

## **Avoiding the Whitefly Problem**

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#### **Introduction**

During 2008 – 09 silverleaf whitefly (SLW) was a significant pest in the latter part of the season in NSW cotton growing regions for the first time. Previously it had only been significant in Central Queensland, St. George and the Darling Downs.

SLW was first recorded in Australia in 1994 and quickly became dispersed across northern Australia. A major outbreak of SLW occurred in Emerald in 2001 – 02, followed by St. George in 2004 – 05 and the Downs in 2005 – 06. Now they are also endemic to the MacIntyre, Gwydir and Lower Namoi regions.

Whiteflies are a warm season pest, thriving under hot temperatures which allow more rapid development and population growth. They have not reached pest status from the Upper Namoi southward because these areas are usually too cool to support more than a few generations. In the warm areas they begin to cause pest management problems after about seven or eight generations.

One spray for whiteflies costs \$70/ha to \$120/ha depending on whether Pegasus or Admiral is used. When they are not controlled the whiteflies produce a honeydew which is more difficult to remove during ginning than the honeydew of aphids. They can potentially cause quality downgrades so control is essential.

Prevention is better than cure. Dr. Richard Sequiera's research at Emerald describes action thresholds for spraying whiteflies, but at all his presentations Richard emphasizes the need to manage crops to minimize the potential for whiteflies to reach pest status.

At St. George in 2008 – 09 whiteflies needed control at most locations with Pegasus or Admiral, but in other areas were completely absent. The absence of whiteflies was consistently associated with simple integrated pest management principles, all aimed at preventing or avoiding a whitefly problem rather than addressing it after it has occurred.

#### **Avoidance of hard or broad spectrum chemistry**

This is an important principle of integrated pest management and when specific and effective insecticides are available, such as in the cotton industry, the easiest to adhere to. Old broad spectrum insecticides like

pyrethroids and organophosphates like profenofos (curacron) and dimethoate should not be used for any pest, even late in the season. They are not effective, except on beneficial insects which we desire to preserve.

### **Early season use of endosulfan, Canopy and Shield on sucking pests**

Endosulfan is a registered whitefly suppressant in cotton while paraffinic oil is a registered whitefly suppressant in vegetables. Canopy is also registered for the suppression of sucking pests in cotton and we have been adding it to all insecticide sprays on both conventional and Bollgard crops for years. I regard Canopy as a dual purpose insecticide/adjuvant.

Endosulfan is certainly not the most effective larvicide on the market but it is cheap and gives very satisfactory larval and sucking pest control in conventional cotton early in the season when more damage can be tolerated. We might apply two ground rig and two aerial sprays before Christmas.

Shield is the new sucking pest insecticide from Sumitomo. It is a neonicotinoid like Confidor and gives very satisfactory suppression of all sucking pests including whiteflies.

### **A mix of conventional and Bollgard cotton**

Except for one late planted crop there were no whiteflies in conventional cotton at any time in the season. This was almost certainly due to their control at very low levels of infestation by one or more of the larvicides used to control *Heliothis*, namely endosulfan, Affirm and Altacor. All three products will suppress whiteflies while Altacor is in fact registered for whitefly control in the USA at twice its larvacidal rate. This same trend for conventional cotton to be free of whiteflies was observed at Mungindi where it occupied over 70% of total acreage.

Bollgard downwind of conventional cotton was also unaffected until very late in the season when the whiteflies first appeared at one site. But with little conventional cotton in the area and very few early sucking pests needing control the majority of Bollgard was untreated throughout November and December and unaffected by drift of conventional insecticides. It became heavily infested with whiteflies on farms where it was the only type of cotton grown and where it was not sprayed with either Canopy or endosulfan for sucking pest control.

Beneficial insects including whitefly predators like the 3 banded ladybird and lacewing larvae were abundant but were unable to prevent whiteflies reaching pest status in unsprayed Bollgard. Therefore beneficials alone will not control whiteflies.

## **Early planting**

Whiteflies are a late season pest. Therefore early planted, and early maturing cotton, is more likely to avoid any whitefly infestation which occurs. Since unsprayed Bollgard is more likely to become infested with whiteflies than sprayed conventional cotton, Bollgard should be planted first whenever there is a mix of the two types. At one St. George location in 2008 – 09 conventional cotton was planted in mid November. It attracted whiteflies late in the season even though the remainder of the farm, about 800 hectares of Bollgard, was free of whiteflies after treatment with endosulfan on 31/12/08. Therefore sprayed conventional cotton alone does not guarantee that the crop will be free of whiteflies. Early planting is also important.

Early cotton is also usually more exposed to thrips as they exit wheat and other winter grasses which are haying off. Substantial thrips damage to early seedlings can occur, but it should be ignored. The crop might appear to be lacking vigour but it will recover and the thrips will predate upon early mites so are an important part of integrated pest management.

## **Complete weed control**

Certain weeds like bladder ketmia and wild turnip species are hosts for whiteflies and other insect pests such as aphids. They should be completely controlled. This is most important for weeds around the periphery of fields because when they are upwind these weeds escape insecticide applications to the cotton crop. Whiteflies also appear to prefer some weeds over cotton so infest them first then migrate to the cotton.

We have a range of herbicides which can be either contact, translocated or residual and are normally placed on the target, compared to insecticides which are mostly ingested and may not hit the target pest. It is realistic to aim for 100% weed control. The herbicides can be used either at the beginning or throughout the season, when growing Roundup Ready Flex. In fact Roundup mixes well with Canopy and endosulfan so we have never had a better opportunity to achieve 100% weed control and avoid whiteflies than we do now.

## **Area wide pest management**

Like most pests whiteflies are most easily controlled when there is cooperation between neighbours. When endosulfan is used pesticide application management plans (PAMPS) are required and although they are

tedious they are worthwhile. According to the latest Cotton Australia statement Bayer will cease making endosulfan at the end of 2010 so we have a maximum of 2 years to enjoy its benefits. In my experience spraying Bollgard with endosulfan by air as late as possible (31/12 in the Balonne Shire), particularly if it has already been used once or twice beforehand, guarantees that we will not have a whitefly problem. Conventional cotton should also be sprayed with endosulfan on the last possible date unless it has already been sprayed with Affirm or Altacor or another endosulfan in the previous 7 to 10 days.

### **Conclusions**

In 2009 pest management in such an advanced industry like cotton should not be a challenge. It is abundantly clear that with Bollgard and conventional cotton and modern conventional insecticides we can grow the most problem free and profitable crop. It is also worth noting the very high value of certain conventional chemistry in our IPM system. It is ironical that it has been available to us because we have been lucky enough to have one of the world's major insect pests in our industry. We should preserve this chemistry at all costs.