

MONSANTO
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Cotton Choices™

PRODUCT GUIDE 2009/10



Successful cotton production

Cotton is a profitable summer cropping option for innovative Australian farmers. The Australian cotton industry has adapted to change and has embraced biotechnology to efficiently produce the world's best cotton.

Two of Monsanto's cotton biotech traits are available commercially in Australia: Bollgard II® and Roundup Ready Flex® cotton. These biotech traits provide unparalleled protection to major insect and weed pests, so that growers can get the most out of their crop each season.

Bollgard II and Roundup Ready Flex cotton also support more efficient and environmentally sustainable production systems. You can read more about this on the following pages.

Bollgard II



Why grow Bollgard II?

- **Bollgard II provides the best control of *Helicoverpa* spp. with the least number of sprays**
- **Bollgard II is the safest way to effectively control *Helicoverpa* spp.**
- **Bollgard II is a cost effective approach to controlling *Helicoverpa* spp.**
- **Bollgard II is an environmentally sustainable option for cotton production**
- **Bollgard II provides a stable platform for Integrated Pest Management (IPM)**

Over the past four years, Bollgard II technology has allowed Australian growers to produce cost effective, high quality cotton without relying on large quantities of insecticides.

The genes in Bollgard II enable cotton to continually produce specific proteins which control certain Lepidopteran larvae when they feed on the vegetative and reproductive parts of cotton. The proteins produced are the same as produced by the naturally occurring soil bacterium, *Bacillus thuringiensis* (Bt).

Bollgard II is the environmentally sustainable way to control *Helicoverpa* spp. in cotton. It underpins a robust IPM approach used in the production of Australian cotton.

What is the Bollgard II Resistance Management Plan?

The Bollgard II Resistance Management Plan (RMP) was developed through collaboration between the Australian cotton industry and Monsanto Australia. The RMP is a vital part of the Bollgard II stewardship program and helps to ensure the longevity of Bollgard II technology for Australian farmers.

Compliance with the RMP is important to ensure growers get the most out of the technology and is a requirement under the terms of the Bollgard II Technology User Agreement. Growers should obtain a copy of the Guide to the Bollgard II RMP for more details.

Roundup Ready Flex

Why grow Roundup Ready Flex?

- Roundup Ready Flex offers broad spectrum control for the majority of hard to kill weeds in cotton
- Roundup Ready Flex has built-in vegetative and reproductive (floral) tolerance to Roundup Ready® herbicide
- Roundup Ready Flex offers real time savings compared to alternative systems
- Roundup Ready Flex systems have lower environmental impact, using less residual chemistry and cultivation

Roundup Ready Flex cotton contains two copies of the CP4-EPSPS gene and a unique promoter sequence to direct the two genes to express in both vegetative and reproductive parts of the plant. This allows Roundup Ready Flex users to safely apply over-the-top applications of Roundup Ready herbicide to cotton, controlling weeds when and where they appear.

What is the Roundup Ready Flex Crop Management Plan?

A comprehensive Crop Management Plan (CMP) for Roundup Ready Flex cotton has been developed by Monsanto Australia, in consultation with researchers, growers and the cotton industry. The plan is designed to protect the sustainability of the technology and aid in minimising the risk of the evolution of glyphosate resistant weeds in the Australian cotton production system.

Simple steps for accessing Bollgard II and Roundup Ready Flex technology

BECOME ACCREDITED

- Growers must be accredited to use Bollgard II and Roundup Ready Flex technology
- For details contact your local Monsanto Representative by calling **1800 069 569**

CONTACT YOUR LOCAL TECHNOLOGY SERVICE PROVIDER (TSP)

- Growers can access Monsanto's cotton technology through regional distribution outlets accredited by Monsanto
- TSPs will be able to supply Roundup Ready herbicide, cotton planting seed and technology licences. You can contact your local TSP for help through this process by visiting www.monsanto.com.au/products/cotton

SIGN A TECHNOLOGY USER AGREEMENT (TUA)

- Your TSP will provide you with the terms and conditions of the TUA which includes a copy of the RMP for Bollgard II and CMP for Roundup Ready Flex

UNDERSTAND THE STEWARDSHIP REQUIREMENTS

- Monsanto's cotton traits are subject to a range of regulatory requirements which help achieve the sustainability of the technology and ultimately maximise the overall benefits. Make sure you read through the terms and conditions of the TUA to fully understand your stewardship obligations

CHOOSE FROM ONE OF THREE COTTON CHOICES

- In 2009/10 growers of Bollgard II with Roundup Ready Flex can choose from 1 of 3 choices including: Trait Discount Offer; Late Crop Removal; or End Point Royalty (EPR) program

Cotton Choices Program

For the 2009/10 cotton season, Monsanto has introduced the Cotton Choices program.

Cotton Choices is a special offer rewarding growers of Bollgard II with Roundup Ready Flex technology.

The program is designed to give growers more flexibility and choice when planting Bollgard II with Roundup Ready Flex, and has been developed based on feedback from our customers. Peter O’Keeffe, Sales Lead, from Monsanto Australia said, “Over the past season we have met with growers and industry and the feedback we received was all about choice, flexibility and adding more value. The Cotton Choices program was created to give growers more choice and add value to their business.”

Growers are able to select one of following three choices for the 2009/10 season:

Product	Price (excl GST)	Grower payment	CHOICE 1	CHOICE 2	CHOICE 3
			Discount offer	Late Crop Removal (LCR)	End Point Royalty (EPR)
Roundup Ready cotton	\$51.00	February	-	-	-
Roundup Ready Flex	\$75.00	February	-	-	-
Bollgard II	\$315.00	February	-	-	-
Bollgard II/Roundup Ready cotton	\$366.00	April	✓	✓	✓
Bollgard II / Roundup Ready Flex	\$390.00	April	✓	✓	✓

Note:

The Cotton Choices program including trait discount, LCR and the EPR program does not apply to individual traits. Growers of individual or straight traits please refer to standard pricing and payment terms listed above.

Choice 1: Discount offer

With Choice 1 of the Cotton Choices program, eligible growers are entitled to a price discount on their licence fees, and the more you plant, the more you save.

DISCOUNT TABLE

Total Stack area*	% Discount
2000+ ha	9%
1000 - 1999 ha	7%
500 - 999 ha	4%
200 - 499 ha	2%
0 - 199 ha	1%

Available to growers with 80% or more of their crop planted to Bollgard II/Roundup Ready Flex

Growers to be invoiced in December 2009 with payment due April 2010

The discount applies to the total stack* area for a particular trading entity across all farm units

Unsprayed Roundup Ready Flex refuge is not included when calculating the total stack area

The discount you receive also applies to any associated Roundup Ready Flex refuge

LCR is not applicable as part of the discount offer

*Stack = Bollgard II with Roundup Ready Flex and Bollgard II with Roundup Ready cotton

Example 1

Grower John decides to plant 600 hectares of irrigated Bollgard II with Roundup Ready Flex on his farm. The cotton is planted in a solid configuration with 30 hectares or 5% pigeon pea as a refuge. John elects Cotton Choice 1. What discount will he receive off the standard price?

As John is growing 600 hectares of Bollgard II with Roundup Ready Flex he receives a discount of 4% off his trait licence fees. This is a saving of \$9360 for selecting Choice 1 from the Cotton Choices program when compared to the standard price.

Example 2

Grower Sally has three separate farms requiring three separate Technology User Agreements (TUAs). On each Sally grows 400 hectares of irrigated Bollgard II with Roundup Ready Flex cotton. While they are separate farms they operate under a single trading entity. What will Sally's discount be under Cotton Choice 1?

If Sally chooses Cotton Choice 1 she can combine her Bollgard II with Roundup Ready Flex area which amounts to 1200 hectares. She will receive a 7% discount on her trait licence fees and saves \$32,760 compared to standard pricing.

Choice 2: Late Crop Removal (LCR)

Late Crop Removal (LCR) has been offered with Monsanto trait technology for several seasons and growers have appreciated the sharing of risk it provides. LCR allows eligible growers to receive a full refund on their Bollgard II with Roundup Ready Flex licence fee if their crop is removed due to hail, drought or other adverse conditions and events.

- **Cotton Choice 2 - LCR applies to any amount of Bollgard II with Roundup Ready Flex, Bollgard II with Roundup Ready cotton as well as any associated unsprayed Roundup Ready Flex refuge.**
- **Growers will be refunded 100% of the licence fee on hectares affected. The crop must be removed on or prior to 20th April 2010 and Monsanto will be informed by this date for growers to be eligible**
- **Technology Service Providers must complete and submit a planting audit adjustment form to Monsanto for any LCR claims**
- **Growers selecting Choice 2 will be invoiced in December 2009 with payment due end of April 2010**
- **Refer to terms and conditions**

Cotton grower Paul Hawkins from 'Willawah' near Wee Waa NSW said, *"Despite achieving reasonable yields last season it was still challenging. Unfortunately we lost four fields to hail during the season. We can't predict whether our cotton will be affected by natural events such as hail storms or drought but the Late Crop Removal program helps reduce the risk associated with growing cotton."*



Choice 3: End Point Royalty (EPR)

In 2009/10 growers can take advantage of Monsanto's End Point Royalty (EPR) pilot program specifically designed for dryland cotton.

The pilot program aims to reduce some of the risk associated with growing dryland cotton through a yield based licence fee structure. Choice 3 dramatically reduces the upfront cost of growing Bollgard II with Roundup Ready Flex cotton and the EPR component is calculated based on yield so growers only pay on the cotton that is ginned.

Cotton Choice 3 includes a **Planting fee** which is based on the area of cotton planted x planting configuration. This is determined by a planting audit completed by the end of November.

The **EPR** is calculated on cotton yield and takes into account planting configuration.

When Roundup Ready Flex is used as 10% unsprayed refuge this is included as part of the total area.

The total yield is based on a ginning report to be provided to Monsanto.

Total Cost/ha = (Planting fee + EPR) * PC

(PC = planting configuration %)

Planting Fee/ha

= (crop planting fee x area) + (refuge planting fee x area)

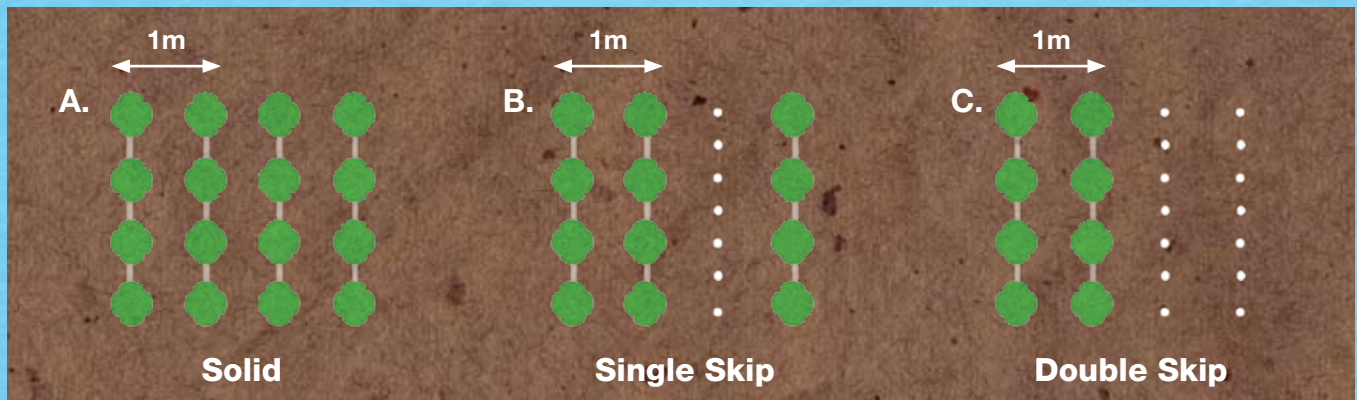
EPR Component (Yield/ha)

= (total crop yield (bales) + total refuge yield (bales) / total broadacre area (ha)

BGII/RRF fees	Double Skip	Single Skip	Solid
Planting fee per ha	\$49.00	\$65.34	\$98.00
EPR 0-3.6 b/ha	\$37.50	\$50.00	\$75.00
EPR >3.6 b/ha	\$7.50	\$10.00	\$15.00

BGII/RRF Yield	Planting Configuration - Total fee/ha (broad)		
	Bales/ha	Double Skip	Single Skip
1.0	\$86.50	\$115.34	\$173.00
1.3	\$97.75	\$130.34	\$195.50
1.6	\$109.00	\$145.34	\$218.00
1.9	\$120.25	\$160.34	\$240.50
2.2	\$131.50	\$175.34	\$263.00
2.5	\$142.75	\$190.34	\$285.50
2.8	\$154.00	\$205.34	\$308.00
3.1	\$165.25	\$220.34	\$330.50
3.4	\$176.50	\$235.35	\$353.00
3.7	\$184.75	\$246.35	\$369.50
4.0	\$187.00	\$249.35	\$374.00
4.3	\$189.25	\$252.35	\$378.50
4.6	\$191.50	\$255.35	\$383.00
4.9	\$193.75	\$258.35	\$387.50
5.2	\$196.00	\$261.35	\$392.00
5.5	\$198.25	\$264.35	\$396.50
5.8	\$200.50	\$267.35	\$401.00
6.1	\$202.75	\$270.35	\$405.50
6.4	\$205.00	\$273.35	\$410.00
6.7	\$207.25	\$276.35	\$414.50
7.0	\$209.50	\$279.35	\$419.00

Alternative Planting Configuration



Row Width	Configuration	Planting Configuration %
40" (1 metre) rows	Solid	100
40" (1 metre) rows	Single Skip	66.67
40" (1 metre) rows	Double Skip	50
60" rows	Solid	66.67

Sample Case Study

Grower John plants 100 hectares of Bollgard II with Roundup Ready Flex, in addition John plants 10 hectares of unsprayed Roundup Ready Flex cotton refuge. As a dryland grower he has used a double skip planting configuration. John's Bollgard II/Roundup Ready Flex yields 4.0 bales/ha and his refuge yields 0.5 bales/ha. What is John's payment under Choice 3?

Planting fee/ha = crop trait fee/ha + refuge trait fee/ha (10% unsprayed)

= Bollgard II with Roundup Ready Flex + Roundup Ready Flex unsprayed Refuge (10%)
 = \$98.00/ha + (\$37.50/ha x 10%)
 = \$98.00/ha + \$3.75
 = \$101.75

EPR component (yield/ha) = total crop yield + total refuge yield / total broadacre area (ha)

Total Yield (bales) = 400 bales + 5 bales
 Yield (bales/ha) = 405 bales/110 hectares
 Yield (bales/ha) = 3.68 bales

The first 3.6 bales/ha is multiplied by \$75.00. Therefore **\$270.00/ha**
 Remaining 0.08 bales/ha is multiplied by \$15.00 and amounts to **\$1.20/ha**
 EPR = \$270.00 + \$1.20
 EPR = \$271.20/ha

Total Cost/hectare = (Planting fee + EPR) x Planting configuration %

= (\$101.75 + \$271.20) x double skip configuration %
 = \$372.95 x 50%
 = \$186.47/ha

The total cost for John Smith is \$18,647

John saves \$1228 off the standard pricing by using the Cotton Choices program - Choice 3 End Point Royalty (EPR). The Cotton Choices program dramatically reduced the upfront amount to \$5087.50, with the remaining cost component based on yield, due once the cotton has been ginned.

Calculate your potential payment for the coming season under Choice 3

PADDOCK SUMMARY

Crop & Refuge	Trait planted	Broadacre Area (ha)	Planting Configuration %	Yield (bales)/ha
BGII/RRF				
BGII/RRc				
Unsprayed RRF				
Pigeon Pea*				

PLANTING FEE /HA *Note : use broadacre area*

Planting Fee/ha = Crop Trait fee/ha + (Refuge trait fee/ha x (unsprayed refuge %))

Planting Fee/ha = \$ /ha + (\$ x (%))

Planting Fee/ha = \$

Total Planting Fee = (Planting fee/ha x Crop Area) x Planting Configuration %

Total Planting Fee = \$

EPR COMPONENT (YIELD/HA) *Note : use broadacre yield and area*

Yield (bales/ha) = (Crop Yield (bales) + Refuge Yield (bales)) / Total Broadacre Area (ha)

Yield (bales/ha) = ((bales) + (bales)) / (ha)

Yield (bales/ha) =

EPR (\$/HA)

A) EPR = The first 0 - 3.6 bales/ha x \$75.00

EPR = /ha x \$75.00

B) EPR = Yield > 3.6 bales/ha x \$15.00

EPR = /ha x \$15.00

EPR (\$/ha) = A + B

EPR (\$/ha) =

TOTAL COST

Total Cost/ha = (Planting fee/ha + EPR (\$/ha)) x Planting Configuration %

Total Cost/ha = (+ (\$/ha)) x %

Total Cost/ha =

Total Cost = Total Cost/ha x Crop Area (ha)

Total Cost =

Product Stewardship

Monsanto's stewardship commitments in Australia include procedures and checks designed to:

- Ensure compliance with all regulatory requirements
- Ensure product safety and environmental responsibility
- Ensure grower choice and the ongoing co-existence of different agricultural production systems
- Achieve sustainability of the technology
- Maximise the overall benefits of the technology

To support these stewardship commitments the following audits are conducted throughout the season:

AUDITS

	Planting	Weed Management	Mid Season	Resistance Management
	Planting - Nov	Planting - Jan	Jan	Harvest - July
Bollgard II	✓		✓	✓
Roundup Ready Flex	✓	✓		
Roundup Ready cotton	✓	✓		

Planting Audit

Confirms compliance with the conditions of the Bollgard II RMP including refuge requirements. Determines planted trait area.

- Conducted by the TSP by 30th November 2009.

Weed Management Audit

Reports any weeds surviving after 14 days after the application of Roundup Ready herbicide.

- To be completed by 15th January 2010.

Mid Season Audit

Assesses the agronomic management of refuge crops to ensure they produce significant *Helicoverpa* spp. larvae as defined in the RMP.

- To be completed between the 1st and 31st January 2010

Resistance Management Audit

Ensures cultivation was performed in accordance with the RMP. All Bollgard II crops in NSW and Southern QLD must be cultivated after harvest to stop re-growth and to destroy *Helicoverpa* spp. pupating in the soil. All fields to be sown to cereals must be inspected by the TSP before sowing commences.

- Pupae busting should occur within 4 weeks of harvest and no later than 31st July 2010.

Frequently Asked Questions

Q. What constitutes a Trading Entity for the purposes of Cotton Choices?

A. A Trading Entity will comprise a farming operation where the cotton growing is carried out under a single ABN. This can be multiple farm units/TUA's combining their hectares.

Q. How does a grower know what TUAs are needed?

A. A TUA applies to a farm unit. Cotton which is separated or connected by no more than 2kms is defined as a farm unit. For the management of resistance, each TUA must have the relevant refuge within 2kms of all Bollgard II fields.

Q. Can a grower use different TUAs to access more than one Choice?

A. There is only one Choice available per Trading Entity. There will be a limited pilot conducted with irrigated cotton and dryland cotton in 2009/10.

Q. Why are you limiting Choice 3 to dryland cotton?

A. Even though we have made Choice 3 available to all growers, it is still very much a commercial trial. We are keeping the program at a manageable level so we can evaluate what changes we need to make for future expansion.

Q. Why are you implementing an EPR program?

A. We see an EPR as a genuine way of sharing risk with growers. It is hoped that growers will be encouraged to grow more cotton and the whole industry will benefit.

Q. Why do growers need to grow 100% Bollgard II with Roundup Ready Flex to participate?

A. 2009/10 is a commercial trial season and Monsanto is trying to keep it as simple as possible. If successful we will look at how the program can be expanded in the future.

Q. When do growers have to decide if they want to use the EPR program?

A. Growers will be able to select Choice 3 - the EPR program at their planting audit in late November. This gives time to see how the crop has established and make a decision on seasonal conditions.

Q. Why do growers have to allow their ginner to report lint yield to Monsanto?

A. Monsanto will use these reports to establish payment levels for growers using the EPR program. Ginners require a signed release from their growers due to privacy regulations.

Q. How do I contact Monsanto?

A. You can visit www.monsanto.com.au or call 1800 069 569 to be connected through to your local Monsanto representative.

www.monsanto.com.au

Monsanto Australia

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