

Public and Private sector Roles in Technology Transfer

Experiences from Colombia



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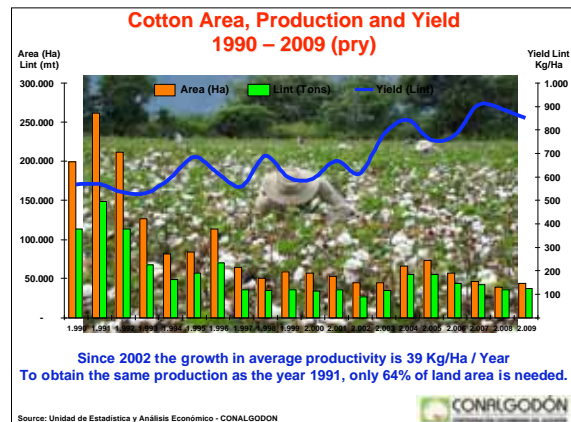
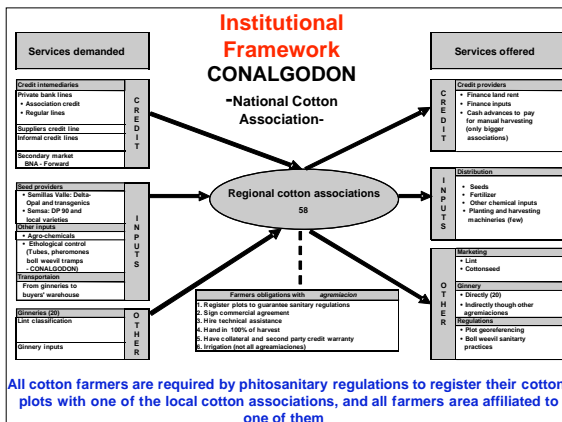
- 1) Colombian Cotton sector today
- 2) Research orientation and funding
- 3) Transfer and adoption of technologies: transgenics case
- 4) Training of new technicians and technologists
- 5) Conclusions

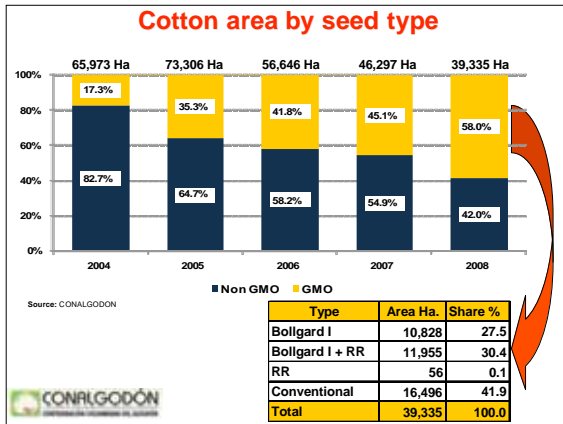
Cotton farmers characteristics 2008



- Cotton farmers 4,236
- Cotton Area (Has) 39,335
- Area per farmer: 9.3 Has
- 75% of cotton fields are rented
- 85% of cotton fields are rotated with corn, rice and sorghum.
- Average age of growers: 50 years old.
- Average years of schooling: 6
- Level of dependence on farming income: 77%

1) Colombia: regional distribution of cotton area





2) Research and Development R&D

Public Sector: Competitive funds (1)
 Private sector: Development funds (2)

How to finance R+D?

A. New Varieties and transgenic seeds= (1) + (2)
 B. Transfer of technology and applied investigation= (2)

Who does the investigation?

- ▶ Many sectors have created their own investigation entities;
- ▶ **CONALGODON** works with CORPOICA, a public/private research organization

What are sector-taxed development funds?

Created by law: a tax on a specific sector to benefit that same sector.

Levy rate: Lint 0.5%
Seed 1.0%

Collection: Cotton and seed collect buyers collect and transfer tax funds to CONALGODON account

Funds Administration: CONALGODON manages the Cotton Development Fund.

Use of Funds: A steering committee with the participation of the Agriculture Ministry and the cotton sector analyze and approve research project proposals.

3. Transfer and adoption of technologies: transgenics case

Conclusions of a study by IFPRI (International Food Policy Research Institute) + OXFAM + CONALGODON: the recent experience with Bt cotton in Colombia

Who adopts Bt cotton?

- ▶ Farmers located in better lands (74% Bt vs 58% non-bt)
- ▶ Plots with better irrigation (87% Bt vs 37% non-Bt)
- ▶ Farmers with more experience cultivating cotton
- ▶ and more educational level

Farmers using bt cotton....

- ▶ Had higher yields than those using conventional varieties
- ▶ Had higher cost in seed, machinery, land rent, financial resources
- ▶ Require more financial resources by hectare

Cost of Production and Yields

Item	A - B		Bt - Non Bt	
	Bt	Non Bt	Value Usd	%
Cost of production (Usd/ha)	1.747	1.450	297	17,0
Yield (Kg/ha)	2.709	2.011	698	34,7
Cost of Production (Usd/ton)	643	721	- 78	-12,1

Source: Survey data



Main Findings

- ▶ The solid institutional framework, under which cotton production has been organized in Colombia has been a key factor in the adoption process.
- ▶ Bt cotton farmers have substantially higher yields which has compensated for the higher costs per hectare associated with the use of this technology.
- ▶ Access by the resource poor farmers to this technology requires an institutional support that guarantees adequate financial resources.



- ▶ Technical assistance is a valuable resource and serves as a communication channel from successful farmers to new adopters.
- ▶ Access to machinery, particularly precision planters and harvesters, is an important factor in the technology adoption.
- ▶ The higher seed and overall input cost, requires a more efficient cultural practices.
- ▶ The reduced use of pesticides and chemicals that has been observed in other countries using bt cotton, is not necessarily confirmed in Colombia because high incidence of boll weevil
- ▶ Better information and knowledge of the overall crop management is key to guide the adoption process and maximize the potential benefits of the technology

Further considerations to the study

- ▶ The process of adopting new transgenic seeds continues and their results remains diverse.
- ▶ The gap between rapid changes of transgenics technology and less rapid development of better germoplasm becomes evident.
- ▶ NUOPAL (Delta Opal + Bt) is currently the best variety adapted to local conditions, compared to other varieties with more advanced transgenic technology. Colombia imports 90% of the seeds.
- ▶ Higher susceptibility to diseases of the ramularia complex, other leaf diseases, and climate stress.



How we are meeting these challenges?

- ▶ Alliance with Monsanto
- ▶ Promoting the constitution and certification of the TECHNICAL UNITS in each grouping.
- ▶ Training new technicians



4) Training of new technicians and technologists

Goal

To train 400 technicians and technologists specializing in the cotton sector, with a vocational education.

Programs

- Corporate management.
- Mechanization.
- Plague and plant monitoring.



Alliance and financing

- Ministry of National Education: 65.8%.
- Conalgodón – Development Fund (cotton sector): 17,7%
- State Investigation Entity: 9,1%
- High schools and Universities in the two main cotton regions: 7,4%
- Additional support from local Education Departments

5) Conclusions: Challenges of the new transgenic technologies

- ▶ **Technicians**
- ▶ **Information and Training**
- ▶ **More mechanization**
- ▶ **Financing**
- ▶ **Phytosanitary Regulations**



**THANK FOUR YOUR
ATTENTION**