**Travel Report**

# Australia

## Narrabri - Wee Waa

**October 22 - 23, 1998**

From October 22-23, 1998, immediately following the ITMF Annual Conference in Melbourne, members of the ITMF Spinners Committee travelled to Narrabri and Wee Waa, New South Wales, which are situated in one of the major cotton growing areas of Australia.

## Participants

### Committee Members & Secretariat

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| Romano Bonadei | Italy | Filati Filartex Spa. |
| Steven Chen | Taiwan | Tah Tong Textile Co. |
| Robert M. Galmes | Australia | Bonds Spinning Mills |
| Stefan Heger | ITMF | Economist |
| Young Ho Kim | Korea | Ilshin Spinning Co. |
| Kenan Koç | Turkey | Edip Iplik |
| Andrew Macdonald | Brazil | Alpargatas Santista Têxtil (Committee Chairman) |
| Alexander Roth | Austria | Freistadtl GmbH & Co. |

### Invited Guests

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| Larry Shaw | ICAC | Executive Director |
| Alexandra Roth | Austria | Freistadtl GmbH & Co. |
| Young-Seek Kim | Korea Rep. | Shindong Enterprises |

Cotton became a commercially viable crop in Australia in the early 1960s. Currently, the cotton area planted is close to 450,000 hectares producing an annual crop of approx. 3 million bales. Around 70% of Australia's cotton is grown in New South Wales with the remaining 30% in Queensland. In most years, over 80% of the area under cotton is irrigated. Australian varieties have an international reputation as being long, strong, non-sticky fibres and free of contamination. Cotton is among the country's fastest growing and most profitable export commodities: 90% of the nation's production is exported, mainly to East Asia (Japan, Indonesia, China, Thailand, South Korea) and, to a lesser extent, to Europe, making the country the world's fourth largest exporter of raw cotton.

At each of the four stops during its trip, the Spinners Committee met with Australian cotton researchers, farmers, ginners and merchants. Main subjects of discussion were cotton classing, ginning and current and future requirements of cotton fibre properties.

## On HVI Testing

The Committee considered HVI testing as the basis for successfully selling cotton in future. Today, by contrast, cotton is still largely marketed on grade and staple, two subjective criteria which are not sufficient to meet the requirements of the modern spinning industry which is more interested in such properties as strength, uniformity, maturity and non-stickiness all of which can be tested today by adequate and efficient instruments. The Committee suggested average moduling as a way of replacing conventional bale-by-bale testing, thus saving a lot of time and money while at the same time producing more even-running cotton for the spinner.

## On Ginning

The Committee emphasised that progress in ginning technology would be indispensable for better cotton. Even though generally satisfied with the quality of cotton grown in Australia, the Committee regretted that it was seriously damaged in the (saw) gins. Major problem areas include neps (caused by seed-coat fragments and immature fibres), short fibres and uniformity. The Committee welcomed recent improvements in Australia in that area and appealed to gin operators to view the spinners and not only the farmers as their customers. A new technological development, the control gin (Intelligin by Zellweger Uster) was proposed to serve as a first step towards customised ginning of cotton. As the name implies, the control gin can be used to adjust ginning speeds, humidity and temperature and also enables the operators to bypass one or more of the lint cleaners.

## On Fibre Requirements

The Australian participants were keen on learning the Spinners Committee's view on cotton's future. First, the Committee stressed the importance of improved communication and closer co-operation, referring in particular to the transfer of up-to-date market information on required cotton quality from the final consumer via the spinner to the grower, signalling the latter present and future market needs and tastes. Second, higher yields through more efficient farm management and superior varieties produced by genetic engineering will be crucial for reducing costs. Third, the spinners would like to see an intensification of the promotion of cotton as an ecological and natural product. Fourth, cotton's future lies in high-performance blends with synthetic fibres and in the creation and exploration of niche markets.

## Cotton Seed Distributors (CSD), Wee Waa

CSD, which was set up 30 years ago, is the main distributor of cotton seeds to Australian farmers, accounting for 90% of the national market. Its sole competitor on a domestic level, Deltalpine, provides the remaining 10%. CSD's international arm, Cotton Seed International (CSI) is selling seeds overseas, such as to the US, Turkey, Greece, South Africa and other countries. At its Wee Waa facilities, which include a delinting plant, warehouses, laboratories and administration, CSD employs a staff of 60.

CSD has a storage capacity exceeding the Australian demand for two years of planting. CSD warehouses are not ventilated. Instead, the formation of moisture is prevented by ventilated in the floor. It is interesting to note that the germination quality of the cotton seeds improves marginally in the first year of storage, levelling out after that and dropping off after approx. 5 years, being higher on average for dry-land than for irrigated types.

In offering certain "guarantees" on various seed properties to the growers, CSD has accepted to meet the standards set by the International Seed Testing Association (ISTA). If the seeds do not meet theses standards, they are not released. According to ISTA requirements, a germination guarantee, for instance, can only be granted to seeds that have germinated 7 days after planting at a rate of no less than 50% in the cold germination room (20$^{o}$ Celsius) and at around 90% in the warm germination room (30$^{o}$ Celsius). A combination of the above 2 settings can be used for calculating a so-called vigour index to determine the ideal time for planting the seeds. Another crucial property is the seed's viability which can be assessed by a tetrosalium test and/or their acid content. The former involves the exposure of tetrosalium seed embryos to a dye; the extent to which the dye is absorbed by the embryos is an indication of their viability. Acid content in seeds in excess of 0.66% negatively affects the seed's viability and can be caused by a variety of reasons, such as wet weather during picking. Due to contractual obligations, CSD analyses the purity of genetically engineered cotton by means of a protein test: substrate-nourished seed embryos are exposed to an indicator. Subsequently the presence/absence of genes within the sample are examined. This complicated procedure is expected to be replaced soon by a "DNA fingerprint".

If the seeds are found to have the necessary physical and chemical structure, they are released for delinting. In this process, the seeds are first graded through several screens with a gravity table taking out defective seeds. After delinting and grading, up to 5 chemical treatments (e.g. insect or fungicide protection) and colours can be applied. Finally, the coated seeds are packed into 25 kg bags at speeds up to 18 metric tons per day for distribution to farmers.

## Namoi Cotton Co-operative, Wee Waa

(Mr. James Prendergast, Sales Manager)

In 1962, Namoi Cotton was established as a grower co-operative, wholly-owned by its members, who also share the profits. Since that time, Namoi has evolved into a fully integrated ginning, classing, warehousing, shipping and marketing organisation selling cotton in Australia and throughout the world.

Once harvested, cotton is delivered to one of Namoi's 12 gins that have a capacity to process up to 1 million bales every season. The farmers receive payment from the co-operative based on traditional criteria, i.e. grade and staple. After ginning, the cotton bales are tested on a bale-by-bale basis at the company's new classing and testing facility which is located at Namoi's head office in Wee Waa and equipped with a number of (automatic and non-

automatic) HVI units with a daily capacity of 800 bales. A percentage of samples from each ginning shift is also tested on an Advanced Fibre Information System (AFIS). The tests are carried out under precise atmospheric conditions in line with ISO standards for cotton testing. For this purpose, Namoi has recently invested in a moisturiser device designed to reduce substantially the required exposure time needed to condition the ginned cotton samples.

The co-operatives' warehouse facilities can store over 300,000 bales under cover in humidity-controlled conditions. The cotton is warehoused firstly by grade and variety, and then, based on HVI test results, further segregated into lots of staple, strength, fineness and micronaire in order to match specific orders from spinners. As many as 1,000 bales per hour can be loaded into containers (each holding either 90 low-density or 140 high-density bales). Rail-sidings built into Namoi's main warehouse sites facilitate subsequent rail transport direct to the ports of Sydney and Brisbane.

## Auscott

(Mr. Dave Anthony, General Manager)

Auscott, a grower/processor collective, invited the Spinners Committee to view its new gin, co-designed by Mr. Anthony. The major principle of the Auscott gin is to use multiple stands, enabling ginners to slow down the process, which, in turn, improves cotton quality. The facility comprises two gins, each of which with three stands including one centrifugal and two saw cleaners for each line. This "custom gin" allows operators to select processing speeds, the extent at which cotton is humidified or dried or the number of cleaners to be used in order to make the ginning process as gentle as possible according to customer's requirements. Unless wet cotton is processed, requiring very low speeds, the maximum through-put is 45 bales per hour and stand.

The Committee was informed about various issues regarding farm management, such as crop rotation and the irrigation system. Normally, the cycle of crop rotation at Auscott is 4 years: during 2 years, cotton is grown whereas the 3rd year is used for other crops (e.g. wheat, rye); in the 4th year, fertiliser is brought into the ground and the fields lie fallow. Despite experiments with the expensive but efficient method of drop irrigation, Auscott continues to rely mainly on flood irrigation. The river water has to be ordered five days before it is needed on the fields. Once in the farm's irrigation system, the water cannot be returned to the river to prevent pollution by agro-chemicals (pesticides, insecticides, fertilisers). The water enters the system through high main channels, is then lifted by pumps to flood the slightly sloped fields and is drained through lower channels.

## Cotton Research Center

(Dr. Greg Constable)

The Research Center was established in 1958 by the State Agriculture Department to conduct research for water uses that had become feasible after a near-by dam construction. Therefore, in the late 50s and early 60s, a number of crops and pastures were evaluated in research programmes with cotton coming out as being a highly profitable and well-adapted crop to the region. Nowadays, the Center's main interests include: improved management and perfection of soil and water resources, protection of the crops (from insects and diseases), crop breeding programmes to enhance quality and yield, farm management and education (post-graduate certificates, extension to farmers and consultants).

Currently, research is focusing on three broad areas. First, plant breeding programmes are aimed at improving fibre properties whilst maintaining or enhancing yields through insect- and disease-tolerance in particular. Secondly, farming systems (irrigation, fertiliser and defoliation management) are studied to optimise their effects on existing fibre properties. Third, computer simulation models are being developed for predicting fibre properties half-way through breeding a new variety by utilizing field data that take into consideration solar radiation, soil moisture and temperature.

Dr. Constable also informed the spinners on the current situation regarding transgenic (BT) cotton in Australia. Currently, 20% of the Australian cotton area is used for BT cotton, up 5% from a year earlier. It is expected that in the upcoming 2 to 3 years, the Government, the Genetic Manipulation Advisory Committee and the National Registration Authority will limit the percentage of BT cotton area to 30%, owing to insect problems of widely used one-gene transgenic varieties. Dr. Constable estimated that along with the successful development of two-gene transgenic cotton, thus eliminating insect problems, the area planted with genetically engineered cotton could eventually increase to 80% or 90%.