

TABLE OF CONTENTS

Executive Summary	Page 2
Acknowledgements	
About this Report	
Overview of presentations at the Regional Working Group Meeting	Page 3
Introductions and Meeting Opening	
Mr K V Satyanarayana, DG MANAGE	
Dr Anupam Barik, Director, Directorate of Cotton Development	
Presentations by producers and organisations working with producers	Page 3
<i>Farmers' Perspective about Cotton in Amravati District, MH:</i> Mr V B Ladole, Community Action for Rural Development Society	
<i>Cotton farmers Condition in India:</i> Mr T. Sudhakar Reddy, General Secretary, Cotton Commodity Committee, Indian Federation of Farmers Associations	
<i>FFS in Cotton – Experiences of AME Foundation:</i> Dr J. Diraviam (and Arun Balamatti)	
<i>Working along the Cotton Value Chain – BASIX Experiences:</i> Ms Vasumathi, BASIX	
Presentations by organisations working on socio-economic aspects of cotton cultivation in India	Page 4
<i>Organising Small Producers:</i> Mr Dharmaraju, Oxfam	
<i>Better Cotton Initiative:</i> Mrs Preeti Shroff, Agrocetl	
<i>Understanding the Financing needs of Indian Cotton Farmers and their families:</i> Dr K J Satyasai, representing NABARD	
<i>Fair Labor Association – Agriculture Project:</i> Mrs Richa Mittal, Fair Labor Association	
Presentations providing an overview of BCI	Page 5
Lise Melvin, Allan Williams, Alastair Usher	
Presentations by Government representatives	Page 7
<i>Present Scenario of Indian Cotton:</i> Dr Anupam Barik, Director, Directorate of Cotton Development	
<i>Central Institute for Cotton Research:</i> Dr N Gopalakrishnan, Central Institute for Cotton Research	
<i>Cotton Scenario in Andhra Pradesh:</i> Mrs Smt. D. S. S. Suseela, Deputy Director of Agriculture, Andhra Pradesh	
<i>Presentation at BCI Workshop:</i> Dr. Anna Rao, Agriculture Department, Government of Maharashtra	
<i>Overview regarding current priorities in cotton:</i> Mr. K Nagaraj, Agriculture Officer, Government of Karnataka (and B Y Srinivas)	
<i>Cotton Scenario in Gujarat and Priorities:</i> Dr V Kumar, Research Scientist (Cotton), Navsari Agricultural University	
Presentations by researchers working on cotton	Page 9
<i>Research Initiatives on Soil and Water Management:</i> Dr. K V Rao, Central Research Institute for Dryland Agriculture, Hyderabad	
<i>Nutritional Management in Cotton:</i> Dr N Gopalakrishnan, CICR, Coimbatore	
<i>Cotton IPM: Current Status in India:</i> Dr O P Sharma (and O. M. Bambawale), National Centre for IPM	
<i>Seed purity Genetically modified crops in India:</i> Dr. K Kranthi, CICR Nagpur	
<i>Achievements and Future Prospects of Cotton Breeding in India:</i> Dr. S S Patil, University of Agricultural Sciences, Dharwad	
<i>Fibre Quality Management at Cotton Gin:</i> Dr. P G Patil, Officer in Charge, Ginning Training Centre, Central Research Institute on Cotton Technology	
<i>Better Cotton Initiative: Regional Working Group Meeting:</i> Mr S A Ghorpade, Advisor CITI – CDRA	
<i>Extension Approaches for Cotton Development:</i> Dr. M N Reddy, Director, AE and C, MANAGE	
<i>Implementation of IPM through Farmer Field School by Central IPM Centers:</i> Dr A Siddiqui, Plant Protection Officer, CIPMC, Hyderabad	
<i>Chetna Organic FT & Organic Cotton Supply Chain – Environment...Ethics...Equilibrium:</i> Mr. Arun Ambatipudi, Chetna Organic	
<i>ICM & Fair Trade:</i> Dr. C S Pawar	
<i>India Sustainable Cotton Initiative:</i> Mr. Vamshi Krishnan, WWF	
Small groups working group sessions — summary of participant feedback on draft BCI Principles	Page 16
Environment / Production Principles — Summary of answers of the 3 working groups	
Socio-Economic Principles — Summary of answers of the 3 working groups	
Summary of responses from BCI at conclusion of meeting	Page 24
Next Steps	Page 25
Full Participant List	Page 26
Sub-groups	Page 27

2 — 4 April 2008

Executive Summary

Better Cotton Initiative (BCI) held a successful 3-day meeting at the MANAGE campus, Hyderabad, on 2 – 4 April 2008.

The objectives below were generally achieved, noting only that the last objective was unable to be fully addressed due to time constraints:

- Shared understanding about the goals of BCI, the role of the Working Groups, and the draft environmental social and economic Global Principles of Better Cotton, and their relevance to family agriculture
- Confirmation of the significance and applicability of the global principles within the Better Cotton Global Framework
- Comments received about the proposed criteria for each of the Principles
- Identification of current standard practices, and recommended best practices for soil, water, pest and fibre quality management
- Identification of current notable and effective practices in promoting producer organisation, access to equitable forms of finance and decent work
- Discussion and identification of what constitutes decent work in Indian cotton cultivation
- Identification of constraints (financial, geographical, other?) on the adoption of tools that exist to achieve the draft Better Cotton principles
- Shared understanding of the relevant and technical aspects of current research, field initiatives and projects in India, and how they contribute to sustainable cotton production
- Identifying and gaining a better understanding of current initiatives working with smallholder cotton farmers – such as organic cotton, Fairtrade, ICM, other projects etc. – to address socio-economic challenges, with a view to:
 - identifying the challenges in implementation on a broad scale
 - better understanding the potential for relationships between these initiatives and Better Cotton.

The meeting participants agreed that the draft BCI principles were valid and appropriate in the Indian context, while suggesting a number of revisions to the wording of two of the principles, and some re-arranging and additional detail for a number of the criteria. The detail of this suggested re-wording of the two principles, and the suggestion that the scope of Better Cotton be expanded to include ginning is noted below. The re-arranging and additional detail relating to the criteria can be found in the body of the report.

It was suggested that “Better Cotton is produced by farmers who maintain the quality and availability of water” be changed to “*Better Cotton is produced by farmers who care for efficient use of water*”. It was also suggested that Better Cotton Initiative will facilitate access to equitable finance (for smallholders) be changed to “*Better Cotton initiative will facilitate access to equitable (fair, institutional and transparent) finance*”. For the principle relating to fibre quality, it was suggested that an additional criteria, relating to ginning, be added.

A number of qualifying and disqualifying practices were also suggested: the adoption of IPM/GAP/BMP/NPM to qualify, and disqualifying practices should include indiscriminate use of pesticide, tank mixing of pesticides, non-label use of pesticide, and continuing the crop beyond normal crop duration. The group looking at producer organisation suggested that there should be qualifying criteria for producer organisations in order to participate in Better Cotton (though not necessarily as a pre-condition to beginning participation in Better Cotton).

Acknowledgements

The sincere thanks of Better Cotton Initiative is extended to all the participants in the meeting whose contributions were invaluable in achieving the objectives set out at the start of the meeting, and to the various institutions who supported their staff members to attend. The generous support and assistance of MANAGE, the team from WWF (Archana Chatterjee, P Vamshi Krishnan and Deepthi K), International Resources for Fairer Trade - IRFT (Arun Raste and Supriya Suman), Dr. CS Pawar and Mr Sainathan and Dr. Francesca Mancini was also vital to the successful preparation, organisation and conduct of the meeting.

About this report

This report aims to record the many and varied issues presented and discussed during the 3 days. It should be noted that apart from the specific objectives of the meetings, the meetings did not endeavour to reach or agree on a position on all the issues raised. Thus the comments and answers recorded reflect the opinion of the person making the comment, and do not necessarily reflect the opinion of BCI or any other person or organisation participating in the meetings.

Overview of presentations at the Regional Working Group Meeting

Introduction

A number of presentations were made over the course of the meetings, the contents of which are summarised below. Note that the presentations are summarised together, even though they were interspersed throughout the course of the meeting by break-out sessions and small-group discussions.

Meeting opening and welcome

Mr K V Satyanarayana (DG MANAGE) kindly welcomed meeting participants, and BCI, to MANAGE, and made a number of very pertinent observations: that we need to continually explore options for better ways to grow cotton, with a focus on profitability and cost to society (and not just yield); that while farmers are receptive to new ideas, someone needs to develop the road map as to how to best implement new ideas, as well as demonstrating the benefits that will arise from their adoption; the ideas need to be kept as simple as possible; Governments are amenable to private delivery models for extension, even including with Government funding; MANAGE works in 588 districts, in close collaboration with the provincial governments (who are responsible for implementation).

Dr Anupam Barik (Director, Directorate of Cotton Development) formally opened the meeting, welcoming BCI to India, noting that the Directorate was pleased to be associated with BCI.

Presentations by producers and organisations working with producers

Mr V B Ladole (Community Action for Rural Development Society) commenced the session with a farmers' perspective on cotton in Amravati District, Maharashtra. This district, which has a total rural workforce of 1.7 million and a literacy rate of 82%, is dominated by smallholder production: some 83% of all landholders farm less than 4 ha. While Mr. Ladole highlighted a series of significant challenges – and serious outcomes – for farmers in the district, in some instances entailing a reduction in cropped area, he also noted that cotton yields had recently improved, increasing from 359 kg/ha in 2004-5 to 875 kg/ha in 2007-8. The principal reasons for such an increase in cotton yield during 2007-08 cited by Mr. Ladole were: a favorable agro-climatic situation; awareness about IPM thru FFS; introduction of Bt cotton; selection of appropriate soil type; and increased access to irrigation.

Mr T. Sudhakar Reddy – as General Secretary, Cotton Commodity Committee – represented the Indian Federation of Farmers Associations (FFA). Mr. Reddy gave a wide-ranging overview of the situation of the cotton farmer in contemporary India, and proposed next steps for the cotton farming community. Noting that small and tenant farmers predominate in most of the country's cotton sector, Mr. Reddy observed the lack of mechanisation and the fact that some 80% farmers are dependent on rain fed conditions: in response, it was proposed that the development of contract farming and strengthening of government support for capital investment would constitute a fruitful way ahead, particularly as regards mechanising harvest and establishing suitable storage facilities in order that farmers are not obliged to sell a standing crop regardless of the market rate. Moreover, the role of middlemen – such as local input retailers and informal lenders – in amplifying downward economic pressures on farmers was also noted. Mr. Reddy then highlighted that overstretched extension services could profitably involve the private sector, and train progressive farmers as extension guides. Soil health was a further concern: while many farmers remain unaware of the key importance of soil health, a noted lack of soil testing facilities, defective ploughing and absence of rotation exacerbates the consequences of this lack of awareness. In order to promote soil health, it was suggested that interested parties need to create awareness among farmers about soil testing and educate farmers about deep ploughing and crop rotation. Mr. Reddy noted several challenges for farmers with regard to inputs: insufficient credit, as well as lack of knowledge in seed selection and fertiliser management on the part of farmers.

Dr J. Diraviam shared AMEF's experience of working with cotton producers through Farmer Field Schools (FFS). Starting from the rationale that, if sustainable agriculture is to be operationalised, it has to begin with farmers' mindset, AMEF seek to guide farmers through Experiential Learning Processes before alternative options are put into practice. In the cotton sector, AMEF has focused on Raichur and Mahabubnagar district, holding 30 FFS events which covered 714 farmers in 2006-7. The outcomes of these FFS events were i) *Economic benefits*: Net returns 30% higher in FFS plots as compared to Farmers' practice plot due to reduced cost of cultivation (of 17%) and additional income from intercropping; ii) *Environmental benefits*: Less harm to the environment due to reduced fertilisers/pesticides application, increased diversity in crops through intercropping and beneficial microorganisms through application of biological agents; and iii) *Social benefits*: Knowledge empowerment of men and women farmers on sustainable cotton production through proper natural resource management.

Finally, *Ms Vasumathi* presented BASIX' experience as a micro-finance institution working closely with cotton producer organisations. BASIX has undertaken a cotton sub-sector study which found: indiscriminate pesticide usage; borrowing in kind; high input costs; low price realisation and; fluctuating prices. In order to begin to address these concerns, BASIX has put into place a multi-faceted service for farmers, entailing access to new technology through the promotion of Integrated pest/nutrient management, new forms of credit, both to individuals through Joint Liability Groups and to collectives in the form of producer groups. BASIX has also sought to make backward and forward linkages – to bio inputs, seed, fertilisers, and to spinning mill contractors respectively – as well as promoting value addition through clean cotton and ginning and access to market intelligence, by means of NCDEX 'price tickers'.

Presentations by organisations working on socio-economic aspects of cotton cultivation in India

Two presenters shared their understanding of the role of producer organisation in India, and the needs of producers and their families.

Mr Dharmaraju (Oxfam) spoke about Oxfam's experience of organising small cotton producers in Andhra Pradesh. A rationale derived from advantages of scale was presented to explain why producer organisation is a vital means to achieve a greater socio-economic sustainability of the cotton sector: advantages of scale in terms of lower costs; increased competitiveness; improved access to services/technology; access to higher value markets; and increased influence in decision making. However while collective organisation and action is necessary for improved access to markets for small producers, it is not sufficient: moreover, producers face significant cost challenges in organising: investment in social capital, governance costs, management costs and internal transaction costs. In view of this, Oxfam has taken a three-tiered structural approach in order to maximise market leverage and optimise value chain efficiencies: village-level Farmer Groups aggregate to Cooperatives established at Mandal (a sub-district geographical area) (or equivalent) level, which themselves link to a Trading Company. Grassroots Farmer Groups seek to share learning and disseminate new techniques such as NPM and organic farming (reducing costs on health and farming), as well as developing and grooming women as leaders and knowledge centres. Cooperatives operate on a revolving fund, with a training and development mandate (to "spread the good word"), as well as seeking to access government grants, collectivise procurement and upkeep of collected commodities and represent Farmer shareholders to the trading/marketing subsidiary company. The latter is a professionally managed marketing organisation, which makes profits through collective procurement and long-term buyer linkages, and aims to leverage the farmers capital to raise money from the maximum number of sources.

For *Mrs Preeti Shroff (Agrocel)*, while it is imperative to fulfil consumer needs of supplying quality-cotton, for long-term sustainability of the supply, one needs to give attention to conditions and needs of the cotton producers as well. This calls for a balancing of the two ends of the value-chain. Ms Shroff emphasised the need for producers' to retain the: untrammelled choice of the right seed-material; liberty to adopt agronomic practices (like ICM) suitable for the local, research-based, area-specific practices that have been developed by state agricultural universities (SAUs), ICAR, Central Institute for Cotton Research and other bodies, depending on prevailing agro-climatic conditions; and freedom to choose the suitable techniques and products for crop protection.

Dr K J Satyasai (representing NABARD) spoke on the financing needs of Indian cotton farmers and their families, and NABARD's roles in seeking to respond to these needs. NABARD undertook commodity-specific research on cotton in 2006, focusing on the entire supply chain for cotton covering cultivation of cotton up to cloth making in handlooms and power looms. Dr Satyasai highlighted the followed financing needs of farmers through the cotton cultivation cycle:

Operation	Investment needs	Working capital needs
Land preparation and sowing	Tractors/equipment	Seed and other inputs, labour
Interculture and irrigation	Tools for interculture, irrigation equipment	Herbicides, O and M of irrigation equipment, labour
Nutrient management	Vermi-composts	Manures and fertilisers, micronutrients, labour
Pest management	Application equipment	Pesticides, labour
Harvesting	Harvesting machines (future possibility)	Labour
Marketing	Transport vehicles	Transport charges if hired, storage charges, labour

Dr Satyasai outlined the formal and informal sources of credit for cotton farmers. Formal (institutional) sources include: commercial banks (public/private/foreign), cooperatives, regional rural banks (RRB), State Finance Corporations and NBFCs (non-bank lenders, such as micro-financiers). The first three of these institutions are particularly important for meeting crop cultivation and family needs; self-help groups (SHGs) and their federations also play an important role. NABARD's research suggests that, while 17% of the sample farmers had accessed only formal credit, 25% depended exclusively on informal sources and 60% had to tap both. Dealer (i.e. input dealer) finance is the predominant source of finance for farmers, especially for cotton with its high level of material needs. Formal loans are purveyed mostly through Kisan Credit Cards (KCS). The presentation also pointed to the need for forms of (crop and health) insurance, as well as market support. Moreover, it was noted that farm families need support for financial and other needs that are commonly not met by the available arrangements. To this end, SHGs and their federations have been extending loans that can be used for consumption needs, contingency working capital needs on farm, education, etc. Commodity interest groups are also being formed in AP that may organise producers of a given crop to reap from the power of association. The presentation concluded with a statement that better cotton can be produced by a farmer who is well informed and aware and lamented that we are still far behind in educating farmers on managing farming as a business, i.e. making decisions, that are the right ones both for his own economy and for society.

A perspective on Decent Work in Indian cotton cultivation was given by Mrs Richa Mittal (*Fair Labor Association - FLA*). Mrs Mittal commenced by explaining FLA's mission to promote adherence to international labour standards and the context of labour standards in international supply chains, before highlighting FLA's developing role in promoting responsible labour practices in Indian agriculture, and hybrid cottonseed production in particular. The latter has taken the form of a project with Syngenta: in its first year of operation (2006 –2007), FLA undertook a Task and Risk Mapping Study, alongside developing internal systems, training internal staff, on-farm monitoring and remediation of health and safety non-compliances. FLA has also developed guidance on the application of its labour standards code of conduct to cottonseed production in three local languages - Marathi, Gujrathi and Kannada. Relating to the child labour component of its work in seed production, FLA has developed an Awareness Campaign with the help of local NGOs and Schools (FLA to play a part in international fund raising), as well as drafting Social Compliance Contracts to be signed by farmers and strengthening Procurement Policy by integrating compliance as a determinant for business and incentives. Mrs Mittal highlighted several key traits to any effective approach to address labour standards in the cotton sector: a 'mixed approach' rather than radical activism; a holistic approach (not just addressing labour standards); building on existing management systems; interaction within business and sourcing departments; stakeholder engagement; transparency; extensive awareness building, training and capacity building; and vocational training.

Presentations providing an overview of BCI

by Lise Melvin, Initiative Manager; Alastair Usher, Social-Labour Coordinator; and Allan Williams, Environmental/Technical Coordinator

The reasons why cotton is an important commodity and why BCI exists introduced the presentation. The organisations and organisational set up of BCI was then shared as including a Steering Committee, Advisory Committee, Regional Working Groups, Better Cotton Partners and other experts. It was highlighted that BCI is an open and transparent initiative, and is not yet a formal legal entity. The role of the multi-stakeholder Regional Working Groups (RWG's) was emphasized as important, holding two meetings of each working group between now and end of 2009, in each of the 4 pilot regions – Brazil, India, Pakistan, and West and Central Africa — in order to help BCI define meaningful global principles, global criteria; and valid regionally specific tools, guidance and implementation strategies, as well as indicators.

BCI's objectives were shared in the form of the environmental, social and economic principles as well as how BCI intends to benefit farmers and companies in the value chain. BCI aims to achieve this through a 'Better Cotton system' that includes 4 major areas of work, namely: the Principles and Criteria, Guidance and Implementation Strategies, Supply Chain System, Verification and Impact Indicators. As part of these work areas BCI is developing the demand for Better Cotton, through partnership and relationship building with retailers in Europe and U.S.A.

BCI's philosophy and approach highlighted the following areas:

- Commodity scale
- Key and most significant global impacts will be addressed
- Technology neutral and does not exclude the use of GM
- Consultation process with the whole value chain - from farmer to retailer, and from the beginning of the initiative
- The system does not intend to communicate via a label on product to consumers

- Measuring impacts – are the principles and criteria successful in creating positive change for the environment, farmers, farming communities / workers?
- Enabling and empowering farmers to change their practices and behaviour
- There will not be a premium price for 'Better Cotton' ... rather BCI seeks for each farmers' business to be more profitable as a result of the BCI system.
- BCI endeavours to be complementary to organic and Fairtrade cotton working towards the same social and environmental objectives.
- A capacity building approach is key to the success of BCI
- BCI's work on the issues or impacts is restricted to the farm

An overview was provided of the BCI framework for defining Better Cotton, i.e.

Term	Explanation of Term
Principle	Broad goal which we hope to achieve (high level 'what')
Beneficiary	Target group for which tools will be provided and criteria will be applied (target group of persons to benefit)
Criteria	Key elements that must be met to achieve principle ('detailed what')
Tools	Tools and resources that farmers can use to meet criteria
Implementation Strategy	How tools and/or resources will be provided to farmers
Indicators	Measurements used to indicate whether criteria are met

In particular, the current draft principles:

- Better Cotton is produced by farmers who care for the health of the soil
- Better Cotton is produced by farmers who maintain the quality and availability of water
- Better Cotton is produced by farmers who use pesticides safely and responsibly
- Better Cotton is produced by farmers who care for and preserve the quality of the fibre
- Better Cotton is produced by farmers who preserve natural habitats
- Better Cotton Initiative will respect and promote Decent Work
- Better Cotton Initiative will facilitate producer organisation
- Better Cotton Initiative will facilitate access to equitable finance

were outlined in detail. This was followed by further explanation and the provision of examples of the other components of the definition of the Better Cotton, i.e. the criteria, tools and indicators.

The Working Group was then advised that its role is to provide advice and recommendations on:

- The validity of the draft global principles for that country/region
- What are the major criteria of the identified principles for that country/region? (eg. under the principle of soil health, criteria could include soil management, erosion management and fertiliser management)
- What are the relevant tools, such as best management practices or good agricultural practices that are appropriate for that region for each of the identified criteria?

A number of questions were posed, and comments given to BCI, which were (answers in italics):

It was recommended that BCI develop criteria that are practical, comprehensive and do not allow for misinterpretation. *This was expressly noted by BCI, and shared that they had received similar comments from other stakeholders.*

Who is going to do the capacity building? and BCI should be engaging with whomever it is now. *BCI will work with NGOs, UN agencies, local organisations, government and others to do capacity building and it has begun developing relationships with these important stakeholders.*

BCI's needs to understand the current research and technology that exists in the different regions of India, as 1 type of technology cannot apply to four different cotton species in 15 different agro-climatic zones – as exists in India. There is also a need to divide rain-fed and irrigated areas as, for example, Bt cotton is not as successful in rain-fed areas as it is in irrigated areas. *BCI confirmed it was aware of the differences between each farm, village, mandal, district, state and climatic area within India; that this was similar to the differentiation within the West and Central Africa RWG.*

Each farmer field school has different issues to deal with, so a better management practice cannot be generalised for a region. *BCI highlighted that it will not impose practices on farmers, but rather provide guidance and tools – in the shape of a toolbox possibly – from which the farmer can make choices and decisions.*

Ginning and spinning factories are important and need to be incorporated. *BCI reiterated that it was focussed on addressing needs and impacts at the farm level only but that it was also working with all the value chain actors as part of developing the supply chain system.*

There are already large programmes in place around NPM and IPM practices so BCI should look at what is going on already, especially with agricultural extension, and make sure it does not reinvent the wheel. *This was understood and BCI wishes to learn from what already exists, work with the national systems and local projects that are operating, and ensure it does not reinvent the wheel. This forms part of the rationale for establishing and working with Regional Working Groups.*

Has BCI identified the market for this 'better cotton'? *The companies on BCI's Steering Committee wish to buy 'Better Cotton' when it is available, and BCI has done – and continues to – work on developing further market demand from large international retailers.*

Other areas for consideration that were raised during the discussions included:

- Indian farmers now have to regularly spend money on seeds whereas before they used to use their own seeds at no extra cost. This is now a significant cost burden that needs to be factored in when looking at how to improve farmer's profit margins.
- The role BCI will have in addressing the problems – especially children working – in cottonseed production in India.

Presentations by Government representatives

*Dr Anupam Barik (Director, Directorate of Cotton Development) provided an excellent and comprehensive overview of the Indian cotton industry, highlighting the following aspects: production statistics, growth trends in Indian production of other textiles, the role and importance of the Indian textile industry in the domestic economy, a detailed overview of the tenth Technology Mission on Cotton and its 4 'mini-missions', and the focus and impacts of its specific objectives: improvement of yield and quality, raising farmer income by reducing costs, and reduction in contamination levels (especially through upgrading of ginning facilities); an overview of the trend in area of cotton planted to Bt cotton (by state); a listing of some of the new and emerging stresses being faced by Bt cotton (eg. poorer performance in marginal and shallow soils, increased incidence of thrips, and new pest problems (or a return of minor pests) such as spodoptera, mealy bug, shoot weevil and mirids); a list of other issues associated with Bt hybrids (including use of refuges, illegal seed, seed rates, agronomic management); a list of strategies to manage insects on Bt cotton; and in conclusion noting the forecast cotton requirements by staple type (eg. short, extra long etc.), and other challenges to be met if the Textile Vision 2012 is to be achieved; and finishing with the comment that the ideal cotton is **as long as wool, strong as steel, fine as silk, as white as snow and as cheap as hull.***

*Dr N Gopalakrishnan (Central Institute for Cotton Research) presented to the meeting the mandate of CICR; aspects emphasized were the conduct of research to improve yield and quality, the development of appropriate farming systems for the 3 different cotton-growing zones, to assist in technology transfer, and to co-ordinate research with state agencies. Dr Gopalakrishnan then provided further details on some of the highlights of the research conducted by CICR, especially in plant breeding, and the development of hybrids with resistance to multiple pests and diseases (such as grey mildew, alternaria leaf spot and bacterial blight, boll worms, jassids and stem weevils). The yield improvement that has been obtained in *G. barbadense* was also highlighted, as were the various abiotic stresses, such as water logging and moisture stress, that need to be included in any screening program when breeding new varieties.*

An overview of the various cropping systems that cotton is currently part of in the various regions was presented, followed by the work being done to conserve and better manage moisture through the development of low-cost drip irrigation systems, the use of poly mulching and multi-tier cropping. It was reported that the highest cotton yield came from a field intercropped with radish, beetroot and coriander.

Work being done on the impact of elevated carbon dioxide levels was presented, which has indicated that there may be positive impacts such as early flowering, higher photosynthetic activity, higher nitrate reductase activity with early induction, more bolls and of a higher weight boll weight, greater dry matter production, a better harvest index, a significant increase in yield, and better fibre quality with higher seed oil content.

Work being done on identifying new botanical pesticides was also shared, as was work being done on comparing the economic and yield impacts of adopting IPM – work that is all supporting the preparation of a cotton pest / insect “expert system”.

The talk concluded with a list of the future requirements that the industry and CICR need to (continue to) work on to maintain the competitiveness of the Indian cotton industry: improving seed quality and the quality of both desi cottons and *G. hirsutum*; facilitating public-private sector linkages for entrepreneurship; quality improvement in *G. hirsutum*; breeding of cotton varieties suitable for 80's and 120's count yarns; extending the area under irrigation; development of agronomic packages that reduce cost of cultivation; development of efficient pest control strategies; and ensuring the efficient transfer of technology.

Mrs Smt. DSS Suseela (Deputy Director of Agriculture, Andhra Pradesh) provided a detailed profile of agriculture in Andhra Pradesh (which provides the livelihood for 70 % of the state's population), noting that 98 % of farm holdings are less than 4 hectares, with the vast majority being 1 hectare or less (and described as marginal) before turning her attention to providing some detailed cotton production statistics in AP, including: AP is forecast to plant 10.96 lakh (1.096 million) hectares in 2007/08, an increase from the normal area of 9.59 lakh hectares; the majority of the cotton is rain fed (81 %), grown in the Kharif season; Bt cotton area for 2007/08 is estimated at 10.01 lakh hectares, or some 91% of the total, with an estimated productivity for all cotton plantings of 400 kg/hectare, giving total estimated production for 2007/08 of 25.78 lakh 170 kg bales (438,260 metric tonnes of cotton); a breakdown of production figures by district; growth rates since 2003/04 (area and yield have both increased); expenditure of government funds (state and federal) on Mini-Mission II on cotton, highlighting in particular the popular components (Farmer Field Schools, distribution of bio-agents and PP equipment, IPM and demonstrations of production technologies); impacts of MM-II noted were a productivity increase, and a reduction in cultivation costs due to adoption of IPM, and reduced pesticide consumption (from 1540 to 107 metric tonnes of technical grade material since 2001/02); the benefits of participating in FFS were noted (49 % increase in net benefit over farmers practices); the presentation finished on the statistics for adoption of Bt cotton varieties since their commercial release in 2002/03, and which it was reiterated constitute 91 % of all cotton planted in AP.

Dr. Anna Rao (Agriculture Department, Government of Maharashtra) commenced his overview with a list of identified gaps (factors that impact upon) regarding technology adoption by farmers: Maximum area under cotton cultivation in Kharif season depends up on monsoon arrivals, sowing depends on sufficient rainfall, many times sowing is late, sowing cotton on light to medium light soils i.e. soils with limiting soil moisture holding capacity, low adoption of improved cultivation practices, no in-situ moisture cultivation practices, less plant population per hectare, protective irrigation facilities are not available, no application of organic manures, no application of basal fertilisers as per soil test, no adoption of integrated pest management, no application of micro nutrients, sowing of Bt cotton on light soils, no seed treatment with bio-fertilisers and bio-pesticides, no application of integrated cotton cultivation practices, lack of grading and admixture of dirt, dust, leaves etc. in cotton during storage and marketing, no group approach in marketing, no intercropping in cotton, no crop rotation followed after cotton, no awareness about organic cultivated cotton practices, and no availability of extra long staples varieties. This list was followed by an equally comprehensive list of strategies for addressing these issues: promoting area expansion in suitable soil type, training farmer for Integrated Crop Management, farm pond program for increasing protective irrigation, increasing area under drip irrigation, FFS for INM, IPM and organic practices, pilot project for demonstrating Integrated Crop Management, recycling cotton plant residue to increase soil health, increased use of micronutrients for yield and quality improvement, clean cotton campaign for increasing quality improvement, adopting one village one variety program, increasing awareness among farmer for quality consciousness, promoting value adoption from cotton to cloth by developing cotton processing cluster, encouraging contract farming. The presentation concluded with a series of proposed development activities: organizing training, organising demonstration plots, organising FFS, promotion of soil test based fertiliser application, promotion of timely sowing, educating cotton farmers about spacing and plant population based on soil type, introduction of inter cropping in cotton, promoting FFS in cotton growing areas for Integrated cotton crop management, popularizing organic fertiliser production and its application to cotton, and promoting cotton growing farmers for micro- irrigation and bio pesticide production. It was emphasised that the Government was placing a lot of effort into increasing the area of production under irrigation.

Mr. K Nagaraj (Agriculture Officer, Government of Karnataka) gave a presentation prepared jointly with the Joint Director of Agriculture, Mr B Y Srinivas. The presentation started with outlining the 10 agro-climatic zones in Karnataka, and the rainfall

distribution – which has a wide range of 500 to 4000 mm / annum. 75 % of the area is rain fed, and only 13 % of cotton is irrigated. 43 % of the rain fed cotton is Rabi, and 57 % Kharif. Production areas by staple length were noted, with the majority being medium staple, closely followed by short staple. Long and extra long staple represent the remaining 30% of the planted area. A yield analysis by district was provided that highlighted a wide range: a low of 124, to a high of 576 kg / hectare. Factors for low productivity were noted as including: the large proportion under (87%) under rain fed conditions; that less inputs are used under rain fed condition; that suitable high yielding, good quality fibre-producing varieties are not available; that there is a lack of adoption of integrated dry land technology to increase the productivity of cotton; that transfer of technology to dry land farmers needs to be strengthened; and that there is a lack of adoption of large scale Integrated Pest Management. Statistics on trends in area, production and yield from 2001/02 to 2007/08 and on funds utilisation on MM-II were provided; popular components of MM-II included: Farmers Field Schools, Front line demonstration on production technology, supply of pheromone traps, supply of bio-agents/ bio-pesticides and supply of manual / power operated sprayers. Challenges and programs associated with cotton production (and the response) include: distribution / lack of availability of certified seeds (Government is providing a 75% subsidy); organisation of large-scale demonstrations of various production technologies, including use of micronutrients and bio-fertilisers; provision / distribution of micronutrients and Bt gene testing kits. Impacts of MM-II noted were: increased productivity, a reduction in the pesticide consumption in the State, popularization of the concept of FFS and improvement in the transfer of technology. Figures demonstrating the benefits of IPM over standard farmers' practice were shared, as was the focus of Government efforts to popularize drip and sprinkler irrigation, as well as planting of ELS varieties and the adoption of IPM through FFS. Further, FFS are to be strengthened and enhanced to include all relevant cotton production technologies. The presentation concluded with an overview of Bt cotton in Karnataka, where it was highlighted that the yield benefits of Bt cotton are only realized under irrigation; that sucking pests remain a problem (especially mirids) and that nematodes may also be a problem. Finally, trends in area under Bt highlight an increase from 6782 hectares in 2002/03 to an estimated 146,685 hectares in 2007/08.

Dr V Kumar (Research Scientist (Cotton), Navsari Agricultural University) gave a presentation on the cotton scenario and priorities in Gujarat. The presentation commenced with an overview of production statistics by district in Gujarat (cotton occupies 22 % cropped area, and contributes nearly 1/3 of the state's gross agricultural product; further, Gujarat is the largest producing state – over 38% of Indian production – with the area under cotton having increased by nearly 50% in the last 5 years to an estimated 2.5 million hectares / 10 million bales in 2007/08, and yield from 139 (1960) to 746 kg hectare in 2006/07). Agronomic reasons identified for these increases included: advanced sowing date to harvest greater yields and to facilitate planting of Rabi crops, use of inter cropping to ensure greater profit and risk cover, use of drip irrigation for greater profits, water saving and improved weed management, adoption of alternate furrow irrigation to save water and increase area under irrigation, use of phosphatic fertiliser, seed treatment for control of sucking pests, adoption of IPM/IRM technology for control of pests, conservation of natural enemies, delaying of resistance development and minimise pollution hazards, restricted use of pyrethroids, use of remote sensing / GIS and crop modelling to predict regional level cotton yield, disease management through seed treatment, cultural, chemical and biological means. Other contributors to increased productivity are: introduction of Bt, increased area under irrigation and a decreased desi cotton area. A number of problems still exist though, including: mealy bug, mites, leaf reddening, para wilt / unknown wilt and grey mildew. The implications of the targets for total Indian production for 2010 and 2012 — 350 and 390 lakh bales respectively — was then discussed, noting that yields of 725 and 800 kg/hectare would be required to meet them. The priorities of cotton in Gujarat in light of this are therefore: Natural resource management, to exploit the agronomic potential of available varieties and hybrids, to conserve and optimise utilisation of natural resources (especially water and land), to increase use of pressurised irrigation systems, and to supplement modern technology with traditional knowledge, making integrated pest and disease management more farmer friendly, broadening and exploiting genetic resources, to improve Asiatic cottons (*G. herbaceum* and *G. arboreum*) for quality, to exploit heterosis in Asiatic cotton through CGMS system and improving seed production technology, to incorporate (?host plant) pest resistance, to develop and popularise ELS cotton, to develop low input, responsive varieties/hybrids and to use biotechnology as a tool. The presentation concluded with details on the technology transfer methods used in Gujarat: frontline demonstrations, on farm trials, Farmers Mela's/Shibirs, KVKs and NGOs, media and Krishi Mahotsav.

Presentations by researchers working on cotton

Dr. K V Rao (Central Research Institute for Dryland Agriculture, Hyderabad) provided the meeting with information on research initiatives on soil and water management. Dr Rao commenced by highlighting the significant increase in both production and productivity since 2003, with details on a state-by-state basis being provided. Trends in area under irrigation were also presented, as was a map showing rainfall distribution across the cotton growing zones. Information on soil type from selected districts was then discussed, as well as the distribution of soil types across the cotton growing regions. While over 50 % of the cotton area is on deep soils, some 30 % is also grown on very shallow soils.

Dr Rao then presented a series of water management practices appropriate to the various combinations of rain fed (high and low rainfall) and irrigated (high and low rainfall) cotton.

	Low Rainfall	High Rainfall
Rain fed	In-situ water conservation (conservation furrows, ridges and furrows, tied ridges etc.)	In-situ water conservation: intercropping, water harvesting
Irrigated	<i>Essential for getting economical yields</i>	Need based: furrow irrigation, alternate furrow irrigation, critical Irrigation (furrows), drip irrigation (for dry spells-increasing in use)

Dr Rao then advised that better water use can be gained through improved management practices and systems. However, there is a need is to demonstrate them in farmers fields in smallholdings. Further, it is necessary to put all of them at one place to generate systems-based information on BMP's.

Micro – irrigation is an approach that may be promoted to improve water use. However, in order to realise the full potential of such a system, awareness on the importance of irrigation scheduling amongst farmers is necessary. There is also a concomitant need to dissuade farmers from continuous application of irrigation water (seen as carried out at least in part because power is freely available). There is also a need to promote the concept of sharing water with other farmers, to help ensure the cost sharing of head control units and also ensure some level of deficit scheduling of water.

The presentation concluded with information on the affect on productivity of a range of variables – variety, Bt or non-Bt, soil type, and also comparing row spacing's under a series of different systems: irrigated, drip and rainfed.

Dr N Gopalakrishnan (CICR, Coimbatore) provided a comprehensive overview of the topic “nutritional management in cotton”. He began by noting that as well as nutrition management, varietal choice, timely planting, good weed control, effective pest control and good harvesting and handling practices are all important in maintaining the value of the crop.

A description of the limitations pertaining to each of the cotton growing zones was provided, together with potential solutions to these limitations. These are tabulated below:

Zone	Constraints	Solutions
North	For Desi varieties (area in decline) poor quality and less profit For Hirsutum varieties CLCuV susceptibility Shortage of irrigation water (canal) availability in time High temperature in early stages Areas prone to water logging Bollworm damage	Quality improvement in desi varieties CLCuV resistant varieties Development of abiotic and biotic stress tolerant genotypes Fine tuning of IPM/IRM Cost effective INM techs Profitable crop rotation - Cotton, Wheat, Mustard and others
Central	Limited irrigation potential Shallow soils, poor fertility, rainfall and its distribution and early termination, recurrent drought Nutritional management vital Undulating terrain and varied soil fertility (All lead to low yield)	Drought tolerant and quality improvement For rainfed. Water harvesting in terrains and efficient genotypes for shallow soils Ashta' model IPM Role of <i>G. hirsutum</i> hybrids and Bt-cotton Efficient crop management, extension and INM
South	Seed/input quality? Extended wet spells and pest problems Monocrop (and its effects) and competition from other crops (Sugarcane and Paddy) Declining in area and production (TN) Smallest hybrid areas- Bt gaining upper hand	Appropriate INM and IPM strategies Area increase under hybrids and Rice Fallow/Summer (T.N.) Intercropping of Groundnut and Pulses - Remunerative Rain water management and intercrop of <i>herbaceum</i> (KTK) Quality improvement in <i>G. arboreum</i> (KTK)

Data on the fertility of soil in India (for N P and K), based on 3.65 million samples showed that the majority (63%) of soils are deficient in N, and over 40 % are deficient in P. K deficiency was relatively minor, with only 13 % of soils rating low in K.

Information on the important role of nitrogen, phosphorous and potassium, and their cycles, was then provided. This was followed by a table, by zone, of suggested fertiliser management practices — including details on the impact of various nutrients on fibre quality, and how to correct specific nutrient deficiencies.

The discussion then turned to Integrated Nutrient Management (INM), where it was noted that farm-yard and green manure can both play an important role. Experiments are being conducted on in-situ green manuring, using sun hemp. Results so far indicate a positive outcome.

Other practices being investigated as part of INM include: use of cover crops (neem), drip irrigation, poly mulching, fertigation and crop residue management (important to keep), biofertilisers, multi-tier cropping and precision soil fertility management (to account for inherent soil variability).

In conclusion, Dr Gopalakrishnan advised that:

- An Integrated Plant Nutrient System involving rational and appropriate use of fertilisers and organics is the key for higher nutrient use efficiency, low cost of production and higher return; and
- That an INM system is the most efficient and practical way to mobilise the available, accessible and affordable plant nutrient sources to optimize crop productivity and economic return to the farmer.

Dr O P Sharma (National Centre for IPM) delivered a presentation prepared jointly with Dr Bombawale, that provided an overview of the unique challenges in developing an IPM Program India, such as: cotton is grown all year round, with all 4 commercial varieties of cotton being cultivated, from anywhere between 130 – 240 days, with over 200 cultivars being available to choose from, and the use of inputs ranging from 0 to extensive. Further, while India has the largest area under cotton, and is the second largest producer, the average productivity is only half the world average.

A timeline from the 1960's to 2004, of the changing pest scenario, genotypes being cultivated and management practices being adopted, was shown, followed by an explanation of the link between resistance to pesticides and pest resurgence. This led into a discussion about a solution to pest resistance and resurgence: IPM, which was defined per the FAO definition, i.e. *“a pest management system that, in the context of the associated environment and the population dynamics of the pest species, utilises all suitable techniques and methods in as compatible a manner as possible and maintains pest populations at levels below those causing economic injury”*. The basic principle of IPM was explained as being that the management unit of IPM is the agroecosystem, and that any management action that does not consider this may produce unexpected and even undesirable effects. The IPM subsystems were noted as being 1) host plant resistance 2) regulatory measures 3) cultural practices 4) biological control 5) other measures 6) botanical pesticides and last 7) chemical control. The practical measures available for cotton cultivation were then listed, as were also an IPM program developed for Punjab, and a program developed under the All India Cotton Crop Improvement Program. A series of other IPM approaches were also shared, such as 'Biointensive Pest Management', the "Ashta" IPM model and an 'Adaptable' IPM module. The impacts of adopting IPM (increased yield, positive economic benefits and reduced pesticide use) were then presented, as were some of the specific practices being adopted in the central zone, such as seed treatments, trap and inter crops, use of pheromone traps, bird perches, release of trichogramma, and needs-based application of pesticides. Practices in the north zone included use of organic manure, bird perches, detopping, hand picking of eggs and larvae, and alternating between NSKE (neem seed kernel extract) and chemical pesticides. A resistance management strategy was proposed, as follows: cultivation of a sucking pest tolerant cultivar to help avoid sprays being required up to 60 days after sowing; provided an ETL to spray decisions is adopted, then the following window strategy can be adopted: endosulfan up to 90 days after sowing (resistance levels of the pest are lower at start of season); no organophosphates until 90 days after sowing; synthetic pyrethroids against PBW only after 120 days after sowing.

The role of Bt cotton in an IPM program was then discussed (following an overview of the introduction and subsequent adoption and expansion of Bt cotton in India, to the current stage where it is estimated over 2.5 million farmers will plant Bt cotton in the 2007/08 season). Figures were presented that showed IPM plus Bt produced the highest yield in a trial in Maharashtra, and a table was also presented that it was argued, showed that Bt cotton performed well compared to conventional cotton at most locations (though the extent of the performance varied).

Figures tabulating the change in pesticide consumption, by pesticide group, since 2000/01 showed that to 2005/06: use of organochlorines, organophosphates and chloronicotinoids decreased; and that use of carbamates, pyrethroids and biopesticides increased.

The impacts of the introduction of Bt were summarised as:

- Performance in marginal and shallow soil is poor.
- Incidence of various secondary pests — pink bollworm (not controlled properly, ? due to drop in protein expression late season), thrips, mealy bugs, spodoptera and mirids (*Creontiodes biseratense*), shoot weevil in central zone and stem weevil in Tamil Nadu — is increasing.

Areas to watch with Bt cotton are: the above pests, plus forced boll opening (observed in Haryana and Rajasthan), red leaf (Karnataka), and grey mildew.

Dr. K Kranthi (CICR Nagpur) highlighted the challenges associated with maintaining seed purity in genetically modified cotton planting seed. The presentation commenced by summarizing the regulatory guidelines for testing, and the methods used to test for the presence of GMO seed (Elisa, PCR, dip-stick), as well as the detection parameters and the sampling requirements. It was pointed out that testing for the presence of GMO does not indicate hybrid purity. A list of the various Bt cotton genes currently in India, and available globally was provided, as part of an overview of the transgenic events released for commercial cultivation. Other transgenic crops listed as being under development were okra, rice, tomatoes, pigeon pea, maize, cabbage, cauliflower and brinjal, leading into a recap of the introduction of Bt cotton in 2002, and its subsequent growth in planted area; some 135 Bt hybrid varieties have been released to date.

Dr Kranthi then focused on Bt seed quality control, and the use of Bt detection kits (developed by CICR) that are available to farmers (free of charge) to allow them to test for the presence and purity of Bt in their planting seed on the spot. The sampling protocols adopted under the Seeds (Control) Order of 1983 were explained, which is used given that there are 4 types of Bt cotton in India: *legal Bt*, *illegal Bt* (i.e. not approved for commercial cultivation by the regulatory authority); *fake legal Bt* and *fake illegal Bt*. Statistics from the testing program on the prevalence of spurious Bt seeds was shared, indicating a reduction in the total % of illegal Bt on the market (but an increase in the number of faked cartons of legal seeds).

Dr. S S Patil (University of Agricultural Sciences, Dharwad) provided his perspective on “Achievements and Future Prospects of Cotton Breeding in India”. Dr Patil noted that the introduction of Bt cottons and the efforts on improving productivity through improved genetics have worked together as key factors responsible for the phenomenal rise in cotton production in India – a five-fold increase in 60 years from a virtually unchanged area of cultivation. Dr Patil then noted the various advantages and disadvantages of each of the species.

It was also highlighted that work is being conducted to release ‘public’ varieties containing Bt, which would allow farmers to retain seed for the planting of the following year’s crop. In response to a question, Dr Patil advised that a list of released varieties, as well as a package of crop production activities is published annually.

Dr Patil concluded by highlighting the importance of work being done to improve the machine-pickability of Indian cottons (i.e. make them more ‘compact’) – as they are presently robust or bushy types, while in developed countries, compact cottons, accessible for machine picking are being cultivated. In response to a question about whether work is being done to develop a mechanical harvester, it was advised that work is being done. It was stressed that some of the main challenges in developing a machine are to ensure that the trash content remains low, and how to take into account the wide range of plant and row spacing’s that are utilised by Indian cotton farmers.

Dr. P G Patil (Officer in Charge, Ginning Training Centre, Central Research Institute on Cotton Technology) discussed fibre quality management at the cotton gin. The most important fibre quality parameters were noted as fibre length, length uniformity, fibre strength and fineness / micronaire; other important parameters listed were elongation, short fibre content, trash (including its distribution), colour, and neps (both fibre and seed coat). A short film that demonstrated the impact of the recent investment in upgrading the Indian ginning industry was then shown, and was followed by a description of the ginning process, and the various functions of each of the stages of ginning. The difference in saw ginning and (double) roller ginning was mentioned, with the latter gin dominating the Indian industry. Detailed reference was made to the importance of utilising a warm air humidification system. It was noted that the current capacity of the Indian ginning industry is 400 lakh bales, compared to the current record production of 310 lakh bales

The Indian standard specifications for a bale of cotton were presented; they cover trash content, moisture content (less than 8.5%), dimensions, mass (170kg ± 10 kg) and density, wrapping material and bale markings. This was followed by information on the structure and chemical composition of cotton fibres, and on the advantages and disadvantages of cotton compared to other fibres, and also a comparison of Indian cotton against imported cotton. The main aspects to note are that imported cotton is lower in contamination, less variable and has a higher value for micronaire (i.e. more mature) and tenacity, but on the downside, imported cotton may have the problem of stickiness (not present in India). Strengths of Indian cotton are its wide range of type, and the large volumes available to the textile industry, the requirement for less cleaning (and therefore reduced fibre damage) due to it being handpicked, and the fact that it is roller ginned, which is also gentler on the fibre.

Regarding contamination management (minimal trash/contamination being an important factor in the value of the cotton), it was stated that the trash content will be affected by the method of picking, whereas the level of man-made contamination (eg. hair, plastic, jute, grease) is affected by the degree of house keeping and regard to management adopted by those handling the cotton. The three sites at which contamination can occur are at the farm, at the market-yard and at the gin. An extensive range of practices to minimise contamination at each of these sites was then provided.

In summary, Dr Patil noted that:

- ginning is the first important mechanical process that cotton undergoes on its passage from field to textile industry;
- that any damage in quality caused during ginning cannot be rectified later;
- due to implementation of TMC, ginneries are being modernised whereby contamination could be almost eliminated in the pressed bales due to improved storage structures, use of pre and post cleaners, use of pneumatic / mechanical conveying system at every stage of material transfer, automatic bale handling systems, employing trained manpower and manual contamination pickers;
- warm air humidification is the appropriate technology which can preserve fibre attributes;
- Indian ginneries will be able to deliver low trash, contamination-free cotton bales to the domestic and export oriented mills.

Mr Ghorpade (Advisor CITI - CDRA) commenced by noting that prior to India being a net exporter of cotton (i.e. when its textile industry relied more heavily on imported cotton), cotton quality did not receive adequate attention. The subsequent increased production — due to improved weather conditions, improved seed quality and availability and the introduction of Bt cotton — has corresponded with an increased quality. Statistics were then provided on the number of spinning units, weaving knitting units and looms currently operating in India, including the rise in consumption by the domestic textile industry, and the projection that consumption will be 450 lakh bales by 2012. Mr Ghorpade then outlined some of the deficiencies to be overcome: high cost of cultivation; prevalence of spurious seeds and pesticides; multiplicity of cotton varieties leading to rampant mixing; poor fiber attributes of most of the varieties of cotton; tardy transfer of agricultural technologies to farmers fields despite efforts under Mini Mission II of the TMC; un-hygienic handling of harvested cotton at the farm yards; poor infrastructure at Market Yards despite up gradation / modernization of market yards under M.M.III of TMC; the high trash content in cotton (6 to 8%) despite being hand picked; and the wide range of contaminants in cotton numbering over 20 types. The quality requirements of the industry (due to the needs of the high speed processing systems in place) were listed as: highly clean and contamination free cotton; stronger and more mature fibers for a given length; low variability in fiber attributes from bale to bale; low short fiber content; high fiber elongation; low fibre neps and seed coat fragments; low organic trash and micro-dust; and high amenability to cleaning. Specific limits in figures were also indicated for some of these parameters, according to the yarn type being spun. The pro-active role of the textile industry and trade in cotton production in assisting farmers meet these quality specifications was explained, with activities including: CITI - CDRA and the Regional Mills' Associations undertaking extension activities to create awareness among cotton growers about modern methods of cultivation and effectively dealing with the pests, insects and better harvesting practices while picking capus from the fields, collection, storage, transportation and handling; an ambitious programme launched by CITI-CDRA for Integrated Cotton Cultivation in Maharashtra covering nearly 50000 acres involving 14163 cotton farmers from 342 villages from Buldhana District of Vidarbha Region; CITI-CDRA has taken up the issue with the Union Ministry of Chemical and Fertilisers to impress upon the fertiliser plants the need to use colored polythene bags for packing fertilisers instead of white polythene bags, as white polythene threads lead to contamination in lint cotton which is difficult to remove and creates problems in dyeing of the yarn; CITI-CDRA, SIMA-CDRA and individual Mills are undertaking Front Line Demonstration Projects on Production Technology and Integrated Pest Management under M.M.II of the TMC for the past three years; CITI-CDRA is implementing 1100 FLDs on Production Technologies and 2 FLDs on IPM during 2007-08 in Maharashtra; a consortium of Mills in Punjab has been implementing Village Cluster Adoption Programme since 2003 in association with Nationalized Banks, Fertiliser Companies and Scientists from Agricultural Universities for improving the Productivity of Cotton in Punjab, leading to increased yields; SIMA-CDRA is involved in cotton development activities including research, seed multiplication and bio-fertiliser input production and distribution besides transfer of technology on production of cotton in Tamil Nadu on a large scale; E.I.C.A, Mumbai through its COTAAP Research Foundation is also involved in development and research activities on cotton for past many years, besides taking up the programme on F.L.D. on Production Technology under M.M.II of the TMC during the past three years.

Dr. M N Reddy (Director, AE and C, MANAGE) provided an overview of the current extension approaches being used in cotton. First, some background on past extension approaches was provided to set the context for the current approaches being used, with the observation that the 1950's focused on community development, the 60's and 70's focused on resource-rich areas to ensure food security and from the 70's to 1990 extension was characterised as: focused on production through dissemination of green revolution technologies; being crop centred rather than taking a farming systems approach; and adopting a "top down" approach. This system had a number of constraints, including: the existence of multiple technology transfer systems; a lack of

farmer focus and farmer feedback; inadequate technical capacity within the extension system; weak research and extension linkages; poor communications capacity; and inadequate operating resources and financial sustainability. The risk of considering Bt as a solution to all problems was also highlighted.

Consequently, the extension approach now being adopted has the following characteristics: decentralized decision making and bottom-up planning; a convergence of line departments; the use of multi agency extension strategies – including and indeed encouraging private sector/ NGOs to participate in extension; use of a broad-based extension delivery (FSA / FSBE); use of Farm School/ Farmer Field School and other group approaches to extension – FOs and CIGs; inclusion of gender concerns; and a focus on the sustainability of the extension services themselves. The following table, highlighting the shifting paradigm from “production – led” to “market – led” extension was shared with the meeting participants:

Aspects	Production - Led Extension	Market - Led Extension
Purpose/objective	Transfer of production technologies	Enabling farmers to get optimum returns out of the enterprise
Expected end results	Delivery of messages Adoption of package of practices by most of the farmers	Optimum returns
Farmers seen as	Progressive farmer High producer	Farmer as an entrepreneur “Agripreneur”
Focus	Production / yields “Seed to seed”	Whole process as an enterprise / High returns “Rupee to Rupee
Technology	Fixed package recommended for an agro-climatic zone covering very huge area irrespective of different farming situations	Diverse baskets of package of practices suitable to local situations/ farming systems
Extensionists’ interactions	Messages Training Motivating Recommendations	Joint analysis of the issues Varied choices for adoption Consultancy
Linkages/ liaison	Research-Extension-Farmer	Research-Extension-Farmer extended by market linkages
Extensionists’ role	Limited to delivery mode and feedback to research system	Enriched with market intelligence besides the TOT function Establishment of marketing and agro-processing linkages between farmer groups, markets and processors
Contact with farmers	Individual	Farmers’ Interest Groups Commodity Interest Groups /SHG’s
Maintenance of Records	Not much importance as the focus was on production	Very important as agriculture viewed as an enterprise to understand the cost benefit ratio and the profits generated
Information Technology support	Emphasis on production technologies	Market intelligence including likely price trends, demand position, current prices, market practices, communication net work, etc besides production technologies

Dr Reddy concluded by identifying areas for BCI to consider focussing on:

- Creation of success stories and their replication
- Better packaging of messages
- Synergising the efforts of all the stakeholders
- Organising continuous workshops, seminars at various levels
- Use of folk lore
- Aggressive campaigning through media, ICT, etc.
- Recognition through awards and rewards

Dr A Siddiqui (Plant Protection Officer, CIPMC, Hyderabad) gave a presentation on the implementation of IPM through farmer field school by central IPM centres. The principles of IPM were considered as being: grow a healthy crop; undertake regular pest monitoring; conserve natural enemies; and make the farmers decision makers. An explanation of Farmer Field Schools (FFS) was then provided, i.e. a school without walls that adopts a participatory approach to learning based on field observations and experimentation, and which focuses on training farmers on IPM techniques by providing them with the skills and knowledge to make their own decisions (seeing is believing and learning is doing).

The broad approach as to how FFS are established was also explained, with high insect pressure and/or high pesticide-using villages being targeted. A central component of the FFS is a Cotton Agro Ecosystem Analysis, which involves field observations and drawings, followed by small group discussions, then presentation to the larger group before then making a decision. A range of the issues being subjected to participatory action research was presented, with the following long term studies being conducted: IPM vs. current farmers practice; varietal trials; defoliation experiments; effect of removal of fruiting bodies (to investigate insect damage thresholds); fertiliser trials; and weed management trials. Short-term studies are focussing on field predation and parasitisation studies (i.e. impact of beneficial insects); seed germination tests; the efficacy of bio-pesticides; and the adverse affect of pesticides on natural enemies. The presentation concluded with a list of the benefits that have been identified from involvement in FFS: reduction in pesticide usage; enhanced adoption of bio-pesticides; improved conservation of natural enemies; minimization of health hazards; reductions in input cost; an elevation in the socio-economic status of the farmers; and adoption of community-focussed IPM.

Mr. Arun Ambatipudi reported on the work being done by the Chetna Organic Cotton Project. The genesis of the project was an FAO program on Integrated Pest management, and while the initial cost per farmer was high, the project is now spending the same amount in total as it was in its initial stages, but is now working with 8,000 farmers, compared to 230 at start up. It was emphasized that although it is an organic project, they adopt an inclusive approach and do not eliminate non-organic farmers. The project also considers social issues at the gin level, that is it adopts a holistic approach to delivering benefits and value in the cotton supply chain.

Dr. C S Pawar provided the meeting with his perspective on Integrated Crop Management (ICM) and Fairtrade. He commenced by defining ICM as “a strategy which best meets the requirements of sustainable and progressive development in agriculture by managing crops profitably without damaging the environment or depleting natural resources for future generations”. Further, “It is a dynamic system that uses every possible research, technology and experience to suit local conditions to optimize food production, energy conservation and minimise pollution”. He also placed ICM in the middle of a progression from chemical farming (“repressive and unsustainable”) to ICM (“progressive, sustainable and regenerative”) to organic farming (“sustainable and regenerative”), as regards increasing natural control and balance, and decreasing human risk and eco-pollution.

The focus areas of management for ICM are land and water, IPM (pest management), INM (nutrient management) and general management, and details on the specific issues considered under each of these headings were noted, for example reducing erosion, improving water-use efficiency, maintaining the soil’s nutritional status, encouraging natural enemies of cotton pests, and gaining access to good quality inputs. Further details on the types of practices employed were also detailed, for example plant row spacing, sowing techniques, seed dressing, suggested intercrops and crop rotations (cowpea, blackgram, other legumes), use of green manure crops such as sesbania, sowing dates.

Evidence as to the economic and yield impact of adopting ICM (by state) was then presented, indicating both increased yield and reduced input and cultivation costs. Comparative figures for IPM, ICM and organic were also displayed, as well as data indicating the reduction in ‘pesticide pollution units’ (PPU’s) obtained by moving from IPM to ICM to organic.

An overview of the requirements of Fairtrade followed the discussion on ICM, including data on the number of ICM Fairtrade farmers supplying Agrocel (7,123, growing 18,274 acres of cotton).

Dr Pawar then turned his attention to the specific issue of producing organic matter from organic waste, and described the techniques being used to supply ICM farmers with a good source of organic matter for their fields, including 1) cow sheds 2) shredding cotton stalks (rather than burning them), and 3) a combination of 1) and 2), utilising a bio-culture to enhance breakdown, so that it is available to spread after 40 days.

Mr. Vamshi Krishnan (WWF) provided an overview of the Indian Sustainable Cotton Initiative, a project being conducted under the World Wide Fund for Nature’s (WWF) Thirsty Crops Initiative, with funding from the European Union, and support from CRIDA and MARI. A major focus of the project is promoting water use efficiency and the adoption of improved water management practices so as to sustain the ecosystem, and the health of the local community. A specific objective is to have 500 farmers using better management practices by 2008, and have awareness generated amongst another 5,000, also by 2008.

The work is currently being undertaken in the Godavari Basin, Andhra Pradesh. Other significant crops in the basin are rice, sugar cane and wheat. A FFS approach is being adopted to develop locally-adapted farming methods to help farmers improve

their productivity. BMP's being adopted to date have focused on pest management, water management and clean picking of the crop (a detailed list was shown, that included reference to the number of farmers adopting each specific practice).

It was indicated that the project is also looking at other issues, including an analysis of the cotton value chain, and a comparison of the benefits gained from adopting a range of different systems (Bt vs. non Bt., FFS vs. non FFS vs. FFS demo), for a range of practices, including rain fed vs. drip vs. furrow irrigation). The results to date show a reduction in fertiliser and pesticide use by FFS farmers.

The presentation concluded with the learnings and challenges of the project to date: *Technology*: BMP's need to be simplified and modified to local specific; the collection of alternative technologies, then experimentation in the field/ trial plot helped to innovate BMP's (eg. Madhyam use, close spacing etc); *Institutional Building*: farmer organisation and the cooperative concept helped to mobilize the farmers easily and also help to sustain the project; farmers cooperatives can be used as a channel to reach the large farming community, for replication, scaling up, marketing of cotton etc. *Implementation*: following up FFS activity (eg. contacting the absentees, recording the result of FFS demonstration) is equally as important as the actual conducting of the FFS; *Production*: Cotton cultivation in Warangal is a complex issue – it is characterised by Bt/ Non Bt; NPM, IPM; varietal differences, soil differences, climatic variations. Hence, it is a challenge to standardize/ recommend the BMP's, and requires:

- intensive monitoring of each practice
- demonstration of BMP's in different soils/ Bt, Non Bt
- intensive follow up of farmers, who may experience complex problems
- the ranking of BMP's – for both efficiency and adoptability

Small groups working group sessions — summary of participant feedback on draft BCI Principles

Environment

Following a recap of the outline of the BCI framework and draft principles, the meeting broke into working groups, based on the:

- Water, soil and habitat principles (considered together due to their interrelationships)
- Fibre quality management principle
- Pesticide management principle

Each of these groups were asked to answer the following set of questions:

1. *Are the current draft environmental principles applicable in India? (if no, why not?)*
2. *Are the listed criteria relevant for this principle in India?*
3. *Are there any other issues that are important for the principle that are not captured by the listed criteria?*
4. *What are the current best practices associated with each of the criterion?*
5. *What are the reasons for non-adoption of the recommended best practice?*
6. *Are there any practices associated with the criterion that you believe are essential to qualify for better cotton?*
7. *Are there any practices associated with the criterion that should disqualify as better cotton? (eg. use of particular pesticides).*

Summary of the answers of the 3 working groups on environment / production principles

1. Are the current draft environmental principles and criteria applicable in India? (if no, why not?)

2. Are there any other issues that are important for the principle that are not captured by the listed criteria?

3. Are there any other issues that are important for the principle that are not captured by the listed criteria?

Each group was also provided with suggested criteria for the principle under consideration:

Principle	Suggested criteria relating to ...
Soil health	Soil management, erosion control, fertiliser management
Water management	Efficient use, extraction, water quality
Pesticide management	Occupational health and safety, application, IPM, choice of pesticides
Fibre quality	Agronomic aspects, harvesting and handling aspects
Habitats	No specific criteria proposed

It was agreed that the proposed principles and criteria were all relevant, **noting** that a number of suggestions for re-wording the principles, and some suggested additional and / or rearranging of the criteria were made as follows:

Principle: Better Cotton is produced by farmers who care for the health of the soil (*no changes made*)

Criteria: Soil Management: practices that are used to maintain and enhance the structure and fertility of soil (*no changes made*)

Erosion Management: practices to minimise erosion and its impacts (*no changes made*)

Efficient integrated nutrient management: Nutrient (organic and inorganic) use based on needs of crop and availability of resources in soil (*additional detailed wording suggested*)

Cropping system management: Crop rotation/ intercrop (cotton based) and sequence crops are used (*new suggested criterion*)

Principle: Better Cotton is produced by farmers who maintain the quality and availability of water (*Suggested re-wording: Better Cotton is produced by farmers who care for efficient use of water*). Reference to water quality was removed as it was considered unclear as to whether it referred to water quality with respect to suitability for crop irrigation, or the water quality of any water leaving the farm. Further, it was considered that as the former issue was largely outside the ability of the farmer to manage individually, and that the latter issue could be dealt with under the habitat principle, that the reference to water quality could be removed from the wording of the principle.

This group commented that as pollution (i.e. water quality) is more amenable to being managed at a group level – given it is difficult to attribute the pollution to any one farm, and whereas the focus Better Cotton is the individual farmer, then the focus of the principle should be on those aspects under the farmer's direct control.

Criteria: Efficient use (irrigation and rainfed) criterion: Optimum water use (BMPs for irrigation and rainwater use) (*no changes made*)

Extraction criterion: Water is [extracted] per compliance terms and at sustainable level (*suggested amend 'legally extracted' to 'per compliance terms'*)

Conservation criterion: Efficient conservation of rain water (*new suggested criterion: Water quality criterion removed from this principle per above discussion and included under habitat principle*)

Principle: Better Cotton is produced by farmers who conserve natural habitats

Criteria: Three new criteria and the addition of a criterion from the water management principle were suggested:

Bio diversity: Natural parasite predator relationships maintained

Farm runoff: Reducing the loads of chemicals/ fertilisers in runoff water

Soil Pollution: Protecting soils from excessive use of fertilisers and agro chemicals

Water Quality: Water courses and other bodies of water are protected from contamination by farm runoff

Principle: Better Cotton is produced by farmers who use pesticides safely and responsibly

Criteria: Occupational Health and Safety Criterion: Pesticides are to be applied by *healthy, skilled and trained* people by taking appropriate protective and safety measures. (*Avoid pregnant/nursing women and Children*).

Application criterion: Only legally registered pesticides with *Central Insecticide Board (CIB), India* need to be applied as per label directions.

Adopting of IPM criterion: *Recommended local IPM packages to be used*

Pesticide choice criterion: Recommended Pesticides least toxic to non-target organisms and less persistent in environment need to be used.

Criterion regarding restriction on certain types of pesticides: *WHO 1, PIC and national recommendations need to be considered.*

Plus: *Chemical pesticide use needs to be also judged on eco friendly parameters (safety to parasitoids, predators, beneficial flora and fauna, pesticide resistance management and pest resurgence etc.*

Principle: Better Cotton is produced by farmers who care for and preserve the quality of the fibre

Criteria: Agronomic practices (Choice of variety, Land preparation, plant protection, moisture retention for dry-land / irrigated etc)

Harvesting, Storing, Transport, Ginning (roller) and Pressing

4. What are the current best practices associated with each of the criterion?

Best Practices identified for pesticide management were:

- For occupational health and safety, the safety guidelines recommended by CIB (Regulatory Authority), India
- For IPM, location specific recommendations by State Agricultural Universities
- Crop Stage based application with due consideration to Natural control mechanisms and Insecticide Resistance Management
- Compliance with CIB regulations on banned and restricted use of pesticide.

Better soil management practices identified as also being relevant to fibre quality management were:

- soil selection and choice of varieties based on soil type
- maintaining soil health
- avoiding erosion
- extension services that provide information about yield, economic benefits etc.

Best Practices listed for fibre management were as follows (note also that the presentation made during the plenary session by Dr P G Patil contained detailed information on best practices for fibre quality management).

- Information dissemination by mills and/or traders/buyers about the requirements, e.g. quality, variety and staple length
- Branding
- Market driven information promoting varieties /grade
- Choice of genotypes
- Enabling environment, where government supports farmers through market interventions (MSP by quality and buying through CCI)
- Modernization and upgrading of market yards with testing facilities to help farmers to assess the quality of produce before trading
- Proper maintenance of ginning machinery
- Training of technical staff
- Availability of technology/platforms

5. What are the reasons for non-adoption of the recommended best practice?

Reasons advanced by the groups were: Lack of timely availability (i.e. non-availability of inputs within specified time limits) of financial resources, inputs (eg. bio-rationals) and of high quality bio-inputs; lack of finance; poor maintenance of equipment (eg. spray equipment); lack of awareness/interest in technology, quality issues and legislation (and lack of effective enforcement mechanism); conflict of interest of farmer with the society (social, environment issues; illiteracy; non availability of labour during crucial crop period; prevalence of spurious inputs especially seeds, fertilisers and pesticides

Problems noted with respect to lack of awareness for managing fibre quality included: farmers opting to grow more than one variety and the mixing of different varieties, especially at harvest and ginning.

6. Are there any practices associated with the criterion that you believe are essential to qualify for better cotton?

7. Are there any practices associated with the criterion that should disqualify as better cotton? (eg. use of particular pesticides)

The following were suggested as being essential to qualify as Better Cotton:

Adoption of Integrated Crop Management / Integrated Resistance Management / Non-Pesticide Management / Best Management Practices / Good Agricultural Practices

Disqualifying

It was suggested that the following practices should disqualify as Better Cotton:

- indiscriminate use of pesticide
- tank mixing of pesticides
- non-label use of pesticide
- continuing the crop beyond normal crop duration

Socio-Economic Principles

Following the working group discussions on the environmental/production focussed principles, the meeting then broke into 3 new groups based on the draft socio-economic principles, i.e.

- Decent work
- Access to finance
- Producer Organisation

The questions to, and answers of, each of these groups is summarised below.

Better Cotton Initiative will respect and promote Decent Work

The working group commenced with debate on what 'Decent Work' means in the context of Indian cotton cultivation, highlighting the following issues:

- Decent work should be an opportunity for fair pay for work done, and equal remuneration for men and women for the same work
- Family labour should be respected and remunerated (especially women's contribution in the field)
- BCI should take cognizance of the role and prevalence of tenant farming practices (AP, Maharashtra, Karnataka) - as they do not have access to formal commercial bank loans and may not receive equitable wages or benefits
- Migrant labour issues, and issues relating to the provision of social security benefits to migrant labours in Punjab, Haryana (inter-/intra-state migration)
- In some states, such as AP, cotton farmers also work as labourers on other farms (rain-fed areas)
- Small farmers generally use family labour; there may be some exchange of family/community labour during peak seasons
- An understanding of the rural labour market is key in understanding the role and nature of Decent Work: in particular, there are bottlenecks in the availability of labour in rain-fed/all areas in peak season and this affects both productivity and labour costs

The working groups formulated the following responses to the proposed draft criteria themes. (It should be noted that the presentation given to the plenary session included feedback from FLA, who were not present during the working group session, and hence there was not full agreement on all recommendations.)

Criteria applicable to all farms, large and small:

1. Farmer and labourer health and safety
 - is an important criterion
 - negligence of health and safety issues is largely due to lack of knowledge and information
2. Participation of children and young workers
 - Children should not be allowed for long working hours for field operation (drudgery) and hazardous work (including pesticides application) should be prohibited (this may also be indirectly related – for instance, children may be involved in bringing water for pesticide use and thus indirectly involved in harmful activities)
 - Provided that the child is attending full time school, light work on a family farm was viewed as acceptable by the working group
3. Employment is freely chosen
 - The group suggested that there is no forced or bonded labour in India in agriculture (esp. in cotton), but that this criterion was acceptable and important
 - Agricultural labours are booked for peak seasons in advance on mutually agreed wage payment. It was noted that revision of wage payment during the peak season in accordance with the market rate may help in improving employment equity
4. National legislation
 - There is NREG (National Rural Employment Guarantee) scheme which offers 100 days' work per year to rural workers, as well as offering scope for maternity and maternal health benefits
 - Farmer's health insurance (cf. Yashashwini scheme in Karnataka)

The working group also suggested that BCI should give careful consideration to countries where there is a lack of national labour legislation, particularly as it applies to agriculture.

Working group: questions for discussion

1. Is the 'Decent Work' Principle relevant to cotton cultivation in India? (If not, why not?): Yes
2. Do you agree that a distinction should be made in the application of Decent Work criteria, between small family farms and larger farms which depend on hired labour?
 - *Health and Safety should be applicable to all forms of farms.*
 - *(FLA also proposed that, except wages and benefits, all criteria should be common to both small and large farms)*
3. How is work divided between 'family work' and work done by 'hired labourers' (including day-workers and piece-rate workers) in Indian cotton cultivation? Does this vary by State?
 - *The types of work commonly done by family labour include weeding, picking and sowing*
 - *Large farms (eg in Haryana, Punjab) employ greater numbers of hired labourers, so this varies from state to state*
 - *The group noted the importance – and challenges – of contract labour engagement, especially in organic cotton.*
4. For each stage of the cotton growing cycle, what are the current best practices with regard to farmer and labourer health and safety? Please describe the practices for each stage of the cycle.
 - *Mechanisation in Haryana, Punjab (large farms) - mechanisation of operations as best practice (at village level)*
 - *Sowing: chemically-treated seeds should not be handled with bare hands*
 - *Fertiliser application (women are mostly involved in fertiliser application): spot application followed by hand wash*
 - *Weeding (95% is done by women): inter-culturing is best practice*

- *Pesticide application: no use of children below 14yrs of age. Contracting this work to skilled people. Tractor spraying in big farms.*
 - *Picking: Child labour should not be used. Cloth bags are being provided while picking and education on clean picking.*
5. Recognising the socio-economic and cultural context of family work in rural India, what are the most important issues to bear in mind in order to ensure that children's and young workers' participation in cotton growing is a positive experience (eg role of education, apprenticeship, training)?
 - *Secondary education in village schools does not guarantee employment after 10th grade, neither does it provide vocational training related to support employment. Issue is that child is neither educated, nor skilled. These 'drop-out' children may be trained and can be engaged to impart training and as a motivator/ facilitator for farmers.*
 - *Inculcate dignity of farming work and exposure of school children in farms: eg pest awareness stickers stuck on notebooks to educate children.*
 5. Are there tasks during the cotton growing cycle which are too dangerous for children and young workers to perform? Which ones?
 - *Pesticide application*
 - *Picking (not all members of the working group agreed on this view, though research literature was cited which suggests engagement of children in cotton-picking activities leads to wounds and other physical complications)*
 6. Are there other important aspects to the Decent Work principle which are not covered in the draft criteria themes?
 - *Respect for family labour*
 - *FLA suggested that criteria should be more comprehensive, to include harassment and abuse; and wages and benefits.*
 7. Do Good Agricultural Practices (GAP) or Better Management Practices (BMP) – such as IPM – require an increase in workload? If so, who does this work, and is this a challenge to achieving Decent Work?
 - *Yes. Monitoring of crop health by farmer/family members. No challenge – though extra effort is required.*
 - *Additional resources are required for training, capacity building, monitoring and verification*
 8. Do you think that there should be absolute minimum requirements under the Decent Work Principle, in order to qualify for 'Better Cotton'?
 - *Yes: no forced child labour; fair wage.*
 - *Awareness among farmers/workers on what constitutes Decent Work*
 9. Do you think there should be any work practices which should exclude producers from participating in Better Cotton?
 - *Forced/bonded labour*
 - *Excessive/injudicious use of external inputs*
 - *Non-compliance with national legislation*
 - *Transparency*
 - *Health and safety*

Better Cotton Initiative will facilitate producer organisation (for smallholders)

Proposed draft criteria themes:

- Increased bargaining power
- Improvement in sharing of knowledge and information

Working group: questions for discussion

1. Is the 'Producer Organisation' Principle relevant to cotton cultivation in India? (If not, why not?) Yes.

2. In your experience, what the most important aspects of organisational structure and management in order to ensure that a producer organisation can effectively advance and defend the interests of its members?
 - Farm group at village level
 - Federation at Mandal level (decentralized) which is self governing

3. Should there be 'eligibility criteria' for producer organisations to participate in Better Cotton, such as management structure, constitution or composition? If so, which?

The group determined that there should be qualifying criteria for producer organisations in order to participate in Better Cotton (though not necessarily as a pre-condition to beginning participation in Better Cotton):

The producers involved in collective organisation should be "cotton-growing farmers" – the group proposed that this should not exclude those farmers who grow other crops in addition or rotation. The group also clearly highlighted the need for farm groups to elect office bearers in a democratic manner.

4. In your experience, what are the 'best practices' with regard to establishing and developing an effective producer organisation? In particular, what are the most appropriate roles that can be played by an external agency seeking to support producer organisation?

The working group identified the following as 'best practices' in fostering producer organisation:

- Group formation
- Commonality of cause
- Inclusive approach
- Cohesiveness
- Organisation should be integrated with savings and credit/input support
- There should be a commodity focus, and a market-driven approach
- It is important to promote training, not least to create impetus and motivation
- Recognition of producer organisation by financial and other institutions including govt. organisations

Several effective roles – and considerations – were proposed for third parties seeking to promote producer organisation:

- Creating an 'enabling environment' for producer organisation
- Capacity building and technical Support (process and business skills, harvesting, production)
- Financial support through grant-funding
- Strengthening backward and forward linkages between value chain actors

5. What are the most pressing needs of producer organisations – and of non-organised producers – in Indian cotton farming? Does this vary by state – if so, how?

The group distinguished in their analysis between the needs of organized and non-organized producers. For organised producers, the key issues are integrity, timely credit, effective/productive group dynamics and labour availability. In the case of non-organised producers, the group identified the following needs: leadership, attitudinal issues, credit and marketing support, labour availability, profit sharing, lack of bargaining power, lack of information and technical support, and absence of economies of scale.

The working group further commented that the scale and form of needs varies by state, dependent on agro-climatic conditions, credit availability, proximity to markets, political intervention (eg support at state level), and labour market conditions dictating availability of skilled / appropriate labour.

6. What does 'supporting producer organisation' mean to you? What does it take to really build the capacity of a producer organisation in the Indian context?

The group indicated the following priority areas:

- Creating economies of scale and bargaining power, and market linkages
- Capacity building and technical support
- Timely credit support and input supply

This approach needs to engender attitudinal change, and should be tempered with perseverance.

7. What are the most important activities and programmes currently underway in India which working with and supporting the activities of cotton producer organisations (such as government, civil society and development agencies' activities)?

The group cited the fact that there are numerous initiatives and programmes underway in India which seek to support cotton producer organisation, either as a discrete programme component or as a means to achieve greater sustainability and ownership of a broader programme (eg promotion of IPM-NPM-ICM through FFS). These include numerous NGOs, ATMA, farmer interest groups, KVK, various FFS-based projects, CCI- MSP, FLO, Sustainable Cotton Initiative, and state-level Commodity Groups.

Better Cotton Initiative will facilitate access to equitable finance (for smallholders)

The working group on access to finance suggested that this Principle was very much relevant to Indian cotton cultivation, and sought to qualify what 'equitable' finance constituted in this context. For the group, this was "fair, institutional and transparent" finance. Hence a slight amendment of the Principle was proposed:

"Principle: Better Cotton initiative will facilitate access to equitable (fair, institutional and transparent) finance."

Given the downward economic pressures – and potential conflicts of interest - constituted by informal lending from dealers (cf NABARD presentation above), the aspect of institutional or formal lending on transparent and agreed terms was deemed particularly important.

The most pressing financial needs of cotton farmers were identified as:

- Working capital – from land preparation through to harvesting
- Tools and implements
- Risk -crop/health- insurance (for all those involved in cotton farming – both farmers and labourers)
- Warehousing receipt financing: whereby receipt are issued for commodity assets stored, which can act as collateral for subsequent lending. This should enable farmers to avoid distress selling in order to meet their obligations to repay loans, and assist in tiding over, given that most farm households have little or no source of alternative income in cotton season, and currently very few have proprietary storage facilities
- Investment in improvements to water and land resources (both individual and collective)
- Investing in improvements in infrastructure facilities (such as storage / stock facilities) - for collectives

The working group highlighted that the highest financial / credit risks for cotton farmers to be found during the cotton cycle are at the following points:

- Sales – in terms of timeliness and level of payment
- Weather – pending rainfall in rain-fed areas
- Procurement of quality inputs

The group suggested that access to finance (and terms of finance) have an important role to play in the profitability – or viability – of Indian cotton farming, highlighting that the availability of *timely* credit was key. The working group proposed the following characteristics of "equitable finance", with reference to rates of interest:

- The interest rate for short- and medium-term credit should be lower than consumer credit at accessible rate
- The interest rate for institutional credit / long term credit should be lower than the rate for individual credit

The group identified the most important financial institutions lending to cotton producing communities as: Rural banks; Cooperative banks; Commercial banks; Cooperative societies; NBFCs; and micro finance institutions. In the group's experience, the most appropriate steps that can be taken to respond to the financial and credit needs of Indian cotton farmers and farming communities are:

- Farmer-centric approach / village-level approach
- Make the credit/ finance benefits available to all farmers, improving accessibility by improving awareness
- Institution-building

In this light, the most important advances that have been made in providing credit to farmers in recent years in India were summarised as follows:

- The government's adoption of the micro-finance bill has improved credit choice for farmers
- The (proposed) loan waiver, enabling farmers to take out fresh loans
- The development of the SHG (smallholder group) movement

Summary of responses from BCI at conclusion of meeting

At the conclusion of the meeting, BCI presented a summary of the main points made by meeting participants, particularly in response to the reports of the working groups that discussed the 5 production / environmental principles, and the 3 socio-economic principles in detail.

For the environmental / production principles and criteria:

- That while some rewording for principle focused on water was suggested, there was agreement that the all the issues covered by the draft principles were important, relevant and appropriate to include within the definition of Better Cotton
- Some excellent suggestions for the organisation and wording of the criteria to be included under the principles was provided
- It was emphasised that as the principles and criteria will be applicable (i.e. common) globally, they could not contain references to specific national legislation or standards — noting that this level of detail can nevertheless be taken into account, and that the appropriate place for this is the regionally applicable tools (i.e. BMP's, GAP's, implementation strategies etc.) and indicators that will be developed under each of the criteria
- Specific reference was made to a number of suggestions for issues to be included with the scope of the definition of Better Cotton, i.e. ginning, promoting certain varieties based on the need to supply certain quality of fibre to the textile industry, and branding. BCI noted that:
 - The focus of BCI is the farm i.e. on matters within the direct control of the farmer
 - Ginning therefore, while recognized as a critical component of delivering good quality fibre, does not fall within this scope
 - Regarding promoting varieties, it was noted that this seemed to be a policy or commercial issue that was not appropriate for BCI to become involved in

For the socio-economic principles and criteria:

- There was broad agreement on the aptness and feasibility of the draft socio-economic principles, and useful contributions were made in terms of refining key definitions – particularly as regards access to finance
- The working groups appreciated and broadly agreed with the rationale and approach proposed by BCI - to make a distinction between smallholder and large farms on the basis of needs assessment, and to derive the extent and form of capacity-building from this assessment (as well as the definition of Decent Work)
- Given that the working groups were given themes for criteria for discussion, rather than criteria per se, much valuable work was undertaken to propose draft criteria, particularly with reference to Decent Work
- It was noted that, while consultation on the socio-economic issues is invaluable, there are certain internationally-recognised standards in the sphere of labour – namely the core conventions of the International Labour Organisation - which BCI, and ILO member states, are bound to respect and promote. In particular, ILO conventions on child labour set parameters on age and activity for children's economic participation.
- BCI clearly appreciated the need to maintain a balanced viewpoint on matters of employment, and to this end it was most valuable to have a representative of farmer-employers in the meeting
- The working group on Producer Organisation agreed that this area is of key importance, and clearly highlighted the resource implications of undertaking capacity building work with cotton farmer organisations: much relevant experience was shared, including challenges and tensions. A common strength of many successful efforts was perceived to be aggregating structures from village to Mandal to trading level.
- It was understood that, while enabling access to credit is a key to unlocking the potential of many farming communities, reducing the need for credit, by promoting less input-intensive practices, is another important part of the credit/debt equation

On general issues it was noted that:

- The excellent information developed by the working groups was applauded
- It was also emphasized that this meeting would not be the final opportunity to provide comments and suggestions on either the principles and criteria, or the regionally-specific tools; in particular, the second meeting will:
 - discuss the revised version the principle and criteria that will be published in July 2008, and provide an opportunity for further comment and revision on them; and
 - be structured to allow for deeper discussions and debate on the technical issues involved in recommending appropriate tools to support the growing of Better Cotton

- It was also noted that BCI would endeavour to meet the request to have some comparative information between the BCI focus regions available at the second meeting
- To further support this deeper discussion, BCI has commissioned CABI to develop a comprehensive list of potential tools that will be provided to RWG members prior to the second meeting;
- BCI would like to provide CABI with the contact details of the members of the RWG so that they might have the opportunity to provide information to CABI to help them develop this comprehensive list of tools
- BCI will establish an online collaboration system ('Basecamp') that allows people to share files and comments; the draft report will be posted on Basecamp
- While the report will not attribute any comments made in working group discussions, BCI would like to include people's names in a participants list at the end of the report. It was also stressed that including people's names was to provide a record of who participated, and is not intended to act in any way as a formal endorsement of the contents of the report. It was agreed that people would advise BCI whether this was acceptable, and that BCI would remind meeting participants of this when the draft report was distributed to them for comment
- It was also noted that the report would not be published until participants had had an opportunity to comment on a draft
- It was confirmed that BCI's point of contact is Allan Williams.

Next Steps

BCI advised that the next steps would be as follows:

- The draft report will be posted on Basecamp for people to comment on by 18 April, with comments due back by Friday 2 May
- Now that the first Regional Working Group meeting has been held in each focus region, there will be further consultations with international stakeholders in May, before BCI finalises version 1 of the draft Principles and Criteria. This will be posted on the BCI website on 7 July 2008.
- The second Indian Regional Working Group meeting date has yet to be decided, but is scheduled to take place in the first quarter of 2009.

Full Participant List

B. Y Srinivas	Agricultural Department, Karnataka State
K. Nagaraj	Agricultural Department, Karnataka State
V. B Ladole	CARD
T. Sudhakar Reddy	Farmer Federation of Andhra Pradesh (FFA)
Dr. O. P. Sharma	NCIPM, ICAR, New Delhi
Dr. V. S Kumar	NAU, Surat
Dr. A. Siddiqui	CIPMC, Hyderabad
S. A. Ghorpade	CITI- CDRA
Preeti Shroff	Agrocel
Supriya Suman	IRFT, Mumbai
K. Vasumathi	BASIX
Archana Chatterjee	WWF- India
J. Bhaskar	M.V. Foundation
Sree Devi. K	Department of Agriculture
D. Guru Reddy	BASIX
P. Vamshi Krishna	WWF- India
Richa Mittal	Fair Labour Association
Deepthi K	WWF- India
D. S. S. Suseela	Department of Agriculture, Hyderabad
Dr. Anupam Barik	Director, DOCD, Mumbai
Dr. M. N.Reddy	Directorate of Agriculture, Hyderabad
Arun Amabatipudi	Nanda Chetna Organic
D. Praveen	Department of Agriculture
J. Diraviam	AME Foundation
Dr. Anna Rao Hasnabade	Dept of Agriculture, Government of Maharashtra
Dr. N. Gopalakrishnan	CICR, Coimbatore
Dr. K. N Gururajan	CICR, Coimbatore
Dr. K. J. S .Satyasai	NABARD
Dharmaraju	Oxfam
Dr. K. V. Rao	CRIDA
Dr. S. S. Patil	WAS Dharwad
Dr. P. G. Patil	GTC CIRCOT
Dr. K. R. Kranthi	CICR, Nagpur
Dr. Y. G Prasad	CRIDA
Dr. C.S. Pawar	BCI
K. Sainathan	BCI
Arun Raste	Facilitator

Sub groups

Soils, Water and Natural Habitat:

Archana Chatterjee, N. Gopalakrishnan, K V Rao, Anna Rao, K Nagaraj, J Diraviam

Pesticides:

CS. Pawar, O.P. Sharma, K. Kranthi, Y.G. Prasad, A. Siddiqui, Sree Devi. K, P Vamshi Krishna, K. Sainathan

Fibre quality:

S A Ghorpade, P G Patil, V B Ladole, T Sudhakar Reddy, K N Gururajan, S S Patil

Decent Work

CS Pawar, O P Sharma, Sree Devi. K, Supriya Suman, K Nagaraj, Anna Rao, J Diraviam, D S Suseela

Producer Organisation

Deepthi K, V B Ladole, T Sudhakar Reddy, P G Patil, Archana Chatterjee, K. Sainathan

Equitable Finance

P Vamshi Krishnan, Vasumathi, S A Ghorpade, K V Rao, A Siddiqui