

Bollgard II® Resistance Management Plan – end of season issues

Bollgard II® Crop - Resistance is a heritable trait which can be passed on from one generation to the next. Any surviving larvae will have been exposed to a sub lethal dose of Bt, so these survivors may have some level of resistance.

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

Trap crop

In cooler cotton regions a key method of controlling resistance in *Helicoverpa* is cultivating the soil to kill overwintering pupae. In CQ, *Helicoverpa* produced late in the season do not overwinter in the soil. Instead they emerge about 15 days after they pupate & continue to breed in lower numbers throughout the winter. As such pupae busting of Bt cotton isn't an effective resistance management tool & instead, a trap crop is required.

- Trap crops** should be most attractive after the cotton has cut-out so that any moths emerging from Bollgard II cotton fields at the end of the season will lay their eggs in the Trap Crop.

- To ensure that no larvae or pupae survive, destruction of the **trap crop** must occur within 2 to 4 weeks after defoliation of Bollgard II cotton (slash & pupae bust – full soil disturbance to a depth of 10cm across the entire trap crop area).

- All **trap crop fields** sown to cereals must be inspected by the TSP before sowing commences to ensure that pupae busting has occurred.

Refuge

A well managed refuge is a source of susceptible moths that have not exposed to Bollgard II®, & therefore, are less likely to carry resistance.

- Refuge fields** do not have to be pupae busted and should preferably be left uncultivated until the following October. This is to allow maximum emergence of any late pupae from refuges.

- Soil disturbance in refuge fields** should not occur until after soil disturbance on Bollgard II® fields.

- Harvest of **cotton refuges** should only be carried out after Bollgard II lint has been removed.

- Harvest of **pigeon pea refuges** should only be carried out after Bollgard II lint has been removed.

- Corn refuges** may be harvested after complete cob maturity.

- Sorghum refuges** may be harvested after complete head maturity.

- Unsprayed cotton refuges** should be left for 2 weeks after harvest to allow emergence of any pupae.

What is adequate soil disturbance?

Soil disturbance is changing the structure of the soil so that it destroys the pupal chamber & prevents pupa from emerging.

- The soil needs to be fully shattered to a depth of 10cm across the field. If you can still dig up slabs of dirt in one piece then it is inadequate. The soil should crumble easily.

- Cultivation operations available for the control of overwintering pupae by *Peta Slack-Smith, Bruce Pyke & Murray Scholenfish (from 1999 Lower Namoi CottonTale)*

Control Level	Operation	% moth survival	Soil Condition
G O O D	Chisel plough (on flat)	0	Dry
	Row blade plough (on flat)	15	Wet
	Centre busting & cultivation with lillistons	12	
	Hydraulic stalk puller & lillistons	16	Mod. Wet
F A I R	Disced & chiselled twice	4	?
	Full disturbance- multi tyne planter - wheat	35	Mod. Wet
	Aer-way cultivator	44	
	Centre busting & lillistons	42	Wet
Sundance stalk puller & lillistons	42		
P O O R	Centre busting	72	Mod. Wet
	Minimum disturbance planter - wheat	95	
	Eliminator plus disc attachments	100	Wet
	Full disturbance multi tyne planter - wheat	54	
	Minimum disturbance planter - wheat	100	
Rotary harrows (on flat)	92	Dry	

Thanks to Toby Makim (Accounts & Stewardship Specialist, Monsanto) for assistance with this article. For more information contact your TSP or Toby on 0400691881.

Those interested in attending the centre pivot lateral move workshop (Emerald 12 May, Theodore 13 May) need to contact Lance within the next two weeks in order to qualify for the Farm Ready refund of cost (\$330).

Cotton Snapshot Competition 2009

Great prizes to be won!!

Photographs will be on display and winners announced at the Cotton Trade Show in May

Categories for entry are...

A Natural Environment/ Climate Change

B Fashion and/or Fabric

C Science in Action

D Under 18's (any cotton subject)

How to enter: Simply submit your photograph, along with a completed entry form (below) to:

Cotton Snapshot Competition c/o CRDC

PO Box 282, Narrabri, NSW, 2390

Entries Close: 15th May 2009 Contact Susan

susan.maas@dpi.qld.gov.au for an entry form.