Contamination in Australian Cotton

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Contamination, even from a single foreign fibre, can lead to the downgrading of yarn, fabric or garments or even the total rejection of an entire batch, causing irreparable harm to the relationship between growers, ginners, merchants and textile and clothing mills. An International Textile Manufacturers Federation (ITMF) study reported that claims due to contamination amounted to up to 3.2% of total yarn sales. Figures 1 and 2 show examples of foreign fibre contamination in yarn and fabric. Contamination represents a significant cost to spinning mills and this has led them to implement methods, at great expense, to cope with contamination.

ITMF Contamination Surveys
The ITMF surveys spinners on the amount of contamination found in world growths. In the survey spinners are asked to rate the degree of contamination they find in cotton lint according to 16 categories of foreign materials.

Figure 3 shows that the degree of contamination worldwide has steadily increased from 14% in 1989 to 26% in 2003 and then decreased to 22% in 2005 and 2007. The level of contamination in Australian cotton is low, although over recent years there has been an upward trend, increasing from a base level of around 5% in the 1990’s to 13% in 2005. A reduction to 7% in 2007 corresponds with the reduced volume of the Australian crop.

Detailed Assessment of Contamination in Australian Cotton
A local, objective survey of the contaminants found at Australian gins is aimed at identifying the extent of contamination contributed by growers and harvesters. This information in combination with information from a large overseas spinning mill that manually extracts contaminants from Australian fibre delivered to their mill is being used to measure the extent of contamination in Australian cotton exports.

To date the survey has shown the main contaminants found in modules of cotton at gins are pieces of metal from harvesting and transport machinery. This is followed by module ropes and covers, and subsequently the bales delivered to the gin yard. The occurrence of foreign matter in modules delivered to the gin yard and subsequently the bales delivered to the spinner.

The major contaminant found in Australian bales delivered to mills was pieces of cloth or clothing made from either cotton or polyester or blends thereof followed by yarn made from either cotton or polyester or blends. This was followed by polypropylene yarn in various colours, plastics including shopping bag, lolly paper and garbage bag fragments, bird feathers, jute/hessian yarn, human hair, paper from newsprint and notepads and metallic pieces such as nuts, bolts and wire. Figures 6 and 7 show examples of contaminants found and the level by category.

The data in Table 1 shows that at 0.6 grams per ton, the amount of contamination found in Australian cotton is lowest amongst export growths such as Brazil, China and the USA. It is noticeable that the other growths have like Australia also recorded decreased levels of contamination over the same measurement period.

Bales
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Conclusion
There is no doubt that the presence of foreign matter in raw cotton is a serious issue for textile processors. It is pleasing to note that the amount of foreign matter found in Australian cotton bales continues to be small relative to other growths. However the goal remains to provide cotton with zero contamination. In response to this challenge, the Australian ginning sector is implementing Best Management Practices (BMP) in the gin, which aim to reduce and possibly eliminate the occurrence of foreign matter in modules delivered to the gin yard and subsequently the bales delivered to the spinner.

Most contamination arises from impurities being incorporated into the bale as a result of human interaction during harvesting, ginning and baling.

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