A common thread of technology at US Beltwide Conference

By Greg Kauter, CSD Extension and Development

The annual US Beltwide Cotton Conference for 2002 was held in Atlanta, Georgia in January. The theme of the Conference this year was Technology — the common thread.

The format for the conference was similar to previous years in that the first two days had a grower focus, with the final two days broken into technical sessions on the various disciplines — for instance, entomology, diseases and weeds.

DAY ONE

The first session of the conference started with a look at cotton improvement and the question of yield versus quality.

Dr Lloyd May from the University of Georgia at Tifton paid the CSIRO breeding program a huge compliment stating that both yield and quality improvements in cotton are possible but it takes a 30 year commitment like that of CSIRO in Australia to achieve the results.

An excellent panel session featuring leading growers from right across the cotton belt looked at the topic 'Cultural practices impact costs'. The session examinednew technologies, their implementation and the costs incurred by growers.

Concurrent sessions were run after lunch with a number focusing on computers and the internet. The main session was on new developments from industry and was broken into three parts:

• Equipment and technologies looking at new pickers, yield monitors, scouting tools and others.

• Chemicals — focusing on newly-released chemistry and its fit into the US industry.

• Varieties — seed companies made presentations on newly-released varieties for US growers.

DAY TWO

The Beltwide conference featured an excellent panel session with US growers.

Steve Allen of CSD (right) catches up with fellow pathologist Pat Colyer from Louisiana State University.

The second day started with a paper on the outlook for the US domestic textile industry — Free trade: what kind of a yarn are we spinning?

It analysed the enormous pressure the US textile mills are under (in Bill Dunavant's talk he revealed that 74 US mills have closed in the past two years) and looked towards protectionism as a possible answer to the decline in the industry.

Perspectives on practices of competitors was an outward-looking session that was well received by growers. It featured presentations from the major competitors — Australia, Brazil, China, India and West Africa. The different presenters compared production practices, cultivars, expected production and quality. A panel session on Cotton nematode management created a lot of interest for the US producers. We are very fortunate we don't have nematodes to deal with in the Australian cotton production system.

The final talk of the session was Market place insights presented by William Dunavant Jr. Of interest to Australian growers was his questioning of current policy that supports US cotton production. He agreed with grower support per se, but not for support that sees record crops planted at times of low price.

He noted that southern hemisphere countries (Australia, Brazil and Paraguay) had sharply curtailed plantings in response to the low world prices and lack of government subsidies (southern hemisphere countries will produce two million bales less this season).

The final session of the grower conference involved a workshop on alternative technologies and had a major focus on precision agriculture.

The conference broke into specific topics for the last few days.

DISEASE COUNCIL

The 2002 Beltwide Cotton Disease Council included a workshop on nematode management, a special symposium entitled 'Diseases and nematodes: their role in cotton yield stagnation'.

The symposium on yield stagnation was organised in response to US concerns about the lack of improvement in lint yield and quality over the past 15 to 20 years. A lack of genetic diversity, the tendency to rely on backcrossing for developing new cultivars, the impact of

Adam Kay, CSD (right) with Lloyd May,

Tim Drewe, CSD (right) and cotton physiologist Derrick Oosterhuis from the University of Arkansas

weather and the effects of pests and diseases — especially nematodes — were suggested as contributing factors.

Papers presented in the general sessions covered various aspects of Fusarium wilt, Fusarium boll rots, bronze wilt, black root rot, seedling diseases, root knot and reniform nematodes. There was considerable interest in the Australian Fusarium wilt situation and the implications for the export of fuzzy seed from Australia to dairy farms in California.

Laboratories in Australia, California, Arkansas and Texas are investigating the efficacy of methyl bromide fumigation prior to shipment and mixed results are being reported. The Australian Fusarium wilt pathogen has not yet been detected in fuzzy seed from Australia although other Fusarium species have been identified.

The 2003 Beltwide meetings will feature a section on the Australian Fusarium wilt situation and its implications.

The high incidence of boll rots at the end of the 2001 US season was mentioned on several occasions with up to 50 per cent of bolls rotted in some fields. One researcher reported cotton seedlings ‘sprouting’ from bolls still on the plant. They also observed sprouting in sorghum and soybeans during the 2001 harvest.

INSECT RESEARCH AND CONTROL

The expression, efficacy and performance of the second generation transgenic cotton (Bollgard II from Monsanto) occupied a large proportion of the papers on pest management at the Beltwide. Bollgard II will provide a higher toxin dose and broader spectrum of pests controlled for the US grower. This technology is still in the regulatory process but will be tested in larger areas in the coming season in the US.

Monsanto has been granted a re-registration of Bollgard (US equivalent of Ingard) by the US EPA for a further five years in the US. Additional requirements the EPA has placed on Monsanto surround the implementation and compliance with the resistance management strategy for Bollgard.

The following data was presented by Monsanto on refuge use by growers for the 2000 crop by Monsanto:

- 48 per cent was sprayed conventional cotton;

• 30 per cent was unsprayed conventional cotton;

• 18 per cent was embedded (conventional cotton sprayed as Bollgard); and,

• Four per cent was a combination of the above.

A number of growers were involved in a new refuge option for US growers — the community refuge — where growers can combine and share their refuge areas under a strict set of conditions. In 2000 there were 144 community refuges of which 90 per cent were sprayed conventional cotton.

The refuge requirements for resistance management of Bollgard cotton has prompted research into other non-crop refuge options. Two papers of interest outlined a preliminary evaluation of the use of garbanzo beans and royal paulownia as alternative small area refuges.

The eradication of the boll weevil from US production areas and the rapid adoption of Bollgard cotton has seen the emergence of a number of insect pests that were previously controlled by insecticides sprayed for Lepidoptera control. The cotton fleahoppers (jassids), tarnished plant bug, stink bugs (green vegetable bug), lygus (mirids), aphids and whitefly are all being identified as increasingly causing the most disruption to the new cotton ecosystem. The need for selective insecticides for these pest complexes that do not disrupt the beneficial insects is as high in the US as in Australia.

The changing cotton ecosystem has resulted in novel research into the ecology of both the ‘new’ pests and beneficial insects and management impacts of planting date, irrigation timing, fertiliser rates, sampling, thresholds, control and damage. Simulated damage trials and systems trials looking at interactions between inputs indicate a new direction in pest management research in the US.

In keeping with the theme of Technology — the common thread, there were some ‘blue sky’ presentations on spatially variable insecticide research in cotton based on remote sensing imagery. The large-scale production areas in the US such as California, where large management units make micro-management of fields difficult, are leading the US in the application of GIS and remote sensing to insect control.

COTTON PHYSIOLOGY

The debate about the alleged impact of the increasing transgenic cotton area on yield and fibre quality has subsided after last year's record crop. But there were still a number of papers comparing transgenic and conventional variety performance. The assessment is that the environment is generally the dominant factor in performance as location is often more important than variety.

Cotton from parts of the US, especially Arizona, has an increasing proportion of the crop that is in the discount range for high micronaire. A number of irrigation, defoliation and variety interactions have been evaluated, but location and season length (day degrees from planting) have the strongest influence on high micronaire with fruiting period (node of first fruiting branch) and variety having some importance.

Row configuration studies still occupy a large component of the physiology research in the US. Papers presented this year indicate a general swing away from UNR to various 'modified' row configurations such as twin row and high density skip row. This has largely been driven by a move to conservation tillage as a result of the very rapid adoption of Roundup Ready cotton in the US.

University researchers are undertaking some interesting studies on the fate and behaviour of glyphosate in Roundup Ready cotton. These detailed studies on the effects on reproduction development have found that pollen is at risk of 'arrested development' because it is relatively susceptible to glyphosate. This can impact yield when combined with the strong translocation of glyphosate to the reproductive organs of the plant if glyphosate enters the plants after the four leaf stage.

COTTON WEED SCIENCE

A number of papers focused on the new transgenic technology with presentations on the Roundup Ready systems and also a number of presentations on the Liberty herbicide tolerance system under development.

The new enhanced Roundup Ready system was also the focus of a number of presentations. Studies that looked at new chemistries such as Syngenta's Enfield were also presented. Crop safety with different glyphosate formulations on

Roundup Ready cotton was also the focus of a number of presentations.

Data was presented from studies with light-activated, weed-detecting shielded spray units. The data demonstrated the same level of weed control as normal shielded spray systems. The major benefit was a 70 per cent reduction in herbicide applied.

Recordings of selected presentations can be found at www.csd.net.au or for details of any of the papers mentioned, contact Greg Kauter ph: 0746 711648.