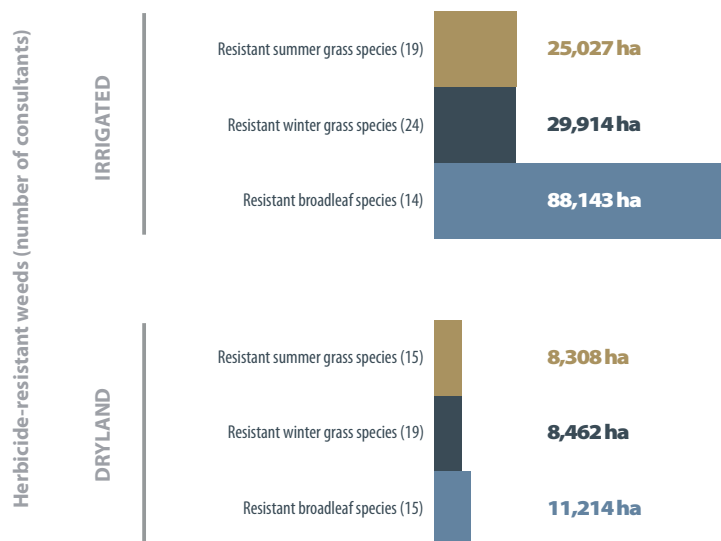
26

Of the cotton hectares over which you consulted in 2013–14, please estimate the total area you believe to contain populations of herbicide-resistant weeds.

43 respondents

Note Resistant broadleaf species includes fleabane. Resistant summer grass species excludes Feathertop Rhodes.

PRESENCE OF HERBICIDE-RESISTANT WEEDS



Number of hectares



ON-FARM PRACTICES AND ATTITUDES

27

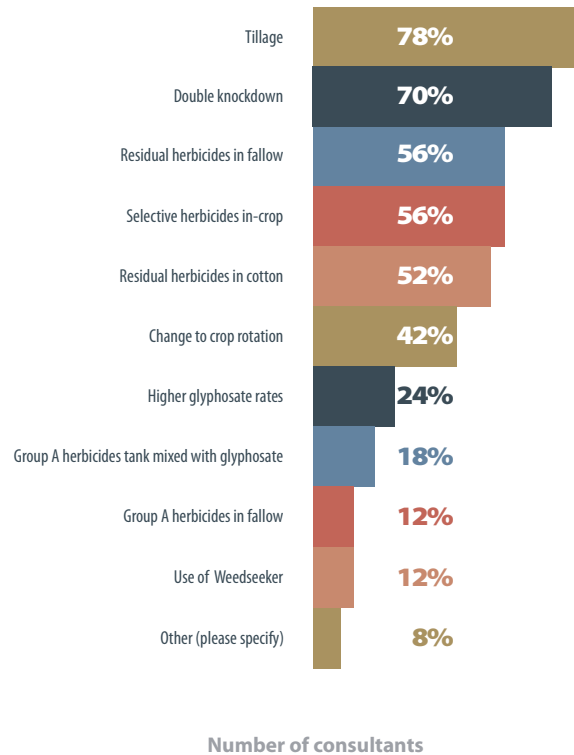
For fields where cotton is part of the rotation and glyphosate resistance is suspected or confirmed, the use of which weed control tactics has increased the most? (Select up to five).

50 respondents

Note The four 'Other' responses were:

- Gramoxone of glyphosate-resistant ryegrass
- all, except for higher rates of glyphosate than required
- chipping
- also use Double-knock, Group A in fallow, residuals in fallow and cotton, and use of a weedseeker.

COTTON ROTATION: WEED CONTROL TACTICS WHERE GLYPHOSATE RESISTANCE IS SUSPECTED

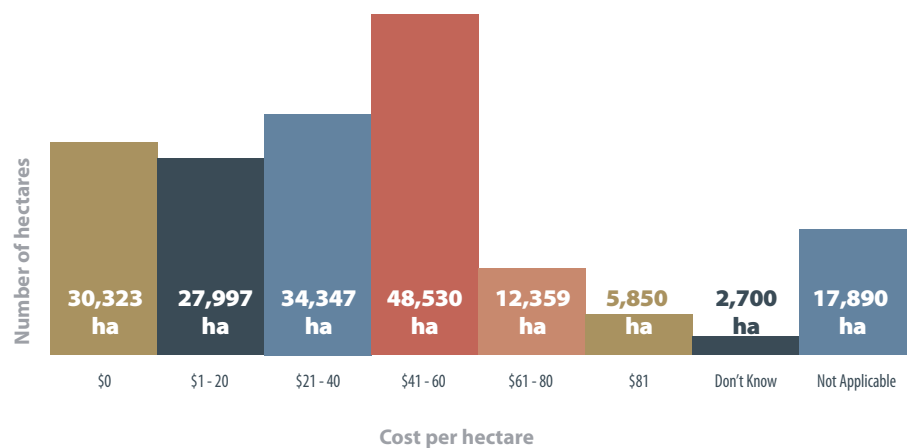


28

In your estimation, how much additional cost per year is being incurred to manage glyphosate-resistant weed populations? (Number of affected cotton hectares).

44 respondents

ADDITIONAL COST PER YEAR TO MANAGE GLYPHOSATE-RESISTANT WEED POPULATIONS





ON-FARM PRACTICES AND ATTITUDES

29

Do you have any comments about the additional costs in Question 28?

17 respondents

Note Some consultants commented in more than one cost category.

\$0 PER HOUR

No extra herbicides required.

\$1-20 PER HOUR

Areas with suspect glyphosate resistant barnyard grass.

More Group A use on barnyard grass.

More would be included if feathertop wasn't excluded.

Cultivation.

1 to 2 extra sprays required.

\$21-40 PER HOUR

Cultivation plus selective herbicide.

It identified as resistant, however more expensive chemicals rotated to try and prolong glyphosate.

Extra sprays.

Doing something extra on all farms.

Not all grasses are resistant but we have seen a distinct rise in grasses in general.

\$41-60 PER HOUR

Hard to quantify total areas. We tend to treat just hotspots overall.

Pre-emergent plus selective herbicide.

Glyphosate-resistant barnyard grass.

Residual herbicides, cultivation, rotation herbicide groups.

Including tillage costs.

Use of residual herbicides, more expensive knockdown chemical and double knock tactics.

Most or all tactics are also used in non-resistant weed fields.

\$61-80 PER HOUR

Areas with confirmed glyphosate-resistant barnyard grass.

Volunteer RR cotton.

Use of residuals and spot spraying per hour and weeding.

\$81+ PER HOUR

Fleabane control is always necessary.

Some farms have major issues.

Still not effectively managing the resistant weeds.

NOT APPLICABLE

Have not seen failures yet in irrigated area.



ON-FARM PRACTICES AND ATTITUDES

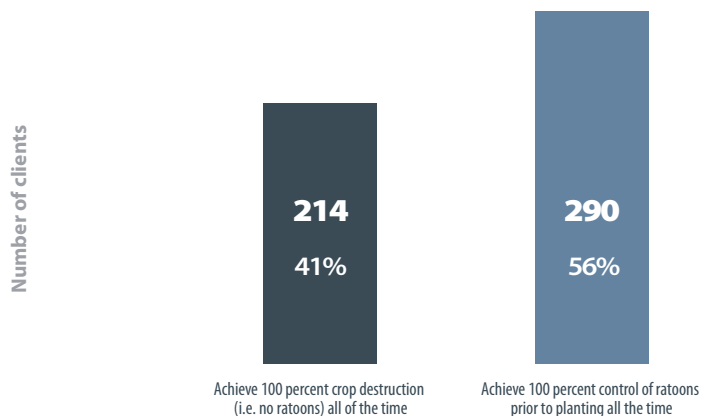
30

Of your cotton clients, how many are able to achieve 100 percent destruction or control of ratoons?

44 respondents

Comment 12 consultants reported that none of their clients achieved 100 percent destruction of ratoons and nine consultants reported that none of their clients achieved 100 percent control prior to planting.

CLIENT'S ABILITY TO ELIMINATE / CONTROL RATOONS



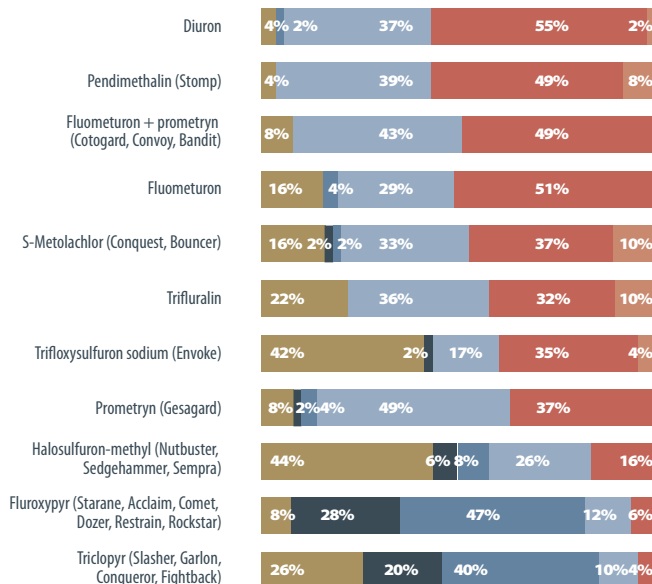
Level of control / percentage of survey's clients

31

Based on your experience, how safe do you think the following herbicides are for use in cotton?

51 respondents

SAFETY OF HERBICIDES FOR USE IN COTTON



Percentage of consultants

- N/A (no experience)
- Not safe, high risk of plant death
- Not safe, high risk of crop damage
- Safe in some situations, some risks of crop damage
- Safe in most situations, some risk of crop damage
- Very safe, no risk of crop damage



ON-FARM PRACTICES AND ATTITUDES

SPRAY APPLICATION

32

In 2014, across how many cotton hectares did you/the business recommend tank mixing an insecticide with a defoliant?

11 respondents

Recommendations to tank mix an insecticide with a defoliant covered a total of 22,115 hectares (8 percent of the survey hectares).

33

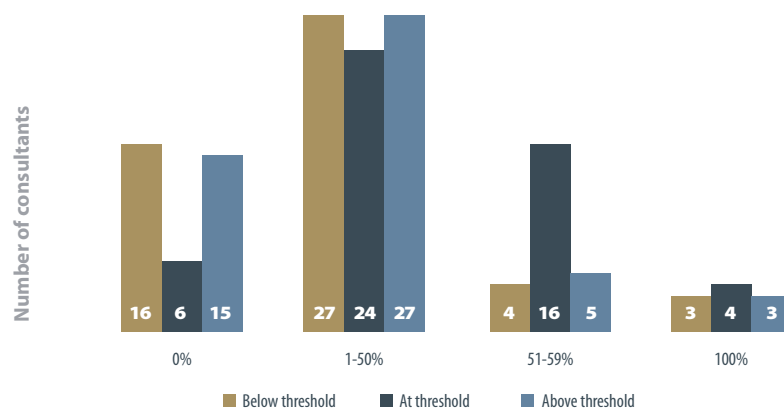
How often were the sprays you requested for mirids in 2013–14 above, at or below the industry's general threshold?

50 respondents

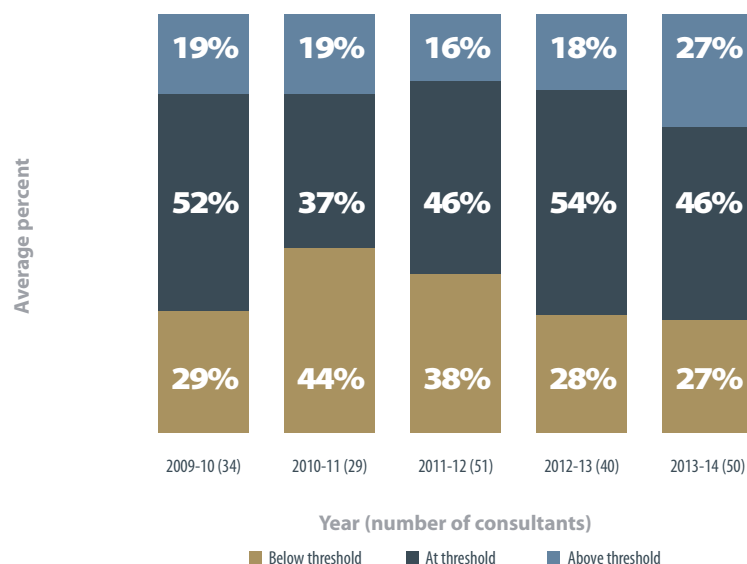
Note The industry threshold for warm areas is three mirids per metre for beatsheets or visually one mirid per metre. For cool areas it is 1.5 per metre for beatsheets or visually 0.5 per metre.

The second graph compares 2013–14 with the four previous seasons.

MIRID SPARYS REQUESTED IN 2013-14 IN RELATION TO THE INDUSTRY THRESHOLD



MIRID SPARYS REQUESTED IN 2009-10 IN RELATION TO THE INDUSTRY THRESHOLD





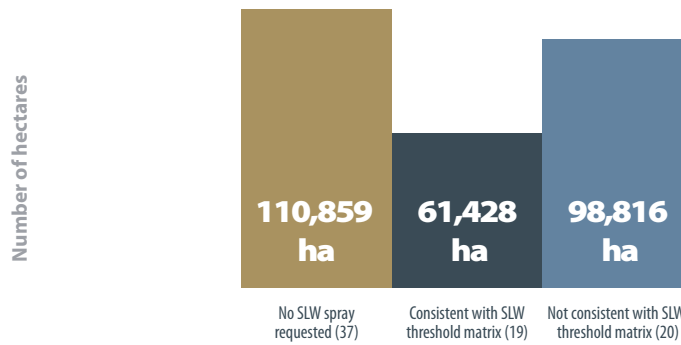
ON-FARM PRACTICES AND ATTITUDES

34

How often were the sprays you requested in 2013–14 for Silverleaf whitefly consistent with the industry’s Silverleaf whitefly threshold matrix?

45 respondents

SILVERLEAF WHITEFLY SPRAYS REQUESTED 2013-14 IN RELATION TO THE INDUSTRY THRESHOLD



Sprays requested (number of consultants)

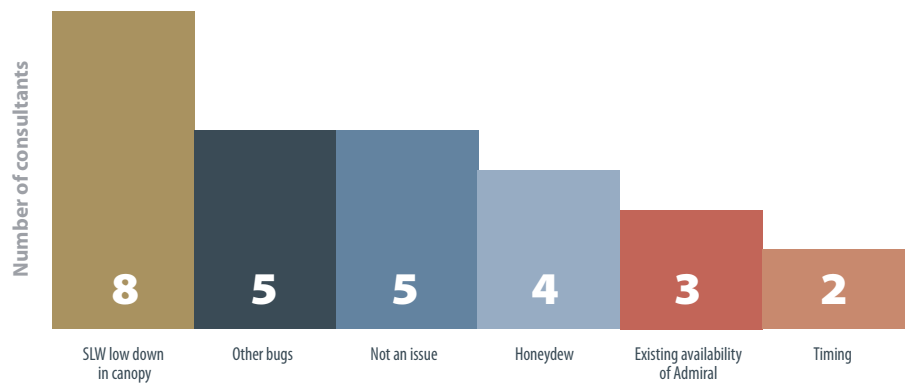
35

With regards to Question 34, where Silverleaf whitefly spray requests were not consistent with the SLW threshold matrix, please provide comment on circumstances/ influences?

26 respondents

Comment This graph shows the most common responses but there were many additional individual comments, which can be found in the appendix.

CIRCUMSTANCES / INFLUENCES WHERE SILVERLEAF WHITEFLY SPRAY REQUESTS WERE NOT CONSISTENT WITH THE SLW THRESHOLD MATRIX





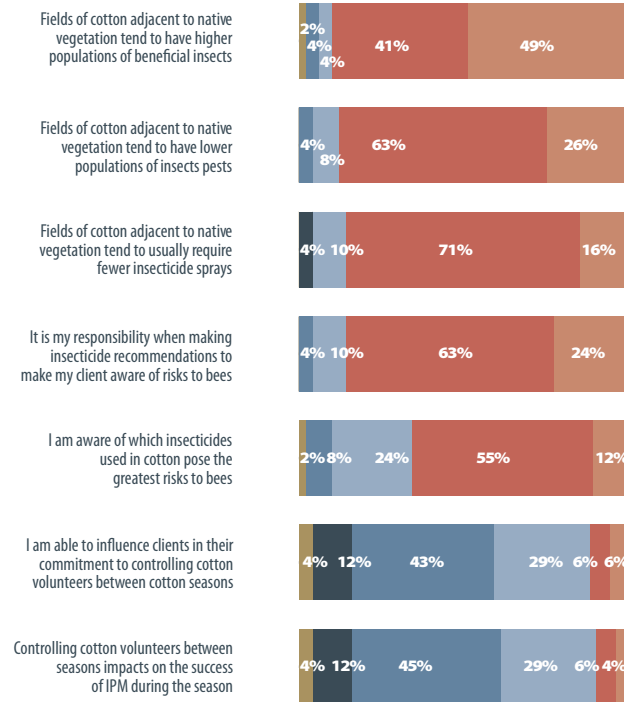
ON-FARM PRACTICES AND ATTITUDES

36

Based on your experience, how strongly do you agree with the following statements?

51 respondents

ATTITUDE TO PEST MANAGEMENT STATEMENTS



Number of consultants





ON-FARM PRACTICES AND ATTITUDES

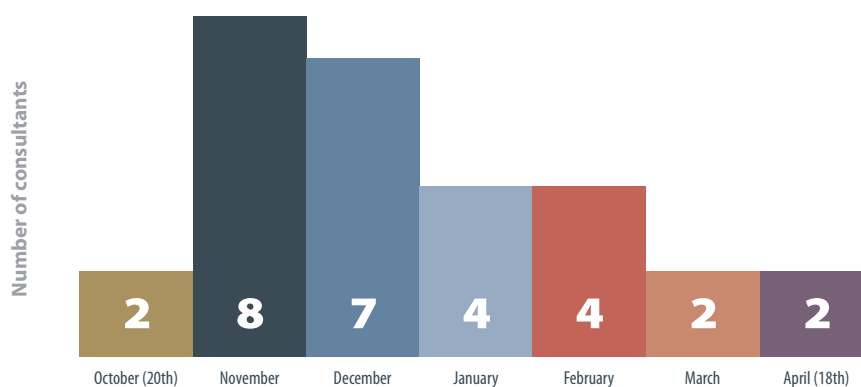
37

How early in the season did you make your first recommendation to apply dimethoate/omethoate for insect pest control?

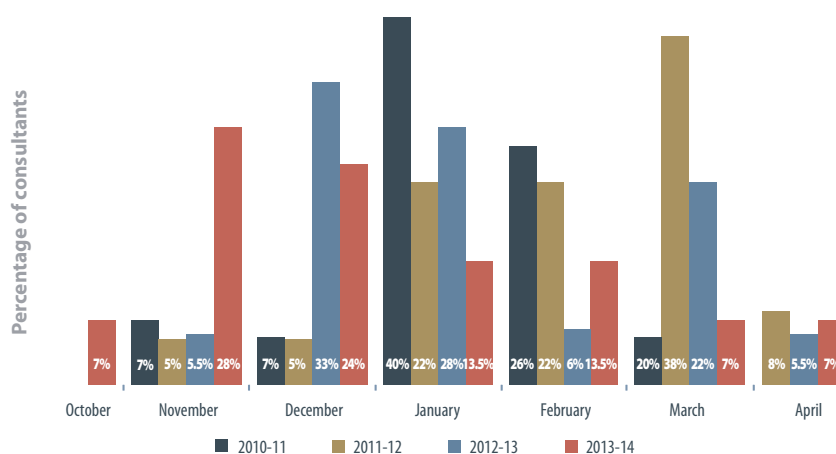
29 respondents

Comment It is important to note that only 29 of the 51 consultants responded to this question, which means it is difficult to draw any conclusions from the data.

TIMING OF FIRST RECOMMENDATION TO APPLY DIMETHOATE / OMETHOATE



TIMING OF FIRST RECOMMENDATION TO APPLY DIMETHOATE / OMETHOATE 2010-11 TO 2013-14

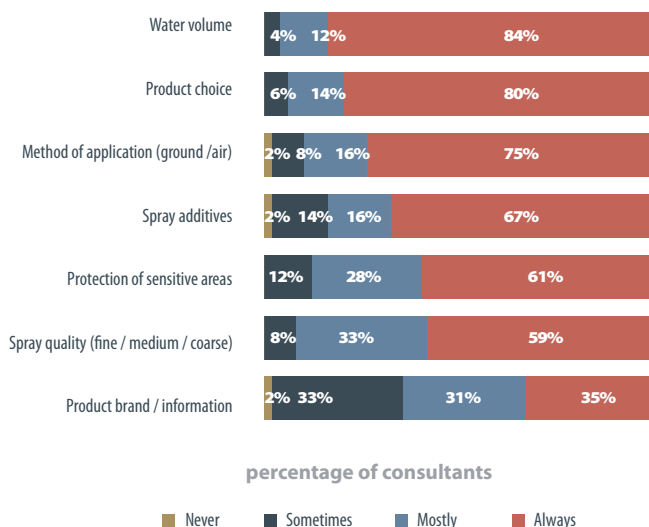


38

How often are the following considerations included in defoliation recommendations?

51 respondents

CONSIDERATIONS INCLUDED IN DEFOLIATION RECOMMENDATIONS





ON-FARM PRACTICES AND ATTITUDES

39

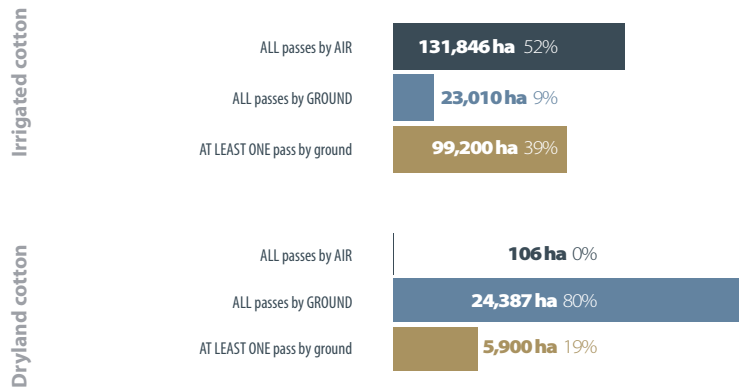
With regards to defoliation, please indicate across how many hectares, ground versus aerial application occurs.

45 respondents

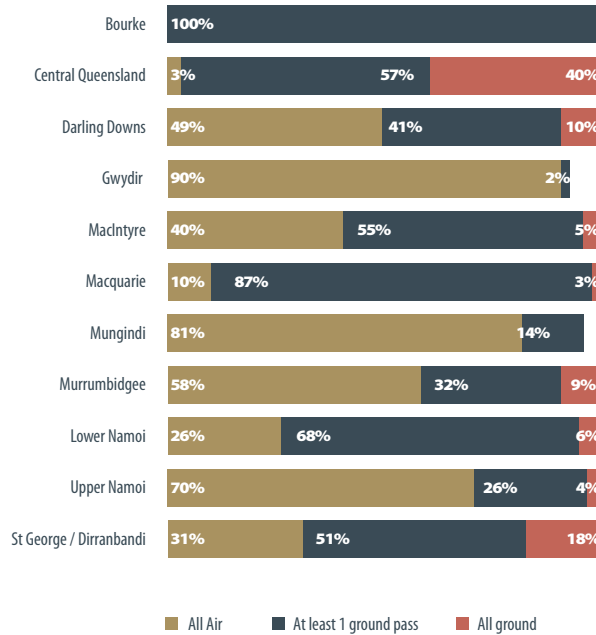
Note The graph below right, shows percentages of survey hectares do not always add up to 100, principally because of reporting by consultants who have clients in more than one region.

Comment Of the 32 consultants who did at least one ground pass, eight were from the Darling Downs.

DEFOLIATION APPLICATION METHODS



AERIAL VS GROUND SPRAY APPLICATION FOR DEFOLIATION OF IRRIGATED COTTON BY REGION



Percentage of survey hectares (see note)



ON-FARM PRACTICES AND ATTITUDES

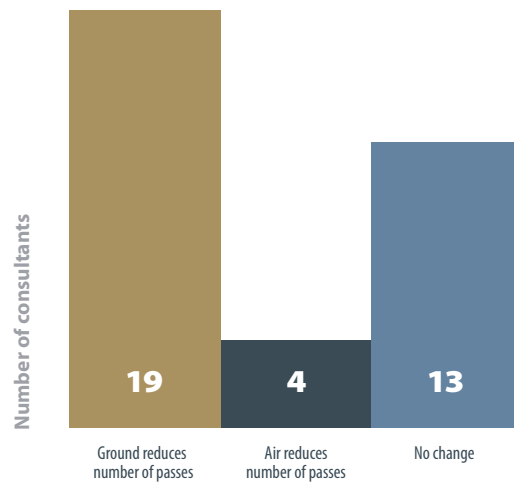
40

From your experience, what influence, if any, do you think ground versus aerial application has on the number of passes required to defoliate cotton?

42 respondents

Comment This graph shows the most common responses but there were also many useful individual comments, which can be found in the appendix.

IMPACT OF AERIAL VS GROUND SPRAY APPLICATION FOR DEFOLIATION

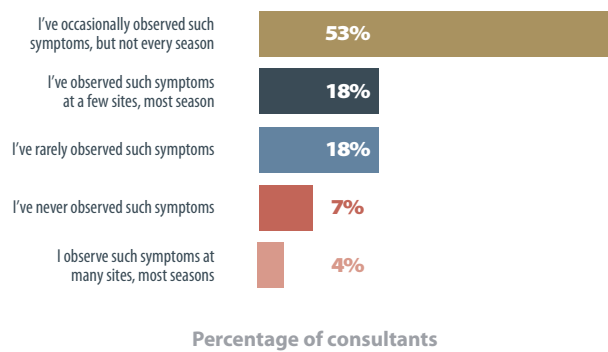


41

How often do you observe symptoms of defoliant products having impacted on nearby trees/bushland.

51 respondents

SYMPTOMS OF DEFOLIANT PRODUCTS IMPACT ON NEARBY TREES / BUSHLAND





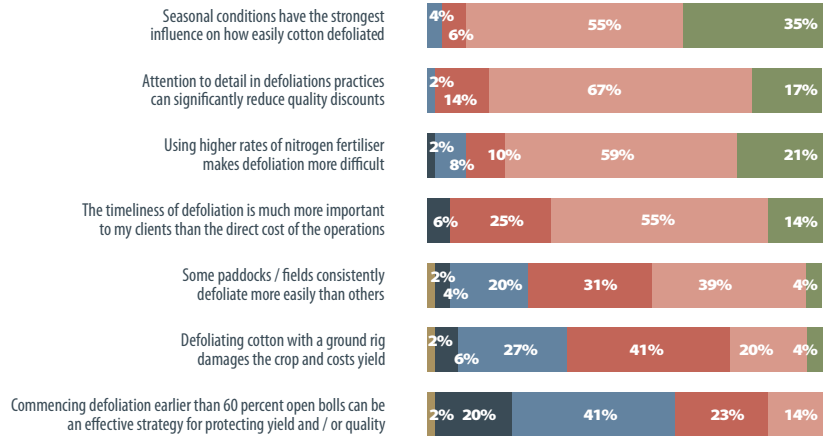
ON-FARM PRACTICES AND ATTITUDES

42

Indicate the degree to which you agree or disagree with these statements.

51 respondents

FACTORS AFFECTING DEFOLIATION



Percentage of consultants

- Don't know
- Strongly disagree
- Disagree
- Neither agree nor disagree
- Agree
- Strongly agree



ON-FARM PRACTICES AND ATTITUDES

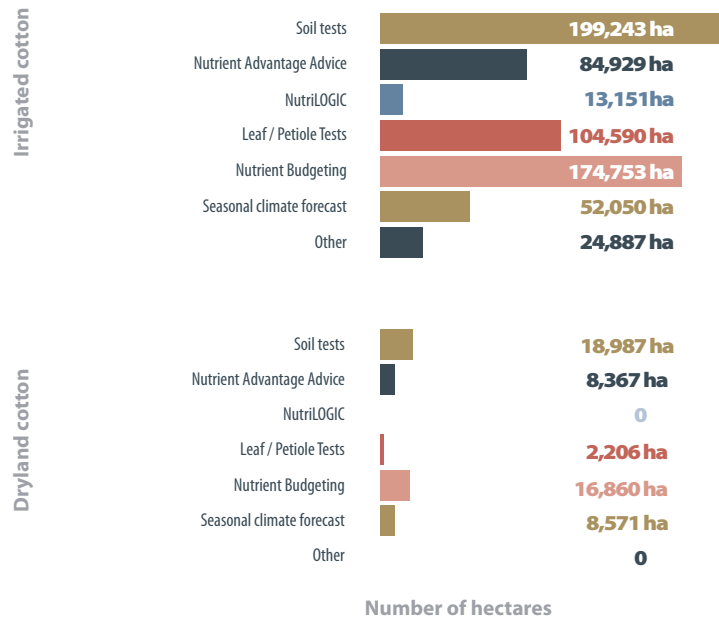
NUTRIENT MANAGEMENT

43

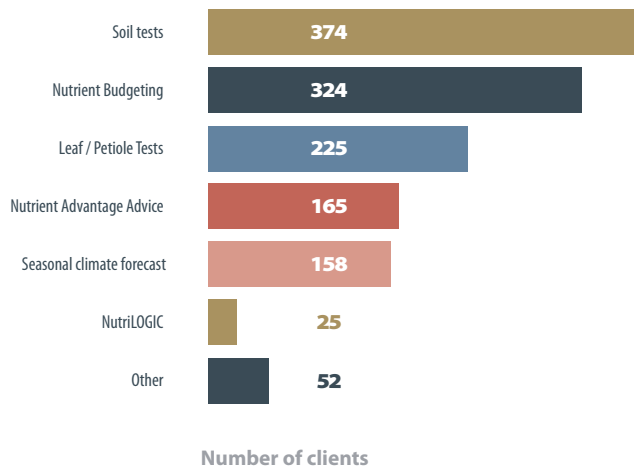
What decision tools are used by you and/or clients to assist with decisions regarding application of fertiliser for their cotton crops?

46 respondents

DECISION TOOLS USED BY CONSULTANT AND / OR CLIENTS FOR FERTILISER APPLICATION FOR COTTON CROPS



USE OF DECISION TOOLS: TOTAL CLIENTS (IRRIGATED AND DRYLAND)





ON-FARM PRACTICES AND ATTITUDES

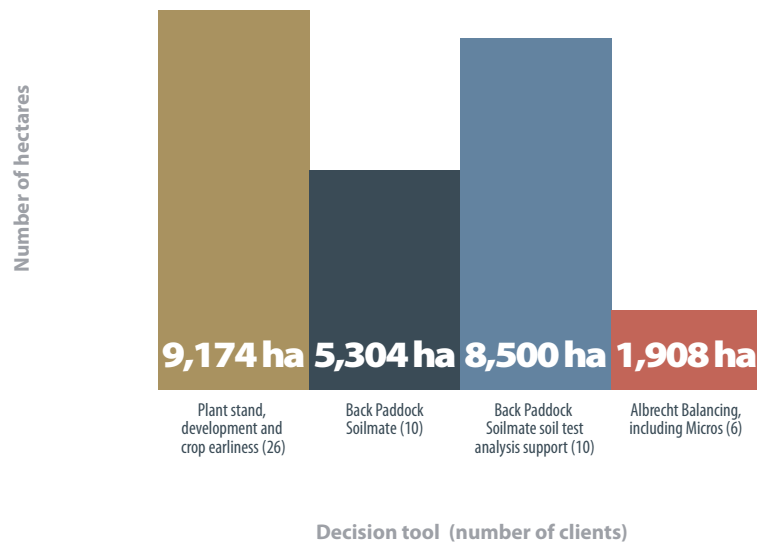
44

Any other decisions tools you used to assist with fertiliser application decisions for cotton crops.

6 respondents

Note All the data relates to irrigated cotton.

OTHER DECISION TOOLS FOR FERTILISER APPLICATION



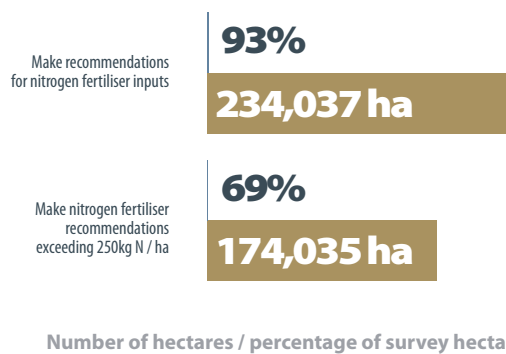
45

Of your client's irrigated cotton hectares, across what hectares did you:

- Make recommendations for nitrogen fertiliser inputs; OR
- Make nitrogen fertiliser recommendations exceeding 250 kg/ha?

43 respondents

FERTILISER RECOMMENDATIONS BY CONSULTANTS





ON-FARM PRACTICES AND ATTITUDES

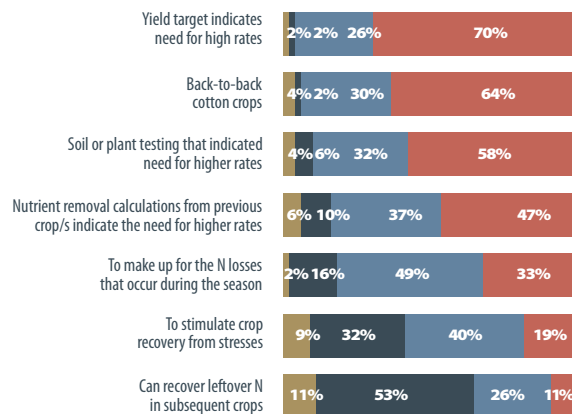
46

In situations where you are assisting clients with nitrogen fertiliser decisions, how much influence do the following factors have on decisions to recommend rates more than 250kg N/ha?

50 respondents

Comment More than 90 percent of decisions to recommend rates of more than 250 kilograms of nitrogen per hectare were highly or moderately influenced by soil or plant testing that indicated the need for higher rates.

INFLUENCES ON DECISIONS TO RECOMMEND RATES OF MORE THAN 250KG NITROGEN PER HECTARE



Percentage of consultants



47

In situations where you are assisting clients with nitrogen fertiliser decisions, how does the availability of soil test results influence the way you develop these recommendations?

47 respondents

In summary, 38 consultants regarded soil test results as having a good influence on nitrogen fertiliser decisions, whereas four said that it had little influence. Please see the appendix for full individual responses.

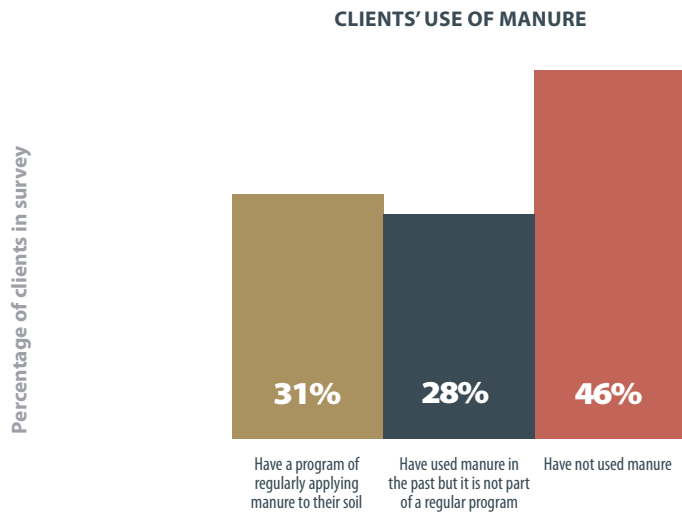


ON-FARM PRACTICES AND ATTITUDES

48

Regarding the use of manure, how many of your cotton clients fit these categories?

45 respondents

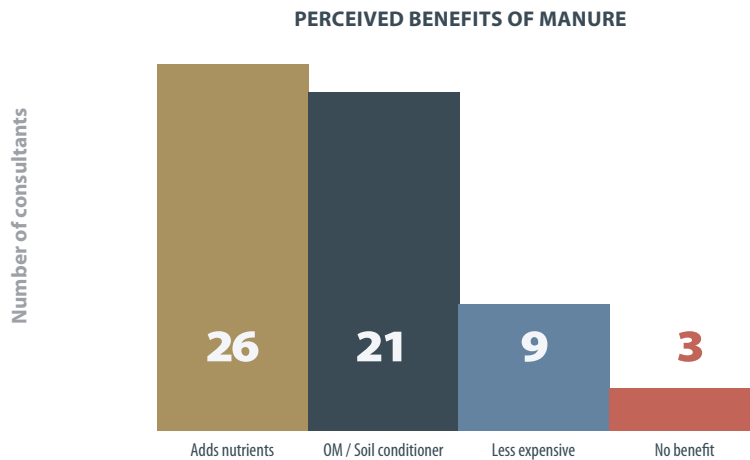


49

What benefit do you see from applying manures?

45 respondents

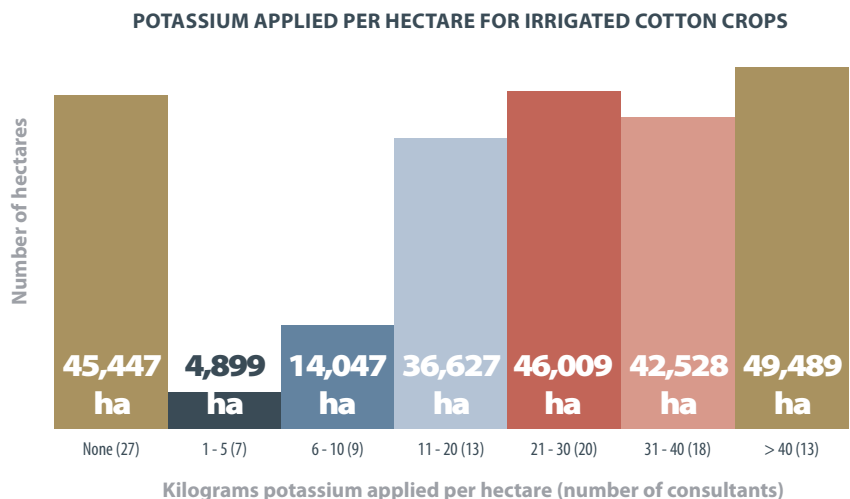
Comment This graph shows the most common responses. Please see the appendix for full individual comments.



50

What is your best estimate on how much potassium was applied per hectare for the irrigated cotton crops in 2013–14?

45 respondents





ON-FARM PRACTICES AND ATTITUDES

51

Across how many hectares did you see evidence or signs of premature senescence during 2013–14?

45 respondents

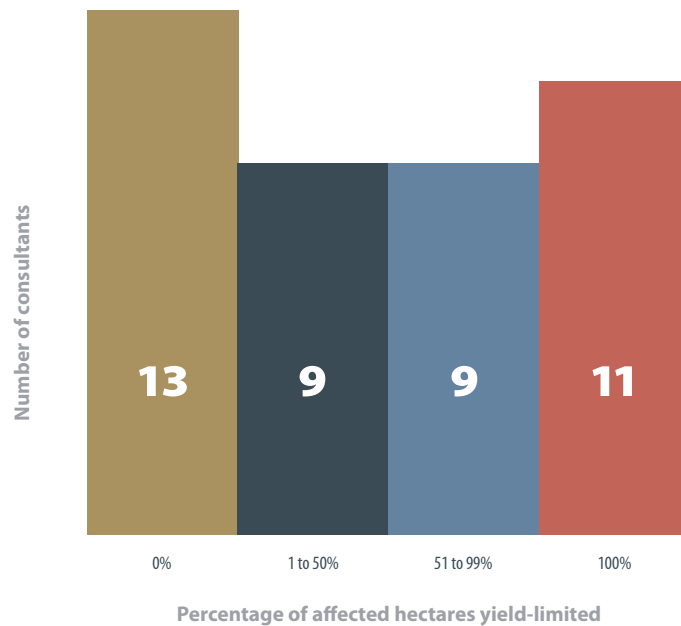
A total of 20,563 hectares (five percent of total survey hectares) showed signs of premature senescence.

52

Across the hectares where you saw evidence or signs of premature senescence, what percentage do you think were yield-limited as a result?

41 respondents

COTTON WITH PREMATURE SENESCE: PERCENTAGE YIELD-LIMITED



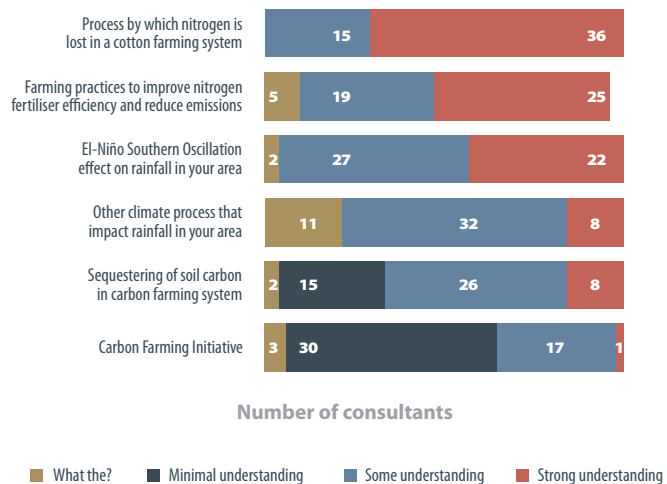
53

Rate your understanding of these issues (shown in the graph).

51 respondents

Comment The issue with the strongest understanding was 'Processes by which nitrogen is lost in a cotton farming system', while the least understood was the 'Carbon Farming Initiative'.

UNDERSTANDING OF FARMING-RELATED ISSUES





ON-FARM PRACTICES AND ATTITUDES

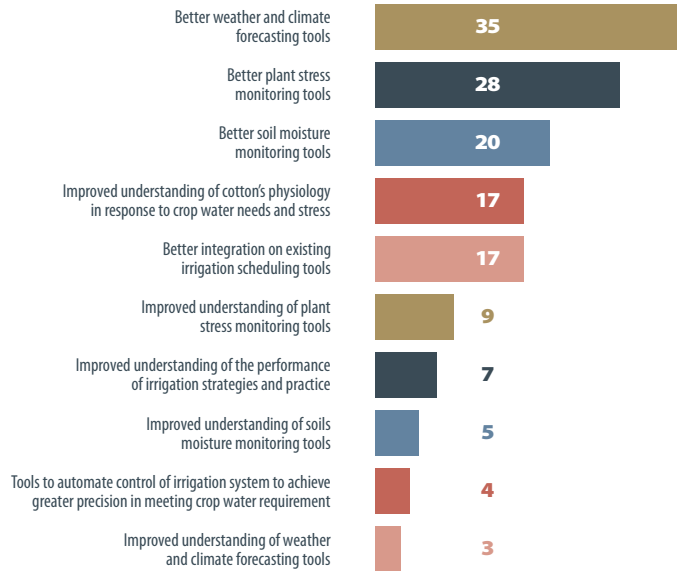
WATER MANAGEMENT

54

Which of the following would give you more confidence in providing irrigation scheduling advice to optimise crop performance and water use efficiency? (select up to three).

51 respondents

FACTORS THAT WOULD GIVE MORE CONFIDENCE IN PROVIDING IRRIGATION SCHEDULING ADVICE



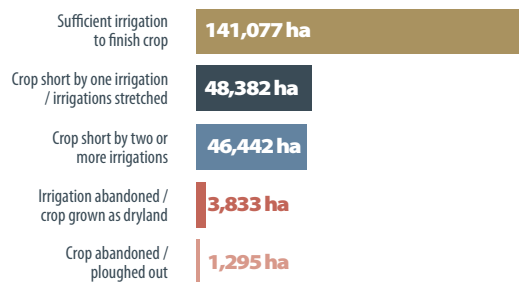
Number of consultants

55

For the irrigated cotton hectares over which you consulted, how much area in the 2013–14 season was affected by limited water? (Please also indicate your best estimates of yield in each situation). (Number cotton hectares, estimated average yield).

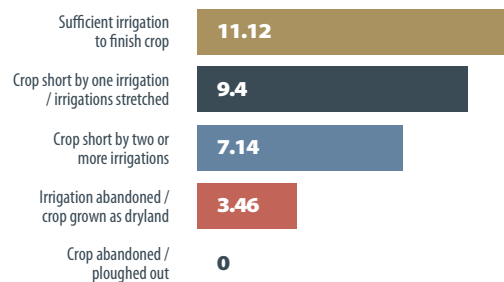
45 respondents

HECTARES AFFECTED BY LIMITED IRRIGATION WATER



Number of hectares

YIELD AFFECTED BY LIMITED IRRIGATION WATER



Average yield (bales) per hectare



RESEARCH, DEVELOPMENT AND EXTENSION INVOLVEMENT

56

How many of the cotton growers YOU work with did on-farm trials in the 2013–14 season?

49 respondents

57

With regards to on-farm trials, please indicate your involvement in the trials. Please record the number of trials.

45 respondents

Note Consultants could record more than one category for individual trials they were involved in.

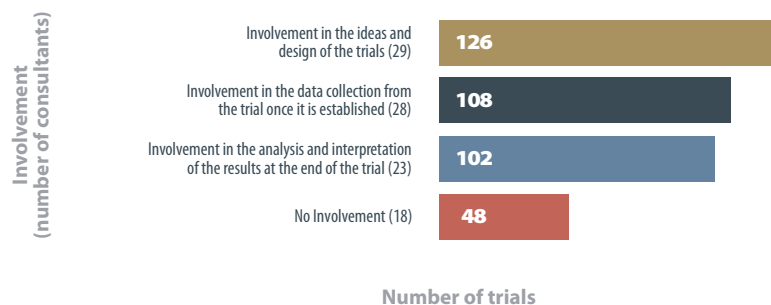
58

Thinking about the on-farm trials of your cotton clients in 2013–14, how many trials included the following elements?

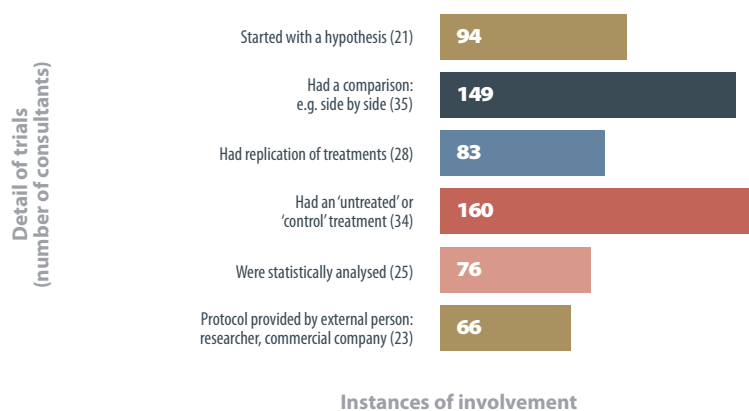
42 respondents

A total of 141 growers (27 percent of the survey's clients) hosted a total of 216 on-farm trials.

CONSULTANTS' INVOLVEMENT IN ON-FARM TRIALS



NATURE OF R&D TRIAL





RESEARCH, DEVELOPMENT & EXTENSION

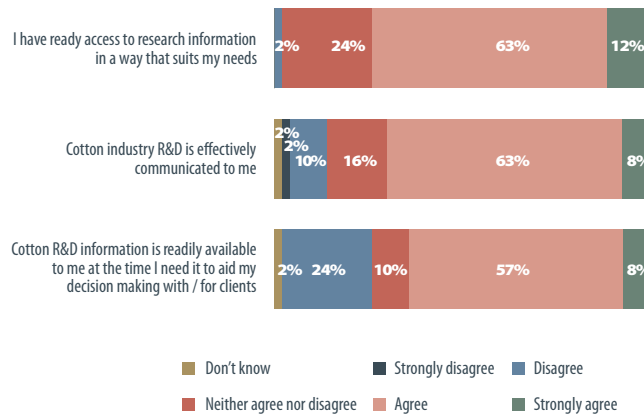
59

Please give your opinion on each of these statements regarding accessibility of R&D information.

51 respondents

Comment An average of 70 percent of consultants either strongly agreed or agreed with the three statements.

SATISFACTION WITH R&D EXTENSION



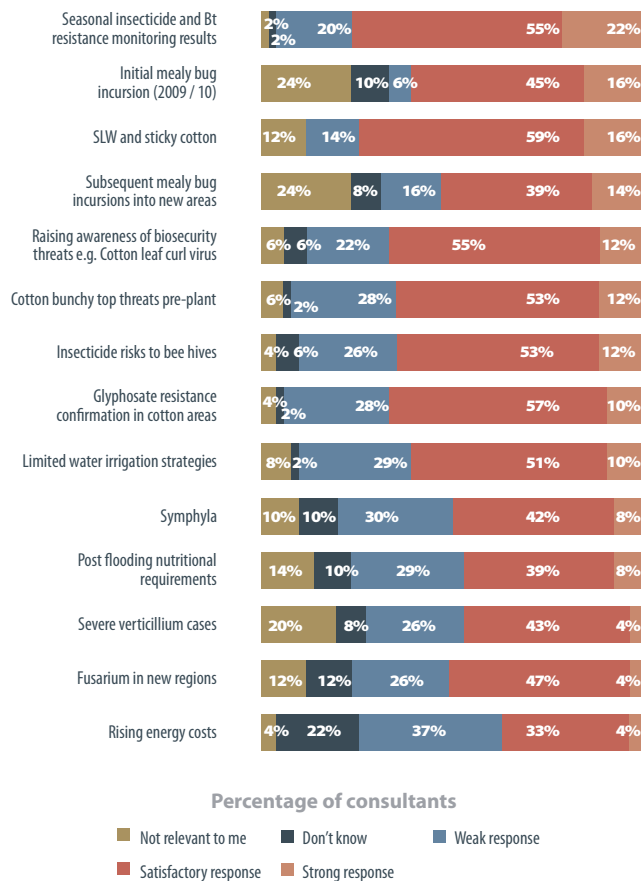
60

How would you rate the response from industry (researchers, CottonInfo, extension, Cotton Australia) in terms of supporting people in the field to recognise and respond to the following emerging issues?

51 respondents

Comment To understand these figures better, please see the appendix for individual responses to this question.

SATISFACTION WITH INDUSTRY RESPONSE TO EMERGING ISSUES





RESEARCH, DEVELOPMENT & EXTENSION

61

Please provide general comment on the way the industry provides support to you in responding to emerging issues.

42 respondents

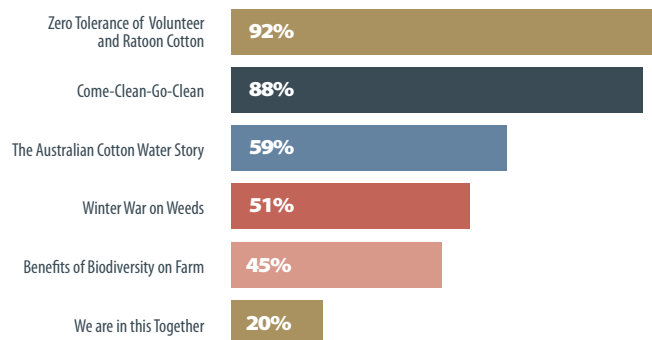
Comment In summary, 32 consultants believed they receive good support, while five saw the support as poor and five made various other comments. Please see the appendix for full individual responses.

62

In the past 12 months do you recall reading, or hearing, about these issues?

51 respondents

KNOWLEDGE OF RECENT ISSUES / PROGRAMS



Percentage of consultants

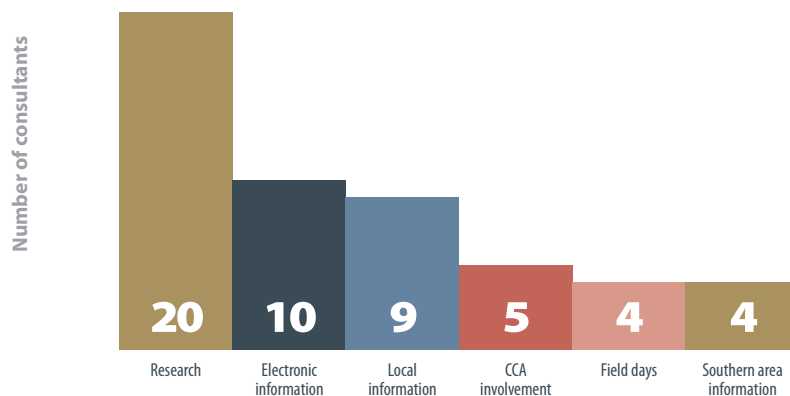
63

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

44 respondents

Comment This graph shows the most common responses. Please see the appendix for full individual responses.

VALUED ASPECTS OF INDUSTRY EXTENSION SERVICES





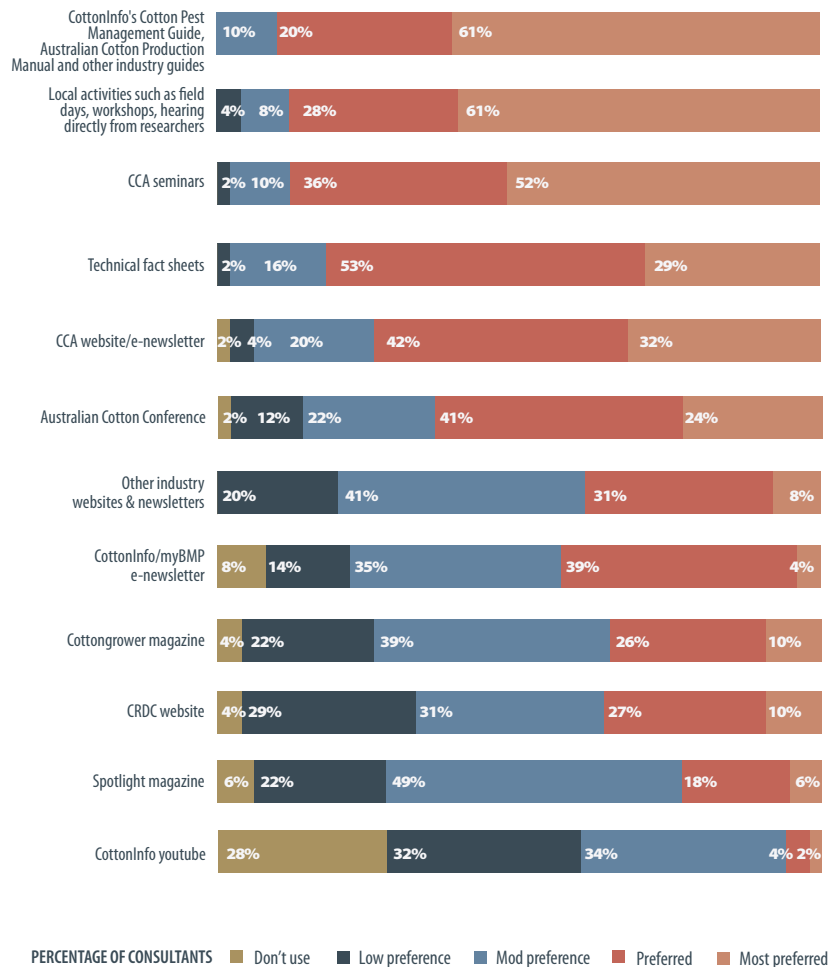
RESEARCH, DEVELOPMENT & EXTENSION

64

To receive information about cotton research and development, please indicate your preference for each of these mechanisms.

51 respondents

PREFERRED MEANS OF R&D INFORMATION DELIVERY



65

Other sources of cotton R&D information?

3 respondents

Three consultants cited other sources of information: factsheets/general information directed to email, the CottASSIST website and the CSD website.



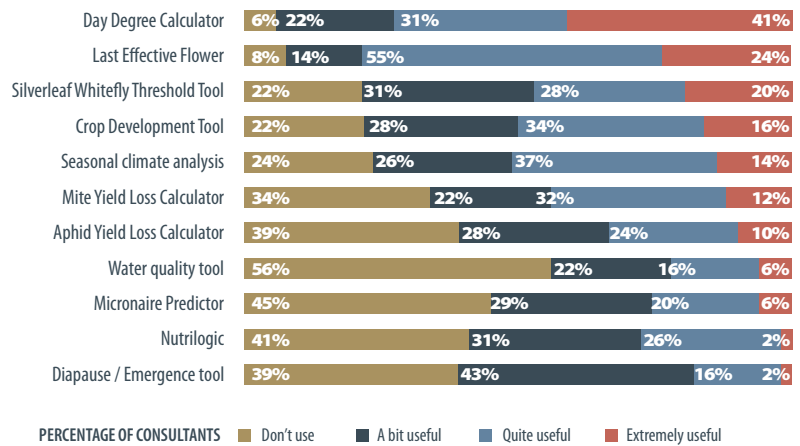
RESEARCH, DEVELOPMENT & EXTENSION

66

Please indicate how useful the following tools/resources are for you/your business in assisting with decisions.

51 respondents

USEFULNESS OF TOOLS/RESOURCES IN ASSISTING WITH DECISIONS

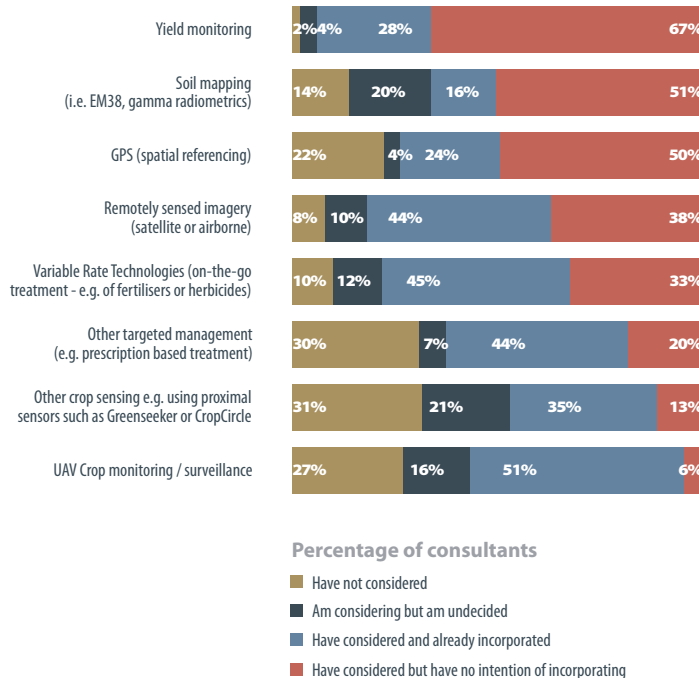


67

Are you considering incorporating any of these precision agriculture tools/services into your business?

51 respondents

USE OF PRECISION AGRICULTURE TOOLS AND SERVICES



68

Are you considering incorporating any other precision agriculture tools/services?

1 respondent

One consultant was considering using gypsum variable rate, based on soil mapping.



APPENDIX

WHAT IS INCLUDED IN THE APPENDIX?

Following on from here, you will find individual responses to Questions 10, 23, 24, 35, 40, 47, 49, 61 and 63, as these responses expand on, or add to an understanding of, graphed information.

QUESTION 10

If replants were required, please list the reasons.

-
- Gappy stands: soil drying out too quickly after sowing on pre-watered fields.
-
- Wind, dry soil, sandblasting.
-
- Cold and wet weather after watering up.
-
- Poor plant stand – ill thrift, disease, symphyla.
-
- Poor seed bed.
-
- Seed slump.
-
- Seedling root disease due to cold start, and poor planting depth due to rough bed preparation following a wet August.
-
- Hail damage and gappy stands.
-
- Difficulties in establishing 74 and 75 BRF seed.
-
- Poor germination.
-
- Seedling disease and mortality. Rhizoctonia and Pythium were the main causes.
-
- Blocked tail drain overtopped beds, bursting seed during watering up.
-
- Fertiliser burn.
-
- Poor climatic conditions after planting. Marginal seedbed condition.
-
- Root disease, wireworm activity.
-
- Dry, planted too deep.
-
- Planted on moisture that dried away too quickly.
-
- Poor plant stands.
-
- Low stands, poor vigour, weak seedlings, low germination.
-
- Planted too deep, ground insects.
-
- Drying out too quickly from the high winds and low relative humidity.
-
- Poor bed preparation.
-
- Replant required in some fields planted with 75BRF, cool conditions were received after planting and planting depth was probably a bit too deep. This led to poor emergence as well as some plant death after emergence.
-
- Poor seedbed condition.
-
- Cold, dry weather at water up in combination with poor bed preparation.
-
- Black root rot; Rhizoctonia; seed vigour and planting depth; bed preparation.
-
- Poor emergence due to cold conditions following planting.
-
- Poor plant stands – top surface running out of moisture.
-
- Due to a severe lack of winter rain, fields had excess trash and large clods. Generally, fields that didn't require replanting had had an extra 2 workings during the winter months or were pre-irrigated then left to dry down and watered up.
-
- Bad germination from 74BRF: poor vigour and seed. Many fields had poor emergence but were not replanted.
-
- Poor stand, as seed was planted into wheat stubble.
-
- Black root rot, rhizoctonia for 54 hectares, dried back.
-
- Rain after watering up.
-



APPENDIX

QUESTION 23

From your experiences, describe the situations where you are most likely to find the earliest mirids of the season (eg. proximity to other farms, crops, vegetation, wind)?

- Adjoining late winter pulse crops/pastures in mild, wetter springs.
- The most advanced fields in a district, proximity to host crops for mirids.
- There is no correlation; every year is different.
- Close to other crops that have matured such as canary/wheat. Regarding Question 28, all three statements are partly true, but the big waves of mirids come in on weather fronts.
- Close proximity to native vegetation.
- Surrounding vegetation and other crops.
- Fields in close proximity to lucerne crops.
- Build up from the nearest edge to a nature strip.
- Usually on fields closest to the rivers.
- Boundary fields: i.e., those exposed to either weed infestations along the side of fields or unsprayed roadside areas. Also prevalent in healthy crops.
- Seems to be more to do with the overall area getting an influx of adults, which then results in nymphs over the coming weeks. Mirids seem to need a decent sized plant (the larger the better) to survive.
- Moving in from grasslands or vegetation areas along riverbanks etc. Most often found in the western areas 1–2 weeks ahead of other farms.
- Western farms and any farms with legumes nearby: faba beans, lucerne etc.
- Cotton starting to close over.
- Near pigeon pea refuges, pasture and timbered areas.
- Locations in certain fields where earliest detections are seen every year and have higher number throughout. Some seem to be near belah vegetation.
- Near grassy roadways.
- Proximity to natural vegetation, especially when this is drying back.
- Green mirids will first be found beside natural vegetation: i.e., rivers, trees, grasslands.
- No idea.
- This changes each season.
- Usually next to native vegetation sources.
- Typically on our western farms, near hay. Or on farm along the river where there is timber and other vegetation.
- Earliest crops. Near native habitat.
- Further west, early-planted cotton. Nearby to other crops and vegetation that harbour mirids.
- Regarding Question 28, it's not black and white. They do generally appear at one farm and then elsewhere. When getting round the rest of the checks that week in other farms/paddocks, I usually see them come in within 2 weeks. Not a real trend unless near lucerne, grass country or sorghum.
- Post-storm from western direction and from surrounding winter crops that are being harvested or haying off.
- Close proximity to vegetable or soybean, faba beans and some native areas.
- West to east and east to west. Both spectrums of the valley with inland sources and east built-up of cropping areas.
- Next to native vegetation in light soils is where most mirids usually found.
- Cotton fields surrounded by other crops (sorghum, mungbeans, corn, sunflowers) will normally be the first fields where mirids are detected.
- In the earliest planted cotton.
- Close proximity to lucerne and pastures. No link to north or south or east or west in our region. The same farms get hit first each season.



APPENDIX

Due to a virtual cotton monoculture, mirids generally arrive on storm fronts.

Earliest mirids are always found on first planted fields at early squaring stage.

The one farm that consistently has the first mirids showing up is next to Beardmore Dam, which has a couple of thousand acres of bush; mirid pressure is always higher and earlier on this farm. Although this farm usually has the earliest mirids, within a week I will begin finding them across all farms, which is why I selected the first statement in Question 28. When finding the first of the mirids in November, these will usually only be 1–2 every 10 metres of beat sampling and have in the last 3 seasons taken until mid to late January to build up to the 3 per metre threshold.

Mirids always build up quickest on the eastern end of the valley and have higher numbers throughout the year.

Canola nearby.

Western fields.

South westerly winds. Generally the same parts of the same fields are attacked first.

I don't see much correlation when finding the earliest mirids. When finding higher numbers later on, this can be after storm fronts, or sometimes if other crops such as mungbeans or sunflowers are present, but this is fairly rare here.

The earliest planted fields.

Depends on the season for each district and what feed sources are about; it varies from year to year.

Following storms (anywhere in crop) or close to fresh vegetation and neighbouring crop areas.

QUESTION 24

Please list any actions you took during the 2013–14 cotton season, on behalf of yourself or any of your clients, which had the specific purpose of protecting bees.

Spraying less and being very mindful of the risks to bees.

Notify beekeeper. Select low impact insecticide. Avoid foraging bees.

Product choice and timing restricted to avoid killing foraging bees.

Discussed with each client the risks of applying chemicals when bees may be foraging.

Liaised with the local beekeeper when I could and reminded clients of their possible presence when using Regent. It is not always easy to know where they are as they are moved regularly.

Where possible, chemicals with a low or null effect on bees were used. The beekeeper was kept informed in a timely manner about spray jobs and what chemicals were going to be used (usually 1–2 days before spray, to allow the bees to be moved at night).

Product choice, pushing thresholds out, time of day products were sprayed.

Avoid the use of Fipronil in sensitive bee areas. Put caution notices on all recommendations when spraying insecticides when bees may be foraging on cotton.

Avoided the use of Regent.

Using chemistry that is softer on bees. Recommending sprays were done at times when bees are less likely or unlikely to be foraging. Making clients aware of downwind risks.

Suggested they notify beekeepers to move nearby hives if insecticide was to be applied.

The last of the growers using Thimet have moved to using a softer, more direct seed insecticide.

None.

No beehives this season in our area.

Made growers aware of the dangers and reduced the use of neonicotinoids.

Switching to Transform along the river where hives were in close proximity. Low Regent rate and salt used elsewhere.

Rang beekeeper.

Insecticide timing and choice.

Sprayed insects during times of the day bees were not foraging.

Increasing the use of canopy oil.



APPENDIX

Spray timing and product selection.

Use of less harmful insecticide.

No hives were located in our region this season.

None, as there are very few bees in or around our cotton production and beekeepers generally stay away from cotton production.

Discussing the risks to bees when evaluating insecticides and pest/beneficial insects. Being proactive and notifying nearby apiarists of impending spraying. It is very often extremely difficult to notify apiarists, as there is no common website or way of locating or contacting nearby beekeepers; you have to make numerous phone calls to neighbours etc. to locate hives.

Calling the beekeeper before spraying.

Warning on recommendations and label compliance.

We never sprayed for sucking pests when bees were in cotton.

Sprayed late afternoon, waited for wind to change direction and communicated with beekeeper.

QUESTION 35

With regards to Question 34, where Silverleaf whitefly (SLW) spray requests were not consistent with the SLW threshold matrix, please provide comment on circumstances/influences?

All the irrigated cotton was sprayed at much lower thresholds than the matrix, mainly because growers were concerned about incurring extra discounts due to colour if honeydew was present in the crop, or rain fell close to picking. More research is needed in this area to quantify the effects of honeydew and rain on the colour of lint, as lots of money is spent by growers in an attempt to maintain quality but we don't know if this is money well spent or not.

No SLW sprays at all.

Grower did not want to use Admiral due to cost.

Combination of Aphids, mite and SLW. Pegasus was applied at sub threshold levels of all pests.

No whitefly issues in the south yet.

Population of SLW, more often than not, did not exist on the 5th leaf but further down in the canopy. Populations were breeding and honeydew being produced on the bottom two thirds of the canopy, whilst rarely exceeding the threshold on the 5th leaf. Spray decisions were often aimed at pre-empting a population explosion.

No Silverleaf whitefly sprays. Only greenhouse whitefly were present this season.

A neighbouring farm sprayed non-selective chemistry several times; we had a very fast build up of adults that could be seen blowing in on the wind from next door. These are the only fields that were sprayed specifically for whitefly.

Sampling of the 5th leaf was not reaching treatment threshold but population build-up and honeydew deposit/accumulation lower in the canopy suggested control was warranted. The high numbers of late season thrips may have changed canopy dynamics to impact the sampling.

Crops were sprayed early to coincide with a miticide application.

High levels of whitefly and honey in lower canopy. Had Admiral on hand that we had owned for a number of years.

We advised some growers to use Admiral when SLW populations were actually below threshold levels but the timing was correct to see the season through, with only 1 application required. This was done because many growers had purchased Admiral years ago and had the stock on farm.

Timing was right for control, with a long residual product targeting a small population.

The matrix did not provide sufficient data to indicate threshold or spray requirement.

Too many whitefly persist down in the canopy for too long with subsequent nymph build-up and honeydew deposits. Initiating a spray with such high numbers lower in the canopy creates a difficult management number. The hot season also seems to keep the numbers lower in the canopy. Matrix spray initiation too late.

We had a mite and aphid pressure when SLW began to show up, so the choice of Pegasus was common for these pests, with the SLW being a secondary concern. However, this still fitted into the matrix, albeit a little early.



APPENDIX

No SLW sprays recommended.

SLW tended to stay lower in the canopy this season, so the result from sampling the 5th leaf from the top didn't seem to correlate well with the population that was present further down in the canopy; hence, spray decisions were based on honeydew production and 'cloud' factors. Also, as many grower clients had Admiral sitting unused in their sheds for the past 4 years, there was a tendency to use up this product at lower than normal IGR threshold levels, rather than spend more money on a Pegasus spray late in the season.

Don't believe the SLW threshold triggers spray early enough.

We don't get consistent monitoring numbers in relation to the matrix. The matrix doesn't take into account monitoring factors like temperatures/humidity at sampling, sampling time of day, nymph numbers and hot spots within fields. It needs a lot of work before we will rely on it!

Whitefly were confined to the lower part of the canopy for the majority of the season and industry thresholds didn't accurately estimate crop numbers.

Whitefly numbers remained lower down in the canopy this year, populations were well over threshold levels though just lower in the canopy.

In relation to Question 21, I recorded a loss/cost of above \$300 per hectare due to sticky cotton. These discounts were not due to sticky cotton as such but, rather, colour downgrades of up to \$800 per hectare (10 bales per hectare crop) were due to the honeydew from whitefly having changed to a black fungus/soot on the lint. 80% of colour discounts have been due to whitefly. Talking to agronomists at Hillston/Griffith, they also had 120–180mm of rain prior to picking (the same as us) but do not have whitefly and therefore received very few colour discounts.

Sprays were recommended as prophylactic with building nymph numbers and were soft spray options.

Population very high or increasing very quickly.

Hectares not under the matrix had lower levels but were treated to prevent build-up later on.

QUESTION 40

From your experience, what influence, if any, do you think ground versus aerial application has on the number of passes required to defoliate cotton?

Water volume and accuracy is greater from the ground.

Ground application has the potential to reduce the number of passes to defoliate cotton.

A great influence. Ground will always require fewer passes.

Air is 120% better in irrigated cotton, ground is just as good in dryland.

Aerial does a better job.

No influence at all.

If there are good conditions, it can sometimes mean the difference between 2 and 3 passes.

In most cases there is a significant improvement by ground application. Water volumes/spray coverage is much better and in a number of cases I believe it saved a third pass.

Dryland defoliation was performed by a ground rig for convenience: dry field, no row closure, short plants, supposed improved spray penetration and cost. Irrigated fields were all defoliated by aerial application due to large canopies, tall crops, soft ground, logistical (to cover hectares and to defoliate in a climatically suitable 'window'). However, the larger canopies meant penetration was often not achieved and, hence, maybe an increase in the number of passes required resulted. Directions were given to fly crossways each pass where feasible, which may have improved efficacy slightly.

A conscientious aerial application is as good as, if not better than, ground. But aerial can also be more prone to human error, poor machine setup, tougher environmental conditions.

Timing of application and temperatures during defoliation has more of an influence I believe than the method of application. Potentially, jobs done with the ground rig using higher water volumes under warm temperatures will increase the amount of leaf drop and possibly reduce the need for a third pass.

Anecdotal evidence suggests that ground application of defoliant is more efficient at achieving 2-pass defoliations. Aerial application under trying conditions seems to add an extra pass.

Ground application is more effective, but after two passes it is about the same.

None.



APPENDIX

Bigger water volumes result in generally better results, which in some cases may require fewer passes. I often prefer to do third pass by air to reduce crop damage. Would have had more ground application this year if it weren't for rain in March.

Very rarely if ever changes the number of passes; however, the quality of the aerial applications varies wildly as compared to the ground rig applications.

Can get a better defoliation with ground if done well.

The reason planes are used is so overall farm operations, including irrigation, are done on time and not held up waiting for completion.

Little influence.

Potential to save a pass by using the ground rig but it has not worked out that way.

Ground applications are able to use much higher water volumes and have the ability to use other beneficial products such as Sprayseed, which can greatly reduce the time between applications/picking and often with greater spray results. However, groundrigs obviously are not an option for most irrigated crops.

No influence at all.

I feel they are very similar. The plane has down wind force that moves the plants and allows droplets into the lower canopy. A ground rig won't move plants so much but makes up for it in water volume.

Usually do the same via ground or plane.

Fewer passes required with ground applications.

Depends on the aerial operator and timing of the defoliation (as well as the crop management prior to defoliation).

Application timing, potential rainfall, temperature, row spacing, crop biomass, water rates and coverage.

Ground passes seem to be better in high leaf index crops.

Only consider ground in dryland situations.

Ground seems to do a better job in general and can mean the difference between 2 or 3 passes.

Generally there is superior defoliation with ground defoliation, due to better spray penetration and coverage. However, usually 2 passes with defoliant is sufficient with either application method. Situations that may require a third pass include: cold temperatures, rain and regrowth, and large bulky crops that still have nitrogen and moisture available to them.

It has very little impact. In rare cases the ground rig may increase efficacy enough to have 2 passes rather than 3 in tough situations.

Ground rig applications are superior in terms of leaf fall, and reduce the need for a third application.

Depends on the crop canopy and the season. In a dry and warm year it does not have any influence.

Defoliating either by ground or air, growers will still require a minimum of 2 passes. The only time I have had to apply a 3rd defoliation is following heavy rain after the second application. All fields that were picked before the rain this year only had 2 applications whether it was by ground or air.

Generally fewer passes and better defoliation by ground.

None.

Ground rig tends to do a better job and reduce number of passes necessary.

No influence.

Ground application tends to be more even across the swath, which can sometimes mean an extra pass is not required to clean up.

Doesn't generally save a pass but it can speed up the process by a couple of days.

None.



APPENDIX

QUESTION 47

In situations where you are assisting clients with nitrogen fertiliser decisions, how does the availability of soil test results influence the way you develop these recommendations?

When soils are very low in nitrogen and yield targets are high we end up applying more than 250 kg/ha N.

Just a benchmark for use.

The starting point, imperative.

It doesn't, try to use replacement rates.

Almost all fields tested. Starting point for all nitrogen recommendations.

Not a big influence.

Highly influences the decisions we make.

I use them regularly prior to each season to plan total nitrogen requirements.

Background soil levels are considered at the start of the season and nitrogen application rates are then tailored based on the average level. Considerations of achievable yield will also be considered though: for example, we would be comfortable in applying large nitrogen volumes on fallow as opposed to back-to-back fields.

Soil tests are one tool used among a multitude of others.

Depending upon residual nitrogen remaining from previous crops, it will influence the percentage of nitrogen applied up front. Stubble residue will also have an influence on nitrogen rates upfront. High stubble loads will generally tie up more nitrogen early season, hence slightly higher up-front rates.

Gives a good base level of confidence for the starting point. From this starting point, all other factors can be modelled to try and predict nitrogen requirements of the crop.

Soil test results provide the foundation of the fertiliser program.

A lot.

We try and achieve 280kg N/ha before planting, including an additional 20kg N/ha that will/could be lost to mineralisation. We then use the soil tests as an indicator of how much nitrogen is left and therefore how much needs to be applied.

When a soil test is available, it dominates the decision process.

Soil test are essential to set accurate budget to suit yield target.

They are a good guideline but can vary. So the bulk of nitrogen requirement is based on other factors like field history as well.

Just provide another indication of what is going on.

Very important.

Highly.

Soil tests are a good guide; however, nitrogen levels can vary so significantly within a paddock or management unit that it shouldn't be assumed that soil test levels of nitrogen are completely accurate.

Highly important to give an understanding of soil available nitrogen.

They are an additional part of information and give an idea whether there is little, moderate or a lot of nitrogen in the soil.

Just gives a roundabout kind of number to start with.

50%.

Can't feed too much up front on the plains as it gives too much growth and does not start to set fruit. Best to apply half up front and keep nitrogen up to the crop as required through the season, based on water and yield potential.

I don't have 100% confidence in soil tests but the numbers are better than guessing. It allows you to assess approximately how much nitrogen is remaining and where in the profile it is. Also provides information of other nutrients that may be affecting the uptake and efficiency of the nitrogen.

Deep nitrogen foundation test will start the budget.

Provides basis for nitrogen use efficiency using pre-plant and post-harvest soil tests and yield results.



APPENDIX

Soil tests are good but way too expensive to utilise properly. We need to have much cheaper testing options like in the USA, where there are full soil tests for under \$20, compared to \$120 here.

Soil tests are completed for all fields and are used for nitrogen recommendations. In regard to the above question, I do not recommend nitrogen rates above 250kg/ha.

Soil test results are a very important factor that I consider when making nitrogen fertiliser recommendations. Very little.

Soil tests conducted on less than half of our cotton area. Should be doing more..

All farms soil test to some degree and results are taken into account but with a substantial buffer.

All my clients carry out soil tests every year. Soil tests provide the base of the fertiliser program. We try to use the same laboratory every year for more consistent results, as different laboratories provide different results.

All farms conduct soil tests for the next cotton season, not in every back-to-back field but across 50% of the farms fields so as to gain a strong picture of what has been used and what remains. Generally fallow fields are all tested so as to know exactly what may be available. I have never recommended more than 280kg/ha of nitrogen.

All our nitrogen recommendations are based on soil tests.

Generally try to test (soil, leaf, petiole etc) as much as possible to accurately target and define fertiliser needs.

Soil tests are done on a yearly basis.

Soil testing is primarily used as an audit of the nitrogen efficiency of the previous crop.

We only use nitrogen soil tests in rotation situations.

Look at the residual pool of nitrogen available for the next crop and develop from there. They are especially useful for helping to determine rates for next crop where the crop has been short of water. Back-to-back generally has little residual nitrogen.

Allows you to more accurately calculate how much soil nitrogen is available.

Used as an indicator.

All fields were soil tested.

QUESTION 49

What benefit do you see from applying manures?

Provides residual nutrient supply over time.

Some benefit (reduced inorganic fertiliser cost) but the overall cost is the same – with similar yields.

Large amounts of potassium, moderate amount of phosphorus, small amount of nitrogen and soil conditioning benefits at moderate cost.

Unsure, cheap nutrition.

Less expensive than conventional fertilisers.

Phosphorus, potassium and trace element maintenance.

Improved soil organic carbon, and microbiology. Excellent source of zinc, phosphorus and potassium.

Soil amelioration, some nutritional advantage but only over the longer term (slow recovery); improved organic matter, and it seems to help the crop finish well in the back-to-back crops in the south where the soils get tired in February/March.

It is logistically unlikely that it would be feasible for us.

Applying all nutrients and a cheaper way of lifting overall background levels of slow release nutrients.

The following crop tends to yield better than the first crop.

Improving soil health and microbial activity. Release of nutrients over a period of time through breakdown of organic matter.

Intrinsic nutrient value if within a reasonable distance to a feedlot.

Good source of slow release nutrition and soil ameliorant. Underutilised in some cases (if close to a source) but in most areas it is too expensive to utilise in preference to synthetic fertiliser, as transport costs are too high.

Good source of potassium, phosphorus and organic matter.



APPENDIX

Additional organic matter and nutrients. Improves soil structure.
Cost effective method of application of phosphorus, potassium and other minor nutrients.
Application of nutrients, and some organic matter/bio soil advantages at high enough rates.
Biggest benefit is the introduction of natural soil organisms, which can become depleted in an agricultural system. Improvement to soil structure is the biggest goal of routine applications.
Good way of increasing phosphorus and potassium levels, as well as some trace elements.
Conditioner.
Organic soil conditioner and fertiliser.
Proximity of some of these farms to local feedlots makes it a cheaper option. Constantly topping up nutrients.
Manure is a good option for improving soil health. The microorganisms and organic matter aid in improving soil health from the harsh effects of repetitive crops.
Replenishing micronutrients and organic matter. Good for cut area in freshly developed fields with large cuts.
Organic matter.
Organic matter, slow release nutrients.
Covers macro and micronutrients, helps with organic matter, and helps address phosphorus and potassium, which is important in the local soils.
Cheapest method of applying phosphorus and potassium. Farms that have been applying high manure rates over the last 8 years have increased phosphorus and potassium so that synthetic phosphorus and potassium fertiliser is no longer required. Also allows a decrease in the application rate of synthetic nitrogen fertiliser.
Increasing trace elements and boosts organic matter in problem soils.
Cost competitive fertiliser.
We are actually using compost, but I thought this would be the place. Four clients have totally replaced all other fertiliser (except nitrogen). I see some improvement in soil structure and nutrient availability.
Cheap source of applying phosphorous and potassium, as well as soil amendment properties.
Great benefit, but none available in our region.
Improved microbial activity and mineralisation. Improves soil structure and condition. Adds some nutrients to soil.
Increasing soil organic matter and improving soil health but is cost prohibitive.
We have not seen much benefit and it is very expensive.
Generally has been able to replace phosphorus applications such as Granulock products. Manure is generally applied at 5t/ha every 4 years.
Manures should help build up nitrogen, phosphorus, potassium, sulphur, calcium and organic matter but experiences have given poor results on heavy soils and good responses on light soils.
Soil conditioning.
Very positive and is cost competitive with inorganic fertiliser forms. As a bonus, it provides the application of balanced nutrients. Have seen a positive response from the amount of potassium and zinc applied in gin trash.
Huge. Especially potassium, phosphorus and the microbes but it has some of everything, including micros. It all helps. Composted gin trash as well, even better.
Natural renewable resource where available. Provides wide range of nutrients.
I see benefits to soils but logistics are an issue.
Nutrient supply, increased microbial activity and health in the soil.



APPENDIX

QUESTION 61

Please provide general comment on the way the industry provides support to you in responding to emerging issues.

SLW thresholds using the matrix seem fine for managing sticky cotton; however there is a large feeling that honeydew (at levels too low to cause sticky cotton), in combination with rain during boll opening, causes more lint discolouration than would be the case if there were no honeydew on the lint. I am unaware of research that addresses this issue. Lots of \$\$ spent by growers to control whitefly to manage lint quality, and seem happy to do it – but is the honeydew causing excessive colour discounts that warrant this expense?

I haven't really had many issues.

Quite proactive and responsive. Would like to see more industry pressure put on government to limit the importation of introduced garden plants: the disease, insect and weed pest risk to agriculture far outweigh the doubtful need for any more garden plants in Australia.

Overall, quite good.

Usually good.

I generally know where to target my enquiries within the support community.

Usually our region is one of the first for new exotic pests, so response is pretty quick and support is very forthcoming.

Often by my direct contact with researchers or via the CCA.

Magazines and on websites. I need to improve my diligence of reading this information. At the moment, I think I miss out on a few discussions as I forget to read and/or don't make the time to read this information.

Responses are generally very good. Unfortunately for all of us, many issues that arise year to year are unexpected (e.g. Broadmites 2 years ago) so the response time is the key area to work on. I realise this is not an easy thing to do.

Fairly good through group emails. I find that the best communication currently is smartphone technology, which allows access 24 hours, 7 days a week to email accounts.

I get most information through direct contact with researcher and CCA technical updates, also CRDC Spotlight magazine.

While the chain of command on who to contact with an issue is a little confusing, I always find my issues are well heard and resolved.

Most issues that are asked of the Australian Cotton Research Institute (Narrabri) are responded to quickly and to an acceptable level.

Industry is extremely good in responding to emerging issues in cotton.

Happy with how the process works.

So far it has been pretty good but I am concerned about the future, given the lack of a CRC and the reduced role of institutional programs.

Results and ideas are very slow to filter through and many seasonal issues are not followed up on.

Generally, new issues are passed on efficiently through emails. Although detailed information on some issues is minimal, at least alerting people through emails is quick.

Proactive on arising issues. Gets communicated by extension staff in the industry.

Small grower groups are best.

Generally delayed.

I call industry people directly.

Ensuring there is a research/ extension office gathering all past information to provide for agronomists.

Undertaking on site trials ASAP.

With the addition of the new staff we should see outcomes more relevant to our area.

Poor action response to emerging problems at the field level. Researchers seem restricted, with limited capacity to react to a sudden situation. Need the equivalent to the GRDC NGA panel, where a committee is appointed to prioritise issues affecting crop production in a region. The committee is made up of local farmers and consultants.



APPENDIX

With mealy bug, this has been very poor. Locally, support was good but from further up the industry it was very poor and disappointing. This is potentially a massive problem that needs more work and focus, not from pencil pushers and office researchers, but hands-on people. The response to SLW originally was incredible and was a shining light for industry support, whereas the mealy bug response is pathetic and should never happen again.

Industry is always on the front foot regarding emerging issues. The cotton industry seems to be a lot more proactive and is able to get information a lot quicker than other industries such as the grains industry.

I can contact relevant researchers and industry organisations to gather information required on how best to respond. I think the industry also tries to be proactive in getting information out where possible about emerging issues before they become established issues.

Can take a while to get the wheels turning.

Information is communicated very well by mail and email, but I would like to see more done on a personal level in the Macquarie Valley.

It would be easier if we had regionally-based extension officer to facilitate communication between local consultants and researchers.

Investigating potential threats to the industry. Providing information how to prevent potential problems.

Overall, the industry provides great support and response. The excellent response from researchers to mealy bug in St George this year is one case in point.

Mostly done through direct contact with researchers.

Generally, support is very good but it would be nice to see more research continued, particularly for dryland and limited water irrigation systems.

Internet and relevant field days, it's all about asking questions.

Mostly response to major emerging issues is very good; however, we have found that the response to new pests or quite area-specific concerns can be slow to gain momentum. This is where relatively simple in-season trials may be useful in gaining answers to issues, rather than full blown 3 year long research projects.

Great teams of researchers and CottonInfo team. Other consultants.

Generally, for any major issues in the local area we have a field day with relevant researchers to discuss.

There are generally emails sent out when issues are emerging.

I think the industry does a very good job on the whole. I don't believe there needs to be any more money spent in this area.

QUESTION 63

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

Field and farm tours – more of these.

Of most value is being able to talk directly with the researcher if required.

Make the Cotton Conference cheaper or closer to southern valleys to get my customers to attend. Whenever I ask them to go they say it is too expensive or too far away.

Access to researchers at CCA seminars. Researchers' liaison with consultants.

Maybe even more liaison with consultants re planning research needs and trials. Extension services staff are probably better utilised documenting best practices in the industry rather than doing research (leave that to the researchers) to confirm what farmers and consultants have already put in practice.

Field days. Regular email newsletters and updates.

CottASSIST website – high value. CSD local trial data. Ability to talk to insect, disease and nutrition experts in cotton CRC. Would like to see cotton research projects relevant to the Murrumbidgee.

Someone who is based in our region and TRULY understands the system of cropping in our region, rather than trying to implement ideas and concepts from other regions directly to our variable system. Sometimes it just cannot be done.

I most value the direct access to researchers such as Lewis Wilson and others. I would like to see more involvement in the southern systems, particularly with regard to water use efficiency, nitrogen rates and soil compaction issues surrounding water application etc.



APPENDIX

Most valued: Facts on Friday (CSD), accessible and free information sheets, seminars and access to researcher's advice. Would like more of: anonymous forum discussions, access to people with chemical knowledge (i.e. 'Fallow Solutions Hotline').

Most valued are CCA meetings, where industry talks to a group of consultants. Very valuable to talk directly to good researchers and industry extension people. Needs to be more of a focus on doing shorter term ('this is affecting us now') type research, a bit like the GRDC NGA model.

I value group emails and sharing of industry information. With smartphone technology, it's easy to access and read when you have time. Having the ability to access research information online for free or without logins is beneficial, as you can access immediately in the field.

Career public servants like Lewis Wilson and Melina Miles, Mike Bell and Steve Allen all add tremendous value to my business as they are accessible and very knowledgeable. The industry needs to focus on creating redundancy and a career path for up and coming scientists so that when these key people retire there is a new crop of well paid, knowledgeable people to replace them. We are at risk of a huge 'brain drain' when these key scientists retire. I feel that the crop of replacements is mainly facilitators/extension people that do not have the depth of true scientific knowledge to take up the impending loss of knowledge.

I most value local representation. I would like to see more research on nutrition in irrigated cotton situations and in a range of locations.

I value that the industry's key researchers/extension staff are highly engaged with the industry, so we can speak to them directly. The industry must concentrate on capacity building in research in all disciplines (insects, nutrition, pathology, virology, physiology) so there is a natural succession as people retire.

Tools and calculators to allow for more science based decision-making. I would like to see the industry form an open access cotton database that encompasses the various research groups results and the inclusion of raw data from research projects to encourage and accelerate other research projects. I would like to see researchers releasing results earlier and not withholding results while awaiting publication.

I like the CCA seminars to deliver cotton research. When you work closely with CSD, they have good extension. The CottonInfo team is doing a good job on the ground; the only improvement would be to get the researchers to spend more time delivering their message live. I don't like too much reading material/newsletters as we get info overload

The majority of research can be found on the internet, which is very handy. Regular grower/consultant updates would be a benefit to keep up with new developments and research.

No comment.

Most value electronic information.

The online tools and the information I can access on line that is current and up to date.

More trial days i.e field days with exposure to new varieties. Greater access to researchers advancements even if they cannot be published yet.

Research newsletters are a good way to pass on new information and research results. A website with personal logins that would contain and save preferences of the research data that has more relevance to specific consultants.

We need more southern NSW-specific research. All data is from Narrabri and our growing conditions and soil types are vastly different.

Plant stress monitoring.

Get some better personnel, integrate specialists with extension.

More local information. More local trials and field days. Data from local trials and recommendations from trials. Needs to be sent via email to Agros.

I think at the moment information is good but a little more electronically is good in this age as time is valuable.

Less time, money and effort spent on Bollgard and more time on fundamental research into cotton physiology, understanding soils, nutrition and response to new and difficult pests.

I most value local extension people on the ground who know the local country and the people. Move anybody in Sydney back to the regions. Each area should have at least one cotton extension person full time.

The availability and ease of access to relevant information. Easy access to extension staff.



APPENDIX

I most value research update seminars. I would like to see the industry extension model move away from having a facilitator-type extension person covering a particular region to a smaller number of specialist, highly skilled research/extension personnel that cover all the growing regions. For example dedicated weed, nutrition, irrigation and insect applied research/extension specialist positions.

Local farm trials and field days.

I value field days in our valley that bring all agronomist and growers together (some combined and some separate). I would like to see a lot more of it in relation to topical issues in our area. I would like to see more industry specialists come to our area to do trial work and present information.

Have more regionally-based extension officers.

Value all research done. Some of the research has been done long time ago with different varieties. I would like to see more updated research in local districts.

I still believe the CCA seminars are the most effective way of transferring research knowledge to consultants. See very little of D&D team members. Having the ability to ring a researcher directly for help is the best aspect of the industry, though no doubt annoying and time consuming for the researcher.

CRDC needs to work closer with the CCA to provide relevant research presentations to consultants.

Access to trial work and journal articles, any variety comparisons etc. Sometimes access can be difficult.

Internet information.

I most value having ready access to researchers and a strong network of industry professionals. I feel there is a need to be able to study and address evolving issues within the season; full research can take 2–3 years, more immediate answers are required for new problems.

CottonInfo team has been good. I want all information, including publications, in one spot in a searchable app. Have all publications as PDF or, preferably, ebooks, so I can read the any time and anywhere.

Relevant research on pests/weeds/water management, particularly in regards to management of problem/resistant pests and weeds, and improving water efficiency.

Higher grower input on important issues needing further research.

We need to ensure that cotton farms are profitable, so we need ways to maximise profitability. The majority of areas have issues with low water availability, so we need to maximise \$/meg water.

A little more collation of different areas of research and results.



Australian Government

**Cotton Research and
Development Corporation**

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



Crop Consultants Australia Incorporated
PO Box 349, Woombye, QLD 4559
Mobile: 04 2992 5459 Fax: 07 3036 6357
Email: info@cropconsultants.com.au