

Biosafety Issues and the Need for Labeling and Liability Regimes



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Outline



- A. Do GE crops reduce pesticide use?
(USA, China)
- B. Cartagena Protocol on Biosafety
 - Liability and redress
 - labeling
- C. Codex Alimentarius. Codex
Committee on Food Labeling



Benbrook, C. 2004. Genetically engineered crops and pesticide use in the United States: The first nine years. At: http://www.biotech-info.net/Full_version_first_nine.pdf

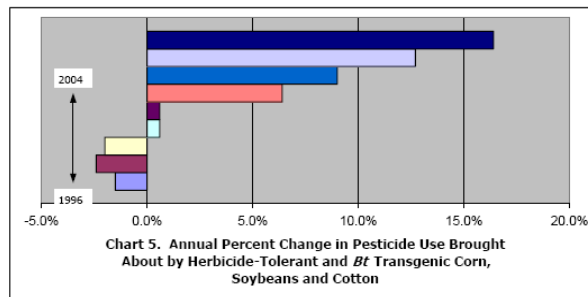
Appendix Table 11. Differences in the Pounds of Pesticides Applied to Conventional Versus GE Corn, Soybean and Cotton Varieties, 1996 - 2004
 (Includes acres planted to stacked varieties)

	1996	1997	1998	1999	2000	2001	2002	2003*	2004	Total 1996-2004
Corn										
Herbicides	-1,908,165	-3,204,637	-7,342,320	-3,124,468	-1,665,169	-1,016,793	2,462,221	3,665,994	5,636,415	-5,296,325
Insecticides	-133,095	-459,195	-645,963	-399,495	-399,703	-261,195	-450,102	-443,054	-449,195	-4,541,903
Herbicides plus insecticides (H+I)	-2,091,264	-3,673,832	-7,987,883	-3,723,873	-2,555,872	-1,417,988	2,052,120	3,423,540	5,187,224	-10,837,829
H+I as % of Total Pesticides Applied	-0.9%	-1.6%	-3.7%	-1.9%	-1.4%	-0.7%	1.3%	2.0%	2.9%	-0.6%
Soybeans										
Herbicides (H)	-1,693,192	-3,482,747	2,304,103	7,824,112	4,372,591	17,628,490	19,914,660	28,277,526	42,398,667	117,532,221
H as % of Total Pesticides Applied	-2.3%	-4.2%	2.9%	10.2%	5.6%	24.3%	22.5%	30.7%	42.0%	15.8%
Cotton										
Herbicides	-723,162	-442,111	29,548	-214,955	1,828,542	5,124,231	5,483,723	8,318,614	7,781,900	26,779,275
Insecticides	-829,689	-699,592	-929,592	-1,736,448	-1,345,219	-973,077	-920,531	-1,438,706	-2,055,542	-11,029,381
Herbicides plus insecticides (H+I)	-1,552,849	-1,341,753	-900,048	-1,951,401	282,727	4,151,360	4,843,192	6,876,308	5,742,358	15,749,894
H+I as % of Total Pesticides Applied	-3.6%	-3.3%	-2.2%	-2.8%	0.4%	7.4%	9.2%	16.2%	12.6%	3.7%
Three Crops										
Herbicides	-4,324,811	-7,329,355	-5,009,672	4,484,890	4,335,354	21,736,134	27,340,604	40,489,134	55,820,981	138,015,170
Insecticides	-1,612,784	-1,368,778	-1,875,155	-2,335,853	-2,238,918	-1,374,292	-1,280,833	-1,881,760	-2,504,732	-15,570,884
Herbicides plus insecticides (H+I)	-5,337,295	-8,698,332	-6,883,827	2,148,937	2,099,446	20,361,862	26,559,972	38,577,374	53,316,249	122,444,286
H+I as % of Total Pesticides Applied	-1.5%	-2.4%	-2.0%	0.6%	0.6%	6.4%	9.0%	12.7%	16.4%	4.1%

*Estimates for 2003 are preliminary projections based on data for 2001-2002 and recent trends.



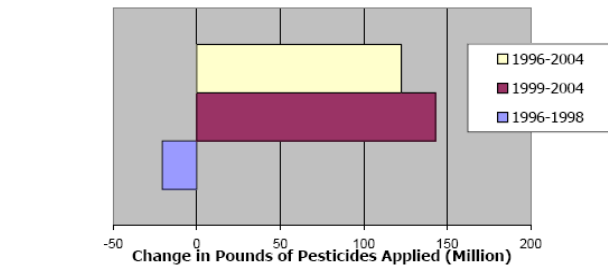
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Chart 4. Changes in Pesticide Use in the First Three Years of Commercialization Compared to the Last Six Years



Benbrook, C. 2009. Genetically engineered crops and pesticide use in the United States: The first thirteen years.

- During first 9 years, pesticide use on genetically engineered crops was increased by a total of 122 million pounds.
- Update on the Benbrook's 2004 paper: "*Bt* corn and cotton has reduced insecticide use by 56 million pounds, but herbicide tolerant crops have increased pesticide use by 383 million pounds, for an overall 327 million pounds increase over the 13 years."
- So, for 1996-2004, 122 million pounds more pesticide was used on GE compared to non-GE crops. For 2005-2008, an additional 205 million extra pounds were applied.



Do GE crops reduce pesticide use?

- “farmers have rotated RR crops, usually soya and maize, to the point that the weeds themselves are now Roundup resistant, which has resulted in much higher applications of Roundup along with a host of other chemicals.” Nathalie Moll, EuropaBio. In “GM crops: Biotech agriculture—Time to take GM seriously”, *Ethical Corporation*, February 7, 2008 At: www.ethicalcorp.com/content.asp?ContentID=5684



Wang, S., Just, D.R. and P. Pinstруп-Andersen. Tarnishing Silver Bullets: Bt technology adoption, bounded rationality and the outbreak of secondary pest infestations in China.

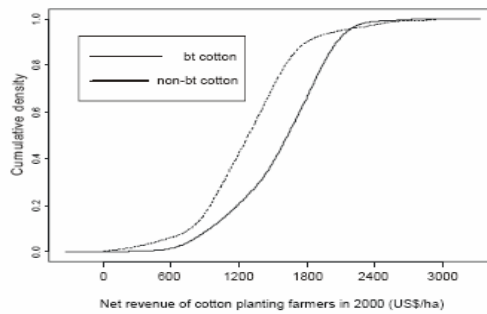
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- Household survey of 481 farmers, 20 villages, 5 provinces: Hebei, Shandong, Henan, Anhui, Hubei
- Results for 2004:
 - Average expenditure on pesticides was same (US\$101/ha) between Bt and non-BT farmers
 - Bt farmers spend 46% less on bollworm pesticide, but spend 40% more on pesticides for secondary pest(s), compared to non-Bt farmers
 - Main secondary pest – mirids
 - GM cotton seeds cost 3 times more than non-Bt cotton, so Bt farmers make less money than non-Bt farmers
 - Results markedly different from data from 1999, 2000, 2001

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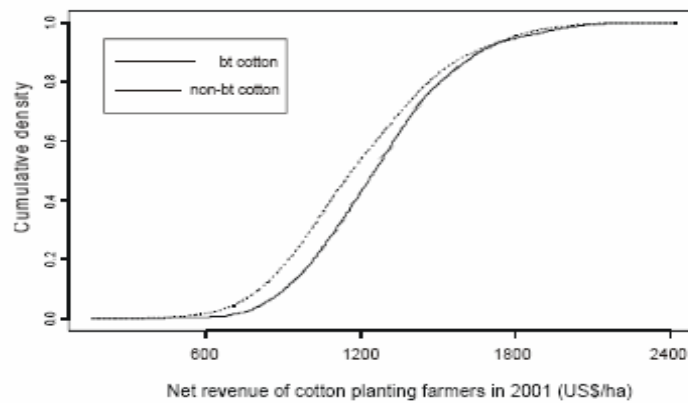
Figure 2. Net revenue (US \$/ha) dominance test of Bt and Non-Bt farmers in 2000



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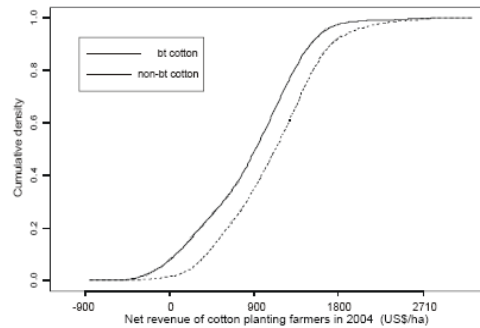
Figure 3. Net revenue (US\$/ha) dominance test of Bt and Non-Bt farmers in 2001



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Figure 4. Net revenue (US\$/ha) dominance test of Bt and Non-Bt farmers in 2004



Cartagena Protocol on Biosafety

- Issues:
- Capacity building
- Compliance
- Financial mechanism
- Handling, transport, packaging and identification
- Liability and redress
- Risk assessment and management
- Roster of experts



Cartagena Protocol on Biosafety

- **Article 27. Liability and Redress**
- The Conference of the Parties serving as the meeting of the Parties to this Protocol shall, at its first meeting, adopt a process with respect to the appropriate elaboration of international rules and procedures in the field of liability and redress for damage resulting from transboundary movements of living modified organisms, analysing and taking due account of the ongoing processes in international law on these matters, and shall endeavour to complete this process within four years.



Cartagena Protocol on Biosafety

- **Article 18. Handling, Transport, Packaging and Identification**
- 1. In order to avoid adverse effects on the conservation and sustainable use of biological diversity, taking also into account risks to human health, each Party shall take necessary measures to require that living modified organisms that are subject to intentional transboundary movement within the scope of this Protocol are handled, packaged and transported under conditions of safety, taking into consideration relevant international rules and standards.



Cartagena Protocol on Biosafety
Article 18. Handling, Transport, Packaging and Identification

- **2. Each Party shall take measures to require that documentation accompanying:**
- **(a) Living modified organisms that are intended for direct use as food or feed, or for processing, clearly identifies that they "may contain" living modified organisms and are not intended for intentional introduction into the environment, as well as a contact point for further information. The Conference of the Parties serving as the meeting of the Parties to this Protocol shall take a decision on the detailed requirements for this purpose, including specification of their identity and any unique identification, no later than two years after the date of entry into force of this Protocol;**




Cartagena Protocol on Biosafety
Article 18. Handling, Transport, Packaging and Identification

- (b) Living modified organisms that are destined for contained use clearly identifies them as living modified organisms; and specifies any requirements for the safe handling, storage, transport and use, the contact point for further information, including the name and address of the individual and institution to whom the living modified organisms are consigned; and
- (c) Living modified organisms that are intended for intentional introduction into the environment of the Party of import and any other living modified organisms within the scope of the Protocol, clearly identifies them as living modified organisms; specifies the identity and relevant traits and/or characteristics, any requirements for the safe handling, storage, transport and use, the contact point for further information and, as appropriate, the name and address of the importer and exporter; and contains a declaration that the movement is in conformity with the requirements of this Protocol applicable to the exporter.
- 3. The Conference of the Parties serving as the meeting of the Parties to this Protocol shall consider the need for and modalities of developing standards with regard to identification, handling, packaging and transport practices, in consultation with other relevant international bodies

Cartagena Protocol on Biosafety

3rd Meeting of Parties, Curitiba, Brazil, March 13-17,
2006

Handling, Transport, Packaging and Identification

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- 4. Requests Parties to the Protocol and urges other Governments to take measures ensuring that documentation accompanying living modified organisms intended for direct use as food or feed, or for processing, in commercial production and authorized in accordance with domestic regulatory frameworks, is in compliance with the requirements of the country of import, and clearly states”**
- a) **In cases where the identity of the living modified organisms is known through means such as identity preservation systems, that the shipment contains living modified organisms that are intended for direct use as food or feed, or for processing;**
 - b) **In cases where the identity of the living modified organisms is not known through means such as identity preservation systems, that the shipment may contain one or more living modified organisms that are intended for direct use as food or feed, or for processing;**

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- c) That the living modified organisms are not intended for intentional introduction into the environment;
- d) The common, scientific and, where available, commercial names of the living modified organisms;
- e) The transformation event code of the living modified organism or, where available, as a key to accessing information in the Biosafety Clearing-House, its unique identifier code;
- f) The internet address of the Biosafety Clearing-House for further information

And *notes* that in accordance with Article 24 of the Protocol, transboundary movements of living modified organisms between Parties and non-Parties shall be consistent with the objective of the Protocol, and *further notes* that the specific requirements set out in this paragraph do not apply to such movements.

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- 7. ***Decides to review and assess, at its fifth meeting, experience gained with the implementation of paragraph 4 above, with a view to considering a decision, at its sixth meeting, to ensure that documentation accompanying living modified organisms intended for direct use as food or feed, or for processing covered by paragraph 4 clearly states that the shipment contains living modified organisms that are intended for direct use as food or feed, or for processing, and includes the detailed information in items (c) to (f) of that paragraph***



Codex Alimentarius

- Food safety standard setting organization of the United Nations. Joint World Health Organization (WHO) and Food and Agriculture Organization (FAO)
- Set up in 1960s to help developing countries with range of voluntary, standards, guidelines and recommendations associated with food safety
- 1996 Uruguay Round of General Agreement on Tariffs and Trade sets up World Trade Organization (WTO)
- Codex standards, guidelines and recommendations considered “trade legal”



Codex Alimentarius

- Codex Committee on Food Labeling (CCFL)
- Meets in Ottawa
- Codex Alimentarius Commission, in 1991, gave following mandate to CCFL: “to provide guidance on how the fact that a food derived from ‘modern biotechnologies’ can be made known to the consumers.”
- There has been discussion of a Draft Guidelines for the Labelling of Food and Food Ingredients Obtained Through Certain Techniques of Genetic Modification/Genetic Engineering since 1997