

## COTTON ESSENTIALS GUIDE 2023/24











## CONTENTS

THE COTTON CHOICES® PROGRAM
MATCH YOUR YIELD BY FIELD - CENTRAL QUEENSLAND
MATCH YOUR YIELD BY FIELD – SOUTHERN QUEENSLAND, NEW SOUTH WALES AND VICTORIA9
BETTER FARMING GRANT AND WATER USE EFFICIENCY GRANT
ATTACHMENT A – RESISTANCE MANAGEMENT PLAN (RMP)
ATTACHMENT B - WEED RESISTANCE MANAGMENT PLAN
ATTACHMENT C - APVMA APPROVED LAVEL FOR BOLGARD 326
ATTACHMENT D - PLANTING AUDIT AND COTTON CHOICES
ATTACHMENT E – MONSANTO MyBMP PROGRAM29
ROUNDUP READY FLEX° WEED MANAGEMENT GUIDE
COTTON TERMINOLOGY
KEY CONTACTS



## THE COTTON CHOICES® PROGRAM

Cotton Choices<sup>®</sup> gives you the flexibility to choose how to pay your trait technology fees based on what's likely to give you the best return.

> In 2023/24, the Cotton Choices<sup>®</sup> program continues to provide you with consistency and flexibility in how you pay for your Bayer technology fees. Key features of the program are:

- Three unique choices that allow you to opt for an upfront discount, manage risk through late crop removal and payment terms, or pay on a per-bale basis after ginning.
  - Choose one of the Cotton Choices across your farm, or a different one for each field.
    - Refer to full Terms and Conditions in Attachment D.



## **COTTON CHOICES**<sup>®</sup> MATCH YOUR YIELD BY FIELD

## CENTRAL QUEENSLAND 2023/24











## SELECT THE BEST COTTON CHOICE FOR YOUR FIELDS

### **COTTON CHOICES 1 –** PRICE DISCOUNT

## You can choose an upfront price discount on the Bayer technology fees for your selected fields or refuge crops.

The applicable payment due date for Cotton Choices 1: Price Discount and technology fees after discount are shown below.

Product	Price/Hectare (ex. GST)	Payment Due Date
Bollgard 3° with Roundup Ready Flex / XtendFlex°	\$390	FEB
Roundup Ready Flex / XtendFlex	\$75	<b>28</b> 2024

**Notes:** Price excludes GST. Discount does not apply to Roundup Ready Flex and XtendFlex unsprayed cotton refuges over 5% of the Bollgard 3 cotton crop area or 10% of the Bollgard 3 cotton crop area if planted after 1 November (as per trait's RMP requirements), or sprayed Roundup Ready Flex and XtendFlex, as nominated in the planting audit. Late Crop Removal is not available under this offer.

The Cotton Choices calculator can help you determine the best choice for your fields. Compare the choices today at

cottonchoices.com.au

### **COTTON CHOICES 2 –** LATE CROP REMOVAL AND EXTENDED TERMS

By selecting Late Crop Removal (LCR) and Extended Terms, your technology fee is waived if your crop is removed due to hail, drought, or other adverse conditions or events. Extended payment terms are until the end of July.

Product	Price/Hectare (ex. GST)	Payment Due Date
Bollgard 3° with Roundup Ready Flex / XtendFlex®	\$420	
Roundup Ready Flex / XtendFlex	\$79	<b>31</b> 2024

**Notes:** Price excludes GST. If for any reason your crop fails (hail, flood, sand storm, drought, herbicide drift etc) and is removed on or before **12 April 2024** for early crops or **10 May 2024** for late crops Bayer will waive 100% of the technology fee on the affected hectares. This offer does not apply to Roundup Ready Flex and XtendFlex unsprayed cotton refuges over 5% of the Bollgard 3 cotton crop area or 10% of the Bollgard 3 cotton crop area if planted after 1 November (as per the trait's RMP requirements), or sprayed Roundup Ready Flex and XtendFlex, as nominated in the planting audit.

### **COTTON CHOICES 3 –** END POINT ROYALTY

You can choose to pay an End Point Royalty (EPR) per bale after ginning to assist in managing production and cashflow risk.

Product	Price/Bale <sup>†</sup> (ex. GST)	Payment Due Date
Bollgard 3° with Roundup Ready Flex / XtendFlex $^{\circ}$	\$52.50	30 days from
Roundup Ready Flex / XtendFlex	\$50	end of month of invoice

**Notes:** Price excludes GST. ^Payment due date is 30 days after the end of the month of the invoice date (ie. the date on the invoice given to your TSP). <sup>†</sup> Standard 227 kg bale of cotton lint. This offer does not apply to Roundup Ready Flex and XtendFlex unsprayed cotton refuges over 5% of the Bollgard 3 cotton crop area or 10% of the Bollgard 3 cotton crop area if planted after 1 November (as per the trait's RMP requirements), or sprayed Roundup Ready Flex and XtendFlex, as nominated in the planting audit. Bale numbers determined via reconciliation of ginning reports received by Bayer.



<sup>^</sup>Payment due date is 30 days after the end of the month of the invoice date (ie. the date on the invoice given to your TSP). Refer to full Cotton Choices and Planting Audit Terms and Conditions in Attachment D.





## **COTTON CHOICES**<sup>®</sup> MATCH YOUR YIELD BY FIELD

SOUTHERN QUEENSLAND, NEW SOUTH WALES AND VICTORIA 2023/24











## SELECT THE BEST COTTON CHOICE FOR YOUR FIELDS

### **COTTON CHOICES 1 –** PRICE DISCOUNT

## You can choose an upfront price discount on Bayer technology fees for your selected fields or refuge crops.

The applicable payment date for Cotton Choices 1: Price Discount and technology fees after discount are shown below.

Product	Price/Hectare (ex. GST)	Payment Due Date
Bollgard 3° with Roundup Ready Flex / XtendFlex°	\$390	FEB
Roundup Ready Flex / XtendFlex	\$75	<b>28</b> 2024

**Notes:** Price excludes GST. Discount does not apply to Roundup Ready Flex and XtendFlex unsprayed cotton refuges over 5% of the Bollgard 3 cotton crop area or 10% of the Bollgard 3 cotton crop area if planted after 1 November (as per trait's RMP requirements), or sprayed Roundup Ready Flex and XtendFlex, as nominated in the planting audit. Late Crop Removal is not available under this offer.

The Cotton Choices calculator can help you determine the best choice for your fields. Compare the choices today at

cottonchoices.com.au

### **COTTON CHOICES 2 –** LATE CROP REMOVAL AND EXTENDED TERMS

By selecting Late Crop Removal (LCR) and Extended Terms, your Bayer technology fee is waived if your crop is removed due to hail, drought, or other adverse conditions or events. Extended payment terms are until the end of July.

Product	Price/Hectare (ex. GST)	Payment Due Date
Bollgard 3° with Roundup Ready Flex / XtendFlex $^{\circ}$	\$420	
Roundup Ready Flex / XtendFlex	\$79	<b>31</b> 2024

**Notes:** Price excludes GST. If for any reason your crop fails (hail, flood, sand storm, drought, herbicide drift etc) and is removed on or before **10 May 2024**, Bayer will waive 100% of the technology fee on the affected hectares. This offer does not apply to Roundup Ready Flex and XtendFlex unsprayed cotton refuges over 5% of the Bollgard 3 cotton crop area (as per the trait's RMP requirements), or to sprayed Roundup Ready Flex and XtendFlex, as nominated in the planting audit.

### **COTTON CHOICES 3 –** END POINT ROYALTY

You can choose to pay an End Point Royalty (EPR) per bale after ginning to assist in managing production and cashflow risk.

Product	Price/Bale <sup>†</sup> (ex. GST)	Payment Due Date
Bollgard 3° with Roundup Ready Flex / XtendFlex $^{\circ}$	\$52.50	30 days from
Roundup Ready Flex / XtendFlex	\$50	end of month of invoice

**Notes:** Price excludes GST. ^Payment due date is 30 days after the end of the month of the invoice date (ie. the date on the invoice given to your TSP). <sup>†</sup> Standard 227 kg bale of cotton lint. This offer does not apply to Roundup Ready Flex and XtendFlex unsprayed cotton refuges over 5% of the Bollgard 3 cotton crop area (as per the trait's RMP requirements), or to sprayed Roundup Ready Flex and XtendFlex, as nominated in the planting audit. Bale number determined via reconciliation of ginning reports received by Bayer.

### WHAT ARE THE KEY DATES TO REMEMBER?



^Payment due date is 30 days after the end of the month of the invoice date (ie. the date on the invoice given to your TSP). Refer to full Cotton Choices and Planting Audit Terms and Conditions in Attachment D.

## FREQUENTLY ASKED QUESTIONS

#### Am I eligible for Cotton Choices?

The Cotton Choices program applies to:

- Cotton containing Bayer Bollgard 3 and/or Roundup Ready Flex, and/or XtendFlex technologies
- Associated Roundup Ready Flex and XtendFlex unsprayed refuge crops (equal to 5% of Bollgard 3 cotton crop area as per the trait's RMP requirements).

#### What about my refuge crops?

- You can select a Cotton Choices option for your Roundup Ready Flex and XtendFlex unsprayed refuge crops (equal to 5% of Bollgard 3 cotton crop area as per the trait's RMP requirements).
- Roundup Ready Flex and XtendFlex crops that are not planted as part of a refuge, or are over 5% of the Bollgard 3 cotton crop area, are not eligible for Cotton Choices selections; standard technology fees and payment terms apply.
- Fully sprayed Roundup Ready Flex and XtendFlex refuges are also not eligible for Cotton Choices selections; standard technology fees and payment terms apply.

#### What are the standard technology fees?

Product	Price/Hectare (Ex. GST)	Payment Due Date
Bollgard 3° with Roundup Ready Flex / XtendFlex°	\$420	FEB
Roundup Ready Flex / XtendFlex	\$79	<b>28</b> 2024

### SIGN YOUR TECHNOLOGY USER AGREEMENT ONLINE

Your TSP will send you your annual Technology User Agreement (TUA) and Planting Audit to sign online through DocuSign<sup>®</sup>.

#### For more information visit cottonchoices.com.au



# Y

### BAYER SUPPORTS BETTER FARMING THROUGH GRANTS FOR GROWERS

In our commitment to working with farmers to reduce agriculture's impact on the environment, Bayer partners with Cotton Australia through the Better Farming grants program, which is aimed at increasing efficiency and sustainability on cotton farms.

The Better Farming grants program recognises that Australian cotton growers are continually striving to implement practices that both benefit the environment and produce the world's highest quality cotton through Australia's best management practice program, *my*BMP.

*my*BMP is a voluntary farm and environmental management system which provides practical tools for producing Australian cotton to the highest standard for areas including energy efficiency, water and pesticide management, biosecurity, soil health and work, health and safety. Through *my*BMP, all Australian cotton growers have access to the industry's best practice standards, which are fully supported by scientific research and development, resources and technical support.

#### myBMP Certification Grants

Bayer will provide a grant of A\$2000 (ex. GST) to growers who conduct an on-farm audit and achieve *my*BMP certification on or before December 31, 2023 as the final step in the certification process and as confirmed by Cotton Australia. These grants will be paid as a credit off the first invoice for Bayer technology fees.

Please see the full Terms and Conditions in the Technology User Agreement (TUA) **Attachment E** for further details on the program.

For more information on *my*BMP and to download the *my*BMP opt-in form, visit: http://cottonaustralia.com.au/cotton-growers/mybmp

#### WATER USE EFFICIENCY GRANT

For all growers that gain the myBMP certification mentioned above, Bayer offers a set of Goanna Ag GoField<sup>™</sup> Plus sensors free of charge (subject to availability). The sensors provide comprehensive soil moisture and canopy temperature data to help growers better manage their irrigation practices and reduce water use. See Attachment E for terms and conditions.





## **BOLLGARD<sup>®</sup> 3** RESISTANCE MANAGEMENT PLAN (RMP)

FOR CENTRAL & SOUTHERN QUEENSLAND, NEW SOUTH WALES AND VICTORIA





## **RESISTANCE MANAGEMENT PLAN**

#### CENTRAL & SOUTHERN QUEENSLAND, NEW SOUTH WALES & VICTORIA

#### Developed by Monsanto Australia Pty Ltd

The Resistance Management Plan is based on three basic principles: (1) minimising the exposure of *Helicoverpa* spp. to the *Bacillus thuringiensis* (Bt) protein toxins Cry1Ac, Cry2Ab 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. These principles are supported through the implementation of five elements that are the key components of the Resistance Management Plan. These elements are:

- 1. Planting timing restrictions;
- 2. Refuge crops;
- 3. Control of volunteers and ratoon cotton;
- 4. Pupae destruction/trap crops; and
- 5. Spray limitations

Growers of cotton containing Bollgard 3 insecticide technology (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 per the Conditions of Registration for Bollgard 3 insecticide under the *Agricultural and Veterinary Chemicals Code Act 1994.* 

### 1. PLANTING TIMING RESTRICTIONS

#### Victoria, New South Wales and Southern Queensland

All Bollgard 3 crops and refuges must be planted into moisture or watered-up between August 1 and before December 31 each year, unless otherwise specified in this Resistance Management Plan.

#### Central Queensland

#### Planting Window 1:

All Bollgard 3 crops and refuges must be planted into moisture or watered-up between August 1 and before October 31 each year, unless otherwise specified in this Resistance Management Plan. Bollgard 3 can only be planted from August 1 to October 31 each year. Seed cannot be planted wet or dry prior to August 1.

 All growers who plant Bollgard 3 cotton between August 1 and October 31 (planting window 1) and intend to grow their Bollgard 3 cotton for longer than 230 days (measured from the first day of planting for each field to the date of complete crop destruction, defined as slashed or mulched and controlled to prevent regrowth) must plant 10% irrigated unsprayed cotton refuge (or its equivalent – must be irrigated) of the Bollgard 3 area that will be grown longer than 230 days. Growers intending to grow Bollgard 3 cotton fields for longer than 230 days are required to comply with the timing conditions stipulated in "General conditions for all refuges" section (a).

- e.g., The additional refuge required for irrigated Bollgard 3 cotton grown longer than 230 days must be planted within 3 weeks of the first sowing date of Bollgard 3.
- Any Bollgard 3 fields that are planted between August 1 and October 31 (planting window 1) that only have an associated 5% unsprayed cotton refuge (or its equivalent) must be destroyed 230 days (or prior) after planting (measured from the first day of planting for each field).
  - e.g., A Bollgard 3 field that begins planting on August 1 that only has an associated 5% unsprayed cotton refuge (or its equivalent) must be completely destroyed by March 18.
- Any Bollgard 3 cotton that is planted in planting window 1 and is grown for greater than 230 days with only a 5% unsprayed cotton refuge (or its equivalent) will be recorded as non-compliant and be issued with a Resistance Risk Management Plan (RRMP).

#### Planting Window 2:

Any Bollgard 3 crops planted into moisture or watered-up after October 31 and up to December 31 must plant additional refuge as specified in Table 3 and 4. Bollgard 3 cannot be planted dry prior to December 31 if not watered up.

### 2. REFUGES

Growers planting Bollgard 3 cotton will 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 the Bt proteins Cry1Ac, Cry2Ab 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 Cry1Ac, Cry2Ab 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 Tables 1 and 2 for irrigated and dryland production scenarios, respectively.

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

#### Table 1. Irrigated Bollgard 3 cotton refuge options

CROP	CONDITIONS	% OF BOLLGARD 3
Catton	Irrigated, sprayed conventional cotton	100
Cotton	Irrigated, unsprayed conventional cotton	5
Pigeon pea	Fully irrigated, unsprayed	2.5

#### Table 2. Dryland Bollgard 3 cotton refuge options

CROP	CONDITIONS	% OF BOLLGARD 3
Catton	Dryland or irrigated, sprayed conventional cotton	100
Collon	Dryland or irrigated, unsprayed conventional cotton	5
Pigeon pea	Dryland or fully irrigated, unsprayed. Dryland pigeon peas can only be planted with an approved plan from Monsanto Australia	2.5

#### Table 3: Irrigated Bollgard 3 cotton refuge options for Central Queensland planted in planting window 1 and grown for longer than 230 days OR planted in planting window 2 (after October 31)

CROP	CONDITIONS	% OF BOLLGARD 3
Irrigated, sprayed conventional cotton		100
Collon	Irrigated, unsprayed conventional cotton	10
Pigeon pea	Fully irrigated, unsprayed	5

### Table 4: Dryland Bollgard 3 cotton refuge options forCentral Queensland planted after October 31

CROP	CONDITIONS	% OF BOLLGARD 3
Cotton	Dryland or irrigated, sprayed conventional cotton	100
Cotton	Dryland or irrigated, unsprayed conventional cotton	10
Pigeon pea	Dryland or fully irrigated, unsprayed. Dryland pigeon peas can only be planted with an approved plan from Monsanto Australia	5

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

Bt products must not be applied to any refuge (including sprayed cotton).

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 heliocide can be applied. 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.

**Irrigated:** 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). If additional Bollgard 3 is 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.

**Dryland:** A dryland refuge must be planted within the 2 week period prior to the first day of planting Bollgard 3 cotton.

- (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) 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 Bollgard 3 cotton begins to flower, the corresponding refuge must not be cultivated and ideally should begin to flower.
- (e) All refuges are to be planted within the farm unit growing Bollgard 3 cotton no more than 2 km from the associated Bollgard 3 cotton field. 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 Australia.
- (f) 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.
- (g) To account for possible insecticide drift, the options for the width of refuge crops vary according to spray regime. If any sprayed conventional cotton is grown on the same farm unit, Bollgard 3 refuge crops must be at least 48 metres wide and each refuge area must be a minimum of 2 hectares. If sprayed conventional cotton is not grown on the same farm unit, 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; however, a sprayed conventional cotton refuge must not be planted in a field that is also planted to an unsprayed refuge type unless a sufficient buffer is in place to prevent insecticide drift.

- (h) In all regions, destruction of refuges must only be carried out after Bollgard 3 has been harvested (refer to section 4 Pupae Destruction).
- (i) Refuges for dryland Bollgard 3 cotton crops must be planted in the same row configuration as the Bollgard 3 crop unless the refuge is irrigated. If an irrigated option is utilised for a dryland Bollgard 3 crop, then that refuge may be planted in a solid configuration. Dryland cotton is measured as Green Hectares.

### 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 Cry1Ac, Cry2Ab 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 ensure that volunteer and ratoon plants are removed prior to flowering 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. PUPAE DESTRUCTION/ TRAP CROPS

#### Victoria, New South Wales and Southern Queensland

To further mitigate the risk of resistance, each grower of Bollgard 3 must undertake *Helicoverpa* spp. pupae destruction in fields with a higher probability of carrying over wintering pupae according to the following key guidelines:

- If first defoliation of a Bollgard 3 field occurs on or before March 31, the Bollgard 3 field must be slashed or mulched and controlled to prevent regrowth within 4 weeks of harvesting.
- If first defoliation of a Bollgard 3 field occurs after March 31, the Bollgard 3 field must be slashed or mulched and controlled to prevent regrowth within 4 weeks of harvesting and pupae busting must be complete by July 31 for all valleys except for all regions including the Lachlan, Murrumbidgee, Menindee and Murray Valleys and Victoria where pupae busting must be complete by August 31.
- Ensure disturbance of the soil surface to a depth of 10 cm to a distance of 30 cm both sides of the plant line.

## Option for an alternative pupae destruction management

If opting to apply a registered attract and kill for Helicoverpa instead of pupae destruction:

- Grower must advise Monsanto if opting in for attract and kill strategy, contact your TSP for opt in dates and process.
- For growers in the Lachlan, Murrumbidgee, Menindee, Murray Valleys and Victoria, grower must apply three (3) weekly applications commencing no earlier than February 10 with the final application being no later than March 1.
  - For all other valleys (excluding Central Queensland) contact your local Bayer Cotton Territory Business Manager.
- Application must be made by an applicator accredited and approved by AgBiTech
- Grower must make applications as per the label of the registered attract and kill for Helicoverpa.

If for any reason the attract and kill applications are not completed as required in the RMP i.e.

- All three applications are not completed (i.e. due to weather or applicator availability only 2 out of 3 applications are made).
- Applications are not completed on the correct dates.
- Incorrect products or rates are used.
- A registered attract and kill product is not available (i.e. out of stock).
- All affected fields will be recorded as non-compliant and a Resistance Risk Management Plan (RRMP) will be issued to the grower to bring affected field(s) back into compliance with the RMP.

#### Central Queensland

#### **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

End of season pupae busting practices are not effective in the Central Queensland region as *Helicoverpa* spp. are less likely to diapause. A late summer trap crop (pigeon pea) must be planted for all Bollgard 3 cotton grown in Central Queensland. 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 5 below.

### Table 5: Late summer pigeon pea trap crop requirements in Central Queensland

CRITERION	TRAP CROP*				
	A minimum trap crop of 1% of planted Bollgard 3 cotton crop is required.				
Minimum area & dimension	If sprayed conventional cotton is grown on that farm unit: the trap crop must be at least 48 m x 48 m.				
(riequirerrierry	If no sprayed conventional cotton is grown on that farm unit: the trap crop must be at least 24 m x 24 m.				
	The trap crop should preferably be planted 4 weeks after the associated Bollgard 3.				
Planting time	<b>Note:</b> 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 meter)				
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% (or 5% if cotton is planted in the later window after October 31) 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 Bollgard 3 cotton crop, (slash and pupae bust – full soil disturbance to a depth of 10 cm across the entire trap crop area). All Bollgard 3 and associated trap crops must be destroyed by July 31.				

- \* 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.

#### Failed crops – all regions

Bollgard 3 crops that will not be grown through to harvest for various reasons and are declared to, and verified by, Monsanto as failed must be destroyed within two weeks after verification, in such a way that prevents regrowth. Crops that are abandoned before February 28 should be slashed and mulched within 4 weeks.

### **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 heliocide can be applied.

**Note:** 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 B

## ROUNDUP READY FLEX<sup>®</sup> 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. Cotton containing the ROUNDUP READY FLEX(R) herbicide tolerance technology provides growers the opportunity of 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<sup>®</sup> COTTON

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

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

- Completion of a ROUNDUP READY FLEX® accreditation course prior to planting cotton containing 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 population 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

#### 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<sup>®</sup> 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<sup>®</sup> 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<sup>®</sup> 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
- 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 resistant weed populations 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<sup>®</sup> cotton technical manual.

PRE-PLANT KNOCKDOWN	<ul> <li>Always start clean by planting into a weed-free application</li> <li>Know your field history in order to identify whether a READY FLEX<sup>®</sup></li> <li>Consider using approved tank mixes with Roundup Roundup Ready PL Herbicide with PLANTSHIELD as part of an IWM strategy</li> </ul>	field using either tillage or a herbicide any volunteer cotton present is ROUNDUP Ready Herbicide with PLANTSHIELD and Technology or other registered products
RESIDUAL HERBICIDES	<ul> <li>Residual herbicides should be used where appropri</li> <li>Consider using residual herbicides where weeds no with PLANTSHIELD and Roundup Ready PL Herbicide v</li> <li>The residual herbicide can be applied as a pre-emincorporated application, or at planting application)</li> <li>Use the recommended labelled rate and timing of the second seco</li></ul>	ate in a ROUNDUP READY FLEX® system t controlled by Roundup Ready Herbicide with PLANTSHIELD Technology are present nergence application (either a pre-plant he residual herbicide
IN-CROP WEED CONTROL	GLYPHOSATE APPLICATION GUIDELINES	
EMERGENCE		00% HARVEST
	ROUNDUP READY <sup>®</sup> HERBICIDE WITH PLANTSHIELD <sup>®</sup>	ROUNDUP READY HERBICIDE WITH PLANTSHIELD
	UP TO 4 x 1.5 kg/ha APPLICATIONS	UP TO 1 x 1.5 kg/ha APPLICATION
READY PL	ROUNDUP READY <sup>®</sup> PL HERBICIDE WITH PLANTSHIELD <sup>®</sup> TECHNOLOGY	ROUNDUP READY PL HERBICIDE WITH PLANTSHIELD TECHNOLOGY
"PLANTSHELO"	UP TO 4 x 1.9 L/ha APPLICATIONS	UP TO 1 x 1.9 L/ha APPLICATION
	TOTAL APPLICATIONS	
	READY 6.0 kg/ha	ICATIONS a
And Deside	Always read and follow label instructions.	

IN-CROP WEED CONTROL	<ul> <li>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 6 cm in size</li> <li>Sequential applications may be required to control new and subsequent germinations of weeds</li> <li>Select the timing of sprays based on the most difficult to control weed species in each field</li> <li>Post-directed sprays should be used to achieve more thorough coverage on weeds</li> <li>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</li> <li>Be aware of any potential contamination of spray application equipment (including mixing stations)</li> <li>Ensure all equipment is thoroughly cleaned and free of residues</li> <li>Only tank-mix registered products</li> <li>Ensure all applications are made according to label guidelines on water volume, droplet size and environmental conditions</li> <li>Be aware of off-target drift to susceptible crops and fields with both aerial and ground applications</li> <li>Growers should use registered non-glyphosate in-crop herbicides where required to increase diversity of weed control tactics</li> </ul>
LAY-BY APPLICATIONS	<ul> <li>If you currently use lay-by herbicides, then consider maintaining this program</li> <li>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</li> <li>Use the recommended label rate and timing of the residual herbicide</li> </ul>
PRE-HARVEST APPLICATION	<ul> <li>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</li> <li>This application can be used to control late season weeds and improve harvest efficiency</li> <li>Compatible with commonly used defoliants (see Roundup Ready Herbicide with PLANTSHIELD and Roundup Ready PL with PLANTSHIELD Technology labels)</li> <li>Do not use on crops intended for seed production</li> </ul>

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

#### 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

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<sup>®</sup> cotton growers with testing of suspected resistant weeds in a ROUNDUP READY FLEX<sup>®</sup> 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 NSWDPI.

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 (Latuca serriola)
- Wild radish (Raphanus raphanistrum)
- Tridax daisy (Tridax procumbens)
- Willow-leaved lettuce (Lactuca saligna)

#### 10. TOOLS

The CropLife Australia website houses information on resistant weed populations in Australia. Please consult <a href="http://www.croplife.org.au">www.croplife.org.au</a>

Mix It Up<sup>TM</sup> is an initiative, developed by Bayer, dedicated to helping growers and advisers manage herbicide resistance. Mix It Up<sup>TM</sup> offers a free resistance tracker tool, where users can discover herbicide resistance levels in their area. The tool searches herbicide resistance data that's been collected in cropping regions since 1993. Further information can be found at <u>mix-it-up.com.au</u>.

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





#### ATTACHMENT C

## 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 D

## PLANTING AUDIT AND COTTON CHOICES®

#### 1. BAYER TECHNOLOGY FEES

Prices are per green hectare except Cotton Choices<sup>®</sup> 3: Cotton End Point Royalty (EPR) which is priced per bale of ginned cotton lint. Prices do not include GST.

PRODUCT	STANDARD PRICE	COTTON CHOICES®1: PRICE DISCOUNT	COTTON CHOICES® 2: LATE CROP REMOVAL	COTTON CHOICES 3°: COTTON EPR
BOLLGARD <sup>®</sup> 3 with ROUNDUP READY FLEX <sup>®</sup>	\$420	\$390	\$420	\$52.50/bale
ROUNDUP READY FLEX®	\$79	\$75	\$79	\$50/bale
Payment due date (to nominated TSP)	28 February 2024	28 February 2024	31 July 2024	30 days from End of Month of invoice*

\*Date on the invoice given to the nominated TSP from Monsanto

#### 2. COTTON CHOICES®

- a. Cotton Choices® is available to Growers who have:
  - (i) any area of BOLLGARD® 3 Stack Cotton on their Farm Unit; and/or
  - (ii) an area of associated ROUNDUP READY FLEX<sup>®</sup> unsprayed refuge crop equivalent to the area required under the relevant RRMP.

All other plantings of ROUNDUP READY FLEX<sup>®</sup> Cotton covered by this TUA are subject to standard pricing and payment terms in accordance with Section 1 of this **<u>Attachment D</u>**.

- **b.** To participate in Cotton Choices<sup>®</sup>, a Grower and the Grower's Nominated TSP must complete, sign and return a Planting Audit and Cotton Choices<sup>®</sup> Selection form clearly indicating the Grower's choice of Cotton Choices<sup>®</sup> program by the applicable due date as set out below, for each eligible Field on the Farm Unit.
- Growers who do not submit a completed and signed Planting Audit and Cotton Choices<sup>®</sup> Selection form before the applicable due date, will be enrolled automatically in Cotton Choices<sup>®</sup> 2 for all eligible Fields on the Farm Unit. Growers of BOLLGARD<sup>®</sup> 3 Stack Cotton can choose one of the following Cotton Choices<sup>®</sup> per Field per Farm Unit.

#### **Central Queensland**

COTTON CHOICE	PLANTING DATES	CHOICE SELECTION DUE DATE
Cotton Choices® 1: Price Discount	1 August 2023 - 31 October 2023	8 November 2023
	1 November 2023 – 31 December 2023	10 January 2024
Cotton Choices® 2: Late Crop Removal &	1 August 2023 - 31 October 2023	12 April 2024
Extended Terms	1 November 2023 – 31 December 2023	10 May 2024
Cotton Choices® 3: End Point Royalty (EPR)	1 August 2023 - 31 October 2023	12 April 2024
	1 November 2023 – 31 December 2023	10 May 2024

#### Southern Qld, New South Wales & Victoria

COTTON CHOICE	PLANTING DATES	CHOICE SELECTION DUE DATE
Cotton Choices® 1: Price Discount	1 August 2023 - 30 November 2023	7 December 2023
	1 December 2023 – 31 December 2023	10 January 2024
Cotton Choices® 2: Late Crop Removal & Extended Terms	1 August 2023 – 31 December 2023	10 May 2024
Cotton Choices® 3: End Point Royalty (EPR)	1 August 2023 - 31 December 2023	10 May 2024

### 3. COTTON CHOICES® TERMS:

#### Cotton Choices<sup>®</sup> 1: Price Discount

Growers receive a discounted rate from the standard technology fees. Growers must nominate this selection by the due date and cannot change their Cotton Choice selection after the applicable to the Cotton Choices selection due date.

Crop losses are not available on Cotton  $\operatorname{Choices}^{\circ}$  1: Price Discount.

#### Cotton Choices° 2: Late Crop Removal

If the crop fails or is removed and reported in writing to Monsanto (via MTrack, signed planting adjustment form or other forms agreed to by Monsanto) by the below due dates, for reasons such as hail, flood, sandstorm, drought, poor germination etc, Monsanto will waive the Bayer technology fees for the affected area. Entitlement to waiver of Bayer technology fees is subject to confirmation of actual loss.

AREA	COTTON PLANTING DATES	CROP LOSS REPORTING DUE DATE
Central Queensland	1 August 2023 - 31 October 2023	12 April 2024
	1 November 2023 – 31 December 2023	10 May 2024
Southern Queensland, New South Wales and Victoria	1 August 2023 – 31 December 2023	10 May 2024

#### Cotton Choices° 3: 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 Cotton Choices<sup>®</sup> 3, 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 Cotton Choices<sup>®</sup>: 3 EPR. 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 Cotton Choices<sup>®</sup> 2 and the Grower agrees to pay the applicable Bayer technology fee.
- e. On or before 12 April 2024 for Farm Units in Central Queensland for Cotton planted between 1 August 2023 and 31 October 2023, or 10 May 2024 for Farm Units in Southern Qld, NSW and Vic and Farm Units in Central Queensland with cotton planted between 1 November and 31 December 2023, 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 2023/24 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.

#### 4. PLANTING AUDITS

The invoice to the Grower for Cotton Choices<sup>®</sup> will be calculated based upon information provided by the Grower on the Planting Audit and Cotton Choices<sup>®</sup> selection form and any planting adjustment form(s).

ZONE	PLANTING DATES	PLANTING AUDIT AND EARLY CROP REMOVAL DUE DATE
Central Qld	1 August 2023 – 31 October 2023	8 November 2023
	1 November 2023 – 31 December 2023	10 January 2024
Southern QLD, NSW and Vic	1 August 2023 – 30 November 2023	7 December 2023
	1 December 2023 – 31 December 2023	10 January 2024

#### 5. 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:
  - (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 Cotton Choices<sup>®</sup> Selection form and submit the completed and signed form on MTrack, together with the information referred to in Section 5(a) of this Attachment D. 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 Bayer technology 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 Attachment D 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:
  - 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 Cotton Choices<sup>®</sup> Selection Form.

#### 6. EARLY CROP REMOVAL

If a Grower:

- a. signs a TUA but does not plant a crop covered by the TUA on a Field on the Farm Unit; or
- **b.** plants a crop covered by the 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 Bayer technology fees for the affected area will be waived, 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 E

### MONSANTO MyBMP PROGRAM (CLAUSE 4.3 OF TUA)

#### TERMS AND CONDITIONS OF THE MONSANTO BETTER FARMING GRANT PROGRAMS

#### Monsanto myBMP 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 2023 as confirmed by Cotton Australia.
- Growers must be *my*BMP accredited by 31 December 2023 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 Bayer 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 Bayer 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.

#### Water Use Efficiency Grant

- The Water Use Efficiency (WUE) Program is intended to provide support to growers to use crop monitoring data to recognise water use efficiency gains.
- Monsanto invites Participants to participate in the Program, at Monsanto's expense, providing Participants access to crop monitoring data that may help to optimise irrigation scheduling to recognise water use efficiency gains.
  - Participants are eligible to participate in the Program on a farm unit:
    - if they have completed a *my*BMP audit successfully; and
    - if they hold a current myBMP certification; and
    - if they plant Bollgard® 3/Roundup Ready Flex® cotton in the 2023/24 season.
- Subject to eligibility and Participant consent provided herein Monsanto will share Participant personal information with its contractor, Discovery Ag Pty Ltd (trading as Goanna Ag Pty Ltd) to install and monitor moisture probes on Participant Property and for the purposes of administering the WUE program
- Participants will, at Monsanto expense, receive a GoField Plus<sup>®</sup> subscription for the current cotton growing season with Goanna Ag Pty Ltd allowing them to access the data generated:
  - o from two (2) moisture probes if they sign a 2023/24
     Technology User Agreement (TUA) and plant greater
     than 1 ha of Bollgard 3/Roundup Ready Flex cotton
     on a single farm unit in the 2023/24 season

- Participant grants to Monsanto a license to use the deidentified data for the purposes of development of a report for the benefit of the cotton Industry.
- Participant must create an account with Goanna Ag and agree to the Goanna Ag Terms and Conditions in order to receive the moisture probe(s) and will receive a complimentary subscription to the GoField Plus program for the current cotton growing season.
- Participant must provide Goanna Ag access to Participant Property at a mutually agreeable time to permit Goanna Ag to install the GoField Plus equipment. Goanna Ag will implement and monitor the moisture probe(s) on the grower's property. This equipment remains the property of Goanna Ag and at the cessation of the agreement, will be collected by Goanna Ag.
- Participant will notify Goanna Ag of any and all functional flaws, errors, anomalies and problems directly or indirectly associated with the moisture probe(s) or Equipment known to or discovered by Participant.
- Participant agrees and consents to the collection of data from the moisture probe(s) by Goanna Ag and will also participate in relevant surveys as part of the Program. Surveys will require the grower to provide data on their behaviour in respect of irrigation practices, irrigation timing, frequency, yield and gross margin. Participant acknowledges that surveys may be conducted by third parties.
- Participant agrees that Monsanto may copy, modify, create derivative works, publicly display, disclose, distribute, license and sublicense, incorporate and otherwise use the deidentified data, for any and all commercial and non-commercial purposes. For the avoidance of doubt, any report generated using the data from the WUE Equipment will be deidentified and will remain the property of Monsanto.

#### Definitions

**"Planting Audit and Cotton Choices" Selection 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 Cotton Choices<sup>®</sup> selections 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<sup>®</sup> 3 and ROUNDUP READY FLEX<sup>®</sup> 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;



## **ROUNDUP READY FLEX® COTTON** WEED MANAGEMENT GUIDE

Roundup Ready Flex® herbicide tolerance technology provides the opportunity for superior weed control, excellent crop safety and the ability to maximise your yield potential. However, overreliance 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 www.mix-it-up.com.au and www.weedsmart.org.au











## WEED MANAGEMENT RECOMMENDATIONS FOR THE ROUNDUP **READY FLEX SYSTEM**



1110 0

Product	Group	Active Ingredients	Company	Product	Group	Active Ingredients	Company
Verdict 520	1	520 g/L haloxyfop	Corteva	2,4-D Amine 625	4	625 g/L 2,4-D	Adama
Sequence	1	240 g/L clethodim	Nufarm	Starane Advance	4	333 g/L fluroxypyr	Corteva
Factor <sup>®</sup>	1	250 g/kg butroxydim	Nufarm	Bouncer 960S	15	960 g/L s-metolachlor	Nufarm
Bromicide <sup>®</sup> 200	6	200 g/L bromoxynil	Nufarm	Dual Gold	15	960 g/L s-metolachlor	Syngenta
Cotogard WG	5	440 g/L fluometuron, 440 g/kg prometryn	Adama	<ul><li>Gramoxone</li><li>Spray.Seed</li></ul>	22 22	250 g/L paraquat 135 g/L paraquat + 115 g/L diguat	Syngenta Syngenta
Cotoran	5	900 g/kg fluometuron	Adama	Roundun	9	$540  \mathrm{g/L}$ glyphosate	Baver
Diuron 900 WG	5	900 g/kg diuron	Adama	Ready PL	1	uno g/ E gryphosate	Duyer
Gesagard 500 SC	5	500 g/L prometryn	Syngenta	Herbicide with			
Sencor <sup>®</sup> 480 SC	5	480 g/L metribuzin	Bayer	Technology			
Terbyne Xtreme	5	875 g/kg terbuthylazine	Sipcam	Roundup Ready	9	690 g/kg glyphosate	Bayer
Rifle 440	3	440 g/L pendimethalin	Nufarm	Herbicide with PLANTSHIELD			
Treflan	3	480 g/L trifluralin	Corteva	Roundup Ultra	9	570 g/L glyphosate	Bayer
Nail® 600EC	14	600 g/L carfentrazone-ethyl	Nufarm	MAX Herbicide			
Valor	14	500 g/kg flumioxazin	Sumitomo	Biffo	10	200 g/L glufosinate-ammonium	Nufarm
Sharpen®	14	700 g/kg saflufenacil	BASF				



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

- Aim to enter the Roundup Ready<sup>®</sup> 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 populations of glyphosate resistant weeds growers must have a plan to manage such weeds.

## PICK UP ON COTTON TERMINOLOGY

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

#### ACCREDITATION

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

#### BG3 (BOLLGARD 3)

Third-generation insect control trait technology that provides three different mechanisms of action to target *Helicoverpa* spp.

#### **COTTON CHOICES®**

Cotton Choices<sup>®</sup> is the name of the program that offers growers different ways to pay for their Bayer cotton traits. Cotton Choices<sup>®</sup> gives growers flexibility in managing cash flow and production risks. You can choose how and when to pay for the Bollgard 3 and Roundup Ready Flex technology present in the cotton seed chosen.

#### Cry1Ac

One of three protein toxins 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 protein toxins 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)**

The Cotton Choices® program includes Cotton Choices® 3: End Point Royalty (EPR). You are able to make the choice to pay your cotton technology fees after your cotton is ginned, via a set EPR per bale. Check the TUA for full terms and conditions.

#### LCR (LATE CROP REMOVAL)

One of the Cotton Choices<sup>®</sup> is Cotton Choices<sup>®</sup> 2: Late Crop Removal (LCR) with Extended Terms. It entitles you to have the Bayer technology fee waived if your crop is removed due to hail, drought or for any other reason. Check the TUA for full terms and conditions.

#### **RMP (RESISTANCE MANAGEMENT PLAN)**

Growers of Bollgard 3 cotton are required to practice preventative resistance management as set out in the Bollgard 3 Resistance Management Plan (RMP).

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

#### **RRMP (RESISTANCE RISK MANAGEMENT PLAN)**

A Resistance Risk Management Plan (RRMP) is part of Bayer's stewardship protocol for reporting compliance with its 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 non-compliance 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 a biotechnology trait that confers tolerance 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 3 and/or Roundup Ready Flex cotton, you must have a TUA. It is an agreement you have with Bayer to authorise you to grow cotton containing their genetic technologies.

#### Vip3A

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

### FOR MORE INFORMATION CONTACT YOUR BAYER TERRITORY BUSINESS MANAGER



#### Mick Fing

Territory Business Manager Darling Downs and St George/Dirranbandi 0417 305 717 michael.fing@bayer.com



**Greg Pearce** Territory Business Manager Gwydir, Macintyre and Mungindi 0427 766 605 greg.pearce@bayer.com



**Emma Brotherton** Territory Business Manager Central Queensland and Dawson/Callide 0409 742 738 emma.brotherton@bayer.com



#### Luke Sampson

Territory Business Manager Lachlan, Macquarie, Bourke and Southern NSW 0427 701 986 luke.sampson@bayer.com



Jack Sharp Territory Business Manager Namoi and Walgett 0436 355 226 jack.sharp@bayer.com



Mark Dawson National Sales Manager -Row Crop 0428 106 090 mark.dawson@bayer.com



Ben Turner Territory Business Manager Northern Australia 0429 809 502 ben.turner@bayer.com

Please refer to the 2023/24 Bollgard 3 and Roundup Ready Flex Technology User Agreement General Terms and Conditions before you plant for full details on the Cotton Choices program and on growing Bayer's cotton traits in the 2023/24 season.

The term 'price' refers to the Bayer technology fees as defined in the Technology User Agreement General Terms and Conditions document.

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.







Roundup<sup>®</sup>, Roundup Ready Flex<sup>®</sup>, Roundup Ready<sup>®</sup>, Cotton Choices<sup>®</sup>, PLANTSHIELD<sup>®</sup>, Sencor<sup>®</sup>, XtendFlex<sup>®</sup>, Roundup Ultra<sup>®</sup> and Bollgard<sup>®</sup> are Registered Trademarks of the Bayer Group. Mix It Up<sup>™</sup> is a trademark 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. © 2023 Bayer Group - All Rights Reserved.



Bayer CropScience Pty Ltd ABN 87 000 226 022 Level 4, 109 Burwood Road Hawthorn VIC 3122 Phone: 1800 636 001 bollgard3.com.au cottonchoices.com.au

Pages 4: Tom, Tony, Sally, Richie and George from Quigley Farms Page 9: David and Danielle Statham of Sundown Pastoral Company, taken at Keytah Farm in Moree NSW.