

SECTION 1  
OVERVIEW

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# A cool change in 2007-08 season

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**M**other nature surprised cotton growers again in the 2007-08 cotton season with some significant variations in climate away from long term averages, including some above average summer rainfall in most cotton growing regions as a result of a 'La Nina' meteorological event.

This was especially evident by the significant summer rainfall event that occurred in central Queensland around Emerald. Here we briefly revise the climatic conditions faced in the 2007-08 summer season.

### Hot temperatures

There is evidence that temperatures above 35°C induce stress that is responsible for reductions in photosynthetic efficiency which, in turn, impacts crop development and lowers yield. If periods of high temperatures are matched with low water availability the stress can be exaggerated and lead to cell membrane damage leading to further yield decline.

The greatest potential for loss is during the flowering period when squares are shed to relieve the stress. If this stress occurs early in flowering the plant is often able to compensate — but when the stress occurs late in flowering the plant will have trouble recovering the losses.

Central and northern growing regions experienced early periods of above average daily temperatures from September 4 through to November 5 assisting crop establishment. When this season was compared with the 2006-07 season and the long term average, the frequency of hot temperature days was significantly less than both.

But Hay and Hillston were subjected to three periods where there were four days or more in a week where temperatures were greater than 36°C.

These occurred in the weeks beginning November 19, December 31/January 7/January 14 and March 10/17.

Overall the maximum daily temperature was below or close to the long term average in all regions. The rain events that occurred throughout the season would have contributed to lowering temperature.

### Cold temperatures

Cold shock in cotton refers to a period when minimum air temperature falls below 11°C. There were very few occasions where there were more than the average cold shocks during the 2007-08 season within critical growing periods.

The exception was Dalby. The week beginning October 22 experienced five days of temperatures below 11°C, and there was an increase in above average number of cold shocks in a week in all regions except Emerald, beginning March 31. Cold temperatures late in the season can be responsible for late boll maturity and can influence effectiveness of defoliation practices.

### Day degrees

Early in the season, above average temperatures gave a positive deviation while the rain events which occurred in the new year resulted in substantial negative deviation. Season totals are shown in Table 1. With the exception of Hay and Hillston, all regions experienced fewer day degrees than the average.

### Rainfall

All regions across the cotton growing area received good summer rainfall events, but not all valleys received above average seasonal (September-April) rainfall. These were Bourke (less 28 per cent), Gunnedah (less three per cent) and Narrabri (less 18 per cent). All other growing regions received above average seasonal rainfall, varying from 2.5 per cent for Hay to 68 per cent for Emerald above long term seasonal averages.

One point of interest was the significant return to below average monthly rainfall in March immediately following the significant rainfall events in February in regions such as St George, Dalby, Emerald, Goondiwindi, Moree, Narrabri, Warren, Bourke and Gunnedah.

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**TABLE 1: Summary of climate for cotton regions for the 2007-08 season (September to April)**

Region	Day degrees 07-08	Difference from average	Rainfall 07-08 (mm)	Difference from average (mm)
Hay	2436.3	+219.8	249.0	+7.31
Hillston	2511.8	+180.9	288.8	+42.7
Warren	2456.8	-3.4	492.1	+154.4
Gunnedah	2279.9	-112.6	432.2	-17.3
Narrabri	2475.8	-138.2	400.5	-88.6
Bourke	2856.6	-73.8	178.4	-68.8
Moree	2517.1	-124.0	493.4	+49.8
Goondiwindi	2626.4	-95.8	458.9	+10.8
St George	2732.4	-245.3	566.4	+174.3
Dalby	2386.1	-131.2	606.2	+111.1
Emerald	3238.3	-225.8	802.7	+323.3

