

Diapause Tool to Identify Helicoverpa Risk

Diapause is the time when a proportion of mature *Helicoverpa* larvae go to ground to pupate and enter a hibernation phase termed diapause or overwintering. This dormancy strategy allows survival over winter months in temperate regions when host plants are scarce and temperatures are generally too low to allow successful development. The triggers to enter diapause are decreasing daylength and temperature, as experienced during late summer and autumn.



Picture of *Helicoverpa* pupa in earthen cell.

The proportion of pupae entering diapause increases from low levels in March, to high levels (almost 100%) by late April. The rate of diapause induction varies from season to season, and region to region. Knowing when diapause is induced is useful for identifying 'high risk' fields i.e. those fields most likely to have diapausing pupae. Overwintering pupae are very important because they contribute to the spring population and may take with them the resistance genes enabling them to tolerate conventional insecticides and the Bt transgenic toxins found in Bollgard II®. It is for this reason that full soil surface cultivation to 10 cm depth (also known as pupae busting) is so important. When carried out properly, pupae busting can reduce survival of overwintering pupae to less than 5%. *Pupae busting is mandatory for all Bollgard II® fields; it is a requirement of the Bollgard II® licence.* Some relaxation of pupae busting requirements has been introduced for conventional cotton fields. *Sprayed conventional cotton crops defoliated after 9 March are more likely to harbour insecticide resistant *H. armigera* pupae and should be pupae busted as soon as possible after picking and no later than the end of August.*

A web tool is available on the Cotton CRC website to help calculate likely rate of diapause induction for your area, based on local climate data. <http://tools.cottoncrc.org.au/cl2/diapause/index.aspx> The tool is also able to compare the results for the current season with the long term average and hotter than average and cooler than average seasons.

Thanks to Dr. Dave Murray, Principal Entomologist, QDPI for this article.

The Benefits of Biodiversity -

Beneficial insects are present in pastures, dry land lucerne, native shelter belts (tree species included Eucalyptus, Acacia, Casuarina and Melaleuca), large river reds along river banks and the travelling stock route adjacent to cotton fields. The beneficial insects are active during the winter months and some used the non-crop vegetation as egg laying sites. Using rare-earth labelling it was demonstrated that beneficial insects moved from the native shelter belt into the cotton fields. This highlights the importance of the non-crop vegetation not only as a source of beneficial insects, but also a breeding site of some beneficial insects.

from the Ecosystem Services Review 14/02/2008)

Researcher's in the field of biodiversity.

David Perovic is a PhD student at Charles Sturt University, in Orange. He is investigating the role of noncrop areas in the conservation of natural enemies in cotton landscapes. With particular focus on landscape complexity, arthropod movement throughout the landscape and modelling landscape connectivity.

Ingrid Rencken recently completed her PhD from the University of New England. The focus of her thesis was the importance of non-crop vegetation to beneficial insects. She now works as a QDPI&F extension officer.

Cotton Industry Awards

The Australian Cotton Industry Awards aim to recognise excellence and encourage the industry's future leaders. The 2008 Cotton Industry Awards are now open for nominations in the following categories:

- Monsanto Grower of the Year
- Cotton Industry Young Achiever of the Year
- CSD ACGRA Researcher of the Year
- Cotton Service to Industry
- AgriRisk Innovative Grower of the Year

Entrants for the Young Achiever, Researcher and Service to Industry Awards can be nominated by self, an industry peer, employer or cotton industry organisation. Nominations for the Grower and Innovator of the Year award can **ONLY** be made by local Cotton Grower Associations - maximum of one for each per CGA. Entries close on Friday 11th April and winners will be announced at the ACGRA Cotton Conference on the Gold Coast in August 2008. Entry forms are available for download from the Cotton Australia website at www.cottonaustralia.com.au

CQ Trial Booklet

I am attempting to collate some of the CQ research from the past few years. If you have on farm research you would like to share, please let me know.