



Watchouts for the fallow period – resistance management and cotton bunched top prevention.

Resistance management:

The Bollgard II® Resistance Management Plan (RMP) has been designed to reduce the rate of development of resistance to the two *Bacillus thuringiensis* (Bt) proteins expressed by Bollgard II cotton plants.

To achieve this the components of the RMP are aimed at minimising the frequency in the pest population of individuals carrying the resistance genes to either or both proteins (Cry1Ac and Cry2Ab), by:

- ▶ Minimising the exposure of *Helicoverpa* spp. to the Bt proteins
- ▶ Providing a population of susceptible individuals
- ▶ Removing resistant individuals at the end of the season

The control of Bollgard II volunteers and ratoon cotton is a key component of the RMP. These are seeds or plants from the previous crop that have survived spraying, cultivation and/or the winter to germinate and regrow in the following season.



Emergence of volunteer cotton

Unless they are controlled and removed, volunteer and ratoon cotton plants may impose additional selection pressure on *Helicoverpa* spp. to develop resistance to the Bt Cry 1Ac and Cry 2Ab proteins.

Growers must make all reasonable efforts to remove volunteer and ratoon plants, as soon as possible from all fields, including:

- ▶ Fallow areas
- ▶ Bollgard II crops
- ▶ Conventional cotton crops
- ▶ All refuges.

The presence of Bollgard II 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.

Cotton Bunchy Top:

Cotton Bunchy Top (CBT) is a viral disease that is spread by the cotton aphid (*Aphis gossypii*) which can have a substantial impact on cotton yield. The annual disease surveys conducted during the 2010/11 season by industry plant pathologists have shown that CBT is highly prevalent in many cotton crops and volunteers late in the season. Levels of up to 70% infestation have been reported, which result in a severe yield reduction.

One of the management considerations for controlling this disease is to eliminate plant hosts during the winter fallow period. CBT can only survive on a living plant host. If we can introduce a break in the presence of these plant hosts between this cotton season and the next, the risk of CBT surviving will be significantly reduced.



Advanced poorly controlled cotton volunteers

Cotton ratoons and volunteers are an obvious host for CBT. It is crucial these overwintering hosts are removed as soon as possible, and resistance management plans are followed, not only within cotton and fallow fields but also along roadsides, head ditches, tail drains, riparian zones and the like.

Controlling volunteers and ratoons will alleviate the problem but it may also force the virus-carrying aphids onto other plant hosts. Some of the key weed hosts for the cotton aphid include:

- ▶ Milkthistle
- ▶ Turnip weed
- ▶ Marshmallow
- ▶ Deadnettle.

In summary, good on-farm weed control is essential in reducing the green bridge for the virus and its vector; the cotton aphid. By planning for good crop destruction, you can reduce ratoons. Control volunteers as soon as possible after emergence to maintain good general weed control.

For more information please refer to Cotton Catchment Communities CRC update on Cotton Bunchy Top.

For more information on volunteers and ratoon cotton please refer to the volunteer cotton management guide at www.monsanto.com.au or call your Regional Business Manager.

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