

# Insecticide Resistance Management Strategy 2023/24

Best practice product windows and use restrictions to manage insecticide resistance in insect pests of Australian cotton

**INCREASING**  
**SELECTIVITY**  
**ON BENEFICIALS & BEES (TABLE 5 CPMG)**  
**DECREASING**

STAGE 1	STAGE 2 15 Dec (CQ 1 Nov)	STAGE 3 15 Jan (CQ 1 Dec)	STAGE 4 15 Feb (CQ 1 Jan)
<b>Helicoverpa viruses</b> (Gemstar®, Helicovex®, Vivus®) Group 31			
<b>Pirimicarb</b> Group 1A (avoid consecutive usage) <span style="float: right;">Note 1</span>			
<b>Paraffinic oil</b> Group UNM			
<b>Pyriproxyfen</b> Group 7C Regional 30 day window			Use an alternative from open cotton <span style="float: right;">Note 5, 6</span>
<b>Sero-X®</b> Group UNE			
<b>Etoxazole</b> Group 10B			
<b>Buprofezin</b> (Applaud®) Group 16			Use an alternative from open cotton <span style="float: right;">Note 5, 8</span>
<b>Chlorantraniliprole</b> Group 28 (max 4x Group 28 per season)			
<b>Afidopyropen</b> (Versys®) Group 9D			
<b>Spinetoram</b> (Success Neo®) Group 5			
Start date = canopy closure	<b>Diafenthiuron</b> Group 12A <span style="float: right;">Note 4, 5</span>		
<b>Pymetrozine</b> Group 9B			
<b>Indoxacarb</b> Group 22A			Jan 31
<b>Dimpropridaz</b> (Efficon®) Group 36			
<b>Cyantraniliprole</b> (Exirel®) Group 28 (max 4x Group 28 per season)			
<b>Spirotetramat</b> Group 23 <span style="float: right;">Note 5, 7</span>			
<b>Flonicamid</b> (MainMan®) Group 29			
<b>Abamectin</b> Group 6 (max 3x Group 6 per season)			
<b>Emamectin</b> Group 6 (max 3x Group 6 per season)			
<b>Propargite</b> Group 12C			
<b>Amitraz</b> Group 19			
<b>Sulfoxaflor</b> (Transform®) Group 4C <span style="float: right;">Note 2</span>			
<b>Fipronil</b> Group 2B		<i>Do not apply to flowering crops</i> <span style="float: right;">Note 12</span>	
<b>Neonicotinoids</b> (acetamiprid, clothianidin, dinotefuran, imidacloprid, thiamethoxam) Group 4A <span style="float: right;">Note 2, 5, 11, 12</span>			
<b>Acetamiprid + Emamectin</b> Group 4A + Group 6			Consider each group's risk
<b>Phorate 1B</b> <span style="float: right;">Note 1</span>	Feb 1 (avoid early season use)		<b>Carbamates</b> (methomyl, thiodicarb) Group 1A <span style="float: right;">Note 9</span> <b>OPs</b> (chlorpyrifos, dimethoate) Group 1B <span style="float: right;">Note 1</span> <b>Synthetic pyrethroids</b> Group 3A <span style="float: right;">Note 5, 10</span>

# How to use the IRMS

The IRMS aims to reduce the chance that highly mobile pests would be repeatedly exposed to the same insecticide group by limiting the timing of insecticide availability. The strategy accommodates two different growing seasons: southern Queensland through to southern NSW, and Central Queensland (to account for early planting and quicker crop development). Dates for both seasons are listed against each stage. Specific start &/or end dates are listed for individual insecticides and miticides that start or end outside window boundaries. All windows start at 12 am. A specific IRMS has not yet been developed for cotton regions in northern Australia. Apply the IRMS principles in these regions.

See CottonInfo's website  
for the latest resistance  
monitoring results.



Products are listed in order of decreasing selectivity. For all pest species, aim to use the most selective option, delaying or avoiding the use of broad-spectrum insecticides.

## Use restrictions

The colours of insecticide windows represent the maximum number of applications per crop per season for any given product or product group. Note: some products in the 'avoid repeated use' may have a maximum application number stated on the label.

No more than 1 application per season

No more than 2 applications per season

No more than 3 applications per season

Avoid repeated applications of same group

Additional restrictions are included to the right of the table; these link to the specific footnotes below.

## IRMS notes:

**Mirids:** No resistance issues identified, but insecticides targeting mirids also select for resistance in secondary pests (aphids, mites & SLW).

**Aphids:** Rapid increase in resistance to pirimicarb/dimethoate and field failures are now likely. **High level of caution recommended.**

1. Widespread early season dimethoate use has caused catastrophic pirimicarb resistance in aphids leading to field failures. Do not use pirimicarb and dimethoate in the same field. If phorate is applied at planting DO NOT use pirimicarb or dimethoate as an early season spray due to cross resistance.
2. Failures of neonicotinoids against aphids have been confirmed. DO NOT follow a neonicotinoid seed treatment with a foliar neonicotinoid when aphids are present. If there is an alternative do not follow a neonicotinoid with sulfoxaflor.

**Mites:** There are existing resistance issues, two spotted mite resistance to diafenthiuron is emerging and mite control options are limited. **High level of caution recommended.**

3. Addition of abamectin to mirid sprays has caused high level resistance in mites. Base miticide decisions on thresholds only.
4. Emerging resistance to diafenthiuron has been identified. Do not use more than 2 applications per season and avoid consecutive use (refer to label).

**Silverleaf whitefly:** Pyriproxyfen resistance stabilised but emerging resistance in other SLW products. **Continue adhering to pyriproxyfen window and IRMS recommendations for all SLW products.**

5. Refer to CottonInfo SLW fact sheet [www.cottoninfo.com.au/publications/insects-managing-silverleaf-whitefly-australian-cotton](http://www.cottoninfo.com.au/publications/insects-managing-silverleaf-whitefly-australian-cotton) for additional guidance.
6. Resistance to pyriproxyfen is low but widespread. To avoid complete loss of product efficacy, adhere to the 30 day regional window and DO NOT use more than 1 application of pyriproxyfen per season.
7. Spirotetramat resistance has increased and been detected in most regions. The dominant target site resistance mechanism means resistance can develop rapidly and reversal of resistance is unlikely. Avoid using spirotetramat more than once per season unless targeting mealybugs.
8. Unless targeting mealybugs, buprofezin usage should not exceed one application per field.

**Helicoverpa armigera:** Resistance stabilised. **Continued adherence to IRMS recommended.**

9. Additional applications can be made if targeting *Helicoverpa* moths using Magnet®.
10. High SP resistance is present in *Helicoverpa armigera* populations. Expect field failures. Low resistance is present in SLW.

**Thrips:** Not included in resistance monitoring program in 22/23. **Continued adherence to IRMS recommended.**

11. Imidacloprid (neonicotinoid) resistance in cotton seedling thrips is likely. If resistance is suspected, phorate is an appropriate at-planting alternative. Consider non-neonicotinoid alternatives for first foliar spray.

## Statement on bees

12. Refer to label statement about bees.

ALWAYS FOLLOW LABEL DIRECTIONS.

CONSIDER IMPACT ON BENEFICIALS & BEES (Table 5 in Cotton Pest Management Guide).

IMPLEMENT AN IPM STRATEGY INCLUDING GOOD FARM HYGIENE AND CONTROL OF OVERWINTER HOSTS.

PUPAE BUST CONVENTIONAL COTTON CROPS AFTER HARVEST.