



GROWING COTTON IN NORTHERN AUSTRALIA

2020/21 GROWER GUIDE



Bollgard³

**Roundup
Ready^{FLEX}**
COTTON

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Cotton is one of Australia's most important summer crops. In an average year, Australia's cotton growers produce enough cotton to clothe 500 million people. It is a major commodity, representing from 30 to 60 percent of the gross value of the total agricultural production in Australian regions where it is grown, helping to underpin more than 50 rural communities.

Australian Grown Cotton Sustainability Report, 2014

Australian cotton growers are some of the best in the world, achieving yields well in excess of world averages and producing some of the best fibre quality cotton. This makes Australian cotton attractive to merchants and spinners around the globe.

The modern Australian cotton industry has grown from humble beginnings with its roots in the Namoi valley of north west New South Wales, to a professional, technologically advanced industry spanning from Northern Australia into Victoria.

In recent years, the industry has seen substantial expansion into areas once thought impractical to cotton growing. Through plant breeding and advances in biotechnology, the Australian cotton industry has been expanding into new regions, including south of the Victorian border and north into the Flinders River in the Gulf of Carpentaria and the Ord River Irrigation Scheme in Western Australia.

Currently irrigated cotton accounts for the majority of annual production, however, in recent seasons the popularity of cotton as a dryland crop has seen an increase in the area planted to dryland cotton.

Further information, resources and tools including a gross margin calculator are available at www.acresofopportunity.com.au



THE EVOLUTION OF BOLLGARD® TECHNOLOGY IN AUSTRALIA

INGARD® cotton was the first commercially grown genetically modified crop in Australia. INGARD was succeeded by Bollgard II® which contained two *Bacillus thuringiensis* (Bt) genes *Cry1Ac* and *Cry2Ab*. Bollgard 3 contains both *Cry1Ac* and *Cry2Ab* along with another Bt gene, *Vip3A*. These genes code for proteins that control certain species of Lepidopteran pests when ingested.

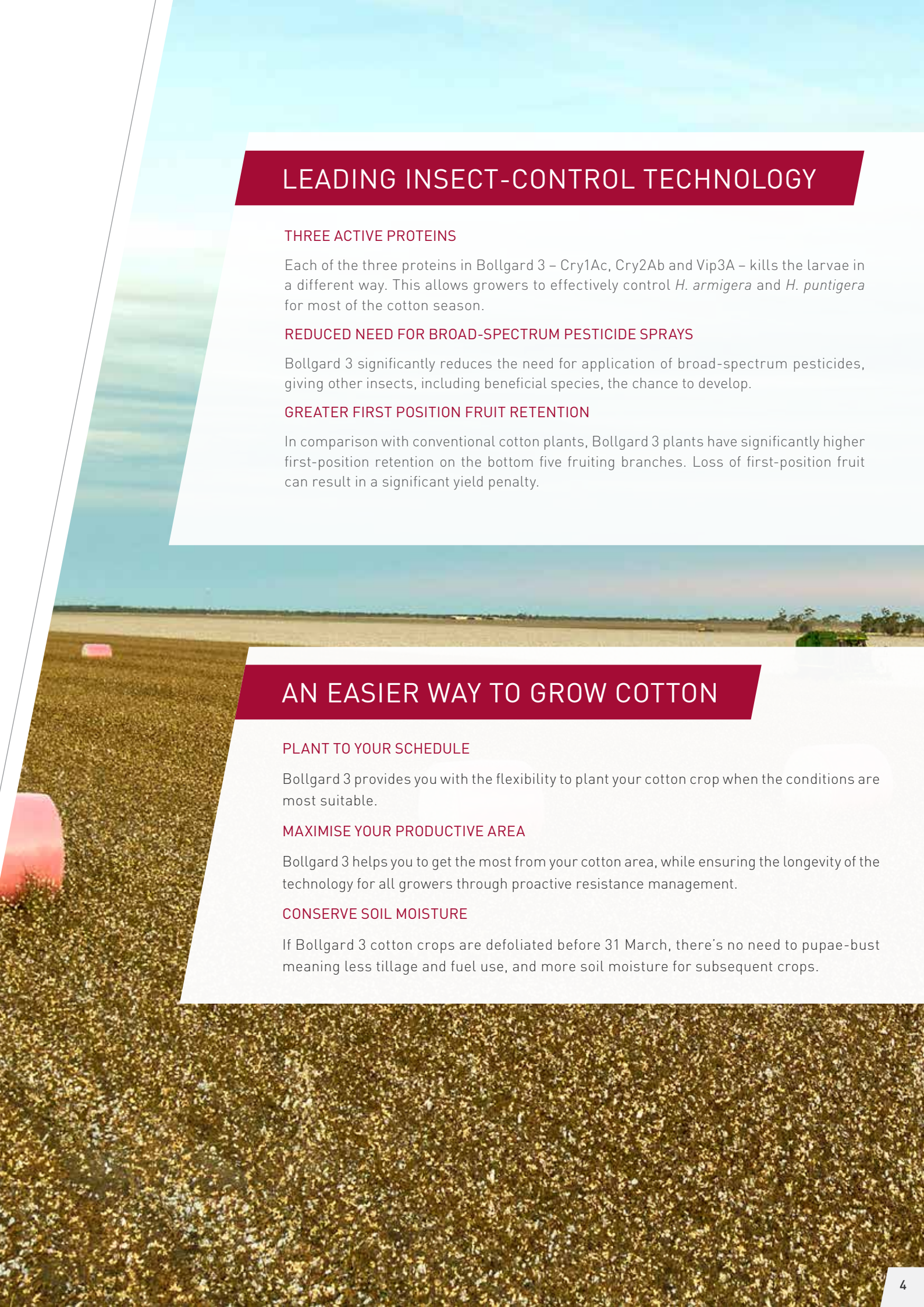
WHAT IS BOLLGARD 3?

Bollgard 3 contains a third protein, Vip3A, to reinforce the Bt proteins found in Bollgard II – *Cry1Ac* and *Cry2Ab*. Each protein “kills” the helioverpa larvae in a different way.

The addition of the third protein increases the sustainability of the technology as it becomes increasingly difficult for helioverpa to develop resistance to more than one of the Bt proteins.

Bollgard 3, in conjunction with good resistance management practices, plays a critical role in protecting the technology, ensuring that it will continue to perform the way that growers need and expect for many years to come.





LEADING INSECT-CONTROL TECHNOLOGY

THREE ACTIVE PROTEINS

Each of the three proteins in Bollgard 3 – Cry1Ac, Cry2Ab and Vip3A – kills the larvae in a different way. This allows growers to effectively control *H. armigera* and *H. punctigera* for most of the cotton season.

REDUCED NEED FOR BROAD-SPECTRUM PESTICIDE SPRAYS

Bollgard 3 significantly reduces the need for application of broad-spectrum pesticides, giving other insects, including beneficial species, the chance to develop.

GREATER FIRST POSITION FRUIT RETENTION

In comparison with conventional cotton plants, Bollgard 3 plants have significantly higher first-position retention on the bottom five fruiting branches. Loss of first-position fruit can result in a significant yield penalty.

AN EASIER WAY TO GROW COTTON

PLANT TO YOUR SCHEDULE

Bollgard 3 provides you with the flexibility to plant your cotton crop when the conditions are most suitable.

MAXIMISE YOUR PRODUCTIVE AREA

Bollgard 3 helps you to get the most from your cotton area, while ensuring the longevity of the technology for all growers through proactive resistance management.

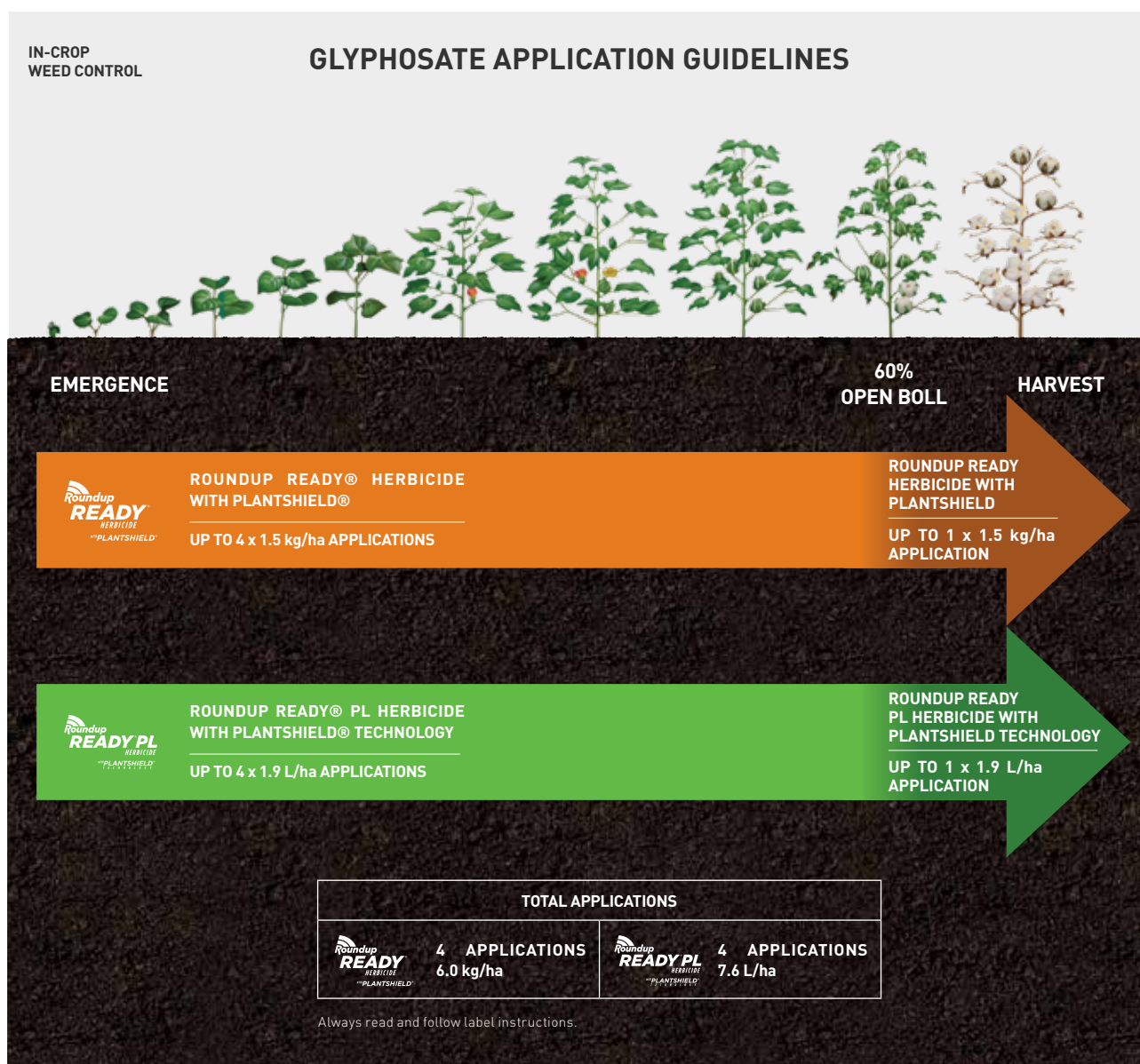
CONSERVE SOIL MOISTURE

If Bollgard 3 cotton crops are defoliated before 31 March, there's no need to pupae-bust meaning less tillage and fuel use, and more soil moisture for subsequent crops.

WHAT IS ROUNDUP READY FLEX® COTTON?

Roundup Ready Flex® cotton has been modified using gene technology to tolerate applications of glyphosate, the active ingredient in the Roundup® family of herbicides.

Roundup Ready® Herbicide with PLANTSHIELD® and Roundup Ready PL Herbicide with PLANTSHIELD Technology are both registered for use over-the-top of Roundup Ready Flex cotton. They are the only products with patented PLANTSHIELD crop-safener technology protecting your crop in a wide range of conditions. Apply no more than 4 in-crop applications of Roundup Ready herbicides during the growing season.



2020/21 ACCREDITATION AND KEY DATES

Accreditation

Prior to planting cotton containing any Bayer technologies, including Bollgard 3, growers must complete an accreditation course. The accreditation course is an important part of the Bayer stewardship system and provides information on the process required to grow the technology and also outlines the key strategies within the Resistance Management Plan (RMP). Further information on completing an accreditation course can be found by contacting your Territory Business Manager.

Resistance Management Plan

Bollgard 3 contains three proteins, Cry1Ac, Cry2Ab and Vip3A, each of which have a different mode of action to “kill” larvae in a different way. This allows growers to protect against *Helicoverpa* spp.

To ensure the longevity of Bollgard 3, an RMP has been developed, specifically for Northern Australia. Compliance with this RMP is critical in protecting the technology into the future.

The RMP can be downloaded at bollgard3.com.au

Key dates for Bollgard®3 and Roundup Ready Flex® in the Northern Australia Region

Technology Cotton Seed	Planting Dates	Planting Audit Due Dates	Mid-Season Survey Due Dates	End-of-Season Survey Due
Bollgard 3 / Roundup Ready Flex	8 week planting window between December 1 and May 30	Due 2 weeks after the 8 week planting window has closed	Due 4 weeks after the planting audit due date	Due 8 weeks after the mid season audit (dependent on picking time)

Notes:

- All audits are conducted by your nominated Technology Service Provider (TSP) who will record all the areas planted with Technology Cotton Seed (together with varieties, field names and associated refuges on all farm units).
- Bayer will advise growers of audit dates once the planting window has been finalised for the region.



Useful Resources

Bollgard 3 website: bollgard3.com.au

Includes product guide, technical manual, refuge planning guide and the Northern Resistance Management Plan

Acres of Opportunity: acresofopportunity.com.au

Technical and support information for new cotton growers, both dryland and irrigated

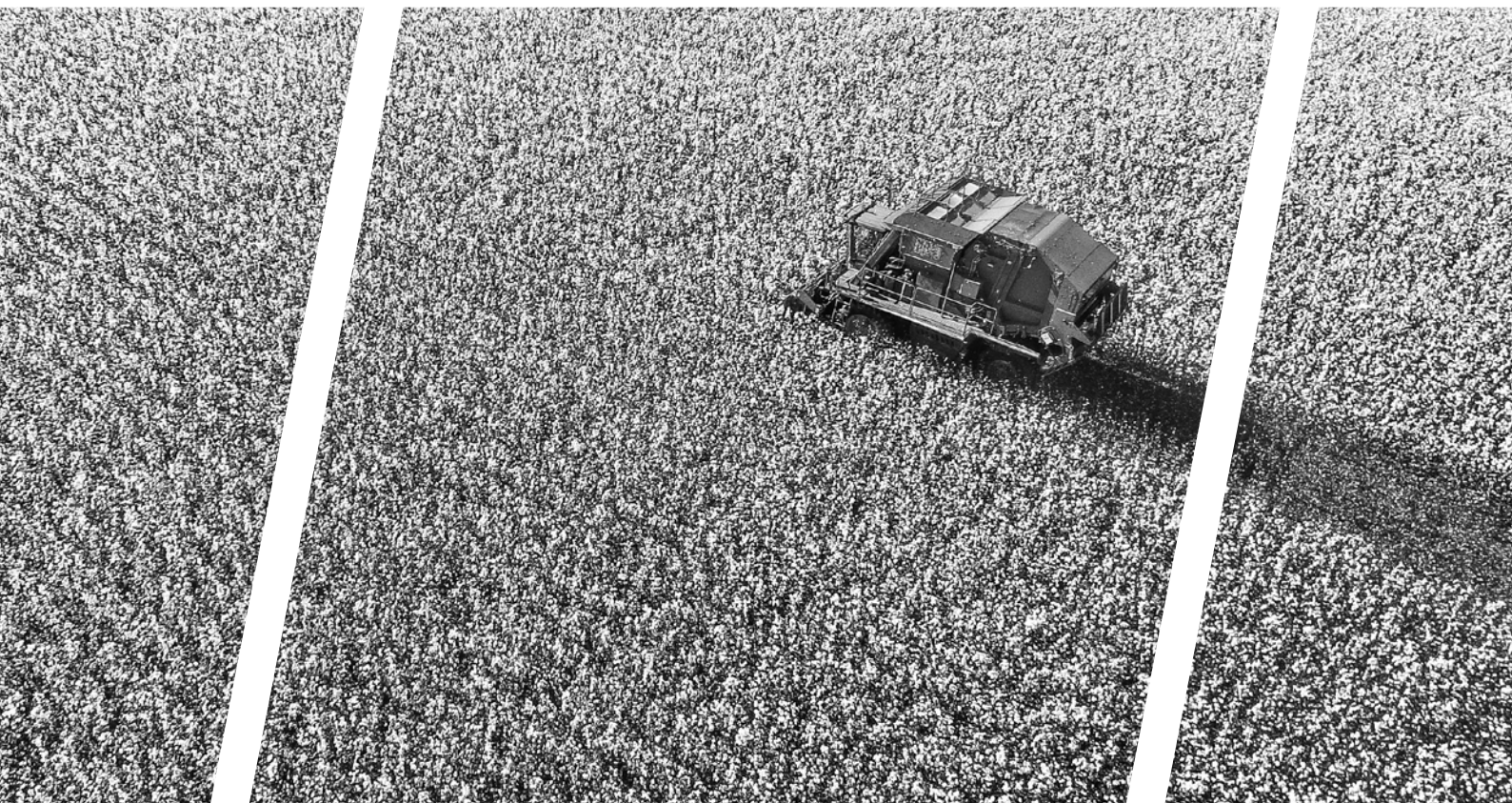
Cotton Seed Distributors: www.csd.net.au

Cotton variety information



ROUNDUP READY FLEX[®] COTTON

WEED MANAGEMENT GUIDE



Roundup Ready Flex[®] technology gives you superior weed control, excellent crop safety and the ability to maximise your yield potential. However, over-reliance on glyphosate before, during and after the cotton crop will increase your chance of glyphosate resistant weeds developing on your farm.

There are a range of herbicides with different modes of action which can be used in a Roundup Ready Flex cotton crop throughout the season. By adding targeted use of pre-emergent, selective herbicides, cultivations and chipping, you can maintain excellent weed control while reducing the risk of glyphosate

resistance developing on your farm, saving you time and money in the future.

We've listed clear recommendations for weed control practices in a Roundup Ready Flex cotton crop, as well as for pre- and post-harvest weed and volunteer cotton control.

Make sure to contact your agronomic consultant regarding your planned weed control program as the following information is a guide only. For more information on herbicide resistance visit mix-it-up.com.au and weedsmart.org.au



WEED MANAGEMENT RECOMMENDATIONS FOR THE ROUNDUP READY FLEX SYSTEM



PRE-PLANTING KNOCKDOWN*

ALL LABEL WEEDS

- Spray.Seed®
- Basta®
- Valor®
- Roundup Ultra® MAX Herbicide

GRASS WEEDS

- Gramoxone®

PRE-PLANTING OR PRE EMERGENT RESIDUAL*

ALL LABEL WEEDS

- Cotogard® WG
- Cotoran®
- Valor

BROADLEAF WEEDS

- Diuron 900 WG
- Cotoran
- Terbyne® Xtreme

GRASS WEEDS

- Bouncer® 960S
- Dual Gold®
- Treflan®
- Rifle® 440



IN-CROP APPLICATION*

ALL LABEL WEEDS

- Roundup Ready® PL Herbicide with PLANTSHIELD® Technology
- Roundup Ready® Herbicide with PLANTSHIELD®

GRASS WEEDS

- Verdict® 520
- Sequence®
- Bouncer 960S
- Dual Gold



CULTIVATION

It is important to target all surviving weeds after chemical applications. The timely use of cultivation and chipping targeting surviving weeds can be a key IWM tactic in a cotton system.



CHIPPING

Product	Group	Active Ingredients	Company
Verdict 520	A	520 g/L haloxyfop and haloxyfop-R-methyl ester	Dow
Sequence	A	240 g/L clethodim	Nufarm
Bromicide 200	B	200 g/L bromoxynil	Nufarm
Cotogard WG	C	440 g/kg fluometuron, 440 g/kg prometryn	Adama
Cotoran	C	900 g/kg fluometuron	Adama
Diuron 900 WG	C	900 g/kg diuron	Adama
Gesagard 500 SC	C	500 g/L prometryn	Syngenta
Sencor 750 WG	C	750 g/kg metribuzin	Bayer
Terbyne Xtreme	C	875 g/kg terbuthylazine	Sipcam
Rifle 440	D	440 g/L pendimethalin	Nufarm
Treflan	D	480 g/L trifluralin	Dow
Nail 600EC	G	600 g/L carfentrazone-ethyl	CropCare
Valor	G	500 g/kg flumioxazin	Sumitomo
Sharpen	G	700 g/kg saflufenacil	Nufarm

Product	Group	Active Ingredients
2,4-D Amine 625	I	625 g/L 2,4-D
Starane Advance	I	333 g/L fluroxypyr (p-ester)
Bouncer 960S	K	960 g/L s-metolachlor
Dual Gold	K	960 g/L s-metolachlor
Gramoxone	L	250 g/L paraquat pro paraquat dichloride
Spray.Seed	L	135 g/L paraquat (pro paraquat dichloride) and 115 g/L (present as diquat d
Roundup Ready PL Herbicide with PLANTSHIELD Technology	M	540 g/L glyphosate
Roundup Ready Herbicide with PLANTSHIELD	M	690 g/kg glyphosate
Roundup Ultra MAX Herbicide	M	570 g/L glyphosate
Basta	N	200 g/L glufosinate-



LAY-BY / SHIELDED SPRAY

ALL LABEL WEEDS

■ Gesagard® 500 SC

GRASS WEEDS

■ Rifle 440

BROADLEAF WEEDS

■ Diuron 900 WG

■ Valor

■ Terbyne Xtreme

PRE-HARVEST

ALL LABEL WEEDS

■ Roundup Ready PL Herbicide with PLANTSHIELD Technology

■ Roundup Ready Herbicide with PLANTSHIELD

■ Roundup Ultra MAX Herbicide

POST-HARVEST

ALL LABEL WEEDS

■ Roundup Ready PL Herbicide with PLANTSHIELD Technology

■ Roundup Ready Herbicide with PLANTSHIELD

■ Roundup Ultra MAX Herbicide

■ Spray.Seed

BROADLEAF WEEDS

■ 2,4-D Amine 625

■ Starane® Advance

	Company
	Adama
resent as meptyl	Dow
or	Nufarm
or	Syngenta
esent as	Syngenta
resent as paraquat	Syngenta
g/L diquat (bromide)	
	Bayer
	Bayer
	Bayer
ammonium	BASF

VOLUNTEER ROUNDUP READY FLEX COTTON CONTROL

In fallow weed control*

■ Sharpen®
■ Nail® 600EC
■ Bromicide® 200
■ Spray.Seed
■ Gramoxone

Pre-planting knockdown*

■ Valor
■ Nail 600EC

Early in-crop application*

■ Sencor® 750 WG†

Post-harvest

■ Nail 600EC
■ Bromicide 200
■ Starane Advance



*Check label for plantback period and always apply according to label conditions.

†Recommended for weed control in pigeon pea refuge crops.

Roundup
Ready FLEX
COTTON

Roundup
READY
HERBICIDE
PLANTSHIELD

Roundup
READY PL
HERBICIDE
PLANTSHIELD

MIX IT UP

WEED
smart
every weed every seed
every farm every year

GUIDELINES FOR A SUCCESSFUL IWM STRATEGY TO REDUCE HERBICIDE RESISTANCE RISKS:

- Aim to enter the Roundup Ready® cropping phase of the rotation with a low weed burden.
- Integrate as many different weed control options (**chemical and cultural**) as possible through all phases of the crop rotation.
- Make every herbicide application count – use **registered rates** at the correct application **growth stage** and assess effectiveness.
- Rotate herbicides with **different modes of action** throughout the crop rotation.
- Regularly **monitor the effectiveness** of resistance management practices.
- **Test weed populations** for herbicide resistance status as part of ongoing integrated weed management (IWM).
- If planting into a paddock with suspected glyphosate resistance growers must have a **plan to manage such weeds**.

For more information on integrated weed management visit **weedsmart.org.au**

ROUNDUP READY PLUS®

2020/21 PROGRAM GUIDE FOR NORTHERN AUSTRALIA

Providing growers with tools to manage weeds sustainably and effectively through product recommendations, education campaigns and financial rebates.



SUMITOMO CHEMICAL
AgroSolutions Division



THE ROUNDUP READY PLUS® PROGRAM

The Roundup Ready PLUS program is designed to reward cotton growers who plant cotton seed containing Roundup Ready technologies and who use herbicides sustainably and help slow or prevent development of glyphosate resistance in key weed species.

The program encourages growers to use a range of weed control practices through:



Product recommendations



Education & stewardship campaigns



Financial rebates

HERBICIDE RESISTANCE TESTING PROGRAM

The free herbicide resistance testing program is available to all growers who have grown Roundup Ready Flex® cotton in any of the prior three seasons. Growers can test five of the major weeds present in cotton systems for resistance to program herbicides.

WEEDS



ANNUAL RYEGRASS

Lolium rigidum



AWNLESS BARNYARD GRASS

Echinochloa colonum



LIVERSEED GRASS

Urochloa panicoides



RED PIGWEED

Portulaca oleracea



MILK (SOW) THISTLE

Sonchus oleraceus

1

Bayer has pre-printed testing envelopes that can be used for weed seed collection. Please contact your Bayer Territory Business Manager, or email cotton@monsanto.com

2

Samples will be sent to Plant Science Consulting, who will do the testing and provide results directly to the grower.

REBATES

For the 2020/21 season, cotton growers will be offered rebates for using participating products sprayed on Roundup Ready Flex cotton fields between 1 October 2020 - 31 August 2021.

Growers will also be eligible for a rebate on a **single application** of Roundup Ready® Herbicide with PLANTSHIELD® or Roundup Ready® PL Herbicide with PLANTSHIELD® Technology, if another program product is used on the same field.

Per hectare rebate is calculated at maximum label rate. Rebates will be adjusted accordingly for lower rates used. Rebates will not be paid for usage above the maximum label rate.

Growers should consult the Technology User Agreement (TUA) for full terms and conditions.

COTTON PRODUCTS AND APPLICATION WINDOWS

Spray.Seed® 250

Used at 2.4 L/ha = **\$4.20 /ha**

Gramoxone® 360 PRO

Used at 1.67 L/ha = **\$2.17 /ha**

**Roundup
READY®
HERBICIDE**
with PLANTSHIELD®

Used at 1.5 kg/ha = **\$1.50 /ha**

**Roundup
READY® PL
HERBICIDE**
with PLANTSHIELD®
TECHNOLOGY

Used at 1.9 L/ha = **\$1.90 /ha**

DualGold®

Used at 1.0 L/ha = **\$3.00 /ha**

Gesagard®

Used at 4.5 L/ha = **\$4.95 /ha**

VALOR®
300 WG HERBICIDE

Used at 280 g/ha
= **\$5.60 /ha**

VALOR®
300 WG HERBICIDE

Used at 45 g/ha
= **\$0.90 /ha**

VALOR®
300 WG HERBICIDE

Used at 90 g/ha
= **\$1.80 /ha** (layby application)

FALLOW

PRE-PLANT
KNOCKDOWN

PLANTING

SEEDLING
ESTABLISHMENT

CANOPY
DEVELOPMENT

FLOWERING AND FRUIT
DEVELOPMENT

HARVEST

1 October

*Valor used at rates above 210 g/ha for fallow and in-crop residual control requires a 2-month interval pre-planting

HOW DO I CLAIM MY REBATE?



PLANT

Plant Roundup Ready Flex cotton.



APPLY

Apply participating herbicides to your crop between 1 October 2020 and 31 August 2021 at the recommended rate.



LODGE

Lodge your spray records, proof of purchase, and timing & rate information onto the 'Record Herbicide Usage' portal on the Roundup Ready PLUS website between 15 May 2021 and 31 August 2021.



REBATE

The rebate will be paid by EFT into your nominated account by 31 October 2021.

Visit roundupreadyplus.com.au for further details

Participating products must be purchased from an authorised retailer and applied between 1 October and 31 August 2021. Growers must hold a valid 2020/21 Technology User Agreement to participate in the program. Rebates will not be paid for product use at rates higher than approved label rates. Always read and follow directions for use on herbicide labels. For full terms and conditions, consult the 2020/21 Technology User Agreement. Program subject to change.

Dual Gold®, Spray.Seed®, Gesagard®, and Gramoxone® are registered trademarks of Syngenta Australia. Valor® is a registered trademark of Sumitomo Chemical Company, Japan.

Always read the label for full instructions. The information and recommendations set out in this brochure are based on tests and data believed to be reliable at the time of publication. Results may vary, as the use and application of the products is beyond our control and may be subject to climatic, geographical or biological variables, and/or developed resistance. Any product referred to in this brochure must be used strictly as directed, and in accordance with all instructions appearing on the label for that product and in other applicable reference material. So far as it is lawfully able to do so, Bayer CropScience Pty Ltd accepts no liability or responsibility for loss or damage arising from failure to follow such directions and instructions.

COTTON PLANTING WINDOWS AND KEY RMP TIMINGS FOR NORTHERN AUSTRALIA

QUICK GUIDE



Bollgard[®]3

PLANTING WINDOWS IN NORTHERN AUSTRALIA: QUICK GUIDE

WHAT IS A PLANTING WINDOW?

A planting window is a resistance management technique that restricts the period in which planting of a cotton crop containing Bollgard 3 insect control technology can occur, with the aim of restricting the number of generations of *Helicoverpa* spp. exposed to Bollgard 3 crops each season. Planting windows are an important part of the Bollgard® 3 Resistance Management Plan (RMP), regulated by the Australian Pesticides & Veterinary Medicines Authority (APVMA).

HOW DO PLANTING WINDOWS WORK?

Planting within a window reduces the length of time that Bollgard 3 cotton will be in the ground and thus limits the number of generations of *Helicoverpa* spp. exposed to the Bt proteins contained in Bollgard 3 cotton during this time.

The greater the number of generations exposed to the Bt proteins, the greater the opportunity for resistance to develop.

COTTON PLANTING WINDOWS FOR NORTHERN AUSTRALIA

The table below outlines region specific planting windows, which requires all Bollgard 3 cotton crops to be watered up or planted into moisture by the designated date, unless otherwise advised by a “Bollgard 3 Planting Window Variation Notice”.

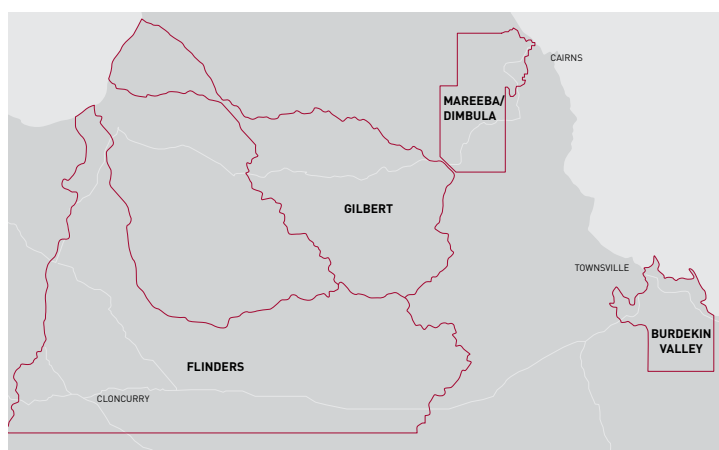
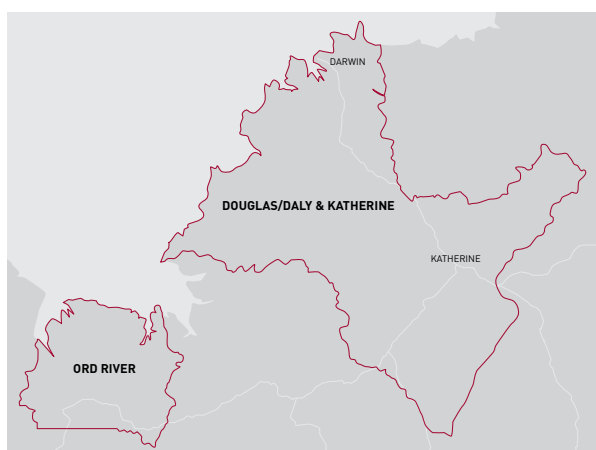
Table 1. RMP specified planting windows for Northern Australia

Area	Planting window
Valleys within Northern Australia	Planted into moisture or watered-up in an 8-week window determined by Bayer and the TIMS Committee, between 1 December and 30 May.

HOW MANY PLANTING WINDOWS DOES NORTHERN AUSTRALIA HAVE?

Each valley within Northern Australia can have a different planting window. In the 2020/21 cotton season, the Northern Australian valleys will be:

- Ord River
- Douglas/Daly & Katherine
- Katherine
- Mareeba/Dimbulula
- Gilbert
- Flinders
- Burdekin



WHAT IS THE PROCESS FOR SETTING A PLANTING WINDOW?

Prior to planting cotton in Northern Australia, growers must check their valley planting window dates. To set planting window dates, the following process should be implemented:

Table 2. The process to set a planting window

If there is a Cotton Grower Association in place
• The valley’s Cotton Grower Association should determine an 8-week window that best meets the needs of growers. • The CGA should apply to the TIMS Committee via written notice of the desired planting window dates. • If approved, TIMS will notify Bayer. • Bayer will communicate the window to growers and Technology Service Providers (TSPs) via a “Planting Window Notice” specifying the dates for that valley. • Growers must comply with this notice.
If there isn’t a Cotton Grower Association in place
• Growers should contact their local TSP or Bayer to notify of preferred planting window dates. • Bayer will work with local TSPs and TIMS to set a window that meets the needs of the majority of growers. • Bayer will communicate the window to growers and TSPs via a “Planting Window Notice” specifying the dates for that valley. • Growers must comply with this notice.

EXTENSION/PERMITS

Extension of a planting window beyond the 8-week period specified in the “Planting Window Notice” is not generally approved as it places additional resistance risk on the Bt proteins. In exceptional circumstances however, it may be considered by Bayer and the TIMS committee. These exceptional circumstances may include unforeseen environmental conditions that prohibit growers from planting cotton within the window.

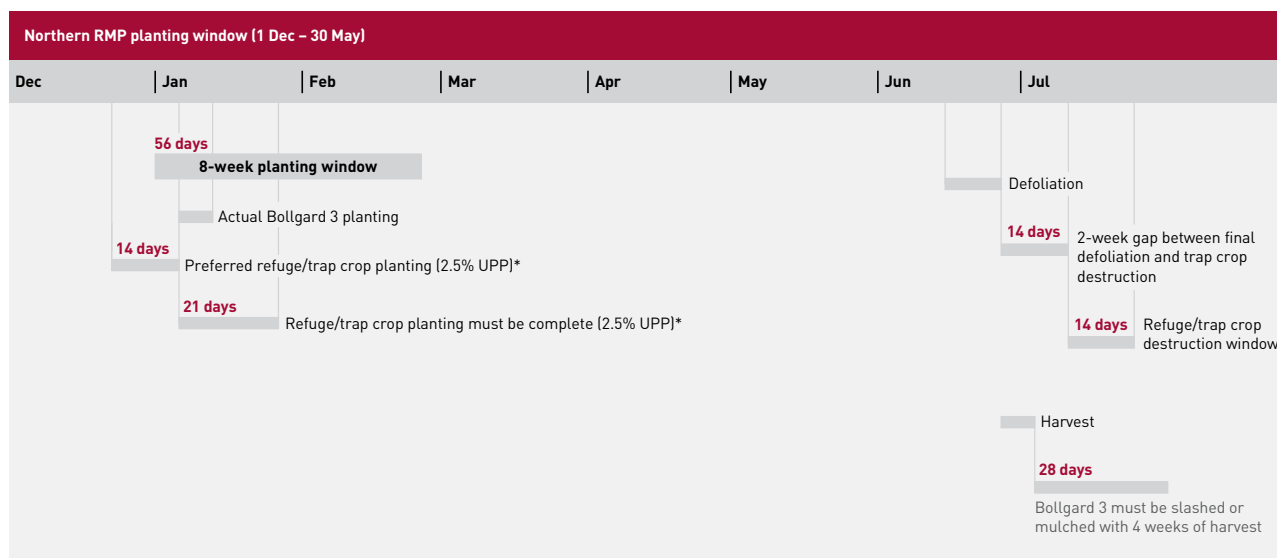
If growers within a valley would like to extend a planting window beyond the defined period or would like to move the planting window outside of the dates specified in Table 1, a permit will need to be obtained from the APVMA by Bayer. All applications for an extension or variation of planting dates outside those specified in Table 1 must be made to Bayer.

KEY RMP TIMINGS

- Refuges must be planted in the same row configuration as Bollgard 3 crops (i.e. solid plant irrigated Bollgard 3 cotton must have an associated irrigated and solid plant refuge crop).
- Pigeon pea trap crops must be irrigated*

Full unsprayed pigeon pea (UPP) refuge also utilised as trap crop

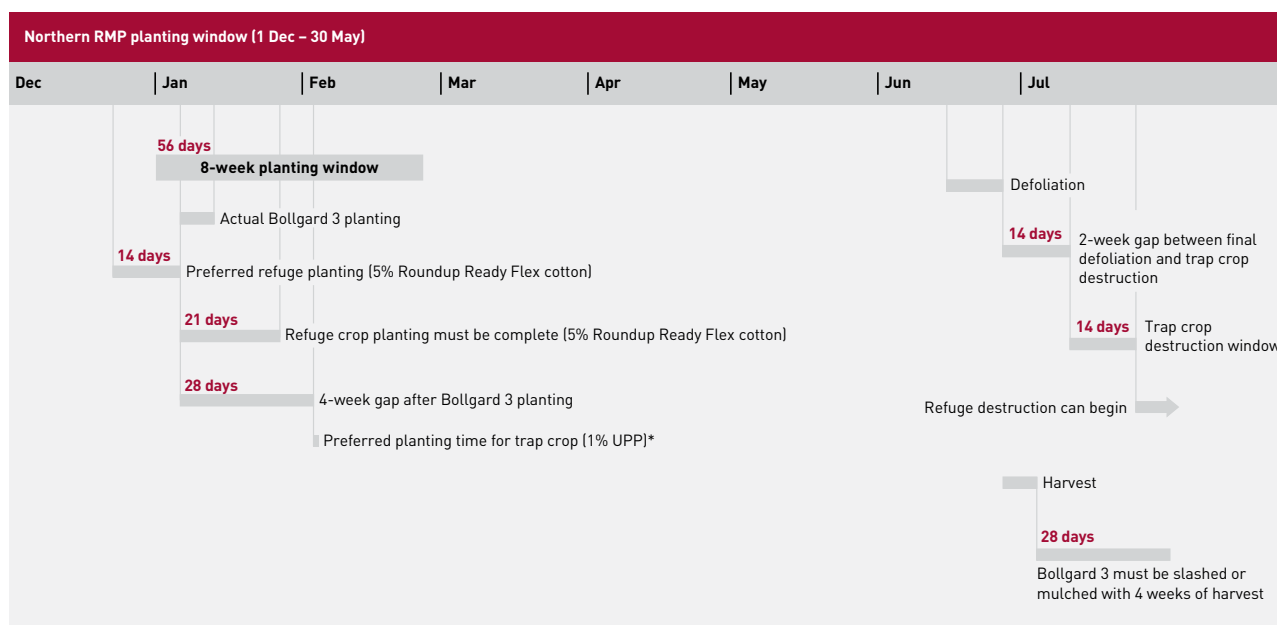
Dates are provided as an example only to demonstrate the relationship between planting/defoliation/harvest operations and RMP requirements.



*If pigeon pea refuge is dryland, and the grower would like to use this entire refuge as their trap crop as well, they must first seek Bayer approval.

Unsprayed conventional cotton refuge (Roundup Ready Flex® cotton) & unsprayed pigeon pea trap crop

Dates are provided as an example only to demonstrate the relationship between planting/defoliation/harvest operations and RMP requirements.



*If grower wishes to plant a dryland pigeon pea trap crop, they must seek Bayer approval first

ATTACHMENT A

RESISTANCE MANAGEMENT PLAN FOR BOLLGARD II® COTTON - ORD RIVER IRRIGATION AND BURDEKIN BOWEN BASIN AREAS

Developed by Monsanto Australia Pty Limited and the Transgenic and Insect Management Strategy (TIMS) Committee of Cotton Australia Limited.

The resistance management plan is based on three basic principles: (1) minimising the exposure of *Helicoverpa* spp. to the *Bacillus thuringiensis* (Bt) proteins Cry 1Ac and Cry 2Ab; (2) providing a population of susceptible individuals that can mate with any resistant individuals, hence diluting any potential resistance; and (3) removing resistant individuals at the end of the cotton season. The three principles are supported through the implementation of 5 elements that are the key components of the Resistance Management Plan. These elements are:

- Refuge crops
- Planting window
- Pupae busting/Trap crops
- Control of volunteers and ratoon cotton and
- Spray limitations.

Growers of Bollgard II cotton are required to practice preventative resistance management as set out below. Compliance with the Resistance Management Plan is required under the terms of the Bollgard II Technology User Agreement and under the conditions of registration (Agricultural and Veterinary Chemicals Act, 1994).

THIS RMP IS FOR THE FOLLOWING AREAS:

- Ord River Irrigation Area, Western Australia
- Burdekin Bowen Basin Area, Queensland
- Richmond Area, Queensland

1. Refuges

Growers planting Bollgard II cotton will also be required to grow a refuge crop that is capable of producing large numbers of *Helicoverpa* spp. moths which have not been exposed to selection with Bt proteins Cry 1Ac and Cry 2Ab. These unselected moths are expected to dominate matings with any survivors from Bollgard II crops and thus help to maintain resistance to Bt proteins Cry 1Ac and Cry 2Ab at low levels.

All refuge options are based on the requirement of a 10% unsprayed cotton refuge or its equivalent as determined by the relative production of *Helicoverpa* spp. from each of the refuge types as described in the tables below.

For each area of irrigated Bollgard II cotton planted, a grower is required to plant a minimum of one, or a combination of, the following:

Table 1. Irrigated Bollgard II cotton refuge options

Crop	Conditions	% of Bollgard II	Regions permitted
Conventional Cotton	Irrigated, unsprayed conventional cotton	10	All Regions
Pigeon Pea	Fully irrigated, unsprayed	5	All Regions

Note: Unsprayed means not sprayed with insecticides that target any life stage of *Helicoverpa* spp.

Bt products must not be applied to any refuge.

If the viability of an unsprayed refuge is at risk due to early or late season pressure by *Helicoverpa* spp., or any other caterpillar species, contact Monsanto immediately. With prior approval from the Monsanto Compliance and Stewardship Manager, a non-Bt heliocide can be applied.

An unsprayed refuge should not be planted in the same field as any crop sprayed with a rate of insecticide that is registered for *Helicoverpa* spp, with the exception of Bollgard II unless a sufficient buffer is in place to prevent insecticide drift.

Sprayed crops and unsprayed refuges that are planted in adjacent fields must also be separated by sufficient distance to minimise the likelihood of insecticide drift onto the unsprayed refuge.

For the purposes of this Resistance Management Plan, conventional cotton includes any cotton varieties that do not have Bt proteins in the plant that control *Helicoverpa* spp. larvae.

General conditions for all refuges:

- (a) Refuge crops are to be planted and managed so that they are attractive to *Helicoverpa* spp. during the growing period of the Bollgard II cotton varieties.

It is preferable that all refuge is planted within the 2 week period prior to planting Bollgard II. If this is not possible, refuge planting must be completed within 3 weeks of the first day of sowing of Bollgard II. At this time, sufficient refuge must have been planted to cover all of the Bollgard II cotton proposed to be planted for the season (including Bollgard II already planted and any that remains unplanted). Should additional Bollgard II planting be made after this date, which is not already covered by refuge, additional refuge must be planted as soon as possible and no more than 2 weeks after sowing of the additional Bollgard II.

- (b) Pigeon pea refuges should not be planted until the soil temperature reaches 17°C, which is a requirement for germination, and should also be planted into moisture to ensure successful germination. If soil temperatures are not suitable to allow germination of pigeon peas in line with condition (a), an alternative refuge must be planted in its place within the prescribed period (under (a) above).
- (c) Once the Bollgard II cotton begins to flower the corresponding refuge must not be cultivated.
- (d) Insecticide preparations containing Bt may be used on Bollgard II cotton throughout the season BUT NOT on any refuge crops.

- (e) All refuges are to be planted within the farm unit growing Bollgard II cotton. Subject to clause (f) below, all reasonable effort should be taken to plant the refuge either on one side of, or next to, a Bollgard II cotton field, and all Bollgard II fields must be no more than 2 km from the nearest Bollgard II refuge.
- (f) To minimise the possibility of refuge attractiveness being affected by herbicide drift, non-herbicide tolerant refuges should be separated from herbicide tolerant Bollgard II cotton crops by a sufficient distance to minimise such drift, but no more than 2km from the Bollgard II cotton.
- (g) To account for possible insecticide drift, Bollgard II refuge crops must be at least 24 metres wide and 24 metres long. Different unsprayed refuge options may be planted in the same field as a single unit.
- (h) Slashing of plants within the refuge should only be carried out after Bollgard II cotton lint removal has been completed. Soil disturbance of refuge crops can only occur 2 weeks after Bollgard II cotton plants have been harvested.
- (i) Refuges for Bollgard II crops must be planted in the same row configuration as the Bollgard II crop.

2. Control of volunteer and ratoon cotton

Volunteer and ratoon cotton may impose additional selection pressure on *Helicoverpa* spp. to develop resistance to the Bt proteins Cry 1Ac and Cry 2Ab produced by Bollgard II cotton.

Growers must make all reasonable efforts to remove volunteer and ratoon plants as soon as possible from all fields - including fallow areas, Bollgard II crops, conventional cotton crops and all refuges. The presence of Bollgard II volunteers/ratoon cotton in any refuge will diminish the value of the refuge and must be removed as soon as possible.

Note: The refuge should preferably be planted into fallow or rotation fields that have not been planted to cotton in the previous season.

3. Post-harvest crop destruction

As soon as practical after harvest, Bollgard II cotton crops must be destroyed by cultivation or herbicide so that they do not continue to act as hosts for *Helicoverpa* spp. Unsprayed refuges must be left uncultivated for two weeks after harvest to allow emergence of any pupating *Helicoverpa* spp.

4. Planting windows

All Bollgard II crops and cotton refuges are to be planted into moisture or watered-up in a five week window. In each region, the start date of the planting window will be determined by TIMS in consultation with local growers and reflected in a regionally amended "Bollgard II Planting Window Variation Notice".

The planting window will occur within the following periods:

- **Ord River Irrigation Area:** March 1 and May 1.
- **Burdekin Bowen Basin Area:** December 1 and April 1.
- **Richmond Area:** December 1 and April 1.

5. Refuge

Unsprayed Pigeon Pea refuge should preferably be planted into a fallow or rotation field that has not been planted to cotton in the previous season.

6. End of season chick pea trap crop

An end of season chick pea trap crop must be planted. The planting configuration of the trap crop should be the same as that of the Bollgard II crop. Table 2 shows the requirements for the chick pea trap crop.

Table 2. End of season chick pea trap crop requirements

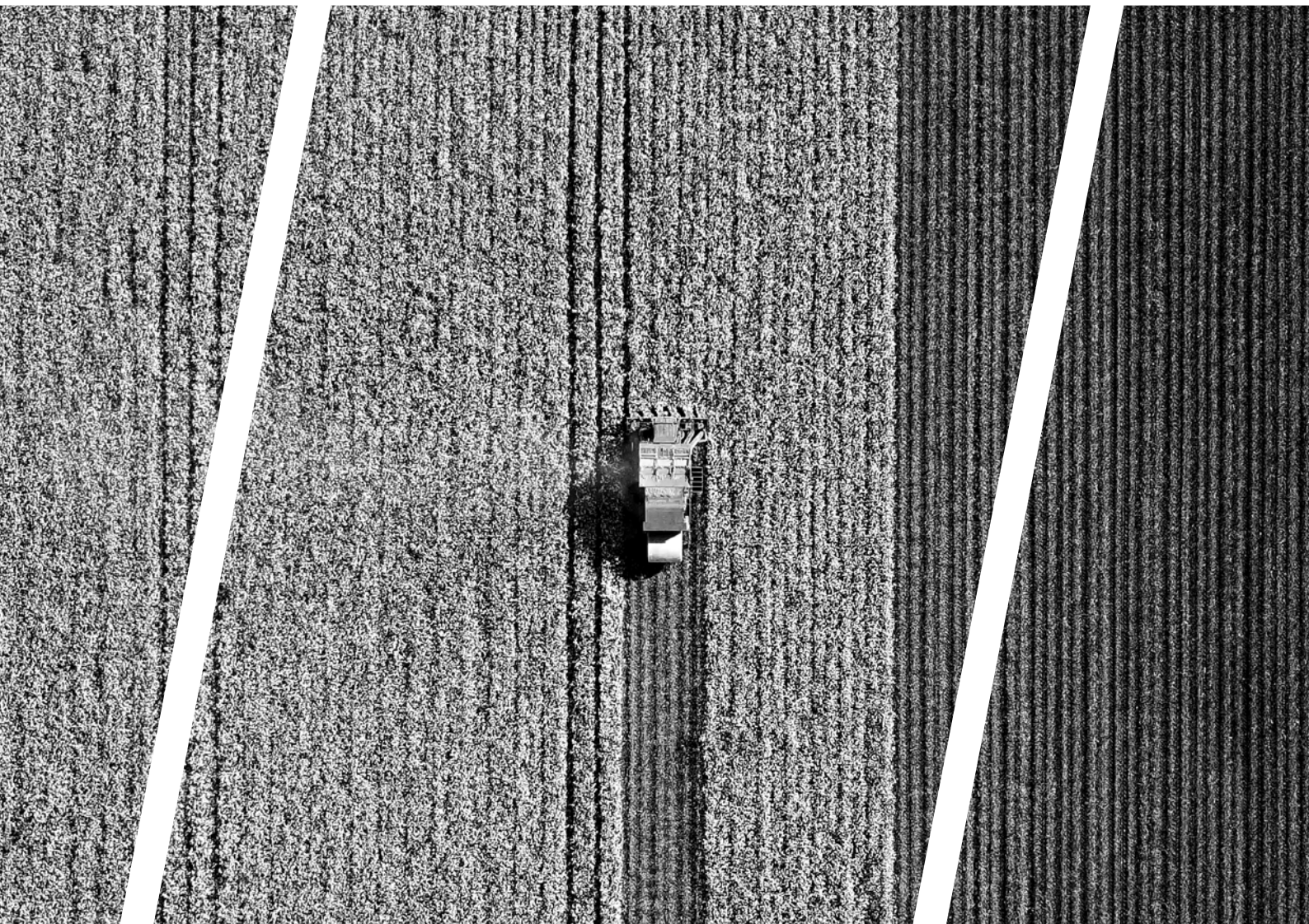
Criterion	End of season chick pea trap crop
Criterion	End of season chick pea trap crop
Minimum area & dimensions	A trap crop of 1% of planted Bollgard II crop area is required. This planting must be at least 24 m x 24m wide.
Planting time	In April for Burdekin Bowen Area. In July/August for Ord area. The trap crop is to be planted such that it is attractive to <i>Helicoverpa</i> spp. from 2 weeks before defoliation of the Bollgard II cotton. It must remain attractive to <i>Helicoverpa</i> spp. until at least 2 weeks after defoliation of the Bollgard II cotton.
Insect control	The trap crop should be monitored and sprayed with insecticide if the larval pressure threatens the viability of the crop.
Irrigation	The trap crop is to remain attractive to <i>Helicoverpa</i> spp. until after defoliation of cotton. In some cases this may require one additional irrigation after the cotton is defoliated. The trap crop must be planted into an area where it can receive the additional irrigation required to ensure the trap crop remains attractive to <i>Helicoverpa</i> spp.
Weed control	The trap crop should be kept free of weeds and particularly volunteer Bollgard II cotton.
Crop destruction	The trap crop must be destroyed 2-4 weeks after defoliation of the Bollgard II cotton crop, but not before 3 weeks (slash and pupae bust – full soil disturbance to a depth of 10 cm across the entire trap crop area). All Bollgard II cotton and associated trap crops must be destroyed by: Burdekin Bowen Basin/Richmond Area – August 31 Ord River Irrigation Area – December 10

NB: If any grower encounters problems in complying with the resistance management plan, please contact your Monsanto Regional Business Manager.

For further background information on the various components of this plan see the "Preamble to the Resistance Management Plan for Bollgard II" in the current Cotton Pest Management Guide.

ATTACHMENT B

RESISTANCE MANAGEMENT PLAN FOR BOLLGARD® 3 COTTON FOR NORTHERN AUSTRALIA



Developed by Monsanto Australia Proprietary Limited and the Transgenic and Insect Management Strategy (TIMS) Committee of Cotton Australia Limited.

The resistance management plan is based on three basic principles: (1) minimising the exposure of *Helicoverpa* spp. to the *Bacillus thuringiensis* (Bt) proteins Cry 1Ac, Cry 2Ab and Vip3A; (2) providing a population of susceptible individuals that can mate with any resistant individuals, hence diluting any potential resistance; and (3) removing resistant individuals at the end of the cotton season. The three principles are supported through the implementation of 5 elements that are the key components of the Resistance Management Plan. These elements are:

1. Planting Restrictions;
2. Refuge crops;
3. Control of volunteers and ratoon cotton;
4. Trap crops/Pupae destruction; and
5. Spray limitations.

Growers of Bollgard 3 cotton are required to practice preventative resistance management as set out below. Compliance with the Resistance Management Plan is required under the terms of the Bollgard 3 Technology User Agreement and under the conditions of registration (*Agricultural and Veterinary Chemicals Act, 1994*).

Scope: This RMP pertains to cotton planting in all areas North of the latitude 21.15 degrees south in Queensland, Northern Territory and Western Australia.

1. Planting Restrictions

All Bollgard 3 crops and cotton refuges are to be planted into moisture or watered-up in an eight week window between December 1 and May 30. Valley boundaries will be determined by Monsanto and TIMS. Within each valley, the start date of the planting window will be determined by Monsanto and TIMS in consultation with local growers and reflected in a regionally amended "Bollgard 3 Planting Window Variation Notice" issued by Monsanto.

2. Refuges

Growers planting Bollgard 3 cotton will also be required to grow a refuge crop that is capable of producing large numbers of *Helicoverpa* spp. moths which have not been exposed to selection with Bt proteins Cry 1Ac, Cry 2Ab and Vip3A. These unselected moths are expected to dominate matings with any survivors from Bollgard 3 crops and thus help to maintain resistant alleles to the Bt proteins Cry 1Ac, Cry 2Ab, and Vip3A at low frequencies.

All refuge options are based on the requirement of a 5% unsprayed cotton refuge or its equivalent as determined by the relative production of *Helicoverpa* spp. from each of the refuge types as described in the table below.

For each area of irrigated Bollgard 3 cotton planted, a grower is required to plant a minimum of one, or a combination of, the following:

Table 1. Irrigated Bollgard 3 cotton refuge options

Crop	Conditions	% of Bollgard 3	Regions permitted
Conventional Cotton	Irrigated, unsprayed conventional cotton	5	All Regions
Pigeon pea	Fully irrigated, unsprayed	2.5	All Regions

Table 2. Dryland Bollgard 3 refuge options

Crop	Conditions	% of Bollgard 3	Regions permitted
Conventional Cotton	Dryland or irrigated, unsprayed conventional cotton	5	All Regions
Pigeon pea	Dryland or fully irrigated, unsprayed	2.5	All Regions

Unsprayed means not sprayed with any insecticide that targets any life stage of *Helicoverpa* spp. Bt products must not be applied to any refuge.

If the viability of an unsprayed refuge is at risk due to early or late season pressure by *Helicoverpa* spp., or any other caterpillar species, contact Monsanto Australia immediately. With prior approval from Monsanto Australia, a non-Bt larvicide can be applied.

An unsprayed refuge should not be planted in the same field as any crop sprayed with a rate of insecticide that is registered for *Helicoverpa* spp, with the exception of Bollgard 3 unless a sufficient buffer is in place to prevent insecticide drift.

Sprayed crops and unsprayed refuges that are planted in adjacent fields must also be separated by sufficient distance to minimise the likelihood of insecticide drift onto the unsprayed refuge.

For the purposes of this Resistance Management Plan, conventional cotton includes any cotton varieties that do not have Bt proteins in the plant that control *Helicoverpa* spp. larvae.

General conditions for all refuges:

- (a) Refuge crops are to be planted and managed so that they are attractive to *Helicoverpa* spp. during the growing period of the Bollgard 3 cotton varieties.

All regions: It is preferable that all refuge is planted within the 2 week period prior to planting Bollgard 3. If this is not possible, refuge planting must be completed within 3 weeks of the first day of sowing of Bollgard 3. At this time, sufficient refuge must have been planted to cover all of the Bollgard 3 cotton proposed to be planted for the season (including Bollgard 3 already planted and any that remains unplanted). Should additional Bollgard 3 be planted after this date, which is not already covered by refuge, additional refuge must be planted as soon as possible and no more than 2 weeks after sowing of the additional Bollgard 3.

- (b) Group J legume inoculant should be used to treat pigeon pea planting seed just prior to sowing to ensure effective root zone colonisation by nitrogen fixing rhizobium bacteria
- (c) All refuges should preferably be planted into a fallow or rotation field that has not been planted to Bt cotton in the previous season to avoid volunteer and ratoon cotton. See Refuge Management Guide for all unsprayed refuges,

- (d) Once the Bollgard 3 cotton begins to flower the corresponding refuge must not be cultivated.
- (e) Insecticide preparations containing Bt may be used on Bollgard 3 cotton throughout the season BUT NOT on any refuge crops.
- (f) All refuges are to be planted within the farm unit growing Bollgard 3 cotton. Subject to clause (f) below, all reasonable effort should be taken to plant the refuge either on one side of, or next to, a Bollgard 3 cotton field, and all Bollgard 3 fields must be no more than 2 km from the nearest Bollgard 3 refuge. For any cases where it may not be possible to plant the refuge within 2 km from the associated Bollgard 3, approval must be sought from Monsanto.
- (g) To minimise the possibility of refuge attractiveness being affected by herbicide drift, non-herbicide tolerant refuges should be separated from herbicide tolerant Bollgard 3 cotton crops by a sufficient distance to minimise such drift, but no more than 2 km from the Bollgard 3 cotton.
- (h) To account for possible insecticide drift, Bollgard 3 refuge crops must be at least 24 metres wide and each refuge area must be a minimum of 0.5 hectares Different unsprayed refuge options may be planted in the same field as a single unit.
- (i) Destruction of refuges must only be carried out after the Bollgard 3 has been harvested. Soil disturbance of refuge crops must only occur when the trap crop is being destroyed (refer to section 4 Trap crop)
- (j) Refuges for Bollgard 3 crops must be planted in the same row configuration as the Bollgard 3 crop.

3. Control of volunteer and ratoon cotton

Volunteer and ratoon cotton may impose additional selection pressure on *Helicoverpa* spp. to develop resistance to the Bt proteins Cry 1Ac, Cry 2Ab and Vip3A produced by Bollgard 3 cotton.

As soon as practical after harvest, Bollgard 3 cotton crops must be destroyed by cultivation, root cutting or herbicide so that they do not continue to act as hosts for *Helicoverpa* spp.

Growers must make all reasonable efforts to remove volunteer and ratoon plants as soon as possible from all fields - including fallow areas, Bollgard 3 crops, conventional cotton crops and all refuges. The presence of Bollgard 3 volunteers/ratoon cotton in any refuge will diminish the value of the refuge and must be removed as soon as possible.

Note: The refuge should preferably be planted into fallow or rotation fields that have not been planted to cotton in the previous season.

4. End of season pigeon pea trap crop

An end of season pigeon trap crop must be planted. The planting configuration of the trap crop should be the same as that of the Bollgard 3 crop. Table 3 shows the requirements for the pigeon pea trap crop.

Crop destruction

All Bollgard 3 crops must be slashed or mulched and controlled to prevent regrowth within 4 weeks of harvesting.

End of season management of refuges/trap crops

A late summer trap crop (pigeon pea) must be planted for all Bollgard 3 cotton grown in Northern Australia. The planting configuration of the trap crop should be the same as that of the Bollgard 3 crop. Irrigated Bollgard 3 must have an irrigated trap crop. Table 5 shows the requirements for the late summer pigeon pea trap crop. **Dryland Bollgard 3 growers who do not have any irrigated cotton on their farm should contact Monsanto Australia for alternative options.**

Refuge and late summer trap crops have different purposes. Where a pigeon pea refuge is utilised, the full pigeon pea refuge area must be managed to become the late summer trap crop. If unsprayed cotton is used as the refuge, an additional area of 1% pigeon pea must be planted as the late summer trap crop. Requirements for late summer trap crops are detailed in Table 3 below.

Table 3: Late summer pigeon pea trap crop requirements in Northern Australia

CRITERION	TRAP CROP*
Minimum area & dimension (Requirement)	A minimum trap crop of 1% of planted Bollgard 3 cotton crop is required (if the full refuge is not utilised). If sprayed conventional cotton is grown on that farm unit: the trap crop must be at least 48 m x 48 m. If no sprayed conventional cotton is grown on that farm unit: the trap crop must be at least 24 m x 24 m.
Planting time	The trap crop should preferably be planted 4 weeks after the associated Bollgard 3. Note: if growers choose to plant their trap crop to coincide with the planting of pigeon pea refuges, they must manage the trap crop in such a way that it remains attractive to <i>Helicoverpa</i> spp. 2-4 weeks after final defoliation.
Planting rate **	35 kg/ha (recommended establishment greater than 4 plants per metre)

Insect control	The trap crop can be sprayed with virus after flowering, while avoiding insecticide spray drift, except where a pigeon pea refuge is converted to a trap crop. In this case the full 2.5% pigeon pea refuge area managed to become the late summer trap crop can only be sprayed with virus after the first defoliation of Bollgard 3 cotton.
Irrigation	The refuge/trap crop must be planted into an area where it can receive the additional irrigation required to keep the trap crop attractive to <i>Helicoverpa</i> spp. until after the cotton is defoliated.
Weed control	The trap crop should be kept free of weeds and particularly volunteer Bollgard 3 cotton. When using the full pigeon pea refuge area as the trap crop, weed control must not be carried out by cultivation once flowering of the associated Bollgard 3 cotton crop has commenced.
Crop destruction	The trap crop must be destroyed 2-4 weeks (but not before 2 weeks) after final defoliation of the associated Bollgard 3 cotton crop, (slash and pupae bust – full soil disturbance to a depth of 10 cm across the entire trap crop area).

*A pigeon pea trap crop is to be planted so that it is attractive (flowering) to *Helicoverpa* spp. after the cotton crop has cut out, and as any survivors from the Bollgard 3 crop emerge. Planting pigeon pea too early (e.g. before November) or too late (e.g. mid December) is not adequate for cotton crops planted during September through to October.

**The planting rate is a recommendation based on a minimum of 85% seed germination.

5. Spray Limitations

Insecticide preparations containing Bt may be used on Bollgard 3 cotton throughout the season BUT NOT on any refuge crops.

An unsprayed refuge should not be planted in the same field as any crop sprayed with a rate of insecticide that is registered for *Helicoverpa* spp. with the exception of Bollgard 3. Sprayed crops and unsprayed refuges that are planted in adjacent fields must be separated by sufficient distance to minimise the likelihood of insecticide drift onto the unsprayed refuge,

If the viability of an unsprayed refuge is at risk due to early or late season pressure by *Helicoverpa* spp., or any other caterpillar species, contact Monsanto Australia immediately. With prior approval from Monsanto Australia, a non-Bt larvicide can be applied.

NB: If any grower encounters problems in complying with the Resistance Management Plan please contact Monsanto Australia.

For further background information on the various components of this plan see the "Preamble to the Resistance Management Plan for Bollgard 3" in the current Cotton Pest Management Guide.

ATTACHMENT C

ROUNDUP READY FLEX[®] COTTON

Cotton Weed Resistance Management Plan



1. OBJECTIVE

The ROUNDUP READY FLEX® cotton Weed Resistance Management Plan (WRMP) details strategies that can be implemented to minimise the risk of glyphosate resistance developing in weeds on-farm. It complements the ROUNDUP READY FLEX® accreditation course and technical manual. ROUNDUP READY FLEX® cotton offers superior and effective weed control to growers, with a wide glyphosate application window, outstanding crop safety, broad spectrum weed control and the ability to control weeds where they appear. The flexibility of an Integrated Weed Management (IWM) strategy, including ROUNDUP READY FLEX® cotton, offers management efficiencies as well as a variety of in-crop weed control options. Prudent management of ROUNDUP READY FLEX® technology and mitigation of resistance risks will ensure these options for weed control are available to Australian cotton growers well into the future.

2. GROWING ROUNDUP READY FLEX® COTTON

There are several requirements that growers need to be aware of when planting ROUNDUP READY FLEX®, as outlined by the Technology User Agreement (TUA) and the product labels for Roundup Ready® Herbicide with PLANTSHIELD® and Roundup Ready® PL Herbicide with PLANTSHIELD® Technology.

These requirements are designed to promote the longevity of the trait and herbicides and include:

- Completion of a ROUNDUP READY FLEX® accreditation course prior to planting the trait for the first time
- Reporting any suspected glyphosate resistant weed species to a Bayer representative
- Implementing an IWM strategy

Growers should make sure they familiarise themselves with both the TUA terms and conditions and the relevant glyphosate product labels.

3. PROTECTING AN IMPORTANT TOOL – GLYPHOSATE

Herbicide resistant weeds have been a reality for decades in Australia – no herbicide is immune, including glyphosate. While the problem is significant, it is also manageable and effective mitigation strategies can reduce the risk and delay its development. In Australia, glyphosate resistant populations of several weed species have been found, including some throughout the cotton growing regions. Glyphosate is a critically important part of any IWM program on cotton farms, and growers want to make sure that the benefits it delivers are preserved and maintained. Where glyphosate resistance has occurred, it can be effectively managed through good agronomic practices. There are actions that every grower can take to prevent or manage glyphosate resistance on their property. By acting now, we can ensure the long-term sustainable use of glyphosate herbicides in cotton crops, by minimising the risk of glyphosate resistance developing.

Naturally occurring populations of some weeds may possess biotypes with resistance to glyphosate. Growers should be aware of this prior to using glyphosate and should aim to decrease the development and spread of resistant populations. If you suspect resistant biotypes are present, they should be sampled and tested. Contact the local Bayer Regional Business Manager for assistance with this process.

The WRMP aims to reduce the likelihood of glyphosate resistance developing, it does not, guarantee that resistance will not occur.

4. UNDERSTANDING YOUR GLYPHOSATE RESISTANCE RISK

Each field planted to ROUNDUP READY FLEX® cotton has its own unique risk of glyphosate resistance developing, based on its usage history, the weeds present and their density, and other historical rotations and agronomic management strategies employed.

As a part of any sound IWM plan, growers are encouraged to assess their resistance risk prior to planting ROUNDUP READY FLEX® cotton, and when making decisions about weed management strategies. The Queensland Department of Primary Industries (DPI) have developed a "Risk Assessment Tool" which can be accessed at <https://www.cottoninfo.com.au/resistance-toolkit>. This tool can be used to help make decisions about what strategies could be used to reduce the specific risk areas on each farm, and in each field.

5. ON FARM FACTORS THAT CHANGE RESISTANCE RISKS

The Australian Glyphosate Sustainability Working Group has developed a guide for sustainable use in northern Australian grain and cotton which describes practices that affect the development of resistance.

Factors that decrease resistance risk

- Monitoring and preventing weed control escapes from setting seed
- Planning and implementing an IWM strategy to reduce the weed seed-bank
- Strategic use of alternative knockdown herbicides and tillage in fallows prior to sowing
- Use of alternate herbicide modes of action including residual herbicides in crops and fallows
- Use of a double-knock glyphosate followed by tillage or paraquat (Group L) based products at effective rates
- Applying stewardship plans when growing glyphosate tolerant crops
- Farm hygiene to prevent importing and moving resistant seeds

Factors that increase resistance risk

- Frequent glyphosate-based chemical fallows
- Continuous reliance on glyphosate as a knockdown prior to sowing
- Inter-row use of glyphosate in grain crops (unregistered)
- Lack of tillage
- Lack of use of alternative herbicide modes of action in fallows and crops
- Allowing survivors of glyphosate applications to set seed
- High weed numbers
- Lack of crop competition on weeds
- Over-reliance on glyphosate tolerant crops as a weed control mechanism

6. RESISTANCE MANAGEMENT PRINCIPLES FOR ROUNDUP READY FLEX® COTTON

As outlined in the Roundup Ready Herbicide with PLANTSHIELD and Roundup Ready PL Herbicide with PLANTSHIELD Technology labels, there are some guidelines for designing a successful IWM strategy. The implementation of these principals should result in the reduction in the weed population entering the ROUNDUP READY FLEX® cotton cropping phase and maximise the control of weeds that may be resistant to glyphosate. These are;

- (a) Aim to enter the ROUNDUP READY FLEX® cropping phase of your rotation with a low weed burden
- (b) Integrate as many different weed control options as possible through all phases of the crop rotation
- (c) Make every herbicide application count – use registered rates at the correct application growth stage and always assess its effectiveness
- (d) Rotate herbicides with different modes of action throughout the crop rotation
- (e) Regularly monitor the effectiveness of resistance management practices
- (f) Test weed populations for herbicide resistance status as a part of ongoing IWM
- (g) If planting into a paddock with suspected glyphosate resistance growers must have a plan to manage such weeds

The simplest and most effective way to minimise the risk of resistance developing in a ROUNDUP READY FLEX® cotton crop is to rotate away from glyphosate immediately following the ROUNDUP READY FLEX® cotton crop. Preventing seed set from any weeds surviving glyphosate application is critical to preventing resistance development and spread – never use the same technique twice on the same weed, or weeds growing from seed produced by a surviving weed.

The following table outlines some key principles for weed control at different stages through the cotton season. For more information about any of these recommendations, see the ROUNDUP READY FLEX® cotton technical manual.

Pre-plant knockdown

- Always start clean by planting into a weed-free field using either tillage or a herbicide application
- Know your field history in order to identify whether any volunteer cotton present is ROUNDUP READY FLEX®
- Consider using approved tank mixes with Roundup Ready Herbicide with PLANTSHIELD and Roundup Ready PL Herbicide with PLANTSHIELD Technology or other registered products as part of an IWM strategy

Residual herbicides

- Residual herbicides should be used where appropriate in a ROUNDUP READY FLEX® system
- Consider using residual herbicides where weeds not controlled by Roundup Ready Herbicide with PLANTSHIELD and Roundup Ready PL Herbicide with PLANTSHIELD Technology are present
- The residual herbicide can be applied as a pre-emergence application (either a pre-plant incorporated application, or at planting application)
- Use the recommended labelled rate and timing of the residual herbicide

In-crop weed control

- Target the first application of Roundup Ready Herbicide with PLANTSHIELD or Roundup Ready PL Herbicide with PLANTSHIELD Technology on young cotton with weeds less than 6cm in size
- Sequential applications may be required to control new and subsequent germinations of weeds
- Select the timing of sprays based on the most difficult to control weed species in each field
- Post-directed sprays should be used to achieve more thorough coverage on weeds
- Refer to the 'Weeds Controlled' table in the Roundup Ready Herbicide with PLANTSHIELD and Roundup Ready PL Herbicide with PLANTSHIELD Technology labels for rate recommendations on specific weeds
- Be aware of any potential contamination of spray application equipment (including mixing stations)
- Ensure all equipment is thoroughly cleaned and free of residues
- Only tank-mix registered products
- Ensure all applications are made according to label guidelines on water volume, droplet size and environmental conditions
- Be aware of off-target drift to susceptible crops and fields with both aerial and ground applications
- Growers should use registered non-glyphosate in-crop herbicides where required to increase diversity of weed control tactics

Lay-by applications

- If you currently use lay-by herbicides, then consider maintaining this program
- A robust lay-by program can provide residual control of weeds not controlled by Roundup Ready Herbicide with PLANTSHIELD and Roundup Ready PL Herbicide with PLANTSHIELD Technology
- Use the recommended label rate and timing of the residual herbicide

Pre-harvest application

- Over-the-top application of Roundup Ready Herbicide is available if required before harvest and after cotton reaches 60% open bolls, as one of the 4 applications. Rate: 1.5 kg/ha for Roundup Ready Herbicide with PLANTSHIELD or 1.9 L/ha for Roundup Ready PL Herbicide with PLANTSHIELD Technology
- This application can be used to control late season weeds and improve harvest efficiency
- Compatible with commonly used defoliant (see Roundup Ready Herbicide with PLANTSHIELD and Roundup Ready PL with PLANTSHIELD Technology labels)
- Do not use on crops intended for seed production

Bayer strongly recommends that growers consult an agronomist when designing an IWM strategy for their property. For further resources and information see www.glyphosateresistance.org.au and www.weedsmart.org.au.

7. MONITORING HERBICIDE EFFICACY

All growers or agronomists should inspect fields between 14 and 28 days after spraying with glyphosate to monitor the effectiveness of the herbicide application. During an inspection, any surviving weeds that are normally susceptible to glyphosate should be identified. The outcomes of any inspection and any remedial application used should be recorded. Any case of suspected resistance should be reported immediately to Bayer for further investigation.

8. WHAT TO DO IF YOU SUSPECT RESISTANCE

If any spray failure of Roundup Ready Herbicide with PLANTSHIELD and Roundup Ready PL Herbicide with PLANTSHIELD Technology occurs, it is essential to determine the reason. Possible reasons for spray failures may be:

- Resistant weeds
- Poor spray application
- Emergence after a spray application

Any weeds which are suspected to be resistant to glyphosate should be tested to confirm this. Bayer will provide support for any ROUNDUP READY FLEX® cotton growers with testing suspected resistant weeds in a ROUNDUP READY FLEX® cotton field. Contact your Technology Service Provider (TSP) or Bayer Regional Business Manager for more information.

9. MANAGEMENT OF RESISTANT OR HARD TO CONTROL WEEDS

To maximise the effectiveness of in-crop applications of Roundup Ready Herbicide with PLANTSHIELD and Roundup Ready PL Herbicide with PLANTSHIELD Technology, growers should base the timing of these applications on the growth stage of the most difficult to control weed species present in each field. The “Weeds Controlled” table on the Roundup Ready Herbicide with PLANTSHIELD and Roundup Ready PL Herbicide with PLANTSHIELD Technology labels lists the weeds which glyphosate will control and rate recommendations on specific weeds. Some “hard to control” weeds will not be controlled by glyphosate and are not listed on the Roundup Ready Herbicide with PLANTSHIELD and Roundup Ready PL Herbicide with PLANTSHIELD Technology labels. Examples of these are

Fleabane (*Conyza bonariensis*) and Feathertop Rhodes Grass (*Chloris virgata* Sw.). These weeds, where present should be controlled by other means. For information and guidance on their control see the cotton pest management guide (<http://crdc.com.au/publications/cotton-pest-management-guide>), consult your agronomist or guidelines produced by QDAFF or NSW DPI.

Currently in the Australian cotton growing regions there are several weeds confirmed as glyphosate resistant, and others at high risk of developing resistance. In addition to the “hard to control” weeds, an IWM strategy should take these weeds into account and special care should be taken to control these weeds and prevent them setting seed.

(a) Glyphosate-resistant grass species

There are currently ten grass weed species where glyphosate resistant populations have been identified.

- Annual ryegrass (*Lolium rigidum*)
- Awnless barnyard grass (*Echinochloa colona*)
- Liverseed grass (*Urochloa panicoides*)
- Windmill grass (*Chloris truncata*)
- Great brome grass (*Bromus diandrus*)
- Red brome grass (*Bromus rubens*)
- Sweet summer grass (*Brachiaria eruciformis*. (Sm.) Griseb.)
- Feathertop Rhodes grass (*Chloris virgata*)
- Winter grass (*Poa annua*)
- Northern barley grass (*Hordeum glaucum*)

(b) Glyphosate-resistant broadleaf species

There are currently seven broadleaf weed species where glyphosate resistant populations have been identified.

- Flaxleaf fleabane (*Conyza bonariensis*)
- Tall fleabane (*Conyza sumatrensis*)
- Sowthistle (*Sonchus oleraceus*)
- Prickly lettuce (*Lactuca serriola*)
- Wild radish (*Raphanus raphanistrum*)
- Tridax daisy (*Tridax procumbens*)
- Willow-leaved lettuce (*Lactuca saligna*)

10. WEEDSMART

WeedSmart is an initiative that promotes the long-term sustainability of glyphosate and other herbicide use in Australian agriculture. The program provides farmers and agronomists with the latest tools and resources to manage herbicide resistance. Further information on Weedsmart can be found at www.weedsmart.org.au.

ATTACHMENT D

APVMA APPROVED LABEL FOR BOLLGARD 3

Please refer to the General Terms & Conditions of the Technology User Agreement supplied to the Grower by Monsanto and accepted and signed by each individual Grower ("Individual Grower TUA") for the full Bollgard 3 label.

ATTACHMENT E

PLANTING AUDIT AND NORTHERN AUSTRALIA DEVELOPMENT OFFER

Northern Australia Development Offer

- (a) **Northern Australia Development Offer** is available to Growers who have:
 - (i) any area of BOLLGARD II® Cotton on their Farm Unit; and/or
 - (ii) any area of BOLLGARD II® Stack Cotton on their Farm Unit; and/or
 - (iii) any area of BOLLGARD® 3 Stack Cotton on their Farm Unit; and/or
 - (iv) an area of ROUNDUP READY FLEX® Cotton on their Farm Unit.
- (b) To participate in the Northern Australia Development Offer, a Grower and the Grower's Nominated TSP must complete, sign and return a Planting Audit and Northern Australia Development Offer form for each eligible Field on the Farm Unit.
- (c) Growers who do not submit a completed and signed Planting Audit and Northern Australia Development Offer form before the applicable due date, will be enrolled automatically in the Northern Australia Development Offer for all eligible Fields on the Farm Unit.

Northern Australia Development Offer Terms:

Northern Australia Development Offer: **Cotton End Point Royalty (EPR)**

- (a) Upon harvest, Grower must deliver all cotton produced on fields enrolled in EPR program to a Monsanto designated ginning organisation for ginning in Australia. The Grower will be responsible for making the necessary arrangements with the designated ginning organisation for ginning the seed cotton. The Grower will bear the costs of delivering the seed cotton to the designated ginning organisation and the costs of ginning the cotton. For the avoidance of doubt, unginned cotton lint produced on Fields or Farm Units enrolled in the EPR Program must be delivered to a designated ginning organisation for ginning in Australia and may not be exported from Australia until it is ginned.
- (b) Under this Northern Australia Development Offer Northern Australia Development Offer: Cotton End Point Royalty, a yield-based fee for each bale of ginned cotton lint harvested from the field is payable on all cotton produced on the Fields on the Farm Unit enrolled in the Northern Australia Development Offer: Cotton End Point

Royalty, Northern Australia Development Offer. The Yield Based Fee will be based on a report provided to Monsanto by a Monsanto designated ginning organisation subject to audit and reconciliation by Monsanto.

- (c) If requested by Monsanto, within seven days of receipt of such request, the Grower must provide information reasonably requested by Monsanto, indicating the cotton produced by each Field and the disposition of all Technology Cotton produced on the Farm Unit, including but not limited to all Technology Cotton delivered to a designated ginning organisation. Each such report will be in a format specified by Monsanto.
- (d) If at any time Monsanto reasonably determines that the information provided by the Grower and the information provided by the designated ginning organisation cannot be reconciled, or otherwise reasonably determines that the quantity of Technology Cotton produced on the Field or the Farm Unit cannot be determined reliably to Monsanto's satisfaction, then, Monsanto will have the option, in its sole discretion, of changing the Grower's enrolment for the affected Fields to the Base Technology Fee and the Grower agrees to pay the applicable TUA Fee.
- (e) On or before 16th March 2021 the Grower must notify the Nominated TSP if the Grower removes part or all of their cotton Fields on a Farm Unit registered for the 2020/21 EPR Program prior to that date. If the Grower removes part or all of their cotton fields enrolled in EPR after these dates, Grower must promptly notify the Nominated TSP or Monsanto no later than 14 days from the date of such removal. On being so advised a Monsanto representative may inspect the Farm Unit to confirm that the crop has been removed.

Planting Audits

The invoice to the Grower for will be calculated based upon information provided by the Grower on the Planting Audit and Northern Australia Development Offer form and any planting adjustment form(s).

Following issuance of the Planting Window Notification for each region, Bayer will make available to growers and Technology Service Providers the dates by which audits must be completed.

Zone	Technology	Planting Dates	Planting Audit Due date	Mid-season-survey due date	End-of-season due date
Northern QLD	Bollgard 3 / Roundup Ready Flex	8-week planting window between December 1 2020 and May 30 2021, as set by Bayer.	Due 2 weeks after the planting window has closed.	Due 4 weeks after the planting audit due date.	Due 8 weeks after the mid-season audit
Far North WA	Bollgard 3 / Roundup Ready Flex	8-week planting window between December 1 2020 and May 30 2021, as set by Bayer.	Due 2 weeks after the planting window has closed.	Due 4 weeks after the planting audit due date.	Due 8 weeks after the mid-season audit
Northern Territory	Bollgard 3 / Roundup Ready Flex	8-week planting window between December 1 2020 and May 30 2021, as set by Bayer.	Due 2 weeks after the planting window has closed.	Due 4 weeks after the planting audit due date.	Due 8 weeks after the mid-season audit

Grower obligations regarding Planting Audit

- (a) Upon entering this TUA, and by no later than the Planting Audit Due Date, the Grower must provide a map of the farm unit: in either or both of the following formats:
- (i) A printed map including GPS coordinates of the farm unit;
 - (ii) A spatial map of their Farm Unit to Monsanto through their Nominated TSP or submit a shapefile to be uploaded into Monsanto's spatial map repository. The map must show:
 - (A) Technology Cotton Seed (identifying the particular Technology and the cotton variety);
 - (B) and other transgenic varieties of cotton; and
 - (C) conventional varieties; and
 - (iii) All Fields planted with:
 - (A) Technology Cotton Seed (identifying the particular Technology and the cotton variety);
 - (B) and other transgenic varieties of cotton; and
 - (C) conventional varieties; and
 - (iv) In relation to any BOLLGARD® 3 Cotton Seed, the type, size and location of the insect refuge required by the applicable Resistance Management Plan.
- (b) By the applicable Planting Audit Due Date, the Grower must sign the Planting Audit and Northern Australia Development Offer form and submit the completed and signed form on MTrack, together with the information referred to in Section 5(a) of this **Attachment E**. Prior to signing the form, Grower will check the accuracy and completeness of the information contained therein. Grower understands and agrees that such information will be used by Monsanto to determine the TUA Fees.
- (c) The Grower must comply with the planting dates stipulated in the applicable Resistance Management Plans. The Grower understands and agrees that the planting dates specified in this in **Attachment E** are for reference only and without prejudice to the planting dates mandated by

the applicable Resistance Management Plans.

- (d) If the Grower decides to plant Technology Cotton Seed after completion of the Planting Audit in the Cotton Growing Season, the Grower must, within two weeks of planting:
- (i) notify Monsanto and the Nominated TSP of the quantity and location of any Technology Cotton Seed planted on prior to the Planting Audit completion date;
 - (ii) notify Monsanto and the Nominated TSP of the quantity and location of any Technology Cotton Seed not planted on the Planting Audit completion date; and
 - (iii) complete an additional Planting Audit by the applicable Planting Audit Due Date.
- (e) The Grower must immediately notify Monsanto if it becomes aware of any errors in the Planting Audit and Northern Australia Development Offer Form.

Early Crop Removal

If a Grower:

- (a) signs a TUA but does not plant a crop covered by this TUA on a Field on the Farm Unit; or
- (b) plants a crop covered by this TUA on a Field on the Farm Unit and removes the crop, for whatever reason (e.g. due to hail, poor germination, etc.) on or before the applicable planting audit due date:

applicable TUA Fees for the affected area, provided, the Grower notifies the Grower's Nominated TSP, in writing, before 6.00pm on the applicable Planting Audit Due Date that the crop has not been planted or has been removed, and subject to verification of non-planting or removal by Monsanto and the Nominated TSP. Requests for Early Crop Removal after this date is subject to approval by Monsanto.

ATTACHMENT F

MONSANTO *my*BMP PROGRAM

(Clause 4.3 of TUA)

TERMS AND CONDITIONS OF THE MONSANTO BETTER FARMING GRANT PROGRAMS

Monsanto *my*BMP Certification Grants

Monsanto will provide a \$2000 (ex. GST) grant to growers who conduct an on-farm audit and achieve *my*BMP certification prior to 31 December 2020 as confirmed by Cotton Australia.

- Growers must be *my*BMP accredited by 31 December 2020 for automatic enrolment in the Monsanto grant program. Growers who undertake the *my*BMP certification audit are required to provide their Technology User Agreement (TUA) number for the current growing season to Cotton Australia for reconciliation purposes.
- Incomplete or failed audits are not eligible for a Monsanto grant.
- Growers are only eligible to receive a single \$2000 (ex GST) grant per Trading Entity registered with Monsanto every 5 years, even if they have multiple farms or farm units on the same *my*BMP audit. The grant will only be paid on a 'per my *my*BMP audit' basis as the final step in the *my*BMP certification process.
- Eligible Monsanto grants will be paid as a credit off the invoice of Monsanto Technology Fees to be invoiced by the nominated Technology Service Provider (TSP) as nominated on the TUA. Growers will receive the credit on their first invoice received in the cotton growing season as per the terms of their signed and executed TUA. If a grower does not plant cotton in the season, the grant will be reimbursed the following season cotton is grown. For the avoidance of doubt, grants will not be reimbursed as cash, cheque or EFT payment unless at Monsanto's discretion.
- For the purposes of verification and issuing of the Monsanto grant, the grower agrees that any information provided by or on behalf of the grower may be shared amongst Monsanto and Cotton Australia to perform and administer the grant program. Growers may request a copy of the personal information stored by Cotton Australia or Monsanto for the purpose of this program.

- By participating in the *my*BMP program you agree to receive communications about the Monsanto Better Farming grant programs from Monsanto.

Monsanto *my*BMP Bale grants

Monsanto will pay eligible cotton growers a grant of \$1 per bale (227 kg) for cotton lint that is produced from *my*BMP certified farms and where the grower has opted in to the *my*BMP Bale grant program via Cotton Australia.

Eligibility Requirements

- Growers must have planted →10 Hectares of Bollgard® 3 / ROUNDUP READY FLEX® cotton.
- Only cotton produced from farms with current *my*BMP certification between 26 February and 29 July in the year of harvest is eligible for the grant.
- Cotton growers must complete a Monsanto *my*BMP Bale Grant opt in form and return it to the *my*BMP office by 28 February 2021 and be verified to have paid full levies to Cotton Australia. Visit <http://cottonaustralia.com.au/cotton-growers/mybmp> for more information

Grant payments

- The *my*BMP office provides a collated summary of eligible businesses/farms and the forecast areas/yields to Monsanto.
- Monsanto will reconcile information provided on each eligible farm to confirm Technology User Agreement details.
- Monsanto will request all eligible cotton growers provide copies of ginning statements from growers and will reconcile data against TUA planting audit data.
- Eligible Better Farming grants of \$1 per bale (227 kg) will be reimbursed by cheque or EFT (at Monsanto's discretion).
- By participating in the Monsanto Better Farming grants you agree to receive communications about the Monsanto Better Farming grant programs from Monsanto.

Definitions

"Planting Audit and Northern Australia Development Offer Northern Australia Development Offer form" means a form completed by the Nominated TSP and signed by the Grower in MTrack detailing the results of the Planting Audit and indicating the Growers Northern Australia Development Offer participation in the Northern Australia Development Offer for each Field on the Farm Unit. The GPS map of the Farm Unit required to be submitted by the Grower pursuant to Section 4.1 as recorded in MTrack shall comprise part of such form.

"Cotton Growing Season" means the season for growing cotton (which includes the planning period prior to planting occurring and ending at the conclusion of the activities relevant to the cotton crop under the TUA and the Nominated TSP agreement with Monsanto);

"Technology User Agreement (TUA)" the Monsanto user agreement for BOLLGARD® 3 ROUNDUP READY FLEX® and BOLLGARD II® Cotton.

"Nominated TSP" means the TSP nominated by the Grower, or in the event of notification by Monsanto that the TSP has breached its TSP Agreement with Monsanto, the replacement TSP nominated by the Grower;

"Farm Unit" means a single property owned, leased or share farmed by the Grower with a group of cotton Fields that are either connected or separated by no more than two kilometres;

ATTACHMENT G

ROUNDUP READY PLUS® PROGRAM 2020/21 TERMS & CONDITIONS

The Roundup Ready PLUS® program (the "RRPLUS Program") incentivizes Growers to use best farming practices in accordance with the strategies in the ROUNDUP READY FLEX® Cotton Weed Resistance Management Plan. The RRPLUS Program is available to certain Growers, on the terms and conditions set forth in this Attachment G (the "RRPlus Terms and Conditions"). These RRPlus Terms and Conditions apply to Growers that participate in the RRPLUS Program.

1. Eligibility

For a Grower to be eligible for rebates under the RRPLUS Program (an "Eligible Grower"), they must do the following:

- Plant ROUNDUP READY FLEX® Cotton Seed or BOLLGARD® 3 Stack Cotton seed in the Territory during the 2020/21 season;
- Execute and maintain a valid TUA for the 2020/21 season;

- Apply Participating Products to Qualifying Hectares between October 1, 2020 and August 31, 2021, and
- Submit a complete RRPLUS Program record form no later than August 31, 2021 for any Qualifying Hectares treated with Participating Products. The RRPLUS Program record form can be found at www.roundupreadyplus.com.au.

2. Roundup Ready PLUS Program Rebates

As part of the RRPLUS Program, Eligible Growers may earn the applicable rebate for each litre of Participating Product they use on Qualifying Hectares, subject to the RRPlus Terms and Conditions. Rebates will be calculated by multiplying the Qualifying Hectares sprayed with a Participating Herbicide times the Rebate Amount and will be adjusted based on the Eligible Grower's application rate of each Participating Herbicide.

- The Rebate Amounts assume the maximum label application rate for each Participating Product and will be reduced depending on the actual application rate used by the Eligible Grower on Qualifying Hectares. Any Participating Product application rate that exceeds the maximum label application rate for such Participating Product will only be eligible for a rebate based on the maximum label application rate.
- For weed resistance management purposes, a rebate for Roundup Ready® Herbicide with PLANTSHIELD® or Roundup Ready® PL Herbicide with PLANTSHIELD® Technology is only available if the Eligible Grower also uses a non-glyphosate Participating Product between October 1 2020 and August 31 2021, on the same Qualifying Hectare. In addition, only one Roundup Ready-branded Participating Product rebate is available per Qualifying Hectare during the 2020/21 season.

3. Other Roundup Ready PLUS Program Details

- Information that Eligible Grower provides Monsanto for the RRPLUS Program may be used by Monsanto to administer and confirm compliance with the RRPLUS Program, and Monsanto may share such information with third parties for RRPLUS Program purposes. Eligible Growers must keep records necessary to demonstrate compliance with the RRPLUS Program, and Monsanto may audit Eligible Grower's records to verify the accuracy of information provided by Eligible Grower.
- Monsanto does not guarantee the availability of Participating Products during the 2020/21 season.
- Participating Products applied using optical spraying equipment or other spot sprayers are not eligible for rebates under the RRPLUS Program.
- Monsanto will provide Eligible Grower the applicable rebate on validated, qualified purchases of Participating Products via electronic funds transfer into the Eligible Grower's nominated bank account by October 31, 2021. Monsanto will also send Eligible Growers a statement to their nominated address with a summary of the rebate paid to them.
- Monsanto reserves the right to modify or withdraw the RRPLUS Program or any portion of it without prior notice.
- Grower should always read and comply with herbicide labels.

Definitions

All capitalized terms not defined in the RRPlus Terms and Conditions shall have the meaning set forth in the TUA.

"**Eligible Grower**" has the meaning set forth in Section 1 of these RRPlus Terms and Conditions.

"**Participating Products**" means the participating products listed in table 1 of the Roundup Ready PLUS 2020/21 Program Guide, available at <http://www.roundupreadyplus.com.au>.

"**Qualifying Hectares**" means hectares that Grower plants with ROUNDUP READY FLEX® Cotton Seed or BOLLGARD® 3 Stack Cotton seed in the Territory during the 2020/21 season.

"**Rebate Amount**" means the applicable rebate amount for each Participating Product listed in table 1 of the Roundup Ready PLUS 2020/21 Program Guide, available at <http://www.roundupreadyplus.com.au>.

"**RRPLUS Program**" has the meaning set forth in the first paragraph of these RRPlus Terms and Conditions.

"**RRPlus Terms and Conditions**" has the meaning set forth in the first paragraph of this **Attachment G**.

"**Territory**" means the Australian states of New South Wales, Queensland, Victoria, and Western Australia and the Northern Territory

PICK UP ON COTTON TERMINOLOGY



When you grow Bollgard 3 and Roundup Ready Flex cotton, you need to be familiar with the terminology used throughout the industry.

ACCREDITATION

Growers need to be accredited to use Bollgard 3 and/or Roundup Ready Flex cotton. Bayer runs accreditation meetings throughout the year. Your Technology Service Provider (TSP) can give you more information.

BG3 (BOLLGARD 3)

The third generation insect technology that kills *Helicoverpa* spp. pests.

Cry1Ac

One of three proteins produced in Bollgard 3 cotton plants that is derived from a common soil bacterium and that is toxic to specific insects.

Cry2Ab

One of three proteins produced in Bollgard 3 cotton plants that is derived from a common soil bacterium and that is toxic to specific insects.

EPR (END POINT ROYALTY)

Cotton growers north of the latitude 21.15 degrees are eligible for the Northern Australia Development Offer. This offer enables growers to pay their technology fee via an End Point Royalty. An End Point Royalty is paid on a per bale basis, after ginning and enables growers to manage production and cash flow risks. Consult the TUA for further details.

RMP (RESISTANCE MANAGEMENT PLAN)

Growers of Bollgard 3 and Bollgard II are required to practice preventative resistance management as set out in the Bollgard II and Bollgard 3 Resistance Management Plans (RMPs).

Compliance with the RMP is required under the terms and conditions of the Bollgard II/Bollgard 3 Technology User Agreement and under the conditions of registration of the Bollgard II and Bollgard 3 technology.

(RRMP) RESISTANCE RISK MANAGEMENT PLAN

A Resistance Risk Management Plan (RRMP) is part of the Bayer stewardship protocol for reporting compliance with its Bollgard II and Bollgard 3 product registration to the Australian Pesticides and Veterinary Medicines Authority (APVMA). An RRMP is a mitigation plan that must be in place for every incidence of grower noncompliance with the Resistance Management Plan (RMP). Designed to protect the longevity of the technology for the entire industry, RRMPs are aimed at mitigating resistance development risk resulting from a non-compliance with the RMP.

RRF (ROUNDUP READY FLEX)

Roundup Ready Flex is the cotton that is tolerant to over-the-top applications of registered glyphosate formulations such as Roundup Ready Herbicide with PLANTSHIELD and Roundup Ready PL Herbicide with PLANTSHIELD Technology.

TSP (TECHNOLOGY SERVICE PROVIDER)

TSPs provide technology support, Technology User Agreements (TUA), Roundup Ready Herbicide with PLANTSHIELD, Roundup Ready PL Herbicide with PLANTSHIELD Technology and cotton seed. You'll find a TSP at your local supplier of agricultural products, although not all suppliers are TSPs so check the website for a full list.

TUA (TECHNOLOGY USER AGREEMENT)

When you grow Bollgard II, Bollgard 3 and/or Roundup Ready Flex cotton, you must have a TUA. It is an agreement you have with Bayer to grow cotton using their genetic technology.

Vip3A

One of three proteins produced in Bollgard 3 cotton plants that is derived from a common soil bacterium and that is toxic to specific insects.

GROWER REQUIREMENTS

GENERAL GROWER REQUIREMENTS



Complete an accreditation



Sign a Technology User Agreement (TUA) before taking delivery of seed



Read, understand and comply with the current requirements of the TUA Terms and Conditions and Resistance Management Plan (RMP)





QUESTIONS?

FOR MORE INFORMATION PLEASE CONTACT:



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Please refer to the 2020/21 Bollgard II, Bollgard 3, Roundup Ready Flex cotton Technology User Agreement ("TUA") for Northern Australia General Terms and Conditions before you plant for full details on the Northern Australia Development Offer program and on growing Bayer's cotton traits in the 2020/21 season.

The term 'price' refers to the TUA Fee(s) as defined in the Technology User Agreement General Terms and Conditions document.

Bayer has made every effort to ensure the accuracy of the information provided. However, Bayer makes no express or implied warranties as to the recommendations and assumes no liability for loss, damage, injury or civil action incurred by those who use it. Any reference to products or companies is not an endorsement of a warranty of those products or companies.

Bollgard3

**Roundup
Ready FLEX**
COTTON

**Roundup
READY PL**
HERBICIDE
PLANTSHIELD

**Roundup
READY**
HERBICIDE
PLANTSHIELD



Roundup Ready Flex®, Bollgard®, Bollgard II® and Roundup Ready® PLUS are registered trademarks of the Bayer Group. All other marks are the property of their respective owners. Insect control technology incorporated into these seeds is commercialised under a license from Syngenta Crop Protection AG.

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