

**SELECTION RESPONSE OF FIBERMAX® LINES DERIVED FROM
THE INTEGRATION OF AUSTRALIAN AND US GERMPLASM**

Jeff Klingenberg

Bayer Cotton Seed International

South East Research Station

Sellers, SC

Abstract

Bayer Cotton Seed International (BCSI), a joint venture of Bayer Crop Science and Cotton Seed International of Australia, has developed an extensive cotton breeding program in the US and South America for the development of FiberMax varieties. Varietal development is highly dependent upon response to selection using introduced lines and populations from CSIRO, and by the integration of Australian by US/ Global cotton germplasm. Initial progress in some of the BCSI conventional breeding material is illustrated by comparing four related selection groups of varieties and families. Group 1 contains six commercial, conventional varieties introduced in the US in the mid-1990s. Group 2 represents two families containing several within-family line introductions to BCSI-US for selection. Group 3 represents the same families but with lines derived from their respective populations under US-Delta/Southeast selection pressure. Group 4 represents two families with lines derived from the integration of parental components of Groups 1, 2, and 3. Two-year multiple location testing of balanced data among these groups is used to indicate performance differences of lint yield and fiber quality. Preliminary results using these particular family groups indicate significant improvement for yield and fiber quality over Group 1, the introduced FiberMax varieties. Selection work done in Group 3 yielded slight improvement over Group 2, its respective family of introduced lines. Group 4, the integration group, significantly improved yield and fiber quality over Groups 1, 2 and 3. Results indicate that integration of US and Australian germplasm has a positive effect when selection pressure is applied as indicated by individual line performances. Advancement of introduced lines, and integrated lines of this nature, significantly enhances the BCSI breeding program for germplasm improvement, diversity, and pipeline potential for transgenic conversion and other biotech incorporation.