TECHNICAL INFORMATION SECTION

SUSTAINABLE COTTON PRODUCTION

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Objectives:
1. Provide update on cotton production research
2. Provide information pertaining to cotton research programs
3. Develop lines of communications among researchers
4. Supervise Common Fund for Commodities funded projects

1. Provide update on cotton production research:

THE ICAC RECORDER
Quarterly
Published in English, French and Spanish
March 2006:
1. Insecticides and their use on cotton
2. Cotton contamination and its elimination
3. The first year commercial performance of WideStrike biotech cotton
4. Short notes

2. Provide information pertaining to cotton research programs

Review articles
- Biotechnology of cotton - 1992
- Short fiber content and uniformity index - 1993
- Insecticide resistance - 1999
- Biotechnology in cotton research and production - 2006
- Environmental impact of cotton production - 2007

1. Provide update on cotton production research:

Technical Seminar
- 2004 - How to improve yields and reduce pesticide use
- 2005 - Rapid instrument testing of cotton: opportunity for breeders and other segments of the industry, and need for uniform definitions
- 2006 - Improving Sustainability: Biotechnology and Crop Management (Brazil, September 14, 2006)

2. Provide information pertaining to cotton research programs

Cotton Production Practices - 2005
Cost of Production of Raw Cotton - 2004
Current Research Projects in Cotton – 2003
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3. Develop lines of communications among researchers
Regional Cooperation
I. Latin American Association for Cotton Research and Development – ALIDA
II. Interregional Cooperative Network on Cotton for the Mediterranean and Middle East Regions
III. Southern Eastern African Cotton Forum
IV. Asian Cotton Research and Development Network

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3. Develop lines of communications among researchers
World Cotton Research Conferences
WCRC – 1 Brisbane, Australia, 1994
WCRC – 2 Athens, Greece, 1998
WCRC – 3 Cape Town, South Africa March 9-13, 2003
WCRC - 4 September 10-14, 2007
Lubbock, Texas
(http://www.icac.org)

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4. Supervise Common Fund for Commodities funded projects
ICAC serves as a supervisory body for CFC projects

SUATAINABLE COTTON PRODUCTION

WHAT IS SUSTAINABLE PRODUCTION?
Definition
UN - World Commission on Environment and Development - 1987
“Sustainable development is a development that meets the needs of the present without compromising the ability of future generations to meet their own needs.”

WHAT IS SUSTAINABLE PRODUCTION?
UN - World Commission on Environment and Development - 1987
1. UN Conference on Environment and Development (Rio de Janeiro, Brazil, June 1992)
2. World Summit on Sustainable Development (Johannesburg, South Africa, August/Sept 2002)
Result:
Governments recognized the need to direct national and international plans and policies to ensure that all economic decisions took environmental impacts fully into account
ALTERNATE NAMES

Biological production/Organic production
Low-input production
Integrated crop management system
Biodynamic production
Bio-intensive production
Conservation tillage
Zero tillage
Regenerative production

Conservation tillage is most popular

SUSTAINABLE COTTON PRODUCTION

COTTON - Model crop for sustainable production

Almost all cotton in the world is sprayed with insecticides

Heaviest consumer of agro-chemicals particularly pesticides

PESTICIDE USE ON COTTON - 2004

Pesticides 9%
Insecticides 19%

PESTICIDE SALES - 2004

<table>
<thead>
<tr>
<th>Chemical Group</th>
<th>All Crops (Million US$)</th>
<th>Cotton (Million US$)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Herbicides</td>
<td>14,849</td>
<td>777 (5%)</td>
</tr>
<tr>
<td>Insecticides</td>
<td>8,635</td>
<td>1,018 (19%)</td>
</tr>
<tr>
<td>Fungicides</td>
<td>7,296</td>
<td>70 (1%)</td>
</tr>
<tr>
<td>Others</td>
<td>1,569</td>
<td>280 (18%)</td>
</tr>
<tr>
<td>Total</td>
<td>32,349</td>
<td>2,745 (9%)</td>
</tr>
</tbody>
</table>

FIVE PILLARS OF SUSTAINABILITY

1. Habitat management
   (Cotton is a farming system, cotton to others and others to cotton)

2. Crop attributes
   (Varieties, seed, planting, etc.)

3. Plant growth and input use
   (Fertilizers, irrigation and physiology)

4. Integrated pest management
   (Minimum use of pesticides)

5. Economic pillar
   (Quality, marketing and processing)

Background
- Sustainability does not always mean higher yields
- Sustainability does not always mean lower costs
- Sustainability is an integrated approach in cotton, from production to marketing and processing.
ECONOMIC SUSTAINABILITY - 2003/04

- World Average = US$ 1.14
- Outlook A Index = US$ 1.51

ECONOMIC SUSTAINABILITY - 2005/06

- World Average = US$ 1.28

BIOTECH CROPS AREA - WORLD

- Cotton 11%
  - Bt = 6
  - HT = 1
- Maize 24%
  - Bt = 14
  - HT = 5
- Soybean 60%
- Canola 5%
- Others <1%

BIOTECH COTTON AREA - WORLD

- 2005/06: 28%
BIOTECH COTTON - 2005/06

World Area 28%
World Production 37%
World Exports 38%

BIOTECH COTTON VS SUSTAINABILITY

Economic sustainability
Yes and No

BIOTECH COTTON VS SUSTAINABILITY

Environmental sustainability
Yes

ORGANIC COTTON & SUSTAINABILITY

- Reducing input costs drives many producer decisions.
- Conventional and organic production can co-exist.
- Profitability will drive decisions in the global supply chain.
- We must correctly understand sustainability and keep that at center of any discussion.
  - Organic is NOT equivalent to sustainable.
  - Sustainable is NOT equivalent to subsistence farming.
  - Sustainability is equivalent to FUTURE and LONG TERM PROFITIBILITY

LAND USE IN THE USA

(Data: Courtesy of Roy Cantrell, Cotton Incorporated)

MAN HOURS PER BALE IN THE USA

US Dept. of Commerce and USDA, NASS, Ag Census Data (Roy Cantrell, Cotton Incorporated)
### SUSTAINABILITY AND WATER USE

<table>
<thead>
<tr>
<th>Country</th>
<th>Water Use (kg lint/mega liter)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Australia</td>
<td>227</td>
</tr>
<tr>
<td>Egypt</td>
<td>136</td>
</tr>
<tr>
<td>Pakistan</td>
<td>50</td>
</tr>
</tbody>
</table>

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