



Final Project Report

Project Name/Reference: Reviving GrubPlan to ensure appropriate use and application of imidacloprid for control of cane grubs

Project Contact: Phil Ross, Regional Co-ordinator - Central

1. Background

The focus of the project was to:

1. Undertake a review of current practices, application technologies and extension methods with the intention of developing an updated best practice program for canegrub control - revised GrubPlan.
2. Pilot a rollout of revised GrubPlan, including risk assessment protocols, pesticide formulation selection, equipment calibration and correct application to industry via a consistent, well designed and properly resourced process.

2. Project Plan

The original work plan was modified as per **Attachment 1**. The original SRA Project Manager, Ian McBean, resigned from SRA in March 2020 and Central Regional Coordinator, Phil Ross, assumed responsibility for the project.

3. Key Activities

a) Service provider engagement

Service providers in each of the key catchment areas of Plane Creek, Mackay, Proserpine, Burdekin, Herbert and Wet Tropics were contacted initially by SRA Regional Coordinators to gauge their interest in the project:

- Plane Creek Productivity Services Limited (PCPSL)
- Mackay Area Productivity Services (MAPS)
- Farmacist
- Burdekin Productivity Services (BPS)
- Herbert Cane Productivity Services Limited (HCPSL)
- Sugar Services Proserpine (SSP)
- Innisfail Babinda Cane Productivity Services (IBCPS)
- Tully Cane Productivity Services (TCPSL)
- Mossman Ag Services (MAS)

IBCPS and TCPSL chose not to participate and MAPS limited their involvement to the review of GrubPlan and in-field applicator assessments and provision of advice to individual growers.



b) Grower Surveys

317 Grower Decision Process and Management surveys were completed:

Region	No. of Grower Surveys	Area Farmed (Ha)
Plane Creek	33	6,899
Mackay	17	2,666
Proserpine	38	7,649
Burdekin	50	7,624
Mossman	14	3,422
Herbert	153	29,376
Mulgrave/Babinda	12	1,800
Totals	317	59,436

Results of the survey were collated into a report and distributed to each participating organisation. The report is included as **Attachment 2**.

c) In-field applicator assessments

Fifty-four in-field applicator surveys were initially conducted during October - November 2019 to establish a baseline and to inform the pilot extension program.

Region	No. of applicators checked
Plane Creek	5
Mackay	14
Proserpine	2
Herbert	33
Totals	54

Major conclusions from this benchmarking exercise are:

- Application depth varies widely, between operators, and within blocks by the same operator
- Most operators are unaware of this variability
- Variation is due to a combination of operator attitude, equipment design, equipment set-up, cane bed profile, and condition of inter-rows

This led to the conclusion that the focus on any extension program needs to be strongly focussed on correct application.

Enhanced extension coordination



Image 1 and 2: In-field imidacloprid applicator assessments November 2019.



Figure 1: Measured application depths for eight double disc opener units in the Herbert. Fifty percent of measurements were less than 100 mm.

Enhanced extension coordination

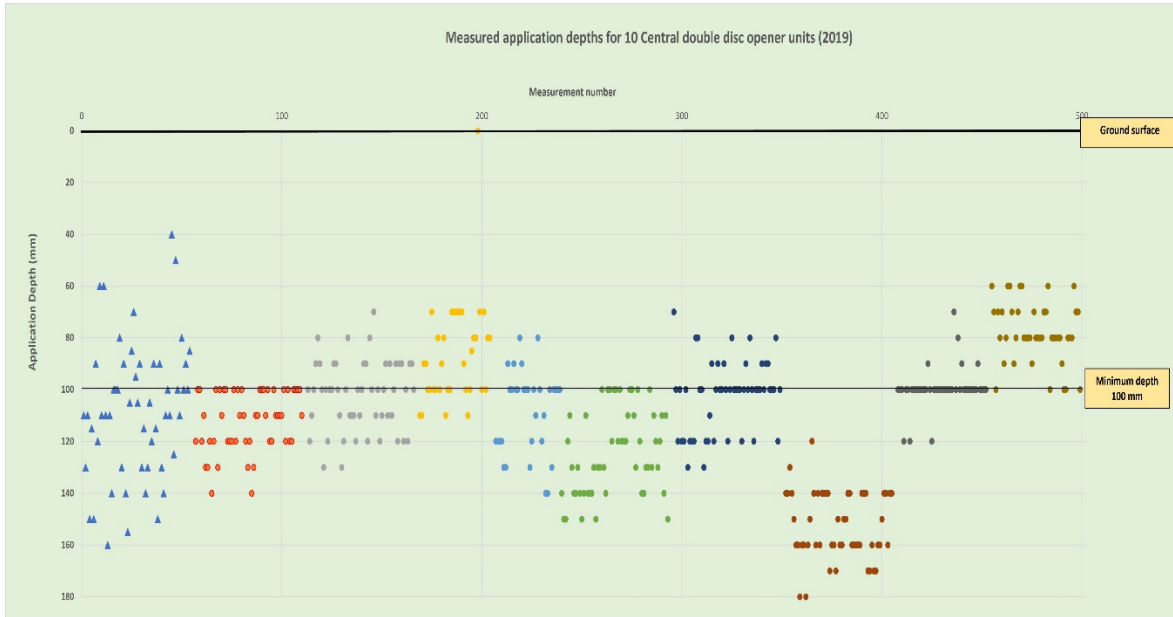


Figure 2: Measured application depths for double disc opener units 1 to 10 in the Central region. Twenty-two percent of measurements were less than 100 mm.

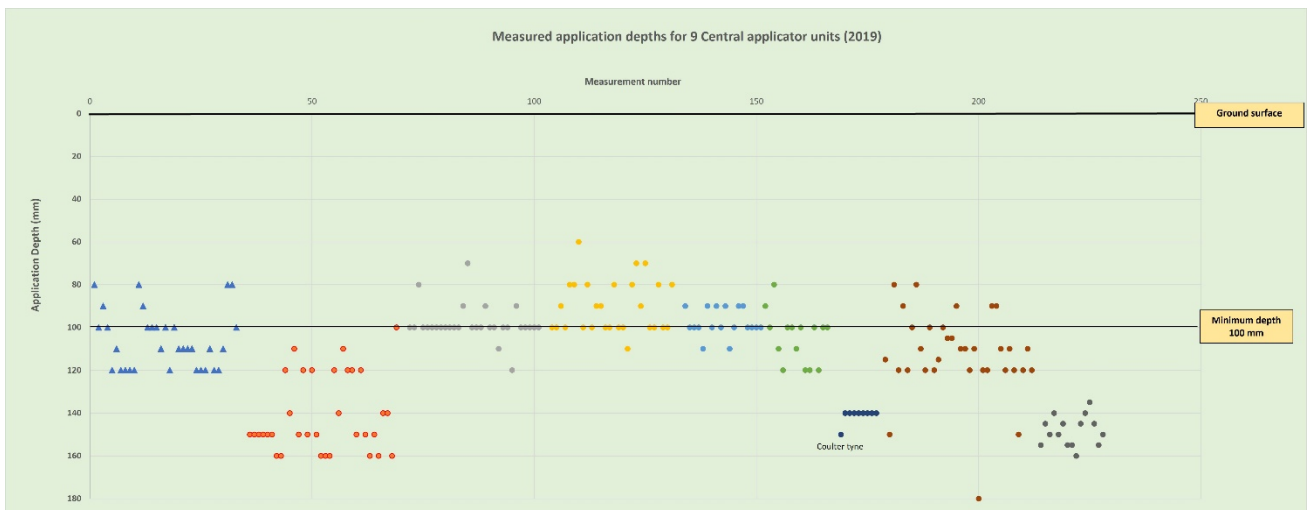


Figure 3: Measured application depths for double disc opener units 11 to 19 in the Central region. Eighteen percent of measurements were less than 100 mm.

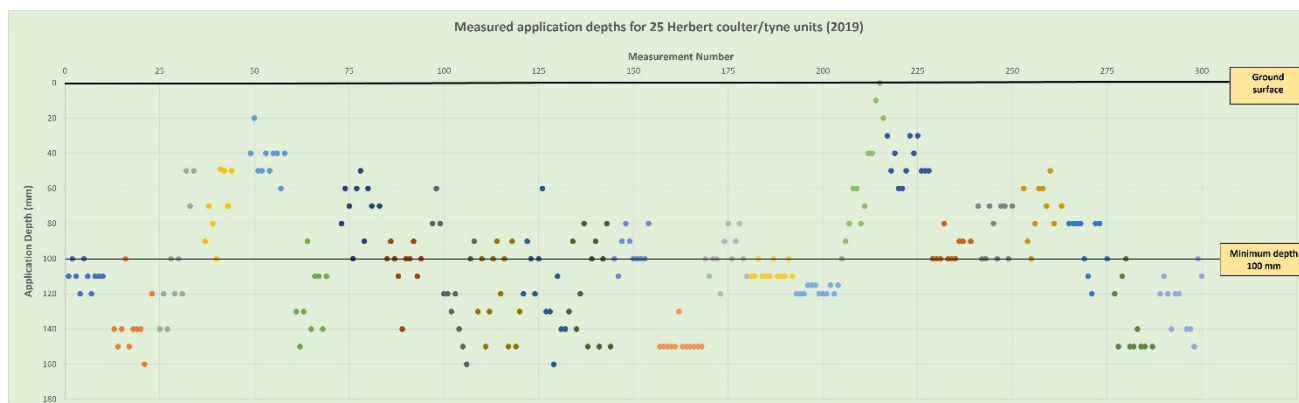


Figure 4: Measured application depths for twenty-five coulters/tyne units in the Herbert. Thirty-three percent of measurements were less than 100 mm.

The initial in-field survey also provided information to allow for the development of a training guide for later in-field assessments (**Attachment 3**).

d) Review of GrubPlan

The BSES publication GrubPlan 2012 was circulated to the Technical Review Committee. Committee members were:

- Nufarm: David Rumbold
- Bayer Crop Science: Richard Dickman
- SRA: Peter Samson, Emilie Fillols, Phil Ross
- Farmacist: Rob Sluggett
- Burdekin Productivity Services: Rob Milla
- Mackay Area Productivity Services: Anthony Schembri
- Sugar Services Proserpine: Frank Millar
- Plane Creek Productivity Services: Peter Albertson
- Herbert Cane Productivity Services: Lawrence Di Bella

A key difference between the original GrubPlan and the current situation is that the original GrubPlan was developed to encourage growers to treat more blocks with insecticide, i.e. it was developed in response to large yield losses to greyback canegrub.

The Committee identified:

- No new information or technology is available to allow more precise infestation risk assessments. Note: An SRA Research project, *Using remote sensing to improve canegrub management in North Queensland canefields (2015 -2019)*, investigated using satellite imagery and e-cognition software to identify low, medium and heavy grub infestations. The key aspiration for this technology was to be able to detect light infestations in untreated fields that would then inform the growers treatment decision for the following season. However, reliability was inadequate to enable its commercial



adoption. With current technology the biggest constraint to monitoring canegrub is the need to dig stools out in mature crops. To gain an appreciation of average numbers of canegrubs around 20 stools need to be dug for each block. This is impractical as growers simply will not do this and advisors are reluctant to as it is laborious and access into blocks is generally difficult except for the outside rows. Newer technology such as UAVs still require ground-truthing by digging stools. The lack of applied technology that can replace the need for stool digging and ground-truthing has been identified as a research gap. SRS's Research Funding Unit is aware of this gap, but new research funding is limited. A review of the research needs and priorities related to pest management is currently in-progress and will inform future research investment decisions by the Research Funding Unit.

- Changes to available management options:
 - suSCon® Blue and suSCon® Plus (both chlorpyrifos) are no longer on the market
 - BioCane (*Metarhizium anisopliae*) is no longer on the market
 - suSCon® maxi (up to 2 years control of greyback canegrub) has been replaced by suSCon maxi Intel® (up to 4 years control)
 - Trap cropping, designed primarily for the Burdekin, is not used by growers as a management option.
- GrubPlan 2012 did not include:
 - Recommendations for dual row systems: Bayer approved recommendations are now included. Nufarm are also submitting revised labelling to the APVMA to account for dual rows. This is not expected to come through until some time in 2021.
 - Detailed equipment setup or troubleshooting: a new section is now included highlighting possible design/setup/application issues
 - Water quality: a new section dealing with impact of imidacloprid on water quality is now included

GrubPlan 2012 has now been replaced with the new publication Greyback Canegrub Management (see Section e) *iii*).

e) Pilot rollout

In consultation with Farmacist and Productivity services, it was agreed that the focus of the extension components should focus on the following activities. Some activities have extended beyond the initial proposed pilot region.

i. Participation in and promotion of the Bayer Confidor® Guard User Accreditation program

The Bayer Confidor® Guard User Accreditation training was developed in collaboration with SRA and is built largely around the results of the in-field applicator assessments and SRA research trials investigating losses of imidacloprid in surface run-off, including effect of depth of placement.

The program is mandatory for agronomists from Bayer authorised imidacloprid resellers and is voluntary for others, including productivity service staff, private agronomists, government advisors and growers. The program is offered from Mossman to Southern Queensland.



Agronomists were targeted to participate in ZOOM training sessions with Bayer, consisting of a video explaining correct application, Power Point presentation reinforcing correct application and applicator design features and issues and questionnaire to reinforce messaging. Participants in the program receive a Confidor® Guard and Nuprid® 350SC Sugarcane Application Depth Gauge. The gauge is intended to remind operators and advisors to check the application slot depth.

The training video has been promoted to growers via publication of the link in various industry newsletters including SRA e-newsletter and Cane Connection magazine, productivity service e-newsletters and CANEGROWERS newsletters. Growers receive a depth gauge tool if they fill in their details on the video platform:

<https://kapara.rdbk.com.au/landers/765229.html>

Gauges have also been distributed to growers when undertaking in-field applicator assessments



Image 3: Depth gauge produced by Bayer and Nufarm to promote correct application depth. The gauge is made from steel with an attachment clip.

Participant numbers were as follows (as at 21 August 2020):

Activity	No.
Agronomists participating in training and accredited	126
Video views	250
Depth gauges distributed	900

ii. In-field liquid imidacloprid applicator assessments and recommendations, targeting depth of application and slot closure

Plane Creek Productivity Services, Farmacist, Mackay Area Productivity Services, Sugar Services Proserpine, Mossman Agricultural Services and Burdekin Productivity Services conducted in-field applicator assessments during August to November 2020.

Enhanced extension coordination



Training was provided by SRA’s Matt Schembri and Emilie Fillols to ensure that assessors used a common approach and to ensure data was returned to SRA. The training booklet and a recording template were developed (**Attachments 3 and 4**). Training included a theory component, working through the manual and a practical component looking over an actual applicator.



Images 4 and 5: Field staff from Plane Creek Productivity Services (left) and Sugar Services Proserpine (right) working through the theory component of the training manual with SRA’s Matt Schembri. Each organisation undertaking assessments received individual training so that COVID-19 protocols could be met.

The in-field assessments supported earlier assessments in finding a wide variation in application depth. Recommendations were made to operators in how to improve their application.

Targets numbers of in-field assessments conducted as part of the extension program are:

District	Number of assessments
PCPSL (Plane Creek)	8 (target)
Farmacist (Plane Creek/Mackay)	20 (target)
MAPS (Mackay)	15 (actual)
SSP (Proserpine)	12 (target)
BPS (Burdekin)	40 (target)
MAS (Mossman)	10 (target)

At the time of this report, MAPS had completed their surveys whilst the other productivity service companies were still in-progress.

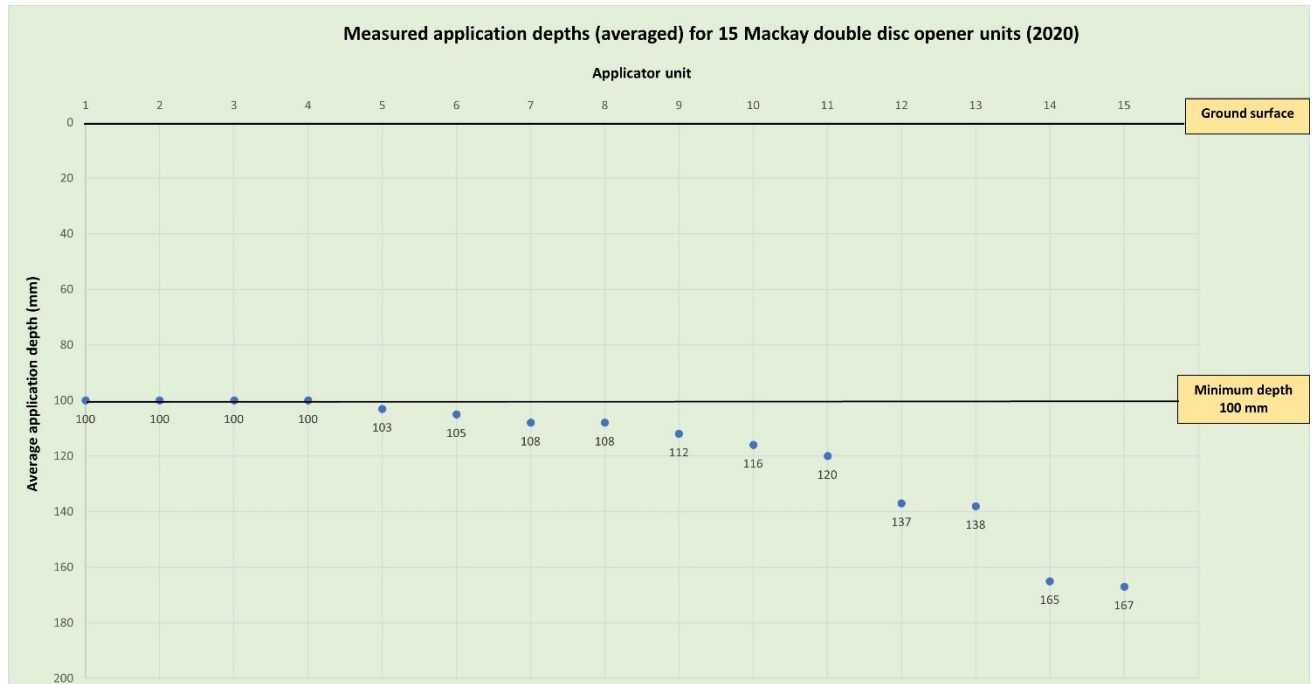


Figure 5: Measured application depths (averaged) for 15 Mackay double disc opener units – surveyed during September – October 2020.

Of the 15 units surveyed by MAPS during September to November 2020, all averaged at least 100mm application depth, with eleven within the optimum depth range of 100- 125mm. Four units were applying somewhat deeper than label recommendations and these operators have been contacted by MAPS advisors. The MAPS results are re-assuring and suggest that the extension messaging from November 2019 to September 2020 has been effective.

Results from the assessments by other productivity service companies will be collated when available and reported on in local industry newsletters.

iii. Publication and distribution of the Greyback Canegrub Management manual

The out-of-date BSES publication GrubPlan has been superseded with the publication of the Greyback Canegrub Management manual. There is a strong focus on correct application and correct equipment setup.

The manual has been distributed to all SRA members and advisors from Plane Creek to Mossman. Distribution in early September coincides with the main treatment window. XXXXX manuals have been distributed to date. Extra copies have been located in each SRA office’s in Mackay, Proserpine, Burdekin, Herbert and Meringa.



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Images 6 and 7: Greyback cane grub management manual – front cover and Table of Contents.

iv. **Discussion of and promotion of correct imidacloprid application at grower shed meetings and/or field days, as they occur.**

Timing of grower shed meetings and field days is dependent on individual productivity service companies. Activities held in the pilot region during 2020 include:

Proserpine

Sugar Services Proserpine conducted grower shed meetings during July 2020. Sixty-three growers attended. The imidacloprid Information Sheet (Attachment 6 – Handout for SSP grower shed meetings) was distributed and correct application techniques discussed.

Mackay

A grower day is still to be held at the MAPS Victoria Plains distribution farm with focus on correct imidacloprid applicator set-up and application.

Correct imidacloprid application will continue to be promoted at shed meetings and events outside of the timeline for this project. MAPS and PCPSL will conduct shed meetings during March 2021 and the annual MAPS/SRA Field Day will be held during May/June 2021.



v. Additional opportunities identified

A major issue identified during in-field applicator assessments was that operators could not check uniform application depth without stopping and dismounting from the tractor. As such, very few checked application depth across the paddock. One grower with an engineering background suggested the possibility of a simple in-cab depth monitor. SRA Adoption Officer, Matt Schembri, who is also a mechanical engineer, is working with this grower and a Mackay fabricator to design and test a simple in-cab monitor. It will use a ground wheel connected to a hydraulic ram which is in turn connected to a simple sight tube in-cab. If practical. It could be constructed with minimal cost by growers. Funding for this initial evaluation has been provided by SRA core adoption budget.

vi. Steering Group review meetings

A steering group was formed prior to the project's inception; with a focus on developing and implementing an imidacloprid stewardship programme. Members of the Steering Group were:

- Bayer
- Nufarm
- SRA
- DAF
- DES
- Farmacist
- James Cook University

Meetings were held on 10th October 2019, 15th November 2019, 14th February 2020, 15th April 2020, and 21st August 2020.

vii. Supporting media

Growers, advisors, millers and the broader industry have been engaged through a range of media, including:

- SRA Autumn Cane Connection
- SRA Winter Cane Connection
- SRA e-newsletters
- Mackay Canegrowers CEO Update – 8/6/20
- Industry Boards and Committees – PCPSL, SSP, Mackay Area Committee (Canegrowers)
- The Billet (Canegrowers Mackay/Plane Creek)
- Mackay Sugar Grower newsletter
- MAPS website
- SSP website
- PCPSL website
- BPS website



- HCPSL website

Content is included as **Attachment 5**.

viii. Related activities that support the project

A number of other projects also support the aspirations for this project. *Cane to Creek 2* (GBRF funds, SRA), *Pathways to water quality improvement in the Myrtle Creek sub-catchment* (DES funds, SRA), the *Sandy Creek project* (DES funds, Reef Catchments, Farmacist, MAPS) and *Project Bluewater* (GBRF funds, Farmacist), include in-stream monitoring and in some cases paddock-scale monitoring of a range of pesticides, including imidacloprid. Results from these projects support the goals of the Reviving GrubPlan project, in that it measures the extent of the issue in a local sub-catchment and involves growers in the discussion around the issue and solutions. Two Case Studies from the Myrtle Creek project are included in Attachment 6 to illustrate the scope of supporting activities.

ix. Legacy and Future activities

This project has achieved a high level of collaboration and communication amongst productivity service organisations, SRA, Farmacist, Nufarm, Bayer, CANEGROWERS, ACFA and resellers. Relationships have strengthened and despite some organisations being inherently competing against each other, this project shows that an industry approach is possible for critical issues.

Dependent on COVID19 status in 2021, grower shed meetings should recommence early in the year and the annual SRA/MAPS Field Day is also anticipated to take place. Imidacloprid stewardship will be promoted at these events.

Nufarm put approximately 400 growers through their suSCon maxi Intel® accreditation program during 2019 (prior to this project) and they intend to run refresher workshops during 2021.

A number of new projects also commenced in September 2020, which include a focus on imidacloprid management. Funded through the Great Barrier Reef Foundation Water Quality program, they include Mackay Whitsunday Cane to Creek (SRA) and a continuation of Project Bluewater (Farmacist).

These events should ensure that awareness of imidacloprid remains high amongst growers and advisors, and will maintain the momentum for practice change over the next three years.

Analysis of exceedance notifications suggests that the central region is at the most risk of future exceedances, although there appears to be a promising downward trend.



Table 1: Analysis of exceedance notifications by Bayer Crop Science, August 2020.

Days of Imidacloprid exceedance of 0.11ug/l ETL

River	13/14	14/15	15/16	16/17	17/18	18/19	19/20
Mulgrave	0	0	0	0	2	1	0 (to 23/02)
Tully	8	10	15	13	21	5	0 (to 4/02)
N Johnson	0	0	12	57	8	0	0 (to 27/01)
Barratta	5	3	3	0	1	0	0 (to 17/02)
Proserpine	NA	NA	0	62	40	19	6 (to 28/1)
O'Connell	0	2	6	20	5	4	3 (to 24/2)
Pioneer	41	5	51	23	75	16	30 (to 30/1)
Sandy	73	41	118	120	150	57	31* (To 30/1)
	127	61	205	295	302	102	70* (Partial)

Signed:

Date:



Attachment 2: Summary of grower survey

Project: Reviving GrubPlan to ensure appropriate use and application of imidacloprid for control of canegrubs: summary of grower survey

Introduction

This project is funded by the Queensland Government's Reef Water Quality Program through the Enhanced Extension Coordination Program.

The grower survey is part of a larger imidacloprid stewardship project and is intended give insight into grower management practices related to the use of imidacloprid. Some district results need to be interpreted with caution due to the small sample size, especially Mackay and Innisfail/Babinda. The survey was conducted from November 2019 to February 2020.

Acknowledgements go to Mossman Agricultural Services, Herbert Cane Productivity Services, Burdekin Productivity Services, Sugar Services Proserpine, Plane Creek Productivity Services and Farmacist for undertaking the surveys in their respective areas. Sugar Research Australia conducted the surveys in the Innisfail/Babinda region.

Survey numbers

Note: not all respondents answered all questions.

District	No. of surveys
Mackay	17
Plane Creek	34
Proserpine	38
Burdekin	50
Herbert	153
Mossman	20
Innisfail/Babinda	12
Total surveys	324

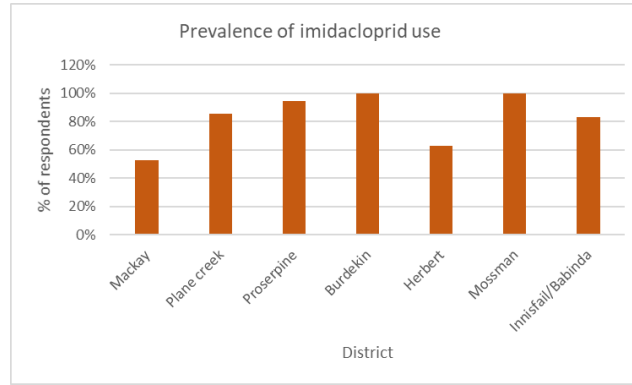
Results

Prevalence of imidacloprid use

Results suggest that canegrub risk differs amongst districts with Mackay and Herbert having significant areas where canegrub risk is minimal, with growers choosing not to treat in those areas. The survey did not identify farm characteristics for those not treating.

District	% of respondents who use imidacloprid	Total no. of respondents to question
Mackay	53%	17
Plane Creek	85%	34
Proserpine	95%	38
Burdekin	100%	50
Herbert	63%	153
Mossman	100%	20
Innisfail/Babinda	83%	12

Enhanced extension coordination

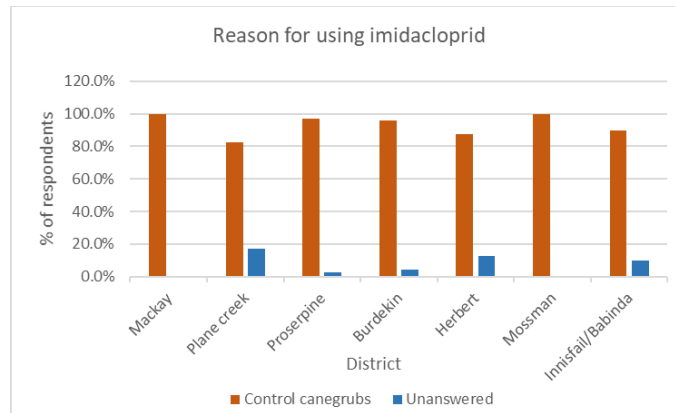


The following sections relate to respondents who use imidacloprid

Reasons for imidacloprid usage

Canegrub management was the predominant reason given for using imidacloprid with some growers choosing not to respond to this question.

District	Canegrub management	Unanswered/rather not say
Mackay	100%	0%
Plane Creek	83%	17%
Proserpine	97%	3%
Burdekin	96%	4%
Herbert	88%	12%
Mossman	100%	0%
Innisfail/Babinda	90%	0%



Method of accessing canegrub risk (percentage totals > 100% as multiple answers are possible)

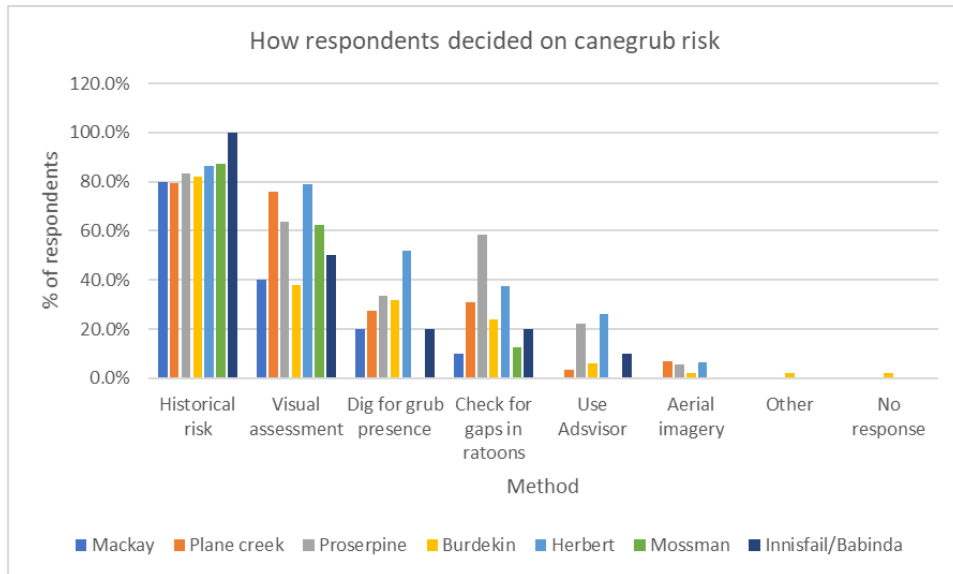
The majority of respondents rely on their knowledge of their farms and which blocks are historically at risk. Historical risk by itself may not be an accurate indication of risk in any particular year, hence it should be used with other methods of risk assessment. The majority of respondents back up this historical knowledge with at least one other method of assessing risk including visual inspection of blocks, digging of stools to check for canegrubs and checking blocks for gaps after harvest. A minority of respondents relied on advice from advisors. It is pleasing to see a number of growers starting to use new technologies such as aerial imagery (including images captured by UAVs).

Enhanced extension coordination



The survey did not capture timing of assessments like digging for grubs, e.g. did digging occur only after visible damage was apparent or was digging used to assess early infestations before visual symptoms were severe?

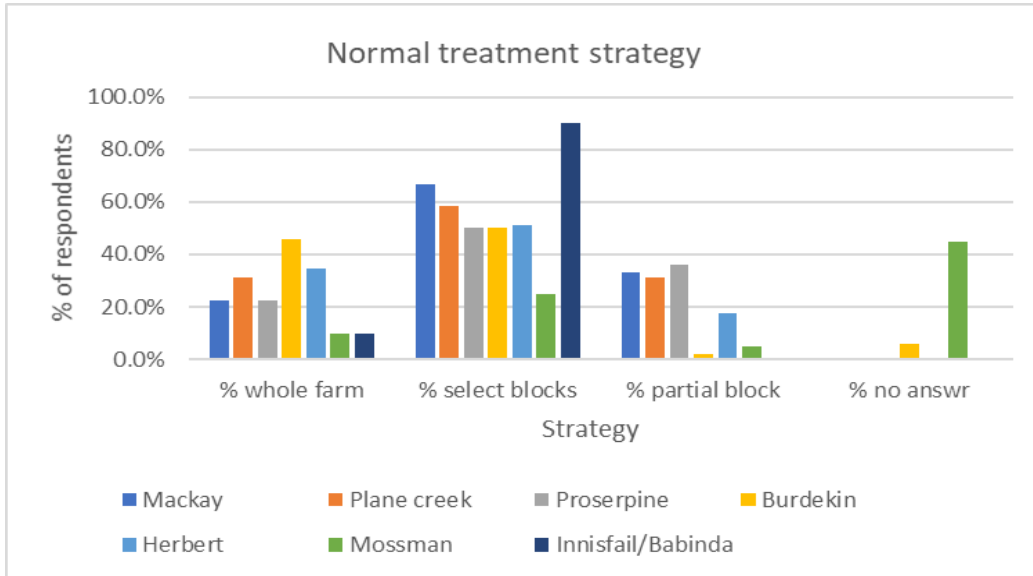
District	Historical knowledge	Visual	Dig	Ratoon gaps	Advisor	Aerial imagery	Other	Unanswered
Mackay	89%	44%	22%	11%	0%	0%	0%	0%
Plane Creek	79%	76%	28%	31%	3%	7%	0%	0%
Proserpine	83%	64%	33%	58%	22%	6%	0%	0%
Burdekin	82%	38%	32%	24%	6%	2%	2%	2%
Herbert	87%	79%	52%	37%	26%	6%	0%	0%
Mossman	88%	61%	0%	13%	0%	0%	40%	0%
Innisfail/Babinda	100%	50%	20%	20%	10%	0%	05	0%



Normal treatment strategy for growers using imidacloprid (percentage totals > 100% as multiple answers are possible)

Approximately half of respondents apply imidacloprid to selected blocks rather than whole farm and with approximately 20% treating parts of blocks. This is evidence that many growers are using a risk-based approach to treatment decisions.

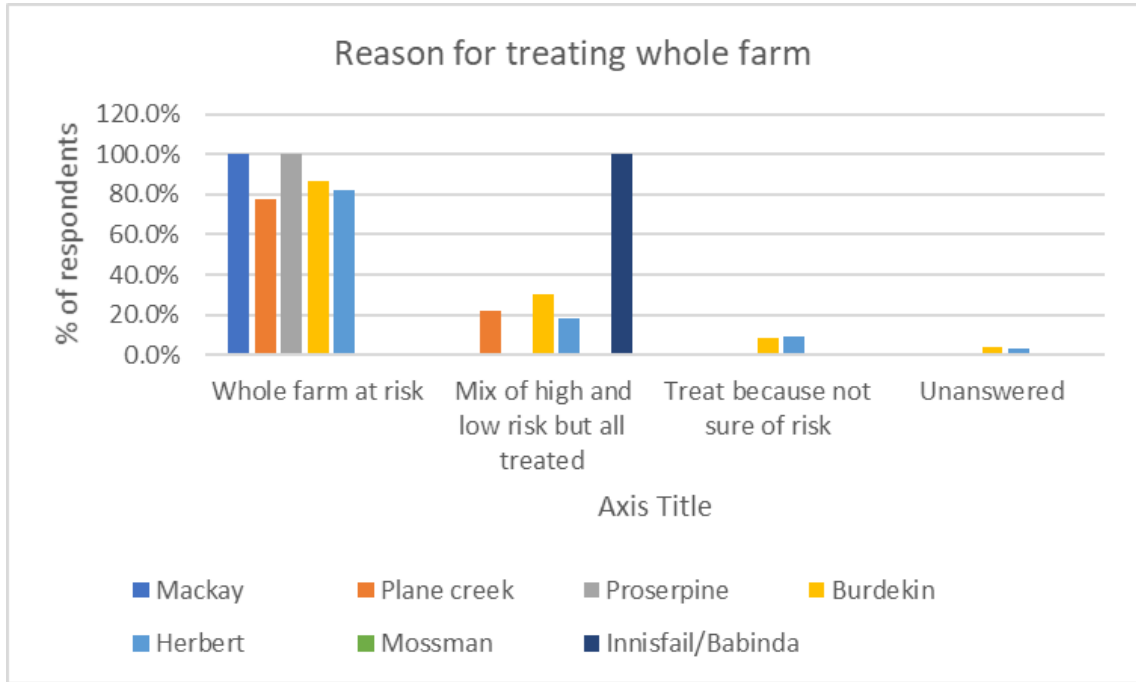
District	Apply to whole farm	Apply to selected blocks	Apply to parts of selected blocks	Unanswered
Mackay	22%	67%	33%	0%
Plane Creek	31%	59%	31%	0%
Proserpine	22%	50%	36%	0%
Burdekin	46%	50%	2%	6%
Herbert	34%	51%	18%	0%
Mossman	10%	25%	5%	45%
Innisfail/Babinda	10%	90%	0%	0%



Reasons for applying to whole farm

A majority of respondents made a decision to treat whole farm based on their belief that the whole farm was at risk of infestation. A minority were conscious that some blocks were of lower risk but treated them anyway. A relatively small percentage treated because they did not know what the actual risk of infestation was. There is scope to encourage more growers to make treatment decisions based on block specific risk.

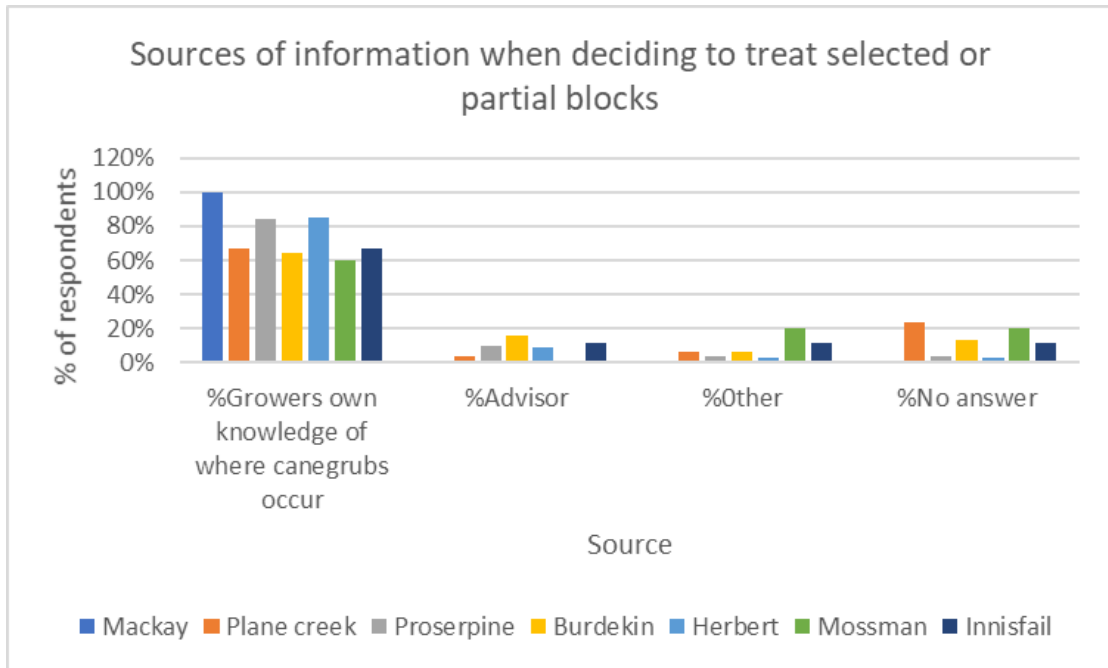
District	Whole farm at risk	Mixture of high and low risk but all treated	Treat because not sure what the risk is	Unanswered
Mackay	100.0%	0.0%	0.0%	0%
Plane Creek	78%	22%	0.0%	0%
Proserpine	100.0%	0%	0.0%	0%
Burdekin	87%	30%	9%	4%
Herbert	82	18%	9%	3%
Mossman	0%	0%	0%	0%
Innisfail/Babinda	0%	100%	0%	0%



Sources of information for growers to make block/partial block specific treatment decisions (multiple answers possible)

The majority of respondents again used their own knowledge of their farms' infestation risk to decide which blocks or parts of blocks to treat. A relatively small minority seek advice before treatment decisions.

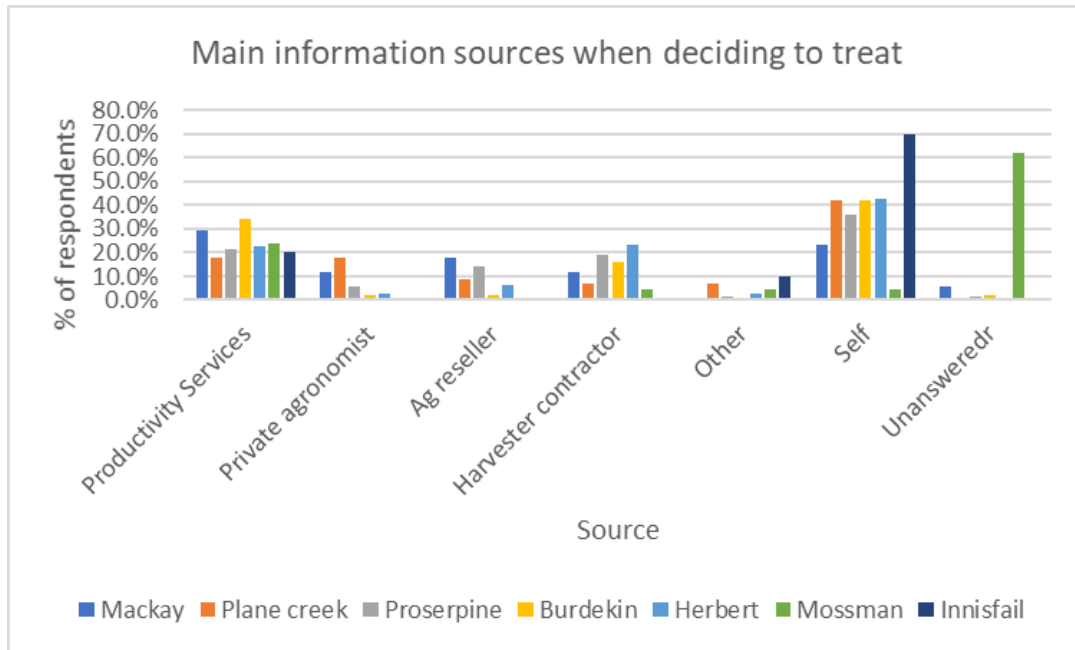
District	Own knowledge	Advisor recommendation	Other	Unanswered
Mackay	100%	0%	0%	0%
Plane Creek	67%	3%	7%	0%
Proserpine	84%	10%	3%	23%
Burdekin	65%	16%	6%	3%
Herbert	85%	9%	3%	13%
Mossman	60%	0%	20%	3%
Innisfail/Babinda	67%	11%	11%	20%



General information sources for canegrub management, for growers who treat. (Multiple answers possible)

There is a spread of information/knowledge sources used by growers when deciding on risk of infestation. Whilst a majority rely heavily on their own knowledge it is pleasing to see a number of alternative sources also being used.

District	Productivity Service	Private agronomist	Ag reseller	Harvester contractor	Other	Self	Unanswered
Mackay	29.4%	11.8%	17.6%	11.8%	0.0%	23.5%	5.9%
Plane Creek	17.8%	17.8%	8.9%	6.7%	6.7%	42.2%	0.0%
Proserpine	21.7%	5.8%	14.5%	18.8%	1.4%	36.2%	1.4%
Burdekin	34.4%	2.2%	2.2%	16.1%	1.1%	41.9%	2.2%
Herbert	22.4%	2.6%	6.4%	23.1%	2.6%	42.9%	0.0%
Mossman	23.8%	0.0%	0.0%	4.8%	4.8%	4.8%	61.9%
Innisfail/Babinda	20.0%	0.0%	0.0%	0.0%	10.0%	70.0%	0.0%



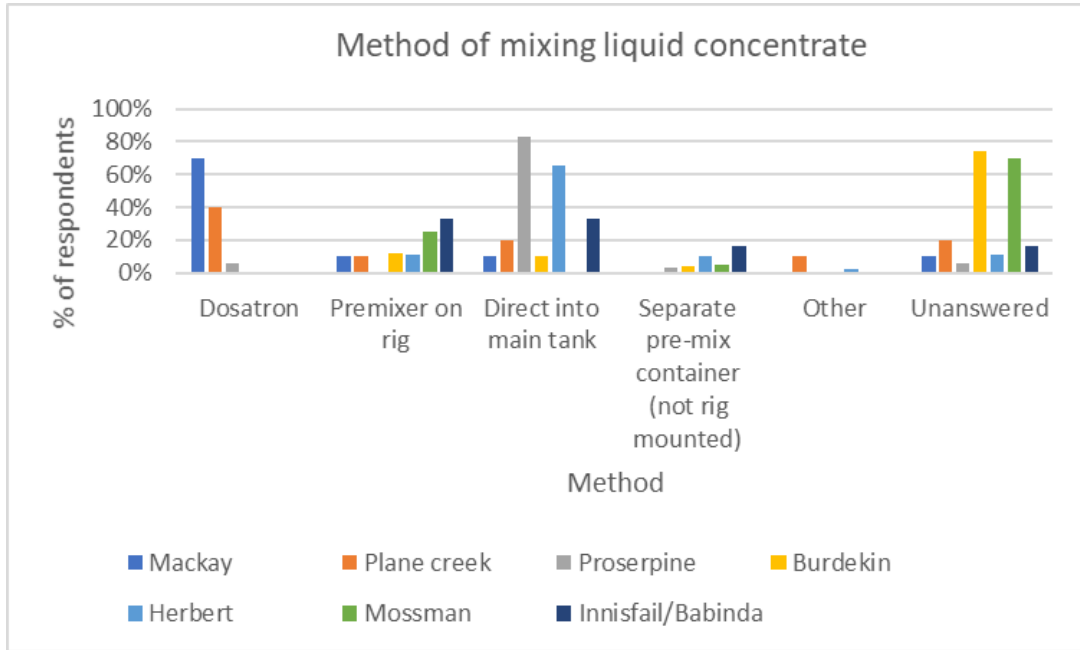
Method of mixing liquid concentrate into solution

There are some quite large practice differences between districts when it comes to mixing concentrate into solution. Dosatron® is a flow-based metering system which has been promoted in the central region over a number of years, which reflects in the survey responses. This system has the advantage that only the required amount of concentrate is used for any particular job, as the concentrate is drawn out of the original container and mixed in-line with a separate water supply. The need for disposal of unused solution is eliminated. All the other mixing systems may involve the need to dispose of unused insecticide solution.

It is not clear why such a high percentage of Burdekin growers chose not to answer this question. Some unanswered may be due to sole use of suSCon® maxi Intel®

District	Dosatron®	Pre-mixer on rig	Direct into main tank	Separate pre-mix container (not rig mounted)	Unanswered
Mackay	70%	10%	10%	0%	0%
Plane Creek	40%	10%	20%	0%	10%
Proserpine	6%	0%	83%	3%	0%
Burdekin	0%	12%	10%	4%	0%
Herbert	0%	11%	66%	10%	2%
Mossman	0%	25%	0%	5%	0%
Innisfail/Babinda	0%	33%	33%	17%	0%

Enhanced extension coordination





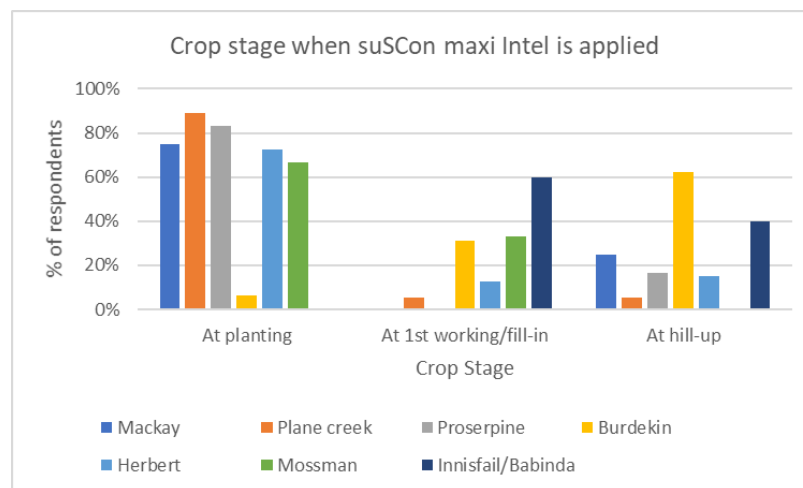
Section 2 Application in plant cane

suSCon® maxi Intel®

Crop stage when suSCon® maxi Intel® is applied

There are some marked differences in time of application between districts. Mackay, Plane Creek and Herbert seem to prefer to apply at planting, whilst Proserpine and Herbert prefer to apply at hill-up. This could be due to machinery available and/or the use of contractors for some operations. Although suSCon maxi Intel is registered for up to 4 years control of greyback canegrub, application at early planting means that it is in place for potentially 8 months before a canegrub infestation occurs, potentially shortening its efficacy in subsequent years.

District	At planting	At 1 st working/fill-in	At hill-up	
Mackay	75%	0%	25%	75%
Plane creek	89%	6%	6%	89%
Proserpine	83%	0%	17%	83%
Burdekin	6%	31%	63%	6%
Herbert	73%	13%	15%	73%
Mossman	67%	33%	0%	67%
Innisfail/Babinda	0%	60%	40%	0%



suSCon maxi Intel applicator type

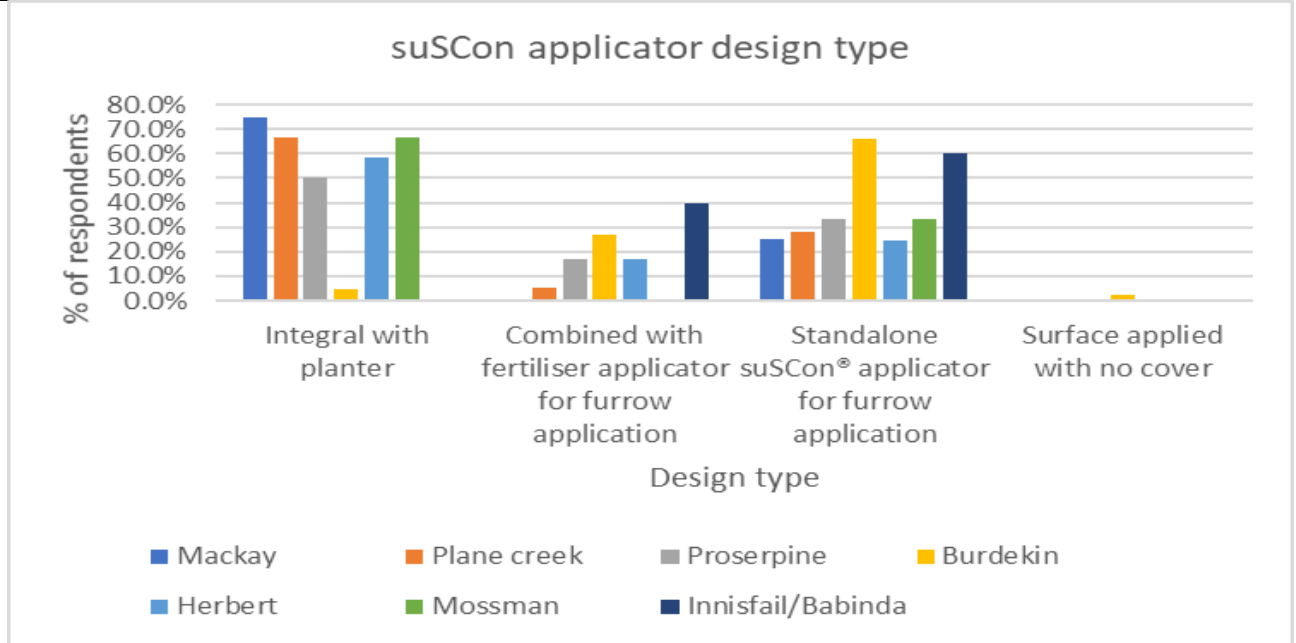
Application of imidacloprid to plant cane generally has fewer issues than when applied to ratoon cane. suSCon maxi Intel is registered for use only in plant cane. Adequate soil coverage is generally achieved at the same time of billet coverage and all applicators should have a set of boards/discs that pull soil in over the billet and/or treatment band. The applicator in the Burdekin that surface applies with no cover would be worthwhile following up!

District	Integral with planter	Combined with fertiliser applicator for furrow application	Standalone suSCon applicator for furrow application	Surface applied with no cover
Mackay	75.0%	0.0%	25.0%	0.0%
Plane creek	66.7%	5.6%	27.8%	0.0%

Enhanced extension coordination

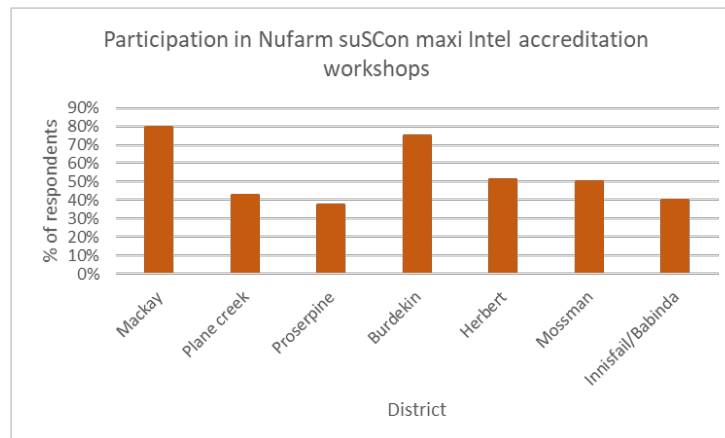


Proserpine	50.0%	16.7%	33.3%	0.0%
Burdekin	4.9%	26.8%	65.9%	2.4%
Herbert	58.5%	17.1%	24.4%	0.0%
Mossman	66.7%	0.0%	33.3%	0.0%
Innisfail/Babinda	0.0%	40.0%	60.0%	0.0%



Participation rates in Nufarm's suSCon maxi Intel accreditation program

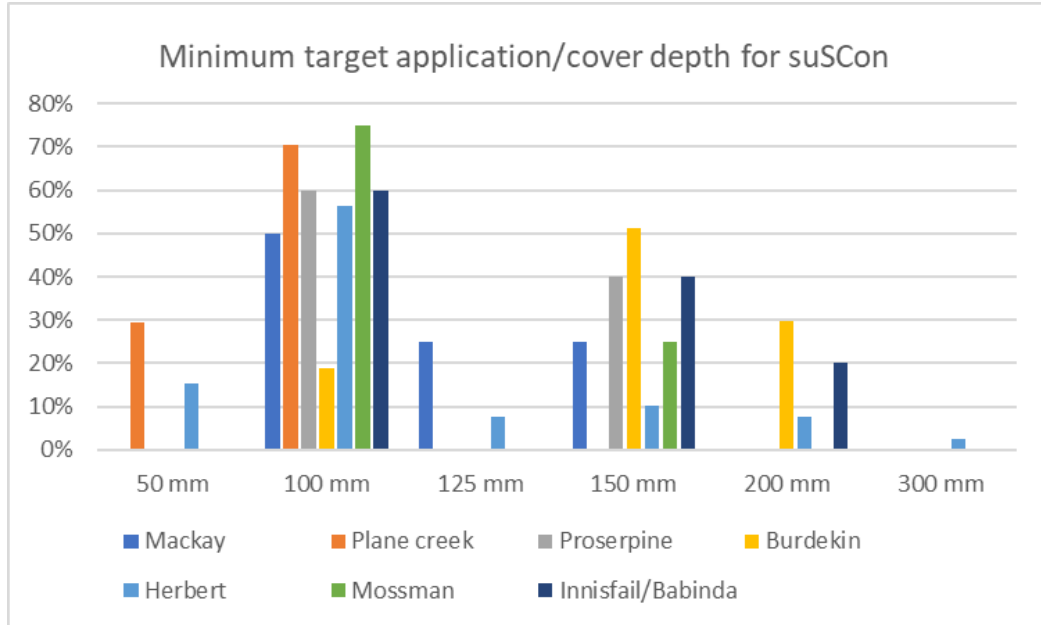
Nufarm has promoted an accreditation program for many years. The high participation rate for Mackay, from this survey, must be treated with caution due to the small sample size. Other districts seem to have an acceptable uptake rate for a voluntary scheme, especially Burdekin. Continued promotion of SmartCane BMP should have follow-on effects in increasing grower participation in the program, as participation in industry training programs is evidence of growers' maintaining currency in technology and /or social/environmental responsibilities.





Minimum target application / covered depth for suSCon maxi Intel

The required depth range for the treated band is 150 – 200 mm after final hill-up. As most growers gave a depth range they were wanting to achieve, the minimum depth is reported here. With the majority minimum depth of around 100 mm, the results suggest that some applications will not be achieving the required depth of soil coverage and there is scope for growers to re-access the minimum depth they aim to achieve.



Liquid formulations in plant cane

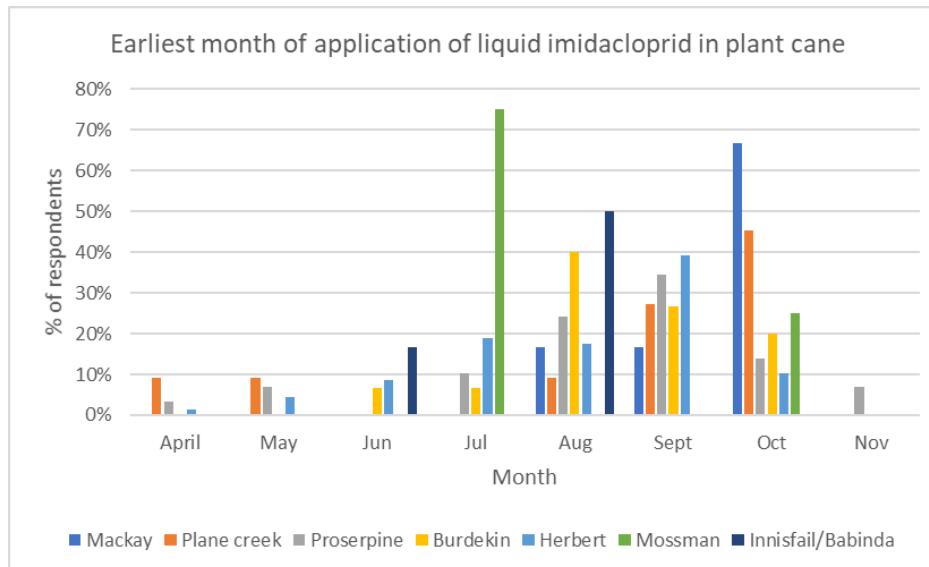
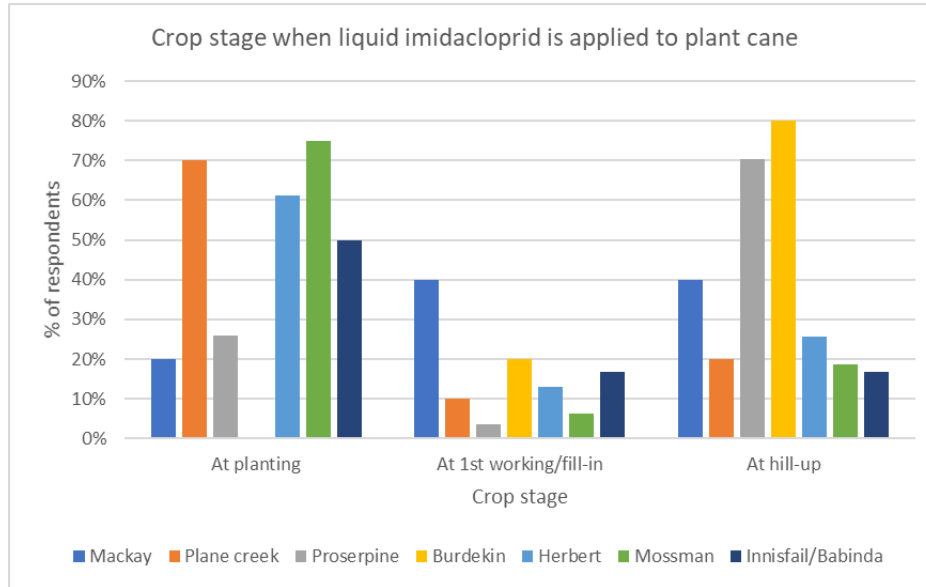
Crop stage and timing of liquid formulations of imidacloprid application

Time of application is important for liquid imidacloprid formulations as the length of control is only one season. Application early in the year could see the level of active in the soil being inadequate for effective canegrub control during the infestation period. Early application also means that the insecticide is vulnerable to losses via leaching or run-off over an extended time.

Plane Creek, Herbert, Mossman and Innisfail/Babinda seem to favour application at planting whilst Mackay, Proserpine and Burdekin favour application at 1st working or final hill-up.

District	At planting	At 1st working/fill-in	At hill-up
Mackay	20%	40%	40%
Plane creek	70%	10%	20%
Proserpine	26%	4%	70%
Burdekin	0%	20%	80%
Herbert	61%	13%	26%
Mossman	75%	6%	19%
Innisfail/Babinda	50%	17%	17%

Enhanced extension coordination



Responses regarding the earliest month of application indicate that some liquid formulation is being applied too early in the year, and this would be during the planting operation. These early applications have a higher risk of losing imidacloprid off-farm as well as loss of efficacy when an infestation occurs.

Responses indicate that most liquid applications are being made during a suitable time window. The latest application date is strongly influenced by harvest season length and weather.

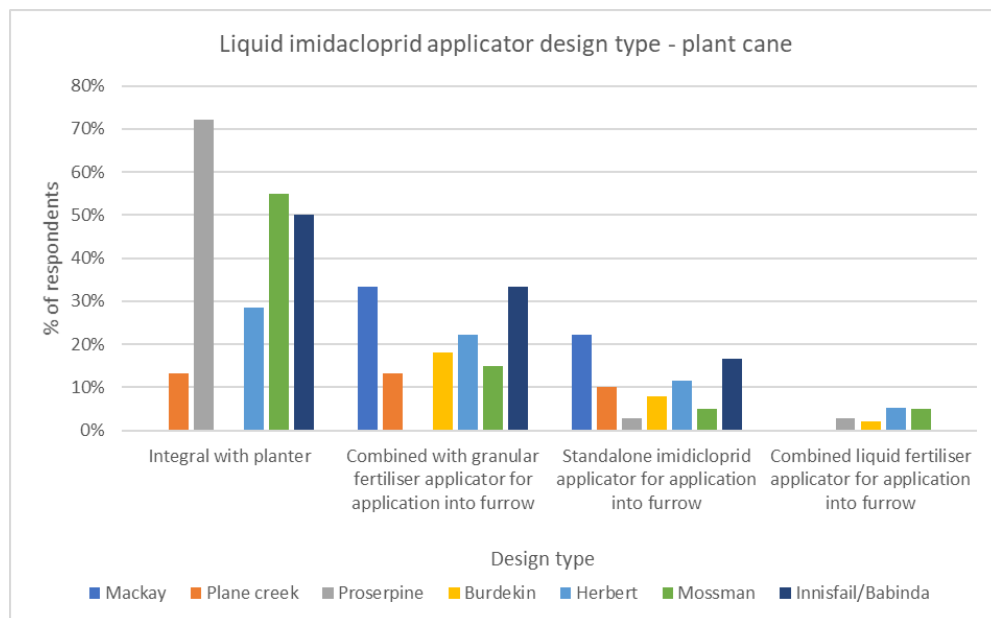
Confidor® Guard is registered for use from August to November whilst Nuprid® 350 EC is registered for use from June to November.



Liquid imidacloprid applicator type

Again, the Mackay small sample size probably does not accurately reflect the true situation as there are quite a few billet planters set up with liquid imidacloprid systems.

District	Integral with planter	Combined with granular fertiliser applicator for application into furrow	Standalone imidacloprid applicator for application into furrow	Combined liquid fertiliser applicator for application into furrow
Mackay	0%	33%	22%	0%
Plane creek	13%	13%	10%	0%
Proserpine	72%	0%	3%	3%
Burdekin	0%	18%	8%	2%
Herbert	29%	22%	12%	5%
Mossman	55%	15%	5%	5%
Innisfail/Babinda	50%	33%	17%	0%



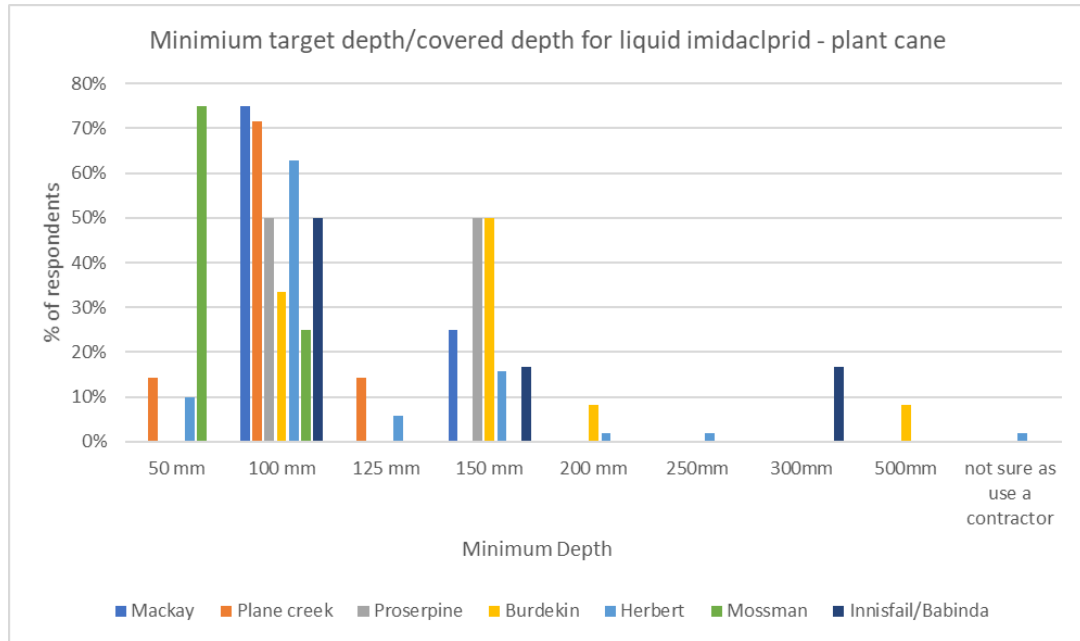
Liquid imidacloprid minimum target depth/cover in plant cane

Results suggest that most respondents aim to have at least 100 mm cover over the imidacloprid band.

District	50 mm	100 mm	125 mm	150 mm	200 mm	250mm	500mm	not sure as use a contractor
Mackay	0%	75%	0%	25%	0%	0%	0%	0%
Plane creek	14%	71%	14%	0%	0%	0%	0%	0%
Proserpine	0%	50%	0%	50%	0%	0%	0%	0%
Burdekin	0%	33%	0%	50%	8%	0%	8%	0%



Herbert	10%	63%	6%	16%	2%	2%	0%	2%
Mossman	75%	25%	0%	0%	0%	0%	0%	0%
Innisfail/Babinda	0%	50%	0%	17%	0%	0%	17%	0%

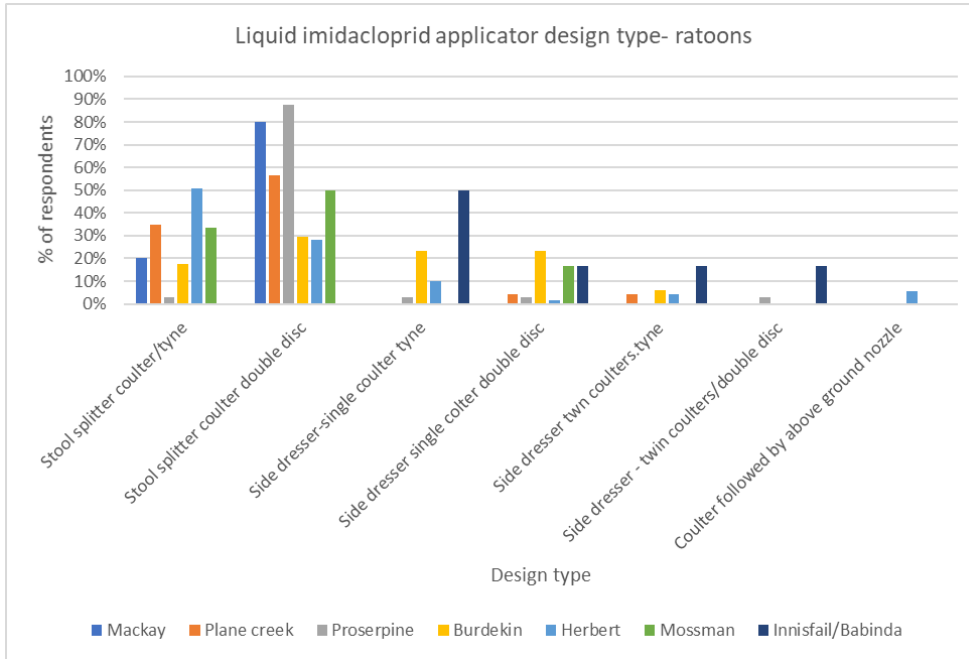


Section 3 Application of liquid imidacloprid in ratoon cane

Liquid imidacloprid applicators design type

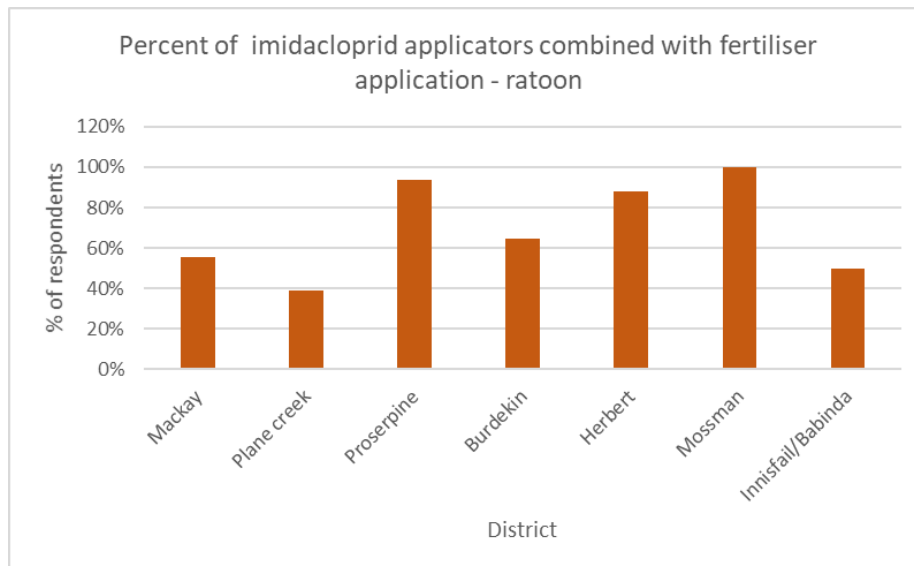
Stool splitters, with either coulters/tyne or coulters/double disc are the most common types of ratoon applicators. With all applicator types the final setup configuration of depth setting, delivery tube position and angle is critical. There is an emerging trend, especially in the Herbert, of using coulters with above ground nozzles to apply imidacloprid the same time as liquid fertiliser. This design needs to be evaluated as the above ground delivery of imidacloprid may greatly increase the risk of losses. HCPSL has engaged with the supplier of this system to find a suitable solution.

District	Stool splitter coulters / tyne	Stool splitter coulters / double disc	Side dresser - single coulters / tyne	Side dresser single coulters / double disc	Side dresser twin coulters / tynes	Side dresser - twin coulters / double disc	Coulters followed by above ground nozzle
Mackay	20%	80%	0%	0%	0%	0%	0%
Plane creek	35%	57%	0%	4%	4%	0%	0%
Proserpine	3%	88%	3%	3%	0%	3%	0%
Burdekin	18%	29%	24%	24%	6%	0%	0%
Herbert	51%	28%	10%	1%	4%	0%	6%
Mossman	33%	50%	0%	17%	0%	0%	0%
Innisfail/Babinda	0%	0%	50%	17%	17%	17%	0%



Percentage of applicators that also apply fertiliser

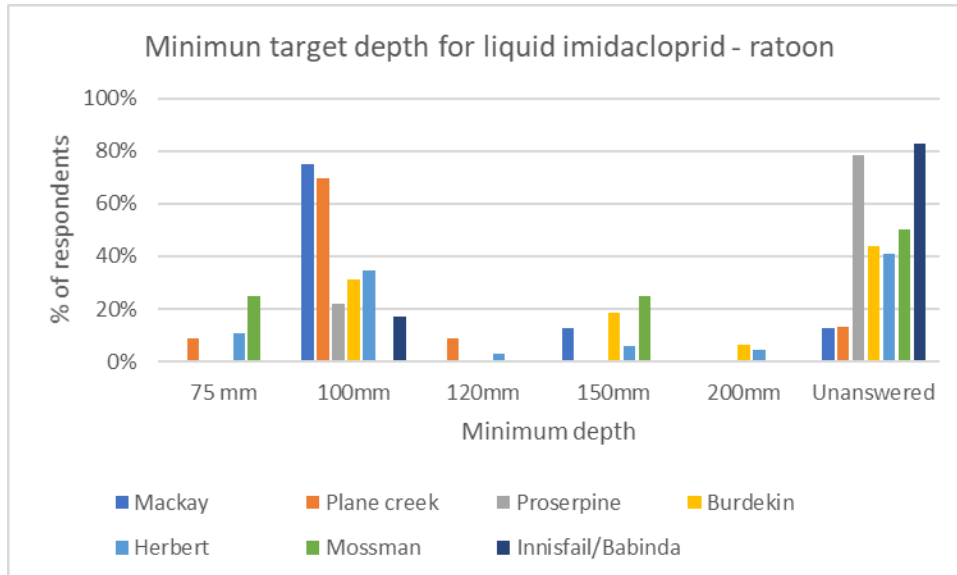
Combined imidacloprid/fertiliser applicators can sometimes result in the liquid wetting up granular fertiliser and causing fertiliser/imidacloprid/soil to stick to the inside of double discs and to be mixed through the profile rather than consistently at the desired depth. Combined units are very common, and operators should check that this does not occur. Many operators have fitted scarppers to the discs to prevent build-up.





Minimum target depth of application for liquid imidacloprid in ratoons

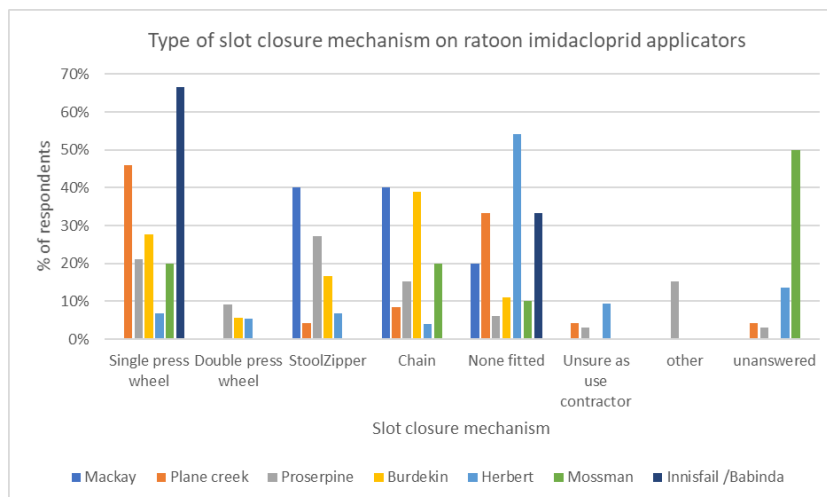
The application depth range on labels is 100 to 125mm. Results suggest that most growers aim to achieve this, although the non-response rate was quite high.



Note: a separate in-field survey of applicators shows that actual application depth can be very different to what operators think they are achieving.

Type of slot closure mechanisms fitted to ratoon imidacloprid applicators

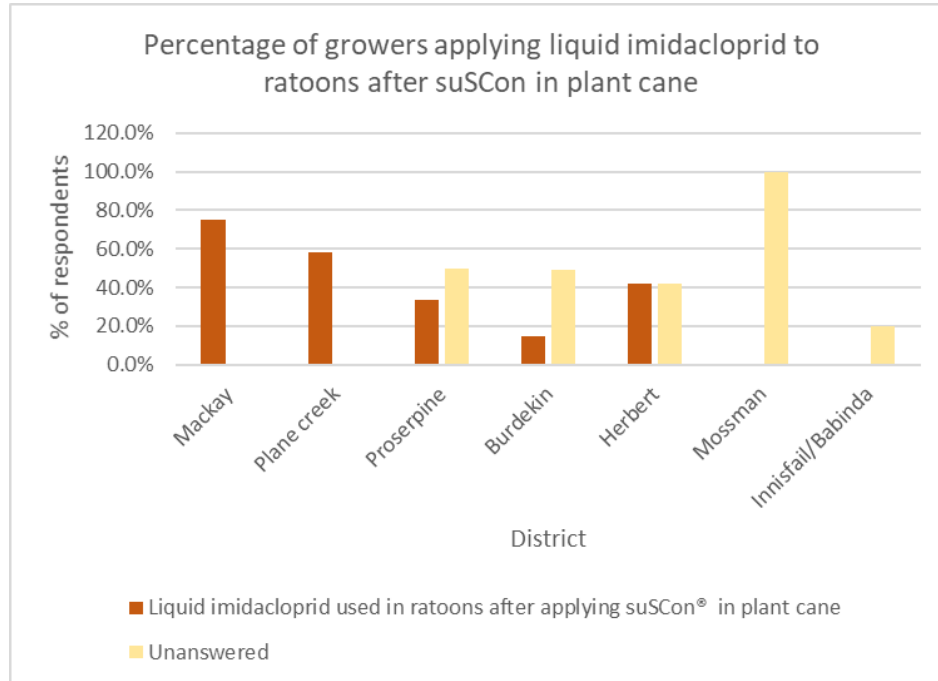
Labels of all imidacloprid products registered for use in sugarcane state that the slot needs to be fully closed. The survey shows most have some type of device fitted. However, there is a relatively high proportion with no slot closing mechanism fitted. Not all mechanisms work equally well in different soil type, e.g. the chains may work to some degree in very loose soils but are ineffective on most other soil types.



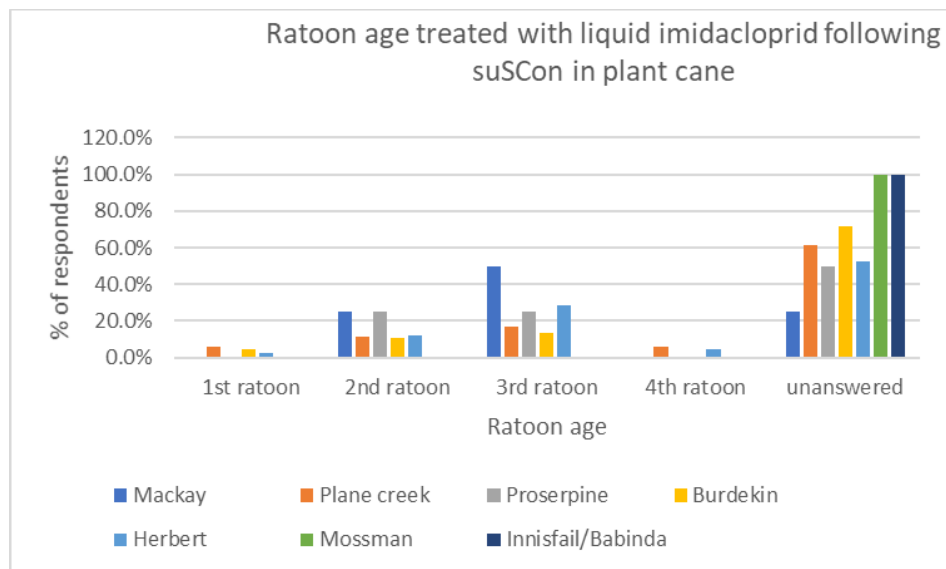


Prevalence of ratoon application of liquid imidacloprid after suSCon application at planting

Control periods for greyback canegrub for suSCon maxi Intel and the previous suSCon maxi are up to 4 years and 3 years, respectively. It is of interest to see what time interval growers are choosing between suSCon application in plant cane and subsequent treatment of ratoons with liquid products. Although the survey referred specifically to suSCon maxi Intel®, some growers may have related their experiences with the previous product suSCon maxi.



Ratoon class treated with liquid imidacloprid following suSCon application in plant cane



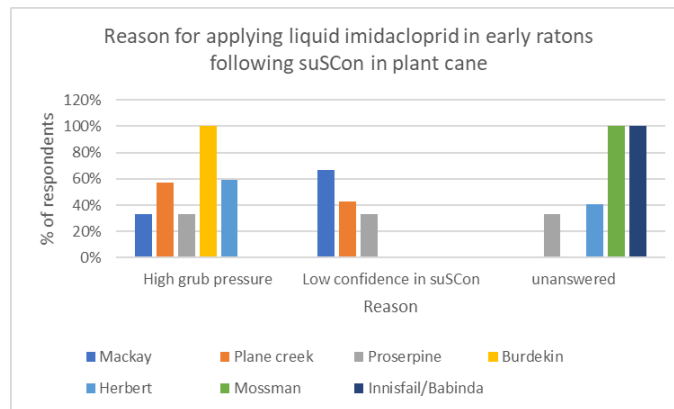
Enhanced extension coordination



Although a small percentage, it is concerning that a few growers apply liquid imidacloprid in 1st ratoon, following suSCon application in plant cane. Applications in 2nd ratoon are also suspect. Applications in 3rd ratoons may be reflecting the previous product suSCon maxi which had a protection period for up to 3 years. It is interesting to note the high percentage of growers who chose not to answer this question!

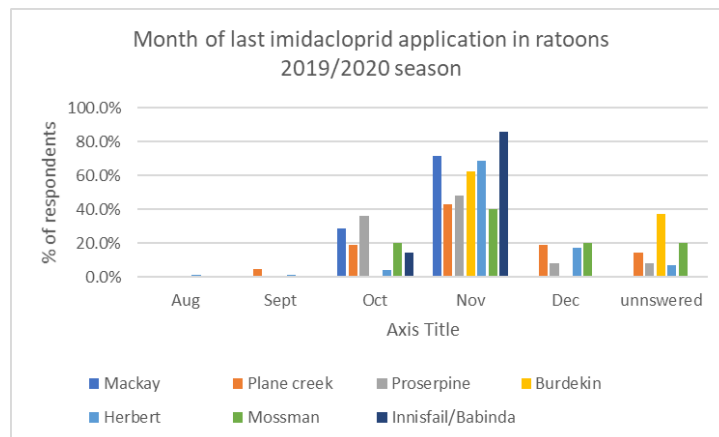
Reasons for treating ratoons with liquid imidacloprid following suSCon in plant cane

This question related to growers who answered yes to applying liquid imidacloprid after suSCon in plant cane. High grub pressure and low confidence in suSCon were the main reasons for applying in the early ratoons. The survey did not capture the application rates so there is no way of knowing if the need to treat early ratoons was due to the incorrect rate being applied in plant cane. Likewise, the survey could not establish if application technique was causing reduced efficacy in early ratoons.



Timing of last imidacloprid application to ratoons in the 2019 season

This question was included to see if the trend of drier springs was having an effect on timing, i.e. being applied later. Although we do not have survey data from previous years these results suggest that the bulk of imidacloprid application in ratoons is occurring late (November is the cut of date on labels) and spilling over into December. Presumably, this would increase the risk of losses in rainfall run-off from December storms.



Growers can face a dilemma in dry springs when there is insufficient soil moisture to allow for application at the correct depth – do they apply and potentially waste the product and/or apply shallow or apply after rainfall which may not occur until late November or December in some years?



Attachment 3: Training booklet for in-field assessors



In-field assessments of liquid imidacloprid applicators

Suggested Guidelines and Procedures





In-field assessments of liquid imidacloprid applicators

1 Insecticide for cane grub control

Cane grubs are a significant threat to the sugar cane growing industry. The widely used control for cane grubs is the insecticide imidacloprid. Imidacloprid is available as a (granular) controlled release formulation (suSCon maxi Intel®) or one of the liquid formulations (e.g. Confidor® Guard, Nuprid® 350 SC). This training package is focused on the application of the liquid formulations of imidacloprid.

For Queensland Department of Agriculture and Fisheries Enhanced Extension Coordination Program, Project TF3.1.1 R3 (SRA 3) *Reviving GrubPlan to ensure appropriate use and application of imidacloprid for control of cane grubs*, in-field applicator assessments have been conducted in the Mackay and Herbert regions. The aim of this document is to assist in achieving consistency in the assessments of imidacloprid applicators.

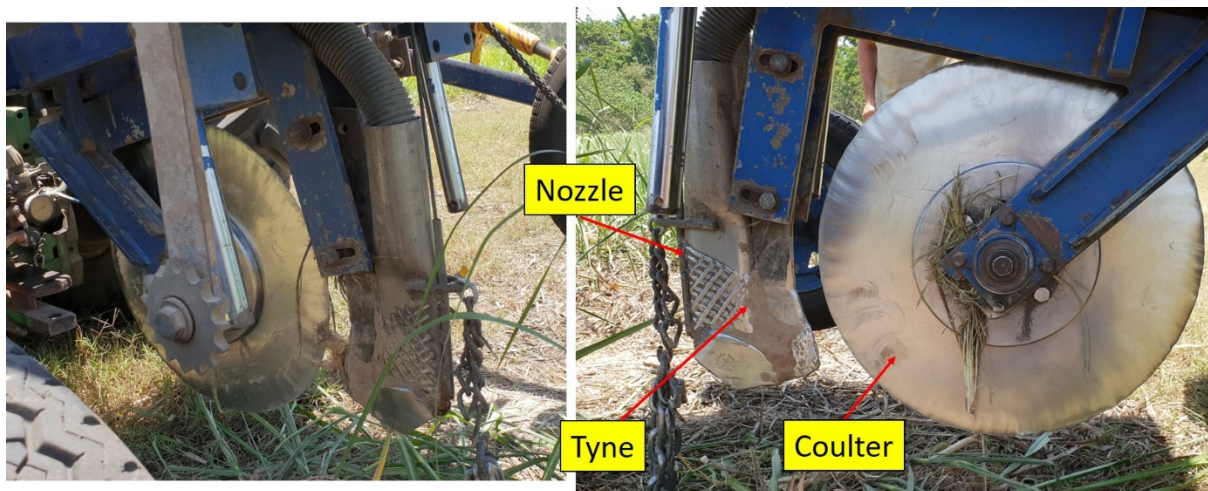
This document provides:

- Terminology and descriptions for the applicators.
- Procedure for in-field measurements of application performance.

2 Terminology and description

The label recommendation for liquid imidacloprid application is 100 -125 mm depth with full soil coverage. This section considers the various components of imidacloprid applicators.

In ratoon cane liquid imidacloprid is most commonly applied using coulter/tyne (refer Images 1 and 2) or coulter/double disc openers (refer Images 3 and 4) configurations.



Images 1 and 2: Coulter/tyne imidacloprid applicator

Enhanced extension coordination

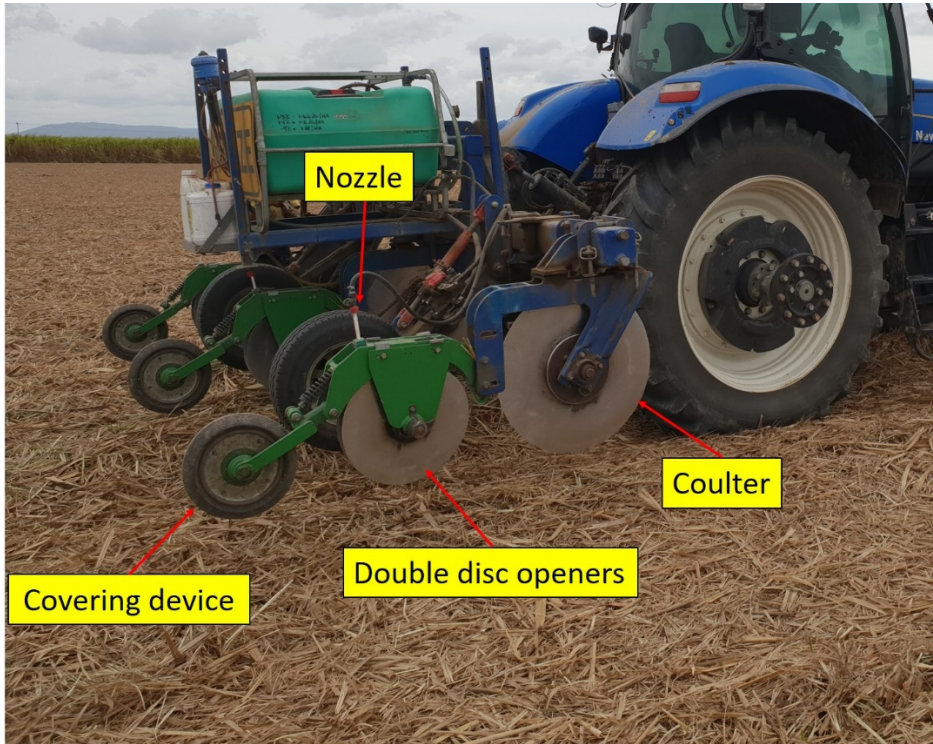


Image 3: Coulter/double disc opener imidacloprid applicator



Image 4: Rear view of double disc openers

Enhanced extension coordination



The purpose of the couler is to cut through the green cane trash blanket and create a path for the tyne or double disc openers to dig into the soil. The couler disc is usually 750 mm in diameter with the double discs having diameters in 450 – 500 mm range. In the Central region some units have done away with the couler and just have double disc openers (refer Images 5 and 6), where the diameters of the discs are similar to the diameter of a typical couler.



Images 5 and 6: Examples of double disc only applicators, that-is no leading coulers

Most applicators (tyne or double disc openers) deliver the imidacloprid into the centre of the stool and therefore are termed “stool splitters”, as shown in Images 7, 8 and 9.



Images 7 and 8: Stool splitter applicators



Image 9: Three row stool splitter unit

Side dresser units (Image 10) apply the liquid imidacloprid to either side of the cane stool. For these units, the maximum recommended separation of the side discs is 500 mm. Stool splitter arrangements are the most common applicators as the stool splitters are better able to achieve the 100 mm required application depth.

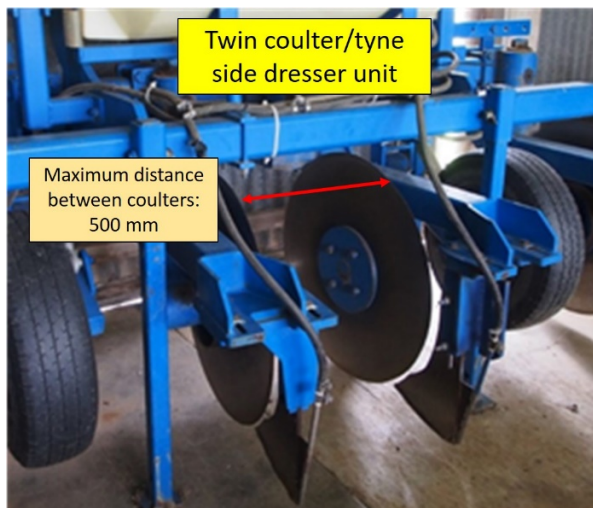


Image 10: Side dresser imidacloprid applicator

Enhanced extension coordination



Many applicator units are fitted with covering devices behind the double discs or tyne where the purpose of the covering device is to close over the slot (refer Images 11, 12 and 13) created by the double discs or tyne.



Images 11, 12 and 13: Examples of open slots behind double disc opener units



The need for a covering device is very much dependent on the soil type where the applicator is being used – in some soil types no covering device is required, that is the soil flows around the double disc or tyne and closes over the slot. In other conditions a simple covering device such as a trailing chain (refer Images 1 and 2 above) is sufficient to ensure adequate coverage of the slot. It is safe to observe that in most conditions dedicated covering devices such as press, finger or coil wheels are required to close the slot and provide the recommended 100 mm of coverage above the applied imidacloprid. Examples of press and finger (marketed as Stool Zippa) wheels are shown in Images 14, 15 and 16.



Images 14, 15 and 16: Examples of covering devices

Enhanced extension coordination



The nozzle which delivers the liquid imidacloprid into the soil is located directly behind the tyne in the coulter/tyne applicators and between the double discs in the double disc opener units (refer Images 17, 18 and 19).



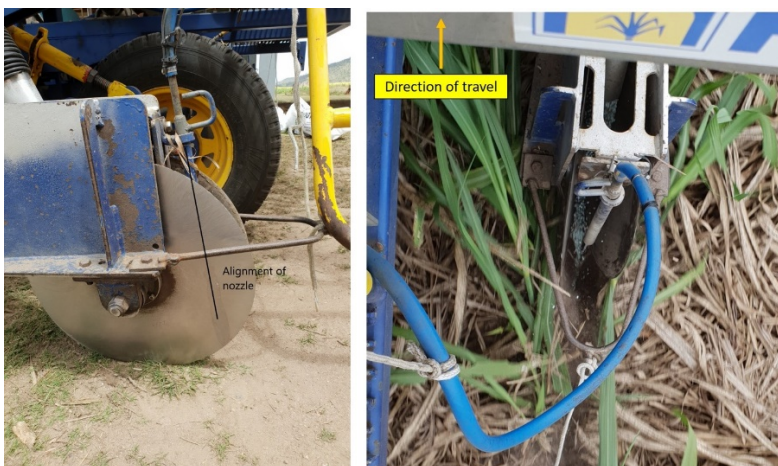
Image 1: Delivery nozzle located between double discs

Enhanced extension coordination

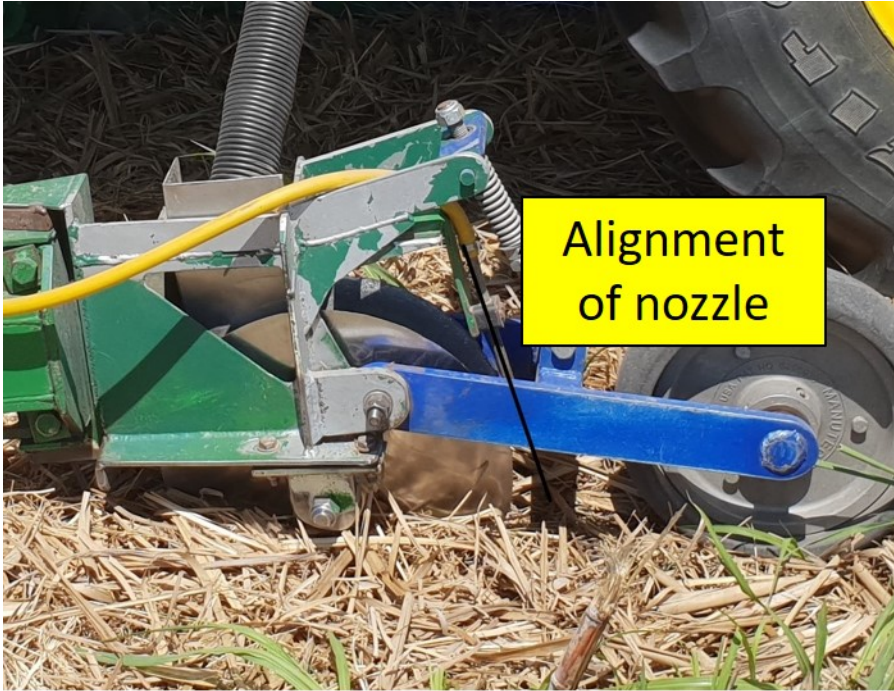


Images 18 and 19: Nozzle extended to bottom of slot in double disc opener arrangement

The critical aspect for the nozzle is its alignment – the nozzle needs to direct the liquid imidacloprid to the bottom of the slot before the soil returns around the tyne or double discs. The nozzle alignment shown in Images 20 and 21 is acceptable as the imidacloprid is directed at the bottom of the slot before the soil returns (as shown in the right hand side of the image). The nozzle alignments shown in Images 22 and 23 are not acceptable as some soil may have already collapsed back into the slot and the product is therefore not applied at the required depth at the bottom of the slot.



Images 20 and 21: Acceptable alignment of the imidacloprid delivery nozzle



Images 22 and 23: Examples of poor alignment of the delivery nozzle

Enhanced extension coordination



Imidacloprid is applied via dedicated imidacloprid applicators or with a fertiliser applicator unit as shown in Images 24 and 25.



Image 24: Example #1 of fertiliser and imidacloprid applicator

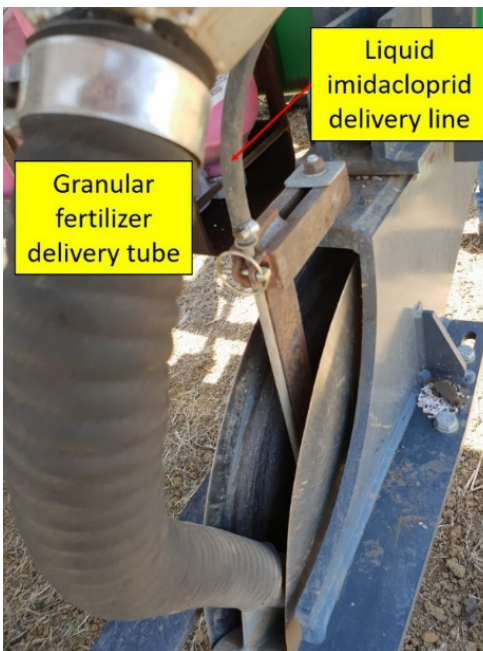
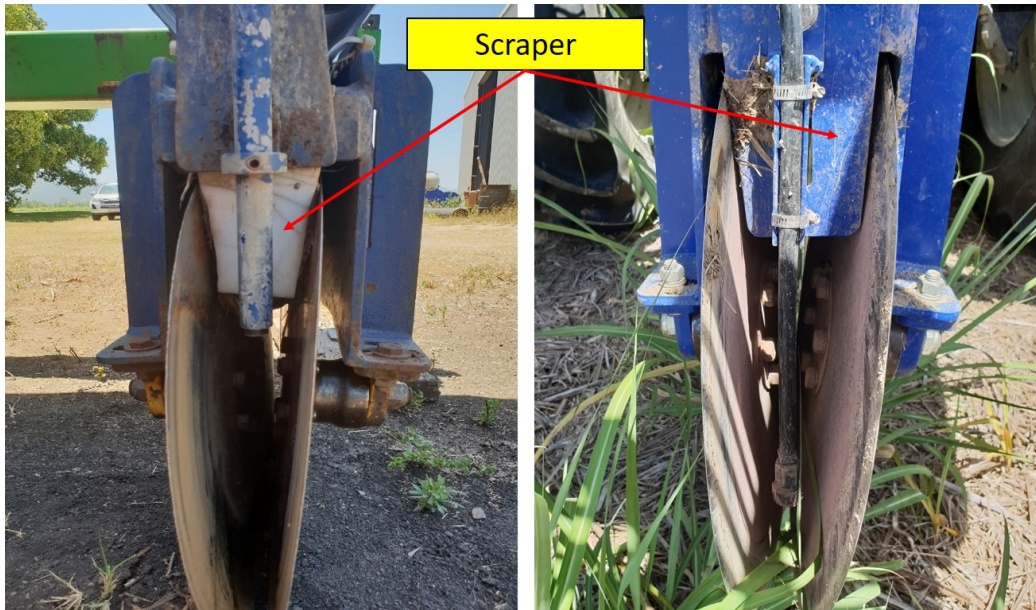


Image 25: Example #2 of fertiliser and imidacloprid applicator

Enhanced extension coordination

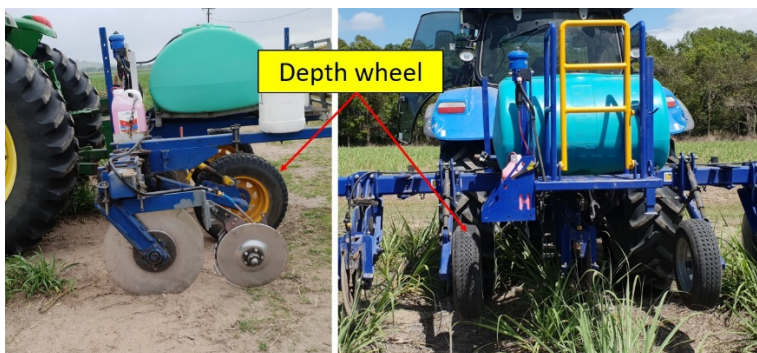


An issue for granular fertiliser and imidacloprid in double disc opener units is that the liquid imidacloprid wets the inner surfaces of the double discs causing granular fertiliser to re-circulate and get deposited on the surface. Growers have overcome this issue by installing scrapers within the double discs (refer Images 26 and 27). However, if discs are wet with imidacloprid, it means the nozzle is not effectively directing the imidacloprid to the bottom of the slot or there is some splashing effect back onto the discs. In addition of creating issues with fertiliser, discs wet with imidacloprid may contaminate the soil that is turned over between the discs and potentially place some product at shallower depth than required by the label. Instead of relying on scrapers, it is recommended to address the imidacloprid nozzle configuration, so it does not wet the discs.



Images 26 and 27: Examples of scrapers installed between the double discs

The application depth of the double discs or tynes is dependent upon the setting of the depth wheels (refer Images 28 and 29). The depth wheels carry the implement and as such the depth wheels limit the depth at which the double discs or tynes operate in the soil. Note that the depth wheels travel in the inter-row space. The setting of the depth wheels is adjustable



Images 28 and 29: Examples of depth wheels

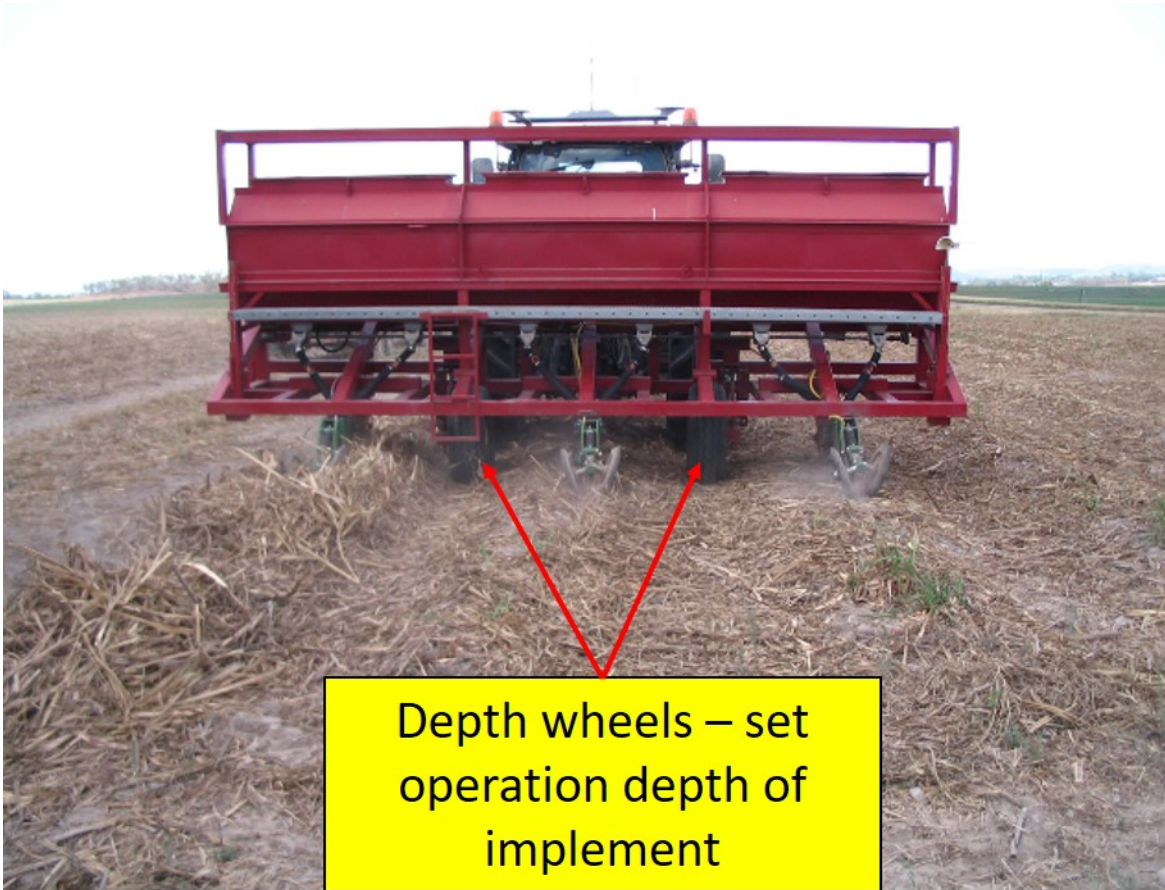


Image 30: Depth wheels operate in inter-row space

Most applicators will have a tank in which water and imidacloprid concentrate is mixed, with a pump used to deliver the imidacloprid solution to the nozzles. Some units are fitted with systems which inject the imidacloprid concentrate into the water (at the required rate) which saves the operator having to pre-mix the imidacloprid and water. An example of such a system is the Dosatron® unit (refer Image 31).

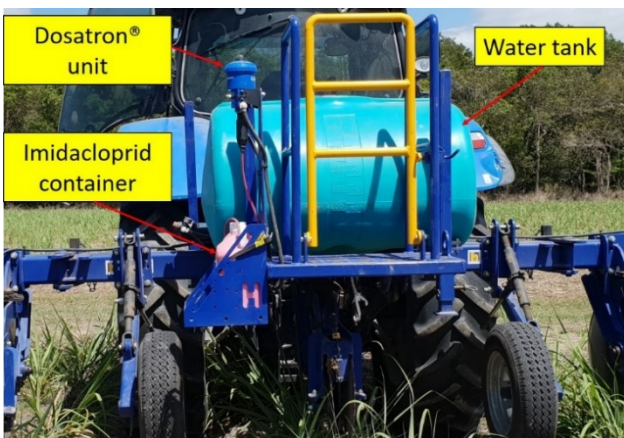


Image 31: Dosatron® unit mixes imidacloprid concentrate and water



Another very useful device for imidacloprid applicators is a flow indicator (refer Images 32 and 33). Fitting a ball flow indicator is an easy way to check, from the cab, that flows are uniform to each delivery tube. If the ball drops relative to the others, then the flow is blocked or restricted. If the ball rises relative to the others, the flow is too high. Apart from conveniently showing the operator the condition of the flow, the flow indicators take away the need to operate the unit with the implement lifted so as to check the flows – this practice places imidacloprid on the ground surface which is not ideal.

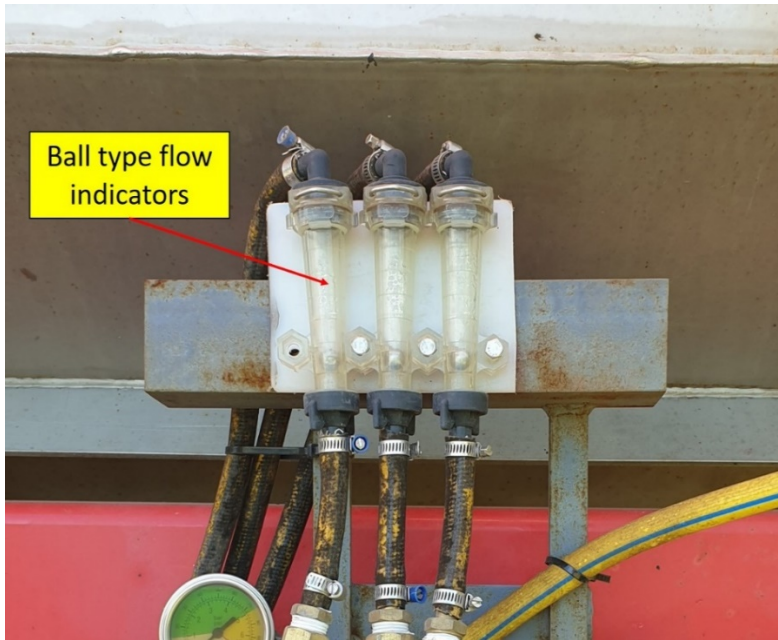


Image 32: A Wilgar flow view™ ball flow indicator

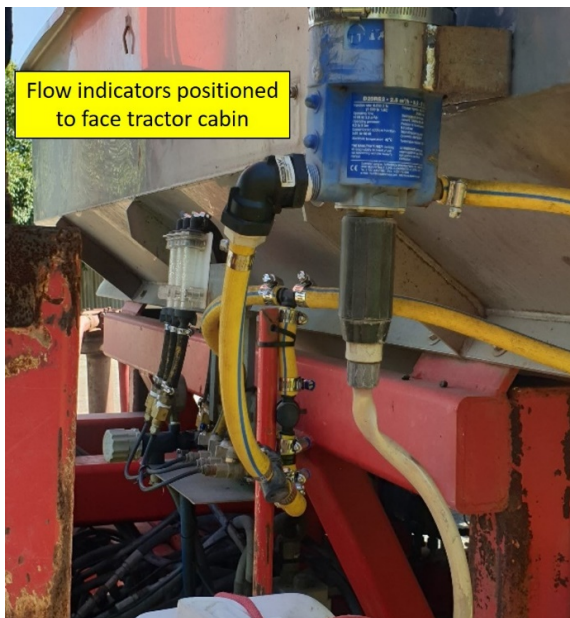


Image 33: Location of ball flow indicator on applicator



Most applicators have an anti-drip valve fitted at the end of each of the delivery lines. Ideally the anti-drip valve should be positioned at the very end of the delivery line but this is not practical for imidacloprid applicators, so the anti-drip valve is generally located at the top of the nozzle tube (refer Image 34). The downside of this is that when the implement is lifted the imidacloprid in the nozzle tube flows out onto the ground surface. To overcome this issue, Bayer recommends that operators turn off the delivery pump just before the end of the row.



Image 34: Anti-drip valve located on delivery line

3 Procedure for field measurements

3.1 Depth measurements

For the assessments of the imidacloprid applicators the two measurements required are the application depth and the covered depth, as shown in **Figure 1**.

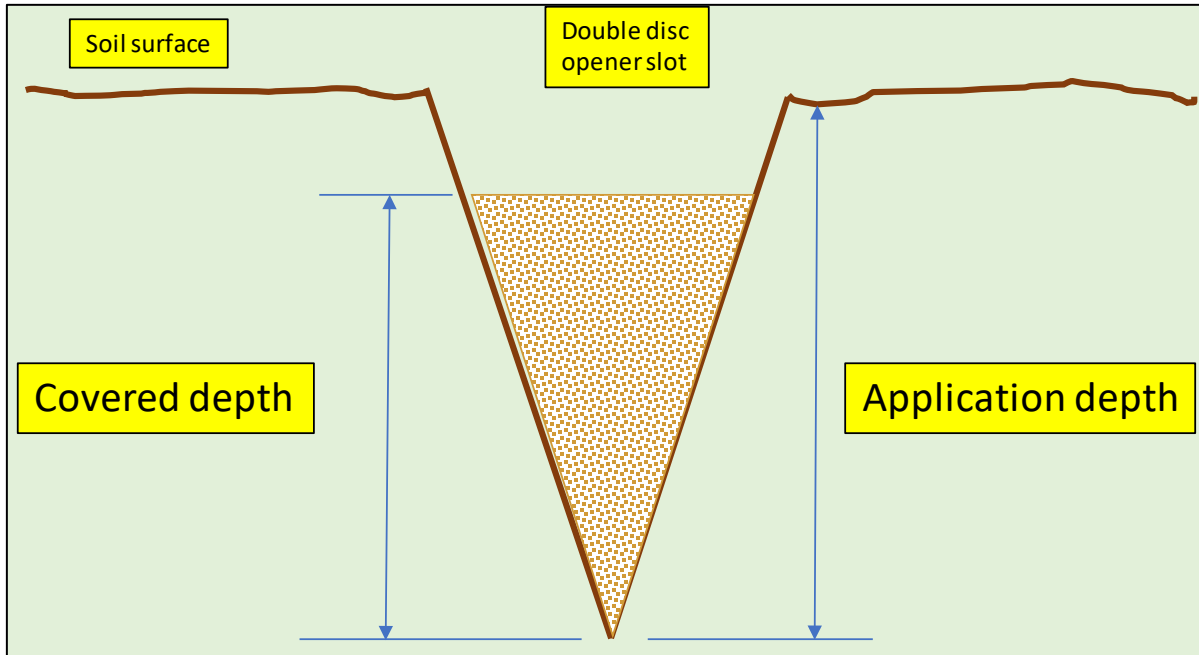


Figure 1: Measurements taken for imidacloprid applicators

For liquid application assessment as it is difficult to see the liquid in the soil, the approach has been to check whether the nozzle delivers the liquid to the bottom of the slot in the soil. If satisfied that the liquid is being delivered to the bottom of the slot, then measuring the depth of the slot becomes the application depth for the imidacloprid. One method of measuring the application depth is to expose the slot created by the applicator, and measure the depth accordingly as show in Image 35. This method is quite slow therefore much easier and quicker simply to push the steel ruler into the slot until the ruler encounters the bottom of the slot, and then read off the depth relative to the soil surface as shown in Image 36.

Also need to measure the depth of soil covering the bottom of the slot as soil coverage is another essential part of correct imidacloprid application. In most cases the application depth will be different to the covered depth as shown in the example in Image 35.



Image 35: Example #1 of imidacloprid applicator assessment field measurements



Image 36: Example #2 of imidacloprid applicator assessment field measurements

Note well – all measurements are taken relative to the soil surface i.e. need to brush away trash blanket or mill mud/compost and measure from the soil surface (for example in **Image 37**) the depth of the double disc opener slot is 50 mm not 120 mm which is the depth as measured from the top of the trash and mill mud layer).



Image 37: Remove any material on soil surface before taking field measurements



Collect 15 – 20 measurements for each applicator leg (tyne or double disc opener). For a multiple row applicator collect measurements for each of the applicator legs at the selected measurement locations. Refer the example for a three row unit shown in **Figure 2** – note that in this example, four measurement locations only are shown, in practice aim for 15 – 20 locations as noted above. There is no need to achieve highly precise measurements as the aim is to get a reasonable indication of the depth performance of the applicator; measurements ± 5 mm are acceptable.

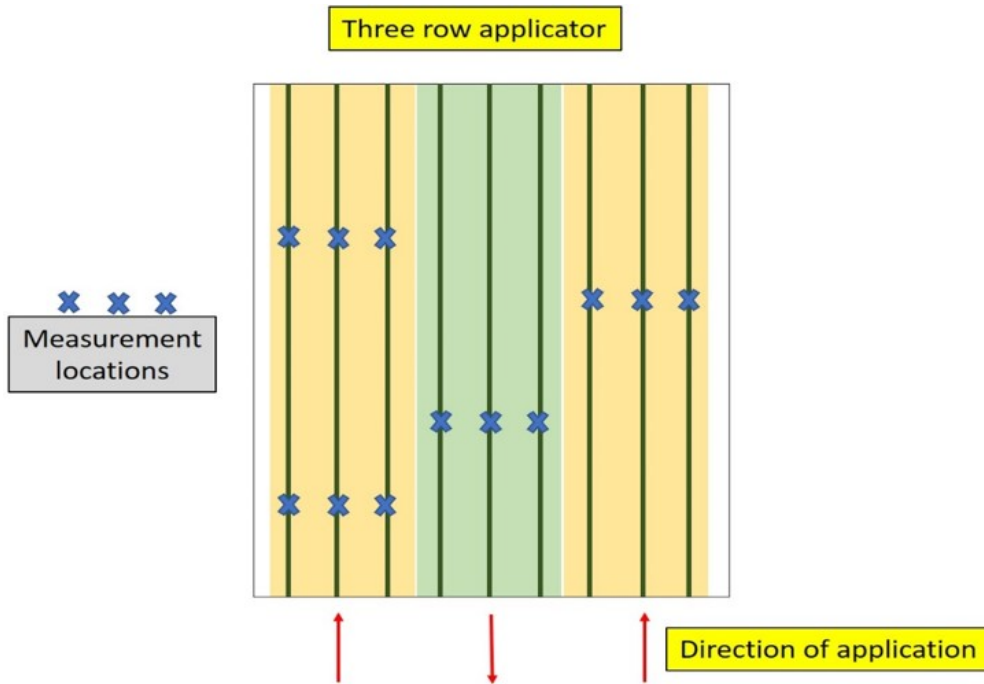


Figure 2: Example of 4 measurement locations for a three row applicator

The measurement locations should be selected randomly throughout the paddock.

Samples of the recorded measurements are presented in Table 1, and Figures 3 and 4 below.

Table 1: Example of application and covered depth measurements for a three row, double disc opener, stool splitter unit

Measured depths (mm) – three row applicator					
Outer double disc opener		Middle double disc opener		Outer double disc opener	
Application depth	Covered depth	Application depth	Covered depth	Application depth	Covered depth
100	50	100	30	100	30
120	60	100	50	130	60
100	40	110	60	110	50
120	60	110	40	120	110
130	60	110	90	110	70
120	100	140	100	130	50
100	30	110	40	110	60
100	50	120	70	130	60
110	60	100	100	110	40

Enhanced extension coordination



110	100	120	90	110	90
100	40	130	60	120	60
120	70	100	70	130	60
100	100	120	70	120	120
120	120	140	80	110	110
120	80	140	60	140	100
120	60	130	90	110	40
110	70	130	100	150	110
112 (av)	68 (av)	118 (av)	71 (av)	120 (av)	72 (av)

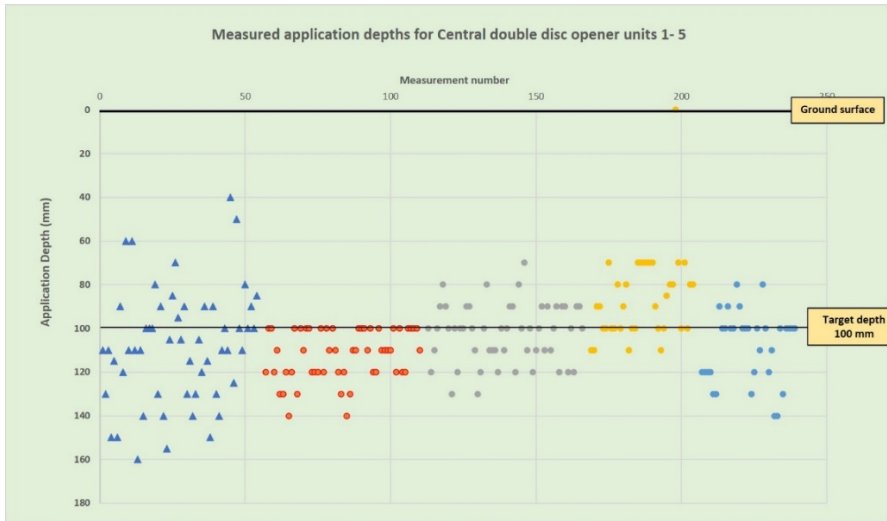


Figure 3: Application depths achieved by 5 double disc opener applicators in the Central Region. Each colour denotes a separate applicator.

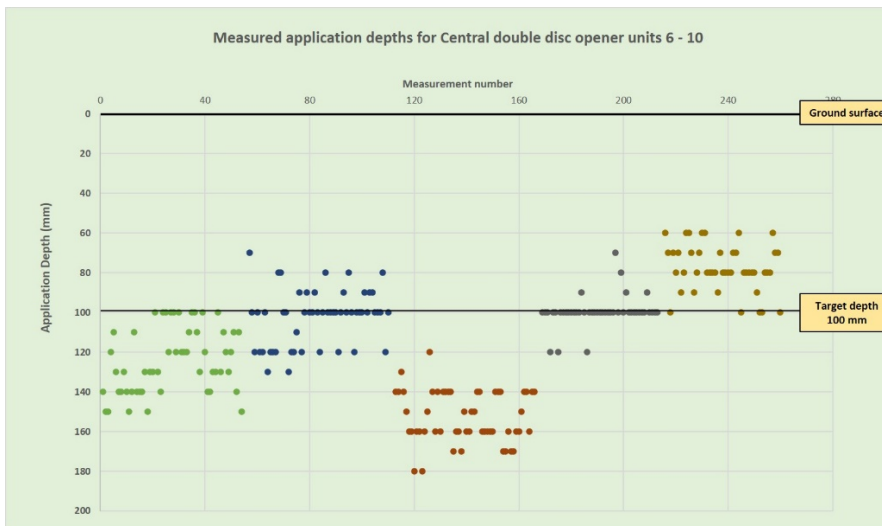


Figure 4: Application depths achieved by another 5 double disc opener applicators in the Central Region. Each colour denotes a separate applicator.



Please note that if the measurements show that the applicator is too shallow, it is worth speaking to the operator and sharing the results – often a quick adjustment of the implement will result in more acceptable application depths.

3.2 Paddock and application details

Record details of the paddock and visual aspects of the application which may be relevant for example:

- Location.
- Soil type.
- Soil moisture conditions.
- Green cane trash blanket.
- Other products on top of the row (e.g. mill mud, compost).
- Trash cut neatly by the coulters.
- Cane stage - ratoon number and age.
- Evenness of the row profile.
- Paddock flat or hilly.
- Row spacing.

3.3 Photos

Collect images of the applicator, paddock conditions and quality of the application.

4 Safety considerations

The assessment of an imidacloprid applicator does involve hazards and risks which must be assessed and controlled so that no injuries are sustained throughout the assessment process. An example of a risk assessment is presented in Table 2. An individual is responsible for conducting his or her own risk assessment prior to conducting an imidacloprid applicator assessment.

Table 2: Example of a risk assessment for an imidacloprid applicator assessment

Step No.	Process Step	Hazard	Risk Score	Control Measure Always select controls according to the Hierarchy of Controls	Residual Risk Score
1	Driving on farm to the paddock in which the applicator is being used	Obstructions; other vehicles/machinery; washouts; rough headlands	M	Contact landholder to arrange inspection visit, travel to farm on day of inspection, then contact landholder again to arrange safe access to inspection paddock.	L
2	Inspection of imidacloprid applicator	Suspended load (implement in the raised position)	H	Request tractor operator to lower the implement to ground level and isolate tractor in parked position. This completely removes the suspended load hazard.	L
3	Inspection of imidacloprid applicator	Unexpected movement of tractor and implement	M	Prior to inspection, implement to be lowered to ground level, and tractor isolated in the parked position.	L

Enhanced extension coordination



Step No.	Process Step	Hazard	Risk Score	Control Measure <i>Always select controls according to the Hierarchy of Controls</i>	Residual Risk Score
4	Inspection of imidacloprid applicator	Pressurised hoses containing chemical	L	Prior to inspection tractor to be isolated.	L
5	Measurement of application depth in paddock	Tractor(s) working in the paddock	M	Must advise tractor operator of your presence in the paddock, and obtain acknowledgement by the operator (i.e. not sufficient to send a text message, need verbal confirmation). Wear high viz clothing. Keep at least 10 rows away from part of paddock where tractor is operating.	L
6	Measurement of application depth in paddock	Snakes, insects	L	Wear our required PPE (long pants and shirt) plus gloves.	L
7	Measurement of application depth in paddock	Leptospirosis, cuts, scratches, liquid imidacloprid in soil	M	Wear high vis shirts with the sleeves rolled down and long trousers. Wear gloves. Clean hands regularly with soap and water. Clean and cover wounds with water-proof dressings. If signs of infection appear, seek medical treatment.	L
8	Measurement of application depth in paddock	Heat/dehydration	M	Avoid hottest part of day, ensure adequate hydration	L
9	Measurement of application depth in paddock	Trips and falls	M	Walk along the inter-row space rather than the stool. Maintain diligence looking ahead especially for indentations in the ground surface.	L
10	Measurement of application depth in paddock	Working in isolation	M	If possible two people should conduct the inspection. If not possible, detail on Locator time of visit and expected return. Contact landholder when leaving the property.	L



Attachment 4: Recording template for in-field assessments

SURVEY 2: IN-FIELD ASSESSMENT OF APPLICATION

1. Description of applicator:

- Granule applicator
- Liquid applicator
- Stool splitter
- Banded each side of stool (twin coulter)
- Liquid injection system behind coulter
- Surface applicator
- 3-point linkage system
- Trailed unit
- Other (specify)

2. What is the intended application depth?

3. Crop class:

- Plant 1st ratoon 2nd ratoon 3rd ratoon Greater than 3rd ratoon

4. What is the actual application depth?

On Page 3 further information is provided on how to collect measurements for a three row applicator (Figure 1) and how to measure the application depth (Figures 2).

5. Collect at least 10 random in-field depth measurements, inserting a ruler into the slot, for each applicator leg (tine or double disc opener) and record in the table below.

LEG 1		LEG 2		LEG 3	
Application Depth	Covered Depth	Application Depth	Covered Depth	Application Depth	Covered Depth



6. During application was imidacloprid applied to the soil surface?				Yes <input type="checkbox"/>	No <input type="checkbox"/>	N/A <input type="checkbox"/>
If yes, provide details (cause of surface application, rough percentage of area surfaces applied)						
7. Soil type: Please describe the broad soil type eg. heavy clay, clay loam, sandy clay						
8. Condition of soil: Friable <input type="checkbox"/> Compacted <input type="checkbox"/> Lumpy <input type="checkbox"/>						
9. Condition of bed profile at time of assessment: Bed profile is relatively uniform along the row <input type="checkbox"/> Bed profile is uneven along the row <input type="checkbox"/>						
10. Condition of inter-rows at time of assessment: Inter-rows are relatively uniform without depressions or ruts <input type="checkbox"/> Inter-rows are uneven with depressions or ruts <input type="checkbox"/>						
11. Was the slot where the imidacloprid applied: <input type="checkbox"/> Closed off using a press wheel <input type="checkbox"/> Closed off using a double disc opener method <input type="checkbox"/> Closed off using a Stool Zippa <input type="checkbox"/> Closed off using a chain <input type="checkbox"/> Closed off by another method (Please specify): _____ <input type="checkbox"/> Closed off partially <input type="checkbox"/> Not closed at all						
12. If the applicator is twin coulters, what is the horizontal distance between coulters?						



13. If the applicator is a trailed unit, is it fitted with rams to adjust ground engaging angle?

Yes No

14. Other notes relevant to application:



Attachment 5: Media support

Bayer media release, May 2020

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MAY, 2020

Industry leaders adopt imidacloprid strategy

Rural Business, National



Page 1 of 1

Industry leaders adopt imidacloprid strategy

Public and private organisations have collaborated to develop and promote a new training program for sugar cane growers that targets the safe and sustainable use of liquid imidacloprid products such as Confidor Guard soil insecticide and Nuprid 350SC.

The program aims to encourage the correct placement of imidacloprid in the field to ensure maximum performance against cane grubs, and the strategic use of the product to ensure the longevity of imidacloprid. By getting these use aspects right, research trial data indicates that benefits may also flow to nearby waterways and the Great Barrier Reef.

With the support of Sugar Research Australia (SRA) and the Queensland Government's Department of Agriculture and Fisheries (DAF), Bayer and Nufarm have worked together to create an instructional video, training package and an application slot depth measurement gauge for use in ratoon cane applications.

Initially, the group will train 750 growers in the Mackay Whitsunday and Wet Tropics regions with the eventual aim of the training materials reaching all Australian sugar cane growers.

The program is based on several years of research work conducted by SRA and DAF. **Emilie Fillola**, senior researcher with SRA based at their Meringa Station, said growers should first consider if they needed to treat their blocks for cane grubs, which was a decision based on a risk assessment.

"If treatment is necessary, achieving an application depth of 100mm or more is essential to reduce imidacloprid loss via runoff," she said. "Three years of field trials in the Wet Tropics and the Burdekin have confirmed the critical importance of application depth in preventing loss of imidacloprid."

Market development agronomist with Bayer **Nick Matthews** said Confidor Guard and Nuprid 350SC liquid imidacloprid are critical tools to control cane grubs, however, they need to be used correctly.

"Bayer has worked hard to prepare a relevant and easily accessible training video and presentation," he said. "Our first goal is to train all retail agronomists, and then work with the relevant productivity services organisations and other organisations to train their agronomists."

"While the minimum depth message is simple, achieving this in-field in all areas poses many challenges. Our training video and materials cover a wide variety of machine types and situations."

A practical contribution to the success of the program has been the Confidor Guard and Nuprid 350SC Depth Gauge. **Dave Rumbold**, regulatory lead ANZ with Nufarm said 1000 of these sturdy tools will be made available, free of charge, to growers, agronomists and contract applicators.

"These tools will allow growers to easily measure slot depth across several locations in their blocks to ensure they are achieving the minimum depths for efficient treatment," he said.

Richard Dickmann from Bayer public affairs and sustainability, said the program was a great example of how industry, government and growers could work together to address issues for the ultimate benefit of both growers and the environment.

Nick Matthews during production of the instructional video.





Mackay Sugar Grower Newsletter June 2020

Sugarcane Imidacloprid Stewardship Program

Imidacloprid insecticides, such as Confidor® Guard, are an important tool for the growth of Australian sugarcane effectively controlling a range of canegrubs. At the same time, you would no doubt be aware of concern regarding the detection of imidacloprid in waterways adjacent to the Great Barrier Reef Marine Park.

In order to understand the causes of waterway contamination and to find ways to address this challenge, several research projects have been carried out which have both highlighted a key route of the product entering the waterways, and some possible solutions.

In response, a cross-industry task force, including Bayer, Nufarm, Sugar Research Australia, and the Queensland Departments of Agriculture and Forestry, and Environment and Science with additional input from James Cook University, have developed a training package based on these latest research findings which focuses on the correct application of imidacloprid insecticides in ratoon sugarcane. You will find the video by clicking on the link below.

<https://kapara.rdbk.com.au/landers/765229.html>

Watching the video does also count as training with respect to a Smartcane BMP accreditation.

Burdekin Productivity Services newsletter March 2020

IMIDACLOPRID SURVEY

The Australian Pesticides and Veterinary Medicines Authority (APVMA) is currently reviewing the use of Imidacloprid. Given that the pesticide is currently the sugar industry's main line of defence against cane grubs, it is important that we take a proactive approach. Making sure that suSCon maxi Intel and Confidor are applied with the correct timing, depth, and placement can improve both the effectiveness and reduce off-site impacts. Industry (lead by SRA with assistance from BPS) have been surveying growers to understand the best way to optimise the use of imidacloprid and work towards safeguarding long term, effective cane grub control.



SRA e-newsletter June 2020

Sugarcane imidacloprid stewardship program

Imidacloprid insecticides are an important tool for the growth of Australian sugarcane, effectively controlling a range of canegrubs. At the same time, you would be aware of concern regarding detections of imidacloprid in waterways adjacent to the Great Barrier Reef Marine Park.

In order to find ways to address this challenge, a number of research projects have been carried out which have both highlighted a key route of the product entering the waterways, and some possible solutions.

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Correct application of Confidor® Guard in sugarcane ratoon crops.

Once you have registered your details above, you will need to login using your email address below to view the recording:

Enter Your Registered E-Mail

Join

Register to access the recording

* indicates mandatory field

* Email

* First Name

* Last Name

* Postcode

* Occupation

I agree for my personal information to be handled in accordance with Bayer's Privacy Statement and as Bayer is a global business my personal information may be stored overseas.

Correct application of Confidor® Guard in sugarcane ratoon crops.

Confidor® Guard, based on imidacloprid, is a vital tool for the sugarcane industry in Australia. The active ingredient imidacloprid was first registered in Australia by Bayer Crop Science in 1996 followed by Confidor® Guard in 2004. Detections of imidacloprid in some waterways adjacent to the Great Barrier Reef National Park are concerning and must be responded to.

Bayer has partnered with SRA, DAFF, Nufarm and QDES to undertake research to understand the background and solutions to this challenge. This research has highlighted that correct application is important to reduce off-target movement into waterways.

All industry participants must be committed to ensuring the correct use of imidacloprid based products to maximise efficacy, protect the environment and maintain the availability of this valuable tool.

As part of the overall training program, the video that you will view provides important information on the best practice application of Confidor® Guard and other liquid imidacloprid formulations in ratoon sugarcane. Some personal information must be collected to send an e-mail confirming your participation in the training and to assess the effectiveness of this training program.

By reviewing this video you will ensure the best results from the use of Confidor® Guard, and you will be helping to improve outcomes for both the environment and sugarcane industry overall. Further information is available at <https://crop.bayer.com.au/confidorguardsustainability>



SRA Cane Connection Autumn 2020

IMIDACLOPRID APPLICATION – MEASUREMENT OF APPLIED DEPTHS

BY MATT SCHEMBRI, ADOPTION OFFICER, SRA MACKAY

In SRA's Spring 2019 edition of CaneConnection, SRA Weeds Agronomist Emilie Fillols reported on trials that showed runoff losses of imidacloprid were minimised if the liquid imidacloprid was placed at least 100mm deep and covered with soil, as per the label instructions. The key message is that imidacloprid, if placed correctly, has a low chance of being transported into local waterways. Therefore, the continuing detection of imidacloprid in waterways adjacent to sugarcane growing land suggests that the imidacloprid is not being placed correctly.

With a view to gain an appreciation of the effectiveness of current machinery to achieve the recommended depths, SRA has commenced measuring application depths of imidacloprid. To date only stool splitter liquid imidacloprid applicators have been examined. We have looked at dedicated imidacloprid units and imidacloprid/fertiliser units consisting of coulters and double disc openers or double disc opener only assemblies.

After application of the liquid imidacloprid it is difficult to clearly identify the liquid imidacloprid in the soil. Therefore, the approach taken has been to confirm that the liquid imidacloprid was being directed to the bottom of the double disc opener slot, and subsequently measuring the depth of the slot. Two measurements were taken: depth of the double disc opener slot (application depth), and depth of covering soil in the slot (covered depth), as shown below in image one. Note also that measurements were taken relative to the soil surface: i.e. any trash blanket or mill mud/compost was removed prior to depth measurements.

The double disc openers were found to be able to achieve the recommended 100mm application depth, as long as the implement was set correctly.

In many cases, while the applicator averaged 100mm depth, measurements

fluctuated around the average due to inconsistent stool height relative to the inter-row space. The depth wheels running in the inter-row spaces effectively set the depth of the double disc openers, so as stool height varied so did application depths as shown in the graph. Applicator unit one (as shown in the graph) was operating in a paddock with inconsistent stool height, and as a result the measured application depths varied from 60mm to 160mm, while applicator unit two was working in a paddock with consistent stool height and consequently had less fluctuations in the depths (100mm – 140mm). Note for both units the average depth across the measurements was greater than 100mm: i.e. for applicator unit one the average depth was 111mm and for applicator unit two the average depth was 114mm.

A key message was that operators reported it was important to check the application depths in each paddock and adjust the depth wheels to achieve 100mm application depth.

The implements with covering devices after the double disc openers (e.g. StoolZippa, press wheels) were found to consistently achieve covered depth equal to application depth. This generally did not occur for implements without covering devices or with relatively simple covering devices such as a chain. We also found that for implements without covering devices, soil type impacted depth of cover. For example, in gravelly soil conditions the soil flowed into the slot giving complete coverage, whereas if the soil had reasonable clay content or was damp, then coverage was inadequate.

Placement of the imidacloprid in the slot is also important. The imidacloprid nozzle must be directed at the bottom of the double disc opener slot so that the jet of imidacloprid hits the bottom prior to soil flowing around the discs and covering the slot. We have observed that

at times the nozzle gets bent backwards and as a result the imidacloprid is directed into the soil flowing around the discs which means that the applied imidacloprid is too shallow.

It is difficult to clearly identify the liquid imidacloprid in the soil after application. Therefore, we have recently commenced work using fluorescent dye added to the imidacloprid solution to identify the location of the applied imidacloprid. The imidacloprid and dye were applied using a double disc opener set to achieve 100mm depth with the nozzle directing the liquid at the bottom of the double disc opener slot. As shown in this example, the imidacloprid has collected at the bottom of the slot as expected. Further work is continuing to check if the double discs could potentially transport some of the imidacloprid toward the soil surface. ■

The work reported above is part of a new SRA-led project aimed at the best practice use of imidacloprid so as to ensure the industry's ongoing access to imidacloprid as a control for cane grubs. The project will consider all aspects of stewardship of imidacloprid. This includes, for example, the determination of when to use the chemical, calibration, application (including section controls) and correct placement, and using the chemical only for grub control. The project is a collaboration between SRA, the Queensland Department of Agriculture and Fisheries, CANEGROWERS, the Australia Cane Farmers Association, Bayer and NuFarm. It is funded by the Queensland Government Reef water quality program through the Enhanced Extension Coordination in the GBR project.



SRA Cane Connection Winter 2020

INDUSTRY LEADERS COLLABORATE TO PROMOTE SUGARCANE IMIDACLOPRID STEWARDSHIP PROGRAM



Public and private organisations have collaborated to develop and promote a new best-practice training program for sugarcane growers that targets the safe and sustainable use of liquid imidacloprid products such as Confidor® Guard Soil Insecticide and Nuprid® 3505C.

The program aims to encourage the correct placement of imidacloprid in the field to ensure maximum performance against cane grubs, and the strategic use of the product to ensure longevity of the product.

By getting these use aspects right, research trial data indicates that benefits may also flow to nearby waterways and the Great Barrier Reef.

With the support of SRA and the Queensland Government's Department of Agriculture and Fisheries (DAF), Bayer and Nufarm have worked together to create an instructional video, training package and an application slot depth measurement gauge for use in ratoon cane applications. Initially, the group will train 750 growers in the Mackay Whitsunday and Wet Tropics regions

with the eventual aim of the materials reaching all Australian sugarcane growers.

The program is based on several years of research work conducted by SRA and DAF.

Emilie Fillois, Senior Researcher with SRA based at their Meringa Station said: "Growers should first consider if they need to treat their blocks for cane grubs, which is a decision based on a risk assessment. If treatment is necessary, achieving an application depth of 100 mm or more is essential to reduce imidacloprid loss via runoff. Three years of field trials in the Wet Tropics and the Burdekin have confirmed the critical importance of application depth in preventing loss of imidacloprid."

Nick Matthews, Market Development Agronomist with Bayer said that Confidor Guard and Nuprid 3505C liquid imidacloprid are critical tools to control cane grubs, however, they need to be used correctly.

"Bayer has worked hard to prepare a relevant and easily accessible training video and presentation. Our first goal is to train all retail agronomists, and then work with the relevant productivity

services organisations and other organisations to train their agronomists. While the minimum depth message is simple, achieving this in field in all areas poses many challenges. Our training video and materials cover a wide variety of machine types and situations."

For Dave Rumbold, Regulatory Lead ANZ with Nufarm, a practical contribution to the success of the program has been the Confidor Guard and Nuprid 3505C Depth Gauge. One thousand of these sturdy tools will be made available, free of charge, to growers, agronomists and contract applicators. "These tools will allow growers to easily measure slot depth across several locations in their blocks to ensure they are achieving the minimum depths for efficient treatment," he said. ■



SRA Cane Connection Spring 2020



SEPTEMBER TO NOVEMBER – PRIME TREATMENT WINDOW FOR CANEGRUBS IN RATOONS

By Phil Ross, Regional Coordinator, Central

Many growers will now be deciding whether to treat their ratoons for canegrub. Canegrub species differ depending whether you are in the Southern or the Central to Northern regions, but September to November is the main treatment window; before beetle flights and subsequent egg laying occurs.

Many growers will be aware of the global scrutiny that the insecticide imidacloprid, our main method of canegrub management, is under. Australia is not immune from this. The Australian Pesticides and Veterinary Medicines Authority (APVMA), is currently reviewing the neonicotinoid group of insecticides, including imidacloprid. This review is due to be finalised by 2023.

In Queensland, the level of imidacloprid in waterways is being monitored as part of the Great Barrier Reef and South East Queensland monitoring programs.

DAF, SRA, CANEGROWERS, ACFA, Bayer and Nufarm are collaborating to promote the responsible use of imidacloprid. Bayer Crop Science has recently launched its Confidor® Guard User Accreditation Program, with commercial agronomists, productivity services and SRA staff participating. Growers are also encouraged to participate by viewing the training video. Hover your smart phone's camera over the QR code to see the video.

(Above left) Root pruning is a symptom of canegrub infestation. (Above right) Well set up liquid imidacloprid / fertiliser applicators – coulters cut to depth, double disc to open the slot, delivery nozzle positioned and angled to place insecticide at the base of the slot, slot-closing mechanisms





Do you need to treat?

Firstly, only treat those blocks that are at risk of infestation.

• How much damage did blocks suffer this season?

- Blocks that were infested in 2020 are highly likely to be re-infested in 2021.
- Look for gaps in your ratoons and check the remaining stools to make sure cane grubs caused the gaps (look for root pruning, gouging), as there can be other causes of gappy ratoons.
- Some blocks and farms historically show low or no risk of infestation. Often this is due to heavy textured soil types. If this is the case, you probably do not need to treat these blocks.

• How many more ratoons do you hope to get out of a block?

- If the block is a young ratoon, and has suffered only minor infestation, you will probably want to treat it.
- If the block is an old ratoon with minor infestation and you only intend to ratoon it once more, you may consider not treating, but it is likely that some productivity loss will result in its final ratoon.
- If the block was heavily infested in 2020, then it is likely that you will need to fallow that block, as high productivity losses will already have occurred. A block that has an average of more than two grubs per stool is considered to be heavily infested. It is important that fallows are clean from cane volunteers.

• Was the block treated with suS Con maxi Intel® when it was plant cane?

- suS Con maxi Intel is a controlled release formulation of imidacloprid, and gives up to four years' control, depending on cane grub species. If the block is now older than the control period and is at risk of infestation, you may want to protect it with a liquid formulation for the coming season. Again, it may depend on how many more ratoons you are planning.

• Other factors that predispose a block to infestation:

- Blocks adjacent to creek vegetation
- Upper slopes
- Infestations on neighbouring farms

- Lighter texture soils
- Early cut cane, particularly cane cut as planting material for early planting – these ratoons will be the tallest when beetles target blocks for egg laying.

Decided to treat? Get it right!

Poor application that results in reduced cane grub control has compounding effects:

- spending money on treating
- losing money from crop losses
- losing imidacloprid from your farm into the creek.

Growers do not intentionally set out to do a poor application job. However, in-field surveys of application have shown large differences in applied depth, both between applicators and also along the row and across the block with individual applicators. Other issues identified included transferring treated soil to the surface from wet fertiliser and soil sticking to discs, and poor or no slot closure.

SRA research has demonstrated that significantly less imidacloprid is lost in surface run-off when applied consistently at the correct depth of 100 – 150 mm.

Check that you are achieving the following in ratoons:

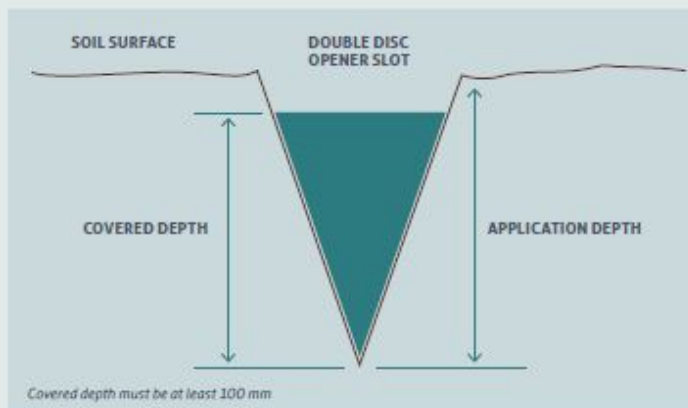
- 100mm to 150mm application depth-check that your coulters/double discs/tyes penetrate to this depth (with trash removed!). Use the Bayer/Nufarm Application Depth Gauge or an ordinary ruler (to receive a Bayer/Nufarm depth gauge, watch the online video and fill in your details at the link above).
- The insecticide is applied to the base of the slot – check the positioning and angle of the delivery tube.

- The slot is fully filled in – check that you have a slot closing mechanism and that it is effective in your soil types.
- If you have a combined imidacloprid/fertiliser applicator, check that the liquid is not making the fertiliser and soil wet resulting in fertiliser and treated soil being brought to the surface on the rotating discs – if necessary, fit a scraper.
- Only use imidacloprid for cane grub control.
- Only use imidacloprid on those blocks where there is risk of cane grub infestation.

Get your applicator checked

A number of productivity service companies, Farmacist and SRA are participating in a DAF-funded project looking at improved cane grub management. The stewardship collaboration, the publication of the *SRA Greyback Cane grub Management manual* and in-field assessments of applicators are part of this project. In-field assessments of applicators in ratoons will be occurring during September and October. This entails running an eye over implement designs and set-up as well as measuring the application depth along and across rows. If you would like to be involved, contact one of the following project collaborators:

DISTRICT	CONTACT
Mossman	Mossman Ag Services
Burdekin	Burdekin Productivity Services
Proserpine	Sugar Services Proserpine
Mackay	Mackay Area Productivity Services / Farmacist / SRA
Plane Creek	Plane Creek Productivity Services / Farmacist





Mackay Area Productivity Services Newsletter July 2020



Canegrub outlook for 2021

MAPS Field staff are reporting an increase of canegrub damage this season. Most of this damage will be from the Greyback canegrub and most of these grubs will now be pupating at depth in the soil. They'll start emerging as adult beetles from about November, depending on when our first summer storms occur. The amount of damage showing up in this seasons crop indicates a high level of infestation risk for susceptible blocks in the coming season. This means blocks at risk of infestation need to be treated by the end of November this year.

The insecticide imidacloprid, available under many different product names, is our main registered insecticide treatment. Globally, this insecticide is under intense scrutiny for its potential environmental impacts. It, and other insecticides in the neonicotinoid group, are being reviewed by the Australian Pesticides and Veterinary Medicines Authority (APVMA). This review will continue through to 2023 when the APVMA will deliver their decisions about use of neonicotinoid insecticides in Australia.

What can we do to ensure continued access to imidacloprid?

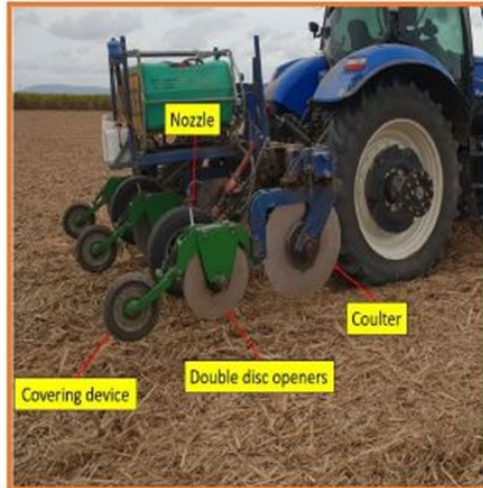
1. Make an informed decision about which blocks are at risk of infestation.
 - a. Risk of infestation increases with:
 - Blocks that were infested this season are likely to be infested again next season
 - Unprotected blocks with lighter soil textures and particularly adjacent to creek vegetation
 - Ridges and upper slopes
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 - b. Risk of infestation is reduced with:
 - Historical low or nil infestation on particular blocks or parts of blocks

- Blocks with heavy textured soils for example Black Earth
- Blocks that have been treated with the controlled release formulation, suSCon maxi Intel® and are still within 4 seasons since application

2. Apply the insecticide correctly

- a. In ratoons, ensure:
 - It is applied at 100mm to 150mm depth- check that your coulters/double discs/tynes are actually penetrating to this depth (with trash removed!)
 - The insecticide is applied to the base of the slot – check the positioning and angle of the delivery tube
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 - If you have a combined imidacloprid/fertiliser applicator, check that the liquid is not making the fertiliser and soil wet resulting in fertiliser and treated soil being brought to the surface on the rotating discs – if necessary fit a scraper
- Only use it for canegrub control

SRA's updated Greyback Canegrub Management Manual is currently being printed and will be distributed to growers in September 2020.



A well set up liquid imidacloprid applicator – coulter to cut to depth, double disc to open the slot, delivery nozzle positioned and angled to place insecticide at the base of the slot, press wheel to close the slot.



Cane News July 2020 (CANEGROWERS Proserpine)

SSP CANEGRUB OUTLOOK FOR 2021

SSP are reporting a lot of canegrub damage this season. Most of this damage will be from the Greyback canegrub and most of these grubs will now be pupating at depth in the soil. They'll start emerging as adult beetles from about November, depending on when our first summer storms occur. The amount of damage showing up in this seasons crop indicates a high level of infestation risk for susceptible blocks in the coming season. This means blocks at risk of infestation need to be treated by the end of November this year.

The insecticide, imidacloprid, available under many different product names, is our main registered insecticide treatment. Globally, this insecticide is under intense scrutiny for its potential environmental impacts. It, and other insecticides in the neonicotinoid group, is also being reviewed by the Australian Pesticides and Veterinary Medicines Authority (APVMA). This review will continue through to 2023 when the APVMA will deliver their decisions about use of neonicotinoid insecticides in Australia.

What can we do to ensure continued access to imidacloprid?

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Cane News July 2020 (CANEGROWERS Proserpine)

SUGAR INDUSTRY AWARD WAGE RATES—2020

The Fair Work Commission has announced its annual wage review decision, with the minimum wage set to increase by 1.75%. However, the increase will be applicable in a staggered manner for different industries.

The Sugar Industry Award forms part of Group 2 Awards, with the award increase coming into effect from the first full pay period on or after **1 November 2020**.

Updated award rates will be distributed by email to all members closer to the commencement date, with printed copies also available from the Proserpine office.

CANEGROWERS MARKETING INFORMATION SERVICE—JULY UPDATE

through workshops, monthly videos and Weekly Notes, the CANEGROWERS Marketing Information Service provides neutral commentary on sugar market trends and the pricing options that may work best in any given set of circumstances.

Click the link below & use your CANEGROWERS membership number to login and read July's update.

SUGARCANE IMIDACLOPRID STEWARDSHIP PROGRAM

Imidacloprid insecticides, such as Confidor® Guard are an important tool for the growth of Australian sugarcane, effectively controlling a range of canegrubs. At the same time, you would no doubt be aware of concern regarding detections of Imidacloprid in waterways adjacent to the Great Barrier Reef Marine Park.

In order to understand the causes of waterway contamination and to find ways to address this

challenge, a number of research projects have been carried out which have both highlighted a key route of the product entering the waterways, and some possible solutions.



In response, a cross-industry task force, including Bayer, Nufarm, Sugar Research Australia, and the Queensland Departments of Agriculture and Forestry, and Environment and Science, with additional input from James Cook University have developed a training package, based on these latest research findings which focuses on the correct application of imidacloprid insecticides in ratoon sugarcane.

A link to the training video can be found at: www.sugarpros.com.au.

When you sign in to the training platform, some of your private details will be collected to demonstrate industry good practice, and to provide you with an e-mail confirmation of undertaking this training you can use this as evidence of participating in Industry training for SmartCane BMP).

These details will be dealt with in line with Bayer's Privacy Policy which can be found at: <https://www.crop.bayer.com.au/privacy-statement>.





The Billet July 2020 (CANEGROWERS Mackay & Plane Creek)

What you need to know about imidacloprid applications

By Chris Dench, Reef Catchments

Cane grubs are a major issue affecting productivity throughout the central region cane industry. There are liquid (e.g. Confidor® Guard, Nuprid® 350SC) and granular chemical products (SuSCon maxi Intel®) currently registered for control of cane grubs.

The active ingredient in these products is a chemical called imidacloprid. The sugarcane industry needs to be able to continue to use this chemical to be able to be productive and viable. However, imidacloprid has been detected in local waterways during sampling trips over recent years, with concentrations increasingly exceeding guideline values (0.11µg/L).

It is important that the product

is kept on farm to do its job and it must be prevented from entering waterways.

Every grower using imidacloprid products for grub control has a role to play in protecting this important chemical. Firstly, imidacloprid products must only be used in grub prone areas. Secondly, each product has an application rate range - only apply the rate required for effective grub control for the pest pressure expected.

Liquid applicator setup is really important - recent assessments of a number of applicators around the district have shown that many need improvements to their setup. Many machines are not consistently achieving 100 mm depth or are not closing the slot properly.

Use a metal ruler or something similar to check

your depth of application. Also, numerous machines are not delivering the product low enough in the slot - the delivery tube should be placed so that the liquid is applied low down behind the leg or between disc openers. You can lengthen the tube if

required.

Plenty of support is available to ensure your machine is keeping the product where it is needed to do the job.

Speak to your chemical supplier, productivity service or independent agronomist.

Need extra help?

If you need help on farm with imidacloprid applications, don't forget the team at Mackay Area Productivity Services and Plane Creek Productivity Services Limited who are ready to assist you.

Contact MAPS by ringing 4963 6830 and PCPSL by ringing 4956 2576.



Imidacloprid stewardship program is now under way

By Phil Ross, SRA

Imidacloprid insecticides, are an important tool for the growth of Australian sugarcane, effectively controlling a range of canegrubs.



At the same time, there is concern regarding detections of imidacloprid in waterways adjacent to the Great Barrier Reef Marine Park.

In order to understand the causes of waterway

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In response, a cross-industry task force, including Bayer, Nufarm, Sugar Research Australia, and the Queensland Departments of Agriculture and Forestry, and Environment and Science, with additional input from James Cook University have developed a training package, based on the latest research findings which focus on the correct application of imidacloprid insecticides in ratoon sugarcane.

Growers are invited to view a training video about the correct application of imidacloprid. It can be accessed by typing: bit.ly/2Y9wEEU into your

browser. You will be taken to a Bayer page titled: *Correct application of Confidor Guard in sugarcane ratoon crops.*

You will need to register and some of your details will be collected to demonstrate industry good practice.

Your details will be handled in line with Bayer's Privacy Policy which can be found at <https://www.crop.bayer.com.au/privacy-statement>

In return you will be provided with an e-mail confirmation of having undertaken industry training for Smartcane BMP.

The video has been prepared as part of the imidacloprid stewardship program which is now under way.

Resellers and advisors are undertaking a training package delivered by Bayer.

An updated canegrub management booklet will also be released by SRA this month.



Handout for SSP grower shed meetings – July 2020 (also included in Cane News July 2020)

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Image: a well set up liquid imidacloprid applicator – coulter to cut to depth, double disc to open the slot, delivery nozzle positioned and angled to place insecticide at the base of the slot, press wheel to close the slot.





Canenews September 2020 (CANEGROWERS Burdekin)

Collaborative partnership to help industry control greyback cane grubs

Sugarcane growers have a new tool in their toolbox to manage one of the industry's primary crop pests, Greyback Canegrub.

The new publication, the Greyback Canegrub Management manual, provides comprehensive information on managing this significant pest, which affects all sugarcane growing regions between Plane Creek in Central Queensland to Mossman in Far North Queensland.

The work occurred as part of a collaboration between Sugar Research Australia (SRA), the Queensland Department of Agriculture and Fisheries, CANEGROWERS, the Australia Cane Farmers Association, Bayer Crop Science and Nufarm Limited. It is funded by the Queensland Reef Water Quality Program through the Enhanced Extension Coordination project.

SRA Regional Coordinator for the Central Region, Phil Ross, said that the manual provided practical and current information for growers, which will assist the industry in managing a key economic pest. It will also assist in stewardship of the insecticide chemical, imidacloprid.

"Imidacloprid represents the sugar industry's best canegrub management tool and proper stewardship of this chemical is vital for the ongoing viability of cane farming in the 50 percent of soils where canegrub damage is common," Mr Ross said.

"The manual, and the broader project, have looked at the best practice use of imidacloprid to ensure the industry's ongoing access to imidacloprid as a control for cane grubs. SRA has collaborated on the ground with productivity services companies to understand the current on-ground practices and to develop strategies to help the industry to continue to improve grub management.

"For example, the project considered key aspects of grub control such as the determination of when to use the chemical, correct placement, and using the chemical only for grub control."

The manual has been distributed to all growers between Plane Creek and Mossman with the Spring edition of CaneConnection magazine. It is also available online via the SRA website (<https://sugarresearch.com.au/sra-information/publications/>) or additional copies can be sourced by contacting Phil Ross on pross@sugarresearch.com.au or 0477 318 897.

"Through this project we've identified practical opportunities to work with the industry to continue to improve efficiency and sustainability. This will lead to economic outcomes through improved input efficiency and effective grub control, and sustainability outcomes through improving water quality."



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- ✓ Complete transparency on results, costs and deductions
- ✓ Advances that deliver more of your money, sooner

For more information, contact our Burdekin consultant, YOLANDA HANSEN 0439 002 240





Plane Creek Update November 2020 (Plane Creek Productivity Services)

Liquid Imidacloprid Applications

As a part of a combined project with PCPSL & SRA we are currently visiting growers applying liquid imidacloprid (Confidor etc) to give an assessment of the application. As there have been reports of increased grub pressure around the mill area it is important that you are getting the full benefit of the imidacloprid treatment. As a part of this we are checking to ensure that you are getting the correct depth combined with good coverage. If you will be applying a grub treatment in the next couple of weeks could you please call Damian on 0427 624920 to arrange an inspection.

Below is the steel ruler that is used to check for depth of application of Imidacloprid.



Plane Creek Productivity Services website: <http://pcpsl-planecreekpsl.opendata.arcgis.com/>

Cane grubs

With cane grubs one of the greatest pest issues in the Plane Creek district, and imidacloprid use under scrutiny, it has never been more important to understand the full range of control options for grubs, and how non-chemical controls could form part of an integrated pest management strategy on your farm. Equally important is the correct application of chemical control agents to, keep them where they need to be for effective control and minimal losses. Recent studies by SRA in the Mackay and Plane Creek districts have supported the importance of correct placement of product at 100mm depth and complete soil coverage in minimising losses, and identified a number of minor adjustments to surveyed machinery that could be made to achieve this placement. Further surveys of equipment are planned in the Plane Creek District in 2020 to continue this work, if you are interested in participating please contact PCPSL staff.

Please find below some links to resources that may assist in your grub management on farm.

- [Canegrub Management and New Farming Systems \(BSES\)](#)
- [Canegrub Identification- Central Region \(SRA\)](#)
- [Calibrating for granular insecticide \(SRA\)](#)
- [Calibrating for liquid insecticide \(SRA\)](#)
- [Correct application of Confidor Guard \(BAYER\) in sugarcane ratoon crops](#)




Figure 2. French's cane beetle (above) and grub raster pattern (below) (SRA)


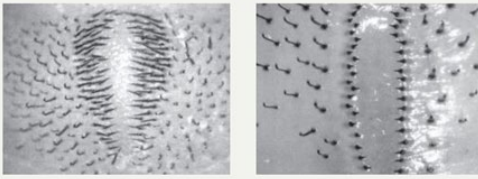


Figure 3. Grey back cane beetle (above) and grub raster pattern (below) (SRA)




Imidacloprid Application Survey

SRA have been conducting surveys on imidacloprid application equipment and techniques, in order to assess the efficacy of different practices in achieving the desired depth of soil cover, as well as measuring losses. In support of this project PCPSL have recently conducted survey's with growers on imidacloprid use, and we are hoping to have on farm assessments of equipment in the region this coming season, to aid growers in managing their losses, and make the most of their imidacloprid.

Enhanced extension coordination



Herbert Cane Productivity Services website <http://www.hcpsl.com/>

 **HCPSL**
Herbert Cane Productivity Services Ltd

181 Fairford Rd, Ingham QLD 4850
Telephone: 07 4776 5660, Fax: 07 4776 1811
Email: admin@hcpsl.com.au


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PESTICIDE MANAGEMENT

Home / Pesticide Management

THE FINAL REPORT ON ITS PERFORMANCE IS NOT DUE UNTIL THE END OF JUNE BUT THE RAINFALL SIMULATION RESULTS HAVE BEEN VERY ENCOURAGING, NOT JUST FOR IMIDACLOPRID, BUT ALSO FOR NUTRIENTS - SO MUCH SO THAT BAYER AND INCITEC ARE UNDERTAKING FURTHER TRIALS ACROSS DISTRICTS (WHICH YOU MAY ALREADY BE AWARE OF):

- Imidacloprid run-off loads over the three rainfall simulation events were about 18.1 g/ha for the closed wheel, compared to 52.4 g/ha for non-closing wheel application.
- The open application drill would also have resulted in some Imidacloprid loss through solar radiation breakdown so the reduction in Imidacloprid run-off associated with the closed wheel is a significant development.
- Nitrogen run-off loads over the three rainfall simulation events were about 18.3 kg/ha for the closed wheel, compared to 32.15 kg/ha for non-closing wheel application.
- Phosphorous run-off loads over the three rainfall simulation events were about 1.2 kg/ha for the closed wheel, compared to 2.0 kg/ha for non-closing wheel application.



[HTTPS://WWW.YOUTUBE.COM/WATCH?v=KUHQY9UEA0&FEATURE=YOUTU.BE](https://www.youtube.com/watch?v=KUHQY9UEA0&feature=youtu.be)

Sugar Services Proserpine website: www.sugarpros.com.au

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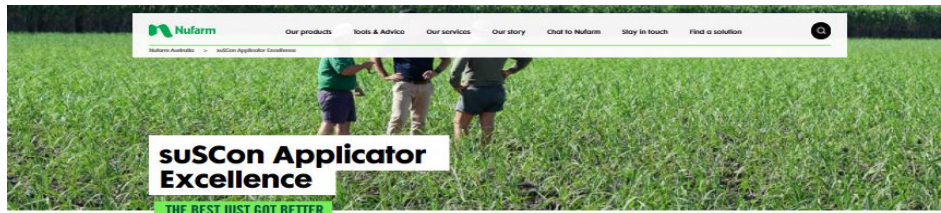
Watch the training video by pressing here

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Nufarm Australia - <https://nufarm.com/au/susconapplicatorexcellence/>



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Extract from SRA report to Industry Boards (SSP, PCPSL) and Mackay Area Committee, May 2020

- **Imidacloprid Stewardship Project (DAF funded, Plane Creek to Mossman)**
 - Bayer launched their Confidor® Guard User Accreditation Program on 4th May. The program incorporates outcomes from SRA research trials on imidacloprid losses in surface run-off and results from SRA in-field assessments of imidacloprid applicators. The rollout has a number of stages:
 - May – June 2020: Approximately 100 retail agronomists to undertake compulsory training conducted by Bayer.
 - May – June: Voluntary training and accreditation offered to approximately 140 non-retail agronomists (Productivity Services, DAF, Farmacist, SRA etc)
 - June onwards: Growers invited to attend discussion sessions: Growers receive confirmation of attendance to use for BMP evidence of participating in Industry Training and maintaining currency of latest information.
 - Resources include training video “Correct application of Confidor® Guard in ratoon sugarcane” which will be uploaded to Youtube, training Powerpoint presentation and Depth Gauge for measuring slot depth.
 - Training material will be available for local organisations eg SRA, MAPS, PCPSL, SSP, Farmacist to use in shed meetings or other grower events.
 - Media support by SRA, Canegrowers, ACFL, DAF and local newsletters
 - Infield imidacloprid applicator assessments (20 in central, 40 in Herbert) during Oct/Nov 2019 revealed a wide variation in application depth for liquid imidacloprid, despite all operators believing they were doing a good job. Application depth ranged from 400 mm depth to surface applied. A number of equipment setup issues were identified and these are incorporated into the Bayer Accreditation Program and also in the revised edition of the SRA GrubPlan booklet. Additional in-field assessments of applicators will be conducted during Sept – Nov 2020.
 - SRA’s Matt Schembri is investigating a prototype in-cab gauge to allow the operator to monitor depth of application on-the-go. The prototype uses a ground wheel as the basis for establishing the depth. This is only a design and would require additional development if it works.
 - The rewrite of the SRA GrubPlan booklet is comprehensive and is awaiting final feedback from project collaborators. It will probably go to press during July 2020.

Enhanced extension coordination

