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

COTTON *TALES*

Central Queensland

Susan Maas ☎ 07 49837403 🖷 07 49837459 💻 susan.maas@dpi.qld.gov.au
Lance Pendergast ☎ 07 49837416 💻 lance.pendergast@dpi.qld.gov.au

2008/09
No.03
07/08/08

0708 Cotton Season Summary

With hail in October and a large amount of rain, cloudy weather &, of course, flooding in December & January, 07/08 will certainly be remembered as a challenging cotton season. The cooler weather from the extended cloudy periods is evident in the day degree data.

Day Degree accumulation to the 30th April 08.

District	Season 07/08	Season 06/07	Season 05/06	Average	Cold Days	Hot Days
Emerald from 15 Sept 07	2939	3148	3478	3163	5*	24*
Theodore from 25 Sept 07	2741	2938	3179	2826	14#	26#

**Average Emerald (6 cold days & 62 hot days)*
#Average Theodore (9 cold days & 41 hot days)

In total 4,554 ha of cotton was picked in CQ, 2,852 ha from Central Highlands & 1,702 ha from Dawson. There were 19,233 bales ginned in Emerald and 14,688 bales ginned at Moura. Based on these figures average valley yields were:

- Emerald: 6.74 bales/ha (2.73 bales/ac)
- Dawson: 8.63 bales/ha (3.49 bales/ac)

Helicoverpa management in chickpea

One helicoverpa larvae, surviving from hatchling to pupa, will consume 2g of chickpea grain. This data has been used to develop economic thresholds for Helicoverpa control.

- Use a beatsheet to sample
- Very small larvae are not used in threshold calculations as they are difficult to assess & will be counted as smalls at the next count.
- Adjust number of small larvae for natural loss from disease, predation etc (30% loss) using:

$$\text{Larvae per m}^2 = \frac{(\text{small larvae} \times 0.7) + \text{medium larvae} + \text{large larvae}}{\text{Row spacing (m)}}$$

Calculate potential crop loss ($/ha):

$$\text{Yield loss (\$/ha)} = \frac{\text{Avg. larvae/m}^2 \times 2.0^{\#} \times \text{chickpea price (\$/t)}}{100}$$

(#2.0g consumed by each larva)

The value of crop loss caused by Helicoverpa *larvae in chickpea, for a range of larval densities and grain prices = breakeven cost of control (1:1 benefit:cost).*

Chickpea Price ($/t)	Value of crop loss ($/ha)				
	1 larva/m^2	2 larva/m^2	3 larva/m^2	4 larva/m^2	5 larva/m^2
300	6	12	18	24	30
400	8	16	24	32	40
500	10	20	30	40	50
600	12	24	36	48	60
700	14	28	42	56	70

This table is a guide as to the per hectare 'break even' cost of control measures.

In deciding to spray, you need to consider the benefit:cost ratio. If your preferred benefit:cost ratio is 1.5 to 1 you wouldn't initiate control measures until you save $1.50 in crop yield for every $1 you spend on the control.

If your cost of control is $24 per hectare, & you are using a 1.5:1 benefit:cost ratio, you would want your saving in crop yield to be $36 per hectare before you commenced spraying. Based on current market price and sampling, you can determine when the infestation justifies control.

Yield loss does not occur until larvae are feeding on pods at setting, filling or maturing. Control is rarely warranted during flowering unless targeting small larvae that will be medium-large by pod set.

For more information see 'Helicoverpa management in chickpea" brochure available on the DPI&F website.

Helicoverpa management in wheat

There have also been some inquiries as to Helicoverpa thresholds for wheat. *Helicoverpa armigera*, are frequently found in winter cereals but usually do not warrant control. Correct identification is important as Helicoverpa & armyworm can both occur in cereals, & management differs for each species.

How much damage can Helicoverpa cause to cereals?

There is currently no data from cereals on which to base this decision, but in the past extrapolation from the old sorghum damage value (1.5 g grain loss per larvae) has been used as a guide. To put this into perspective, chickpea is 2.0g/larvae, mungbean is 3.5g/larva and the sorghum estimate has recently been revised upwards from 1.5 to 2.4g/larva. Using the old sorghum value (1.5g/larva) is not unreasonable & may be conservative (low), but it provides sound guidance for decision-making. It should also be remembered that larval damage is irrespective of yield potential of the crop.

Value of crop loss caused by Helicoverpa larvae based on estimated consumption of 1.5 g per larva, for a range of larval densities and grain prices = breakeven cost of control (1:1 benefit:cost).

Cereal price ($/t)	Value of crop loss ($/ha)*			
	4 larvae/m^2	6 larvae/m^2	8 larvae/m^2	10 larvae/m^2
250	15	23	30	38
300	18	27	36	45
350	21	32	42	53
400	24	36	48	60
450	27	41	54	68

Interpretation is similar to chickpea table above.

Thanks to Melina Miles (QDPI&F) for assistance with both articles.

More information on management of Helicoverpa & armyworm is available on the Beatsheet Blog http://thebeatsheet-ipmnews.blogspot.com/