Cotton Catchment Communities CRC
Queensland Government Department of Primary Industries and Fisheries

COTTON *TALES*

Central Queensland

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2008/09
No.15
27/01/09

Day Degree accumulation to the 26Jan 09

District		Season 08/09	Season 07/08	Season 06/07	Cold Days	Hot Days
Emerald	From 15/09/08	1858	1804	1828	2	26
	From 31/10/08	1347	1238	1299	0	26
Theodore	From 25/09/08	1683	1651	1629	5	34
	From 06/11/08	1234	1116	1161	1	30

Cotton Industry BIG DAY OUT – 26 Feb 09 @ Keytah
Let me know by 30 Jan if you are interested – we are trying to organise a charter flight.

Whitefly Monitoring

B. tabaci (Whitefly) numbers have been increasing in CQ. Zara Ludgate (QDPI Graduate entomologist) has been sampling nymphs for resistance testing & has used a small portion of this sample to provide some data on species & parasitism.

	% SLW	%GHW	% Parasitism
Emerald site 1	95%	5%	40%
Emerald site 2	100%	0%	75%
Biloela	100%	0%	25%
Theodore	70%	30%	15%
SLW = Silverleaf whitefly; GHW = Greenhouse whitefly			

It can be assumed that all B. tabaci from this region are SLW & not eastern Australian native, although there was a particularly high proportion of GHW in Theodore. The high levels of parasitism (up to 75% in Emerald), could be a reflection of the low insect pressure early in the season, which has reduced the number of mirid sprays, ensuring beneficial numbers remain high. Samples collected from Emerald Site 1 & Biloela had signs of other beneficials feeding on whitefly indicated by large numbers of empty pupal cases with no emergence holes. In Biloela there was high levels of predators such as the apple dimpling bug feeding & with the cloudy weather, E. hayati (SLW parasitoid) were visible, on a lot of leaves & didn't fly off.

Don't forget the SLW matrix can assist with spray decisions. Where low populations exist prior to open cotton, an economic & low risk control option such as diafenthiuron (Pegasus®) can be considered. However for higher infestations, an application of an IGR between 1450 & 1650 day degrees is recommended. It is important to consider that IGRs have a lag phase of at least 2 weeks from application & that they are more effective on populations that have not moved into an exponential growth phase. Delaying application beyond 1650 DD & > 50% infested leaves (> 2 adults/leaf) could result in yield loss, &/or lower efficacy of the IGR, substantial lint contamination. Lint contamination is of particular concern as it could potentially damage the good reputation of Australian Cotton.

ENSURE ONLY A SINGLE APPLICATION OF ADMRIAL® OCCURS WITHIN A SEASON.

Timing Of Last Irrigation & Defoliation

(For more information see WATERpak p93)

The final irrigation needs to be timed to ensure that boll maturity is completed without water stress, with the aim to be at refill point at time of defoliation. Once a boll is 10-14 days old, the abscission layer to cause boll shed cannot form so that late water stress (beyond cut out) does not significantly reduce boll numbers. However, fibre development (quality and yield) can be affected by late water stress.

End of season water requirements can be estimated from the date of the last effective flower (4 Nodes Above White Flower). The last harvestable bolls take 600 to 650 day degrees to reach maturity. Crop water use during this period will vary, at the time of first open boll, water use may be 5-7 mm/day, & may decline to around 3-4 mm/day prior to defoliation. Don't forget to apply a rainfall efficiency of 40-50%, ie. if 20mm of rainfall is measured, assume only 10mm is available to the crop).

The following table shows the details for 2 crops:

	Crop A	**Crop B**
Total Fruiting Branches	13	13
% Open Bolls	25-30%	0%
Nodes above cracked boll (NACB)	9	13
Days to Defoliation (4NACB)	(9-4)x3=15	(13-4)x3=27
Estimated daily water use till defoliation	5mm/day	5.5mm/day
Total Water Requirement	75 mm	149 mm

Assume soil refill deficit is 70mm.

- Crop A: Decision to irrigate will depend on the capacity of the crop to extract moisture below its normal refill point. If the crop can extract to 90mm & there is 35mm (half the profile) of available water still in the profile, irrigation may not be necessary. If the crop cannot extract below 70mm, irrigation would be necessary (even if there is 35mm left in the profile).
- Crop B: Will require close to 2 full irrigations.

Determining Defoliation date:

- The crop can be safely defoliated after 60 – 65% of the bolls are open.
- If a boll can be cut easily, it is presumed to be mature. The crop should not be defoliated until <2% of bolls are immature.
- It takes about 42 day degrees for each new boll to open on each fruiting branch. In warm, sunny conditions this is about 2-3 days/node, however, mild & overcast weather will slow opening.
- Defoliation generally occurs at 4 Nodes Above Cracked Boll (NACB). Defoliation time can be calculated using

  Days to defoliation = (total NACB – 4) x 3