

Mike Bange joined CSIRO's Australia's cotton research effort at Narrabri in 1995, having previously worked in crop physiology with various state departments in Australia. Dr Bange is the current leader of CSIRO's Integrated Cotton Management Group, which has produced significant increases in productivity, and sustainability of the cotton industry. He has skills with many research aspects in cotton from crop physiology, agronomy and farming systems.

The theme of Dr Bange's career has been application of agricultural science in the field. He has undertaken detailed field growth analysis which has provided the fundamental understanding of agronomic crop responses. He has conducted pioneering work in crop physiology of cotton in genotypic responses, abiotic stress, fiber quality, and climate change in both fully irrigated and rain fed systems. In collaboration with cotton scientists in Australia and abroad (particularly the USA) he has undertaken innovative research leading to development and application of new agronomic recommendations and decision tools.

He is heavily involved in technology transfer, having led the development and application of cotton crop simulation capabilities and computerized decision support in Australia. He has also been an author on a considerable number of significant industry publications for successful cotton production and heavily involved in research extension. He is recognized internationally for his research. In leadership roles he is heavily involved in research organization, education and technology transfer. He is the current chairman of the Association of Australian Cotton Scientist.

### **Presentation Topic**

*'Cotton Physiology' the cornerstone of future cotton science*

Cotton production worldwide will be influenced by changes in climate as well as indirect effects such as regulation of water resources. To combat these changes as well as dealing with increasing costs will mean that sustainable production will need to adopt practices in combination that will: increase and/or maintain high yields and quality; improve a range of production efficiencies (water, nitrogen, energy, emissions etc.); seek to improve a better return for products; or consider other cropping options as alternatives. The presentation will cover present impacts of these changes on production systems and highlight some options for adaptation with an emphasis on the role of plant and crop physiology to support these. Crop management and plant breeding options include high yielding/high quality stress tolerant varieties; optimizing water and nutrition; manipulating crop maturity; varying planting time; optimizing soil and health for crop nutrition; and maintaining diligent monitoring practices for weeds, pests and diseases to enable responsive management.