

Hands-on focus for cotton conference

There are high profile international speakers and important industry issues to be debated at the Cotton Conference. But it is primarily a research conference, and this year the organisers have put a lot of effort into ensuring as much interaction as possible between researchers and growers.

The special hands-on research session on the Thursday afternoon (August 12) will allow access to researchers and extension personnel involved in a wide range of research projects.

The hands-on research session will comprise a series of small concurrent group discussions focused on a specific research topic. At each of about 20 different stations, an ACGRA member will introduce researchers and extension team members involved in the research topic, and act as a discussion facilitator.

Each topic discussion will be approximately 30 minutes and each will repeat three times during the session. The format of each topic discussion will vary but will include a facilitated discussion and in some cases practical demonstrations.

Some of the topics up for discussion include:

Managing resistance of aphids and mites

Helicoverpa (heliiothis) and mirids are natural enemies of secondary pests of cotton, such as aphids and mites.

But when chemicals are used to control heliothis and mirids, these natural enemies are destroyed, making the management of aphids and mites much more difficult.

Compounding this problem, both aphids and mites have developed resistance to key pesticides.

The workshop session at the conference will examine an integrated approach to resistance management, with the aim of reducing the total number of insecticide sprays applied against both aphids and mites.

The approach includes:

- Rotation between pesticide groups;
- Limiting the number of applications from any one group;
- Reducing over-winter hosts;
- Monitoring and then spraying only at pest threshold;
- Correct pest identification;
- Optimal stage of crop growth;



GM cotton at the tissue culture stage.

- The use of transgenic varieties;
- Conserving beneficial populations; and,
- Choice of appropriate pesticides.

This special workshop session will emphasise the options available to growers when making spray decisions to control aphids and mites. It will also help growers to identify the main species of aphids and mites found on cotton, as well as their alternative host plants.

Seeking salinity solutions

While irrigation is an indispensable technology, Cotton CRC soils researchers have found that poor water management (such as unsuitable location of reservoirs) can lead to the creation of perched water tables and secondary salinisation.

In some irrigated areas in the northern Murray Darling Basin, point-source salinisation has occurred while in others there is little or none.

This is because waterlogging and salinisation occur as a function of interactions between various biophysical factors (agronomy, geology, hydrology, climate and topography).

Using information stored in Geographic Information Systems (GIS), the interaction between biophysical data layers can be related to where salinisation occurs, and

where these conditions may be met elsewhere.

This information will be revealed at a hands-on research session, where a team of Cotton CRC research and extension personnel will demonstrate the methods and materials that can be used to assess on-farm and district-scale salinity hazards.

Their presentation will also include case studies of the Trangie and Warren districts, and results from salinity hazard mapping.

GM cotton

Genetically modified cotton will step out of the laboratory and into the public arena at the ACGRA Cotton Conference.

Dr Danny Llewellyn, a biotechnology research team leader working with CSIRO Plant Industry in Canberra, will husband the GM technology in a special hands-on research segment.

The aims of the segment are to allow cotton growers and other industry participants to better understand how new GM traits are developed, how genes work and how scientists can manipulate them in the laboratory.

Danny invites cotton conference participants to observe what DNA looks like close up, and possibly have a go at extracting some DNA.

“Come and see some cotton tissue cultures and observe how whole plants can be reformed from lumps of GM cotton cells in a plastic dish,” he says.

Soil workshop

Yield losses due to soil physical and chemical degradation, a continual problem for many cotton growers, will be the focal point of a workshop.

The problems most commonly encountered are poor soil structure and high sodicity and salinity — all of which can be inter-related.

The main focus of the workshop will be managing soil structural problems, identifying causes, structure related issues such as rough seedbeds, sodicity and salinity.

Demonstrations will include soil profile photographs and stereoscopic views of soil clods from degraded and ameliorated (gypsum, rotations, rational tillage) sites. There will be a presentation on setting up and using the white paint method to evaluate soil structure in a paddock, including images of sodic and non-sodic soils.

Specific issues discussed will depend on questions put by growers, but will include:

- Farming systems experiments;
- Increasing soil organic matter;
- Managing standing stubble in irrigated grey clays;
- Irrigation with poor quality water;



Simulating mirid feeding on cotton bolls.

- Deep drainage;
- Managing salinity and sodicity;
- Tillage and rotation options;
- Sensitivity of cotton to salinity; and,
- Pupae busting and soil compaction.

What's that underground?

In just one gram of soil there are more organisms than researchers can presently identify.

These organisms are capable of a diverse range of biological functions and interacting in ways that scientists are only just starting to understand.

Oliver Knox, representing a team of researchers studying soil organisms, says that if we are to develop sustainable cotton production and maintain these soils as a valuable resource, then having a better understanding of what's in the soil, how it works and interacts, is vitally important.

The team's objective is to study the soil's biological diversity, functional capabilities, and what constitutes a 'healthy' soil in cotton growing regions.

Some of the results of this research will feature in a hands-on research session.

The aim of this session is to demonstrate the soil's complexity, introduce growers to some prominent soil organisms, and give them a chance to see and participate in some techniques used by researchers.

A team of researchers will also be on hand to answer questions and discuss issues relating to biodiversity, soil's functional capabilities, food webs and VAM.

Mirids on the march

Mirids are becoming an increasing problem in cotton with the reduction of broad-spectrum insecticide use brought about by integrated pest management strategies and the use of Bt cotton cultivars.

Once thought of as an early season pest, mirids are becoming a serious pest during boll filling later in the season.

A workshop will discuss a range of research and management initiatives designed to prevent and control mirid outbreaks.

The workshop will feature mirid sampling techniques; early and late season damage effects; establishment of thresholds; and techniques used by researchers to determine the effects of thresholds.

A handout will be available to participants containing pictures of mirids, and the damage they cause to bolls at various stages of development, together with a beat sheet used for determining mirid numbers in the field.

Small plants with mirid damage will also be on display and participants will also be able to compare bolls damaged naturally by mirids with those artificially damaged to simulate mirid feeding, as well as observe cages used to confine mirids onto bolls and see how researchers are simulating mirid feeding on bolls using syringes. 