

Met site	2008/ 2009	2007/ 2008	Ave DD	Cold Shock 08/09 (ave)	Hot Shock 08/09 (ave)
Benerembah	1818	1850	1664	42 (51.2)	37 (28.8)
Hay	1800	1860	1723	38 (46.6)	38 (33.5)
Hillston	1938	1930	1817	33 (38)	50 (37.3)
Whitton	1828	1840	1660	41 (51.1)	39 (28.4)

Day degree for the period 25th Sept to 9th Mar 2009

Met site	2008/ 2009	2007/ 2008	Ave DD	Cold Shock 08/09 (ave)	Hot Shock 08/09 (ave)
Benerembah	1745	1785	1614	36 (43.3)	37 (28.8)
Hay	1729	1792	1669	34 (33.5)	38 (39.2)
Hillston	1854	1855	1759	28 (31)	49 (37.2)
Whitton	1755	1777	1611	35 (43.3)	39 (28.4)

Day degree for the period 5th Oct to 9th Mar 2009

Day degree (DD) figures above present the image of the 2008/09 season being warm and similar to recent seasons. Yet reality could not be further from the truth. Up until early January DD figures were tracking near average which could only be described as cool (illustrated by the high number of cold shock days). Since then the area has experienced extreme heat combined with strong winds, low humidity & no rainfall (illustrated by the hot shock days). These climatic conditions can have a significant impact on cotton plant growth.

Effect of hot temperatures on cotton growth

Research has shown that yield and quality can be adversely affected by periods of extreme heat. Where daily maximum temperatures are greater than 35°C this significantly decreases availability of assimilates because a plant can no longer maintain its temperature in the optimal range for fruit growth. This results in increased square and boll shedding, and reduced seed number per boll which can all lead to a decrease in yield. Loss of fruit may cause the crop to grow excessively vegetative (rank) following the period of heat stress. Excessive regrowth is not apparent in this region as the heat happened later in the season, during the period of peak flowering and boll fill.

Night temperature is also important for optimum cotton growth. Warm nights (above 26°C minimum) mean that leaf temperature remains high, and respiration remains high consuming stored assimilates that would have been used for additional growth.

Extremely hot temperatures at flowering may also cause direct tissue damage or poor pollination that lead to 'parrot beaking' and during early boll growth may lead to boll death or cavitation.

- Parrot beaked bolls- small bolls with uneven seed numbers between the locks caused by poor pollination/seed set particularly in one lock. High temperatures reduce the viability of the pollen at flowering. This reduces boll size and can reduce yield. However whilst there is know evidence there is speculation that the plant compensates for these bolls by having normal bolls grow bigger.
- Boll freeze, cavitation or boll dangle - Occurs when young bolls die before the abscission layer forms. Fruit hangs on the plant by a dangling piece of tissue. Depending on when this occurs loss of fruit may cause the crop to grow excessively vegetative following these symptoms.

These effects are exaggerated when crops are suffering water stress, as there is less transpiration by the leaves to cool them.

Increases in temperature also reduce the interval between flowering and boll opening, shortening the time to maturity and reducing yield. This may increase final micronaire by limiting the number of late set bolls that can have lower micronaire. Fibre length can also be affected by sustained periods of high temperatures as the time required for fibre elongation is reduced, not allowing for genetic potential for fibre length to be reached.

This cotton tale based on fact sheet titled "2005-2006 seasonal climate analysis", by Dirk Richards & Michael Bange, CSIRO Plant Industry, Narrabri NSW, Cotton Catchment Communities CRC

Upcoming Events

12/3/09	Hillston trial field walk with James Quilty and John Bennett. Starts 8:00am at the Storriers property Riverview
25/3/09	Defoliation field walk, Murrumbidgee (details TBA)
8/04/09	Lachlan & Murrumbidgee annual Cotton Field Day (details TBA)