

**This Cotton Tale has been developed by Ian Taylor, Richard Sequeira, Paul Grundy and Lewis Wilson.**

## Managing Silverleaf Whitefly (SLW) – Wet conditions, late crops and displaced populations

Whitefly numbers have been increasing in most cotton growing regions during February. However, infestations are variable - some fields recording zero leaves infested while others are 80% infested. Though cool conditions mean fewer generations of whitefly have developed, the regular rainfall has maintained widespread growth of suitable hosts which has probably sustained widespread low whitefly infestations. Now, as these hosts mature and as fallow fields and pastures are sprayed with herbicide it is likely that whitefly are seeking more palatable hosts such as cotton. The migration of SLW from surrounding weeds, sprayed out crop lands or defoliated crops poses an additional challenge for crop managers particularly for those crops already delayed by flooding or wet weather.

Management of whitefly this season will be challenging due to the wide spread of crop maturity both between and within each region. The flooding and inundation that has occurred in both November and again in February means some cotton crops will mature on time, while others may have been set back by as much as six weeks due to flooding/waterlogging and cool overcast conditions.

Temperatures during the last two weeks have remained in the low to mid thirties and hence we expect whitefly numbers to increase in crops and as whitefly continue to migrate from senescing or herbicide treated alternative hosts.

The threshold matrix should be used to guide whitefly management decisions for crops that are on time, or close to it (the day degrees calculator found at <http://CottASSIST.cottoncrc.org.au> can assist with assessing whether crops are maturing on time). Refer to pages 26 - 28 of the 2011/12 Cotton Pest Management Guide for control recommendations using the threshold matrix. This matrix provides an excellent measure of projected population build up and action thresholds for crops that are on time and not subject to mass SLW

migrations from surrounding areas.

## What if my crop is late?

Control of whitefly in later maturing crops is more complex. Whitefly that may occur in these crops are likely to be a combination of both the resident population and those that have dispersed from earlier maturing defoliated crops or sprayed out winter cropping lands. In these instances the threshold matrix **MAY NOT** be an accurate predictor of SLW population build up. Firstly, the day-degrees that a crop accumulates may no longer align well with the matrix if it is late developing due to flood damage. Secondly, the matrix is predicated primarily on SLW populations having built up in the crop without additional mid to late season influxes from surrounding areas. Agronomists and consultants will need to adjust their management strategy to one that accounts for open bolls and honey dew build up as opposed to the direct use of the chart.

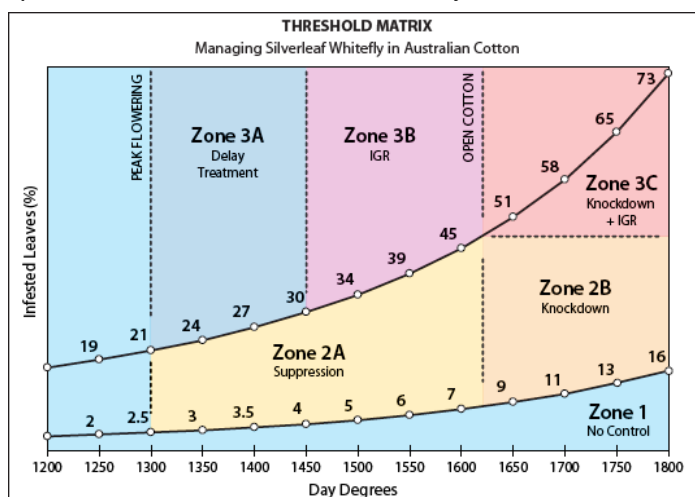
A crop manager faced with these scenarios should aim to avoid honey dew contamination of open bolls. This means that high populations of displaced whiteflies prior to open bolls can be tolerated. The delay of treatment for as long as possible on late crops may also be advantageous as cooler temperatures in March/April will slow whitefly population growth and further reduce their capacity to generate honeydew. **Purposeful treatment delay** also allows more settling time for the likely inward flow of whiteflies before treatment is applied. Treating too early maybe partially ineffective due to further crop re-invasion by adult whitefly as the treatments efficacy declines and hence increases the risk of having to retreat.

For developmentally delayed crops or those fields that suffer influxes control decisions should be primarily based on four factors being:

- 1) Presence of whitefly and open bolls
- 2) Expected time until defoliation leaf drop
- 3) The rate of honey dew accumulation on the crop canopy and lint
- 4) The likely efficacy and residual impact of the chosen insecticide.

Product choices for SLW are primarily limited to knockdowns such as Pegasus (Diafenthiuron) and Pyrethroids (Bifenthrin) or the slower acting IGR's such as Admiral (Pyrproxifen) and Movento (Spirotetramat). Resistance is a threat to these products, so follow the IRMS. Admiral can only be applied once.

Crops with very low whitefly populations, <10% infested, and little honeydew at boll opening should not require control. However numbers and honeydew should continue to be monitored and if there is a sudden increase in whitefly, due to an influx from neighbouring fields control with a knockdown may be



warranted. Crops with moderate to high numbers at boll opening >30% infestation, may require treatment. Treatment options will depend on the origin and numbers of SLW, level of honey dew and rate of change and time left till defoliated leaf drop and relevant product withholding periods (WHP's).

If numbers are moderate to high and defoliated leaf drop is 3 or more weeks away an IGR may be the best control option as Pyrexifen has excellent residual and will mostly prevent the continued build up of resident and immigrant SLW. The Central Queensland experience strongly suggests that Pyriproxyfen (Admiral®) works even better at lower autumn temperatures than it does in summer and is capable of cleaning up dense whitefly populations on late cotton very effectively with a single application. Again, continue to monitor whitefly numbers and honeydew. If adult numbers begin to rebuild a knockdown may be required – use the threshold matrix as a guide.

If the crop is less than 2 weeks from defoliation and an influx of adult SLW occurs, a knockdown type product may provide better value, keeping in mind relevant WHP's. Again monitor honeydew and revise control decisions accordingly. In each scenario, if whitefly numbers are beginning to recover and cause honeydew close to defoliation then consider defoliating a few days earlier. Once defoliant is applied adult whitefly will generally leave the crop and falling leaves will take the nymphs with them.

In terms of monitoring honey dew, it is difficult to determine at exactly what point levels may become problematic once bolls begin to open. In CQ and during later outbreaks on the Darling Downs, honeydew was considered to be nearing levels that maybe problematic when leaves on the lower canopy start becoming heavily speckled with honeydew. If the leaves are at or get beyond this level and develop a honeydew "sheen" then corrective action is required immediately.



*Honeydew sheen on lower leaves indicating corrective action is required*

In some instances a crop will have an earlier and later maturing phase of bolls in the crop. It is important to manage whitefly to reduce the risk of contamination of the earlier bolls. The basic strategies outlined above should be used in relation to the earlier bolls eg, delaying the first treatment as late as possible, but not later than 5% open bolls. However, with ongoing monitoring of whitefly and honeydew as a guide, a second application of an insecticide from a different group may be required. Earlier defoliation may also be beneficial.



*With heavy honey dew contamination and the appearance of sooty mould on bolls, growers should delay harvest.*

If, despite efforts to manage whitefly, crops end up with significant honeydew contamination – e.g. lower bolls dark with sooty moulds - then picking should be delayed as long as possible to expose the lint to maximum weathering, especially rainfall, which will help reduce honeydew levels. The long range forecast indicates a high probability of rainfall late February and at various intervals throughout March. In general however the costs of preventing the problem will be far less than the potential grade penalties for weathered lint – so proactive management is the best option.