

# 2009 – 2010 Insecticide Resistance Management Strategy for Cotton

## Northern Regions: Central Highlands, Dawson and Callide Valleys

	Stage 1	Stage 2 Nov 15	Stage 3 Dec 15	Stage 4 Jan 15	Stage 3 Feb 1	Post-Harvest
See Cotton Pest Management Guide for suggested thresholds		Maximum 2 consecutive sprays of any one insecticide group, alone or in mixtures				
Helicoverpa	FOLIAR <i>Bacillus thuringiensis</i> (BT) -on conventional and Bollgard cotton but EXCLUDING any refuges					Sprayed conventional cotton crops defoliated after 9th March are more likely to harbour insecticide resistant diapausing <i>Helicoverpa armigera</i> pupae and should be pupae busted as soon as possible after picking and no later than the end of August
	HELICOVERPA VIRUSES (GEMSTAR, VIVUS) avoid season long use of low rates					
	CANOPY OIL , ABRABE - No restrictions					
	AMITRAZ - Max of 4					
	ENDOSULFAN - see label for restrictions					
	AFFIRM					
	ABAMECTIN - for <i>H. punctigera</i> , Max of 2, including mite sprays					
	ALTACOR - Max of 3					
	Dec 1 STEWARD* - Max of 3 Feb 15					
	PYRETHROIDS & PYRETHROID MIXES - PBO, Max of 2 - TALSTAR sprays, Max of 2, including mite sprays.					
	CHLORPYRIFOS - Max of 3 including mixtures					
	Other OPs - Max of 3 including mixtures					
	METHOMYL - Max of 4, carbamates Including mixtures					
	THIODICARB - Max of 4 carbamates Including mixtures					
	* September 15 <sup>th</sup> No use of Steward or Tracer on chickpeas after this date					
PRODIGY - Max of 3					Registered but currently commercially unavailable insecticides	
INTREPID - Max of 1 at any rate including mite sprays						
TRACER* - Max of 3						
CHLORPYRIFOS METHYL- Max of 3 including mixtures						
PROFENOFOS - Max of 3 including mixtures						



	Stage 1	Stage 2 Nov 15	Stage 3 Dec 15	Stage 4 Jan 15	Stage 3 Feb 1	With-holding Period	Post-Crop Management
See Cotton Pest Management Guide for suggested thresholds	1. Maximum 2 sprays per mode of action group, including mixtures, unless otherwise indicated below. 2. Rotate chemistry. No consecutive use of the same group 3. Failures with neonicotinoids against aphids have been confirmed. Do not follow a seed or planting insecticide with the first foliar spray from the same group. <b>ALTERNATE</b>					Nil See label Nil See label 91 days 28, 10 & 5 days 21 days 28 days 28 days 14 & 21 days 5 days Nil See label 70 days 28 days 14 days 28 days 21 days 20 days 28 days 14 days 28 days	 <b>STOP</b> Over resistant populations by practising good farm hygiene (see IPM Guidelines)
Aphids	Canopy Oil - No restrictions						
	CRUISER GAUCHO / GENERO AMPARO } Seed dressing						
	CONFIDOR } Finish date determined by long withholding period						
	ACTARA, INTRUDER, SHIELD						
	PIRIMICARB Use when beneficial conservation is important						
	FULFILL - Crop must be actively growing Finish date determined by crop growth (see label)						
	ENDOSULFAN - see label for restrictions						
Aphids and Mites	DIMETHOATE & OMETHOATE						
	CHLORPYRIFOS - METHYL see Helicoverpa strategy						
	ALDICARB In furrow at sowing						
	PHORATE in furrow at sowing or side dress						
	CHLORPYRIFOS - See Helicoverpa strategy						
Mites	Start date determined by canopy closure (see label) PEGASUS						
	PROFENOFOS - See Helicoverpa strategy						
	PARAMITE - Max of 1						
	ABAMECTIN - Max of 2, including <i>H. punctigera</i> sprays						
SLW Mirids	Don't use pre squaring PROPARGITE						
	TALSTAR - Max of 2, including Helicoverpa sprays.						
	INTREPID - Max of 1 at any rate including Helicoverpa sprays						
Refer Silverleaf whitefly Threshold Matrix and associated Notes							
<b>WARNING</b> Avoid early season omethoate/dimethoate use as it may compromise their efficacy and pirimicarb efficacy against aphids as well as flare other pests including silver leaf whitefly.							



Chemical Groups for Rotation	Effective against		
	Helicoverpa (14)	Mites (7)	Aphids (7)
Group. CHEMICAL: SOLD AS			
16A. METHOXYFENOZIDE (IGR): PRODIGY			
11C. BT: DIPEL, COSTAR, MVP2, etc			
VIRUS. Helicoverpa virus (NPV's: GEMSTAR, VIVUS)			
OTHERS. CANOPY, ABRADE			Canopy
28. RYNAXYPYR: ALTACOR			
5A. SPINOSAD: TRACER			
3A. PYRETHROID: BULLDOCK, DECIS, DOMINEX, FASTAC, KARATE, ETC			
3A. PYRETHROID (BIFENTHRIN): TALSTAR		Suppress only	
19A. AMITRAZ: AMITRAZ, OVASYN etc			
2A. ENDOSULFAN: THIODAN etc.			
22A. INDOXACARB: STEWARD			
6A. AVERMECTIN: EMAMECTIN BENZOATE (AFFIRM)		Suppress only	
6A. AVERMECTIN: ABAMECTIN (WIZARD etc)	<i>H. punctigera</i> only		
1A. CARBAMATES: METHOMYL (NUDRIN, LANNATE etc), THIODICARB (LARVIN etc)			
1A. CARBAMATE At planting: ALDICARB			No cross-resistance
1A. CARBAMATE Foliar: (PIRIMICARB) PIRIMOR, APHIDEX			
1B. CHLORPYRIFOS (+ methyl) (OP): CHLORFOS, LORSBAN, PREDATOR, (RESCUE, DIPLOMAT) etc	No cross resistance		
1B. PROFENOFOS (OP): Curacron, Sabre etc	No cross resistance		
1B. Other OPs: At Planting or side-dress: THIMET, PHORATE Foliar: DIMETHOATE, OMETHOATE, PARATHION METHYL.			
13A. CHLORFENAPYR: INTREPID			
12B. DIAFENTHIURON: PEGASUS			
4A. NEONICOTINOIDS (IMIDACLOPRID, THIAMETHOXAM, ACETAMIPRID & CLOTHIANIDIN): Seed treatments: GAUCHO, GENERO, AMPARO, CRUISER Foliar: CONFIDOR, ACTARA, INTRUDER, SHIELD			
9A. PYMETROZINE: FULFILL			
2B. DICOFOL: KELTHANE, MITIFOL			
14A. PROPARGITE: COMITE, BULLET			
10A. ETOXAZOLE: PARAMITE			

Cross resistance in Aphids - Treat Pirimicarb and group 1B as one chemical group. Do not use first foliar spray from this group if seed or furrow treatment from this group.

Do not use first foliar spray from group 4a if seed /furrow treatment from this group

### Key Changes

- Altacor windowed:  
Northern regions - Nov 15 - Feb 1.  
Central and southern regions: Dec 1 - Feb 15.
- Incorporation of the Darling Downs with the Central regions.
- New Southern Region IRMS incorporating Macquarie, Lachlan and Murrumbidgee.
- Northern: Steward moved 15 days further into the season, Dec 1 - Feb 15.
- Central: pyrethroids moved 1 month further into the season, Jan 15 - end.
- Shield (clothianidin) added to Neonicotinoid group
- Chemicals registered but not commercially available identified.

### Key Guidelines

- Pupae bust cotton and alternative crop residues as soon as possible.
  - Use recommended thresholds for all pests.
  - Monitor 1st position fruit retention at flowering.
  - Avoid using broad spectrum sprays.
  - Monitor pest and beneficial populations.
  - Avoid continuous sprays from same group.
  - Do not respray apparent failure with same group.
  - Control weeds on farm which are hosts for pests.
  - Comply with any insecticide use restrictions according to label.
- For more detailed information see web page:  
[http://www.cottoncrc.org.au/content/Industry/Publications/PestsandBeneficials/Insect\\_Resistance\\_Management.aspx](http://www.cottoncrc.org.au/content/Industry/Publications/PestsandBeneficials/Insect_Resistance_Management.aspx)

Trouble shooting: A TIMS sub-committee has been established to arbitrate in cases where individuals, groups or regions expect to have difficulties following the strategy guidelines. It includes representation from: CSIRO; Industry and Investment NSW; Department of Employment, Economic Development and Innovation Qld; Cotton Australia.

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