




# Sound Plant Protection Practices

33 International Cotton Conference Bremen  
18 March, 2016  
Bremen, Germany




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Food and Agriculture  
Organization of the  
United Nations



## Outline

 <p><b>Sustainable agriculture?</b></p>	 <p><b>Cotton and sound plant protection</b></p>	 <p><b>Key success factors</b></p>
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Reducing pesticide risk in cotton



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Agriculture today **farmers and farms**

**570 MI**  
farms

90% family run  
80% small scale

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24 ottobre 2015  
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Agriculture today **water**

**70%** surface water  
is used in  
agriculture

20% irrigated land

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Agriculture today **fertilizers**

**166 MI ton** 100 MI ton N  
38 MI ton P  
28 MI ton K

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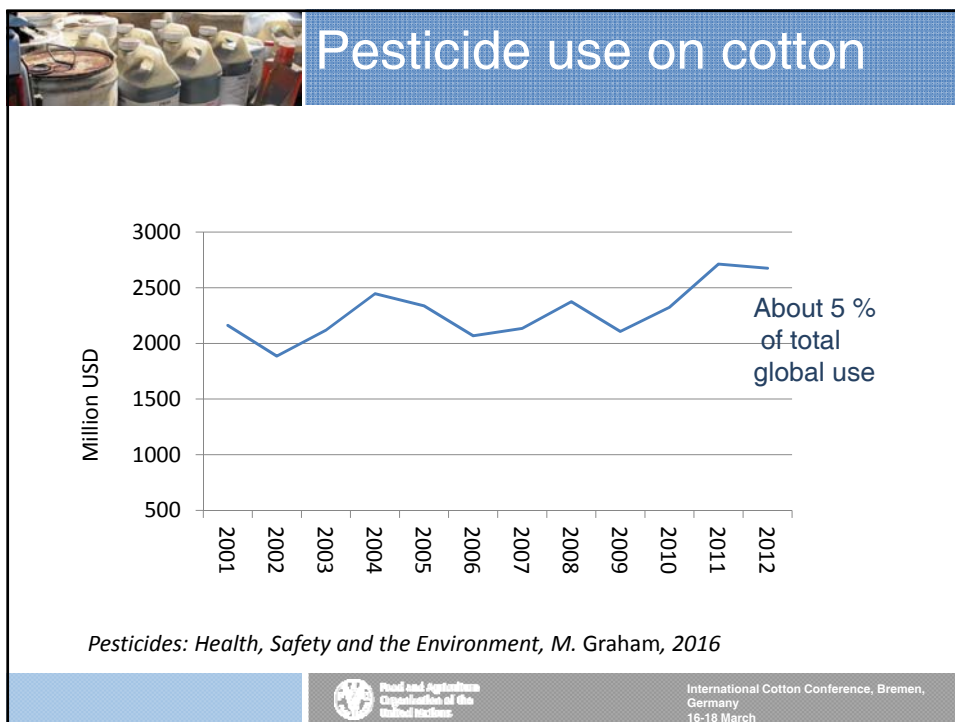
agriculture today **pesticides**

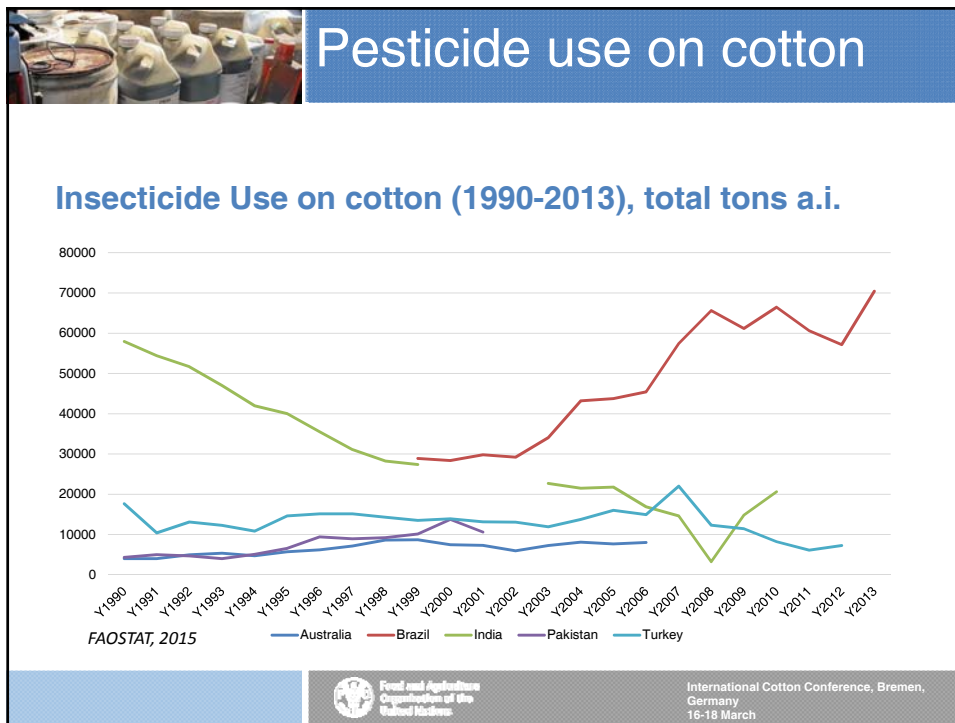
**35 MI ton**  
**active ingredients**

FAOSTAT, 2013 Annual growth:  
**9.8% during 2007-2012**  
CropLife International, 2015

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**Still a problem?**

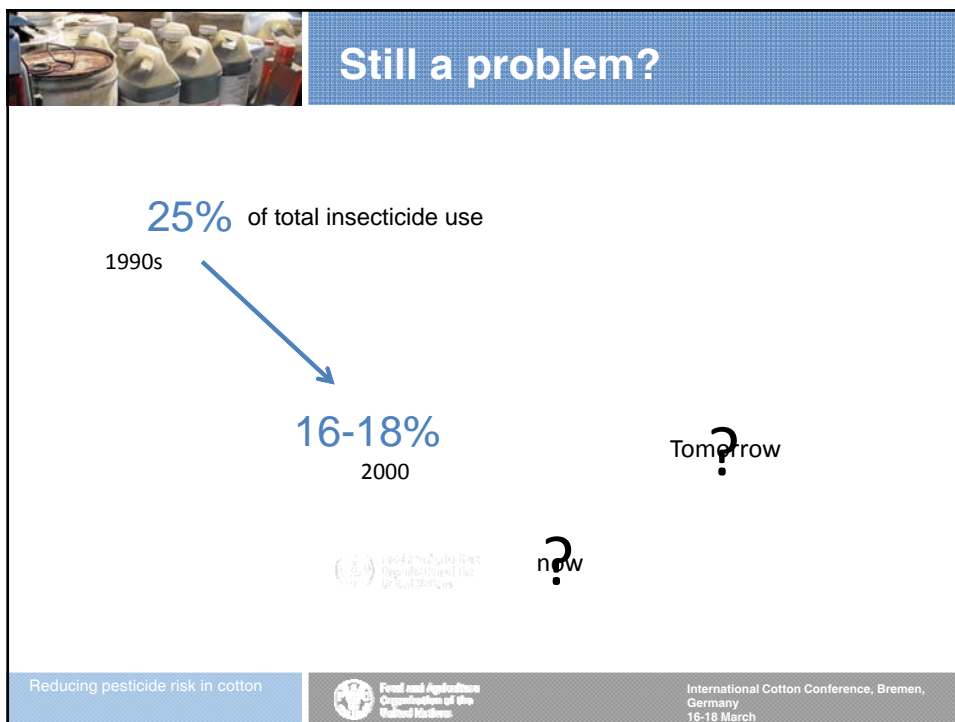
- **Outbreaks:**
  - White fly (Punjab-India and Pakistan)
  - Sucking pests in China
  - Boll weevil in Brazil
  - Mealy bug in Ethiopia
- **Development of resistance of Bt cotton**
  - Pink bollworm in India (Fabrick et al., 2014).

treadmill

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**Still a problem?**

25% of total insecticide use  
1990s

16-18%  
2000

Tomorrow ?

now ?

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**SOUND PLANT PROTECTION**

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## Sound Plant Protection

- 1 Reduce pesticide use
- 2 Reduce hazard
- 3 Reduce exposure

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## 1. Reduce pesticide use

Integrated Pest Management – 70%

Country	Methods used	Insecticide use reduction	Source/ reference
<b>Mali</b>	IPPM-FFS Use of neem	92.5%	Settle (2015)
<b>Benin</b>	Organic cotton farmers cooperative Use of food spray to boost yields	100% 805 kg/ha	PAN Intl (2015)
<b>India</b>	IPM adoption in Andhra Pradesh – 43 FFS and 52 control farms	75% 1.7 applications	Mancini (2007)
<b>Nigeria</b>	Organic cotton Use of bush tea for insect control and cowpea	100% 492-693 kg/ha	Odion et al (2013)

Insect control without insecticides

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6 december 2015 – 11 december 2015  
Mumbai India






## 1. Reduce pesticide use

### Systems approach to pest management

whole agroecosystem: pest and production management  
prevent cycles of insecticide overuse, resistance

natural soil fertility	biological control	Pollination...
		
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## 2. Reduce hazard


### Highly Hazardous Pesticides

- Highest acute and chronic toxicity (WHO and GHS\* classification)
- Pesticides listed under the international chemical conventions

most HHPs are either not permitted or severely restricted in industrialised countries  
...but still used on cotton in developing countries, legally or illegally



\*Globally Harmonized System on Classification and Labelling of Chemicals

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### 3. Reduce exposure

Important but insufficient alone



Photograph courtesy of Hardi International

Photograph by Graham Matthews



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## KEY SUCCESS FACTORS

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## Success factor Agronomic


### Ecological factors

- **Adoption of IPM on a large scale**
- **Availability of alternative pest control** – location specific
  - Research into alternatives and new control options

### Social factors

- **Invest on farmers !Build farmer's knowledge and skills to manage crops**
  - Adaptive management in a changing climate - resilience.
  - Food security (intercropping food crops)

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## Success factors

### Political factors

- **Supportive not conflicting policies**
  - adequate resources for extension
  - Pesticide subsidies and centralised procurement lead to overuse and accumulation of stocks
- **Good governance**

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Thank you

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