

# Political Economy of Genetically Modified (GM) Food Production in China, India & Brazil

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## Politics changing – will we have GM corn production in Asia?

- CHINA: Political climate clearly more favorable for GMOs  
President Xi Jinping speech regarding GM technology at the People's Congress December 23, 2013 published October 2014:
  - “Be courageous in innovative research, occupy the commanding height of transgenic technology and don't let big foreign companies take all the markets of transgenic agricultural products.”
  - 2015 No.1 Policy Document: Govt will promote GM crop production
- INDIA: New (2014) Minister of Agriculture and Environment supporting GM crops as safe and profitable.
  - Resuming field trials of Bt eggplant, mustard, corn, and others.
  - Government educating Hindu nationalists to obtain their support
- Comparison with BRAZIL one of the few big countries that had major biotech policy change since 2000
  - 2005 major policy change to support biosafety regulatory system CTNBIO legalizes GM soybeans. Permits GM corn (2007).

## No GM food crop production in India & China; Brazil soybean “illegal” 1997 to 2005, corn 2007

- In China regulators approved insect resistant rice and high phytase corn in 2009 as safe for production
  - **But no permit actual cultivation**
  - **New government is showing signs of support for GM corn**
- In India regulators approved insect resistant eggplant for cultivation in 2009
  - **Minister of Environment declared a moratorium on Bt eggplant 2010.**
- Brazil regulators approved herbicide tolerant soybeans in 1997 but was blocked by the courts until decision by President Lula in 2003 & new biosafety law in 2005

# Framework of today's presentation

## Dynamics of commercialization

- Consumers concerns about novel foods - particularly if they have created major controversies like GM – can prevent GM commercialization
- Economic interest groups must champion biotech
  - Who benefits and loses through simulations?
    - Not just Monsanto/Farmers/Consumers
    - Simulations results to breakdown “consumers” in to Industry and final consumers and add local seed industry and pesticide industry
  - Which groups influence policy? Results of surveys and interviews
- Or government must have major political goals that GM foods would help

## Which consumers are worried? – urban elites.

- China
  - Urban consumers mostly positive from 2002, 2003 and 2010 have turned against GMOs in 2012 (Huang & collaborators)
  - No surveys or urban consumers but farmers like it as producers – examples: Bt cotton & Bt rice in Hubei province
- India –
  - Recent studies of urban consumers show “weak-aversion” to GM food (Bansil & Ramaswami)
  - Farmers like technology – main concern is biotech seed prices and availability
- Brazil
  - Like US consumers – some urban consumers concerned and well organized groups oppose GM crops

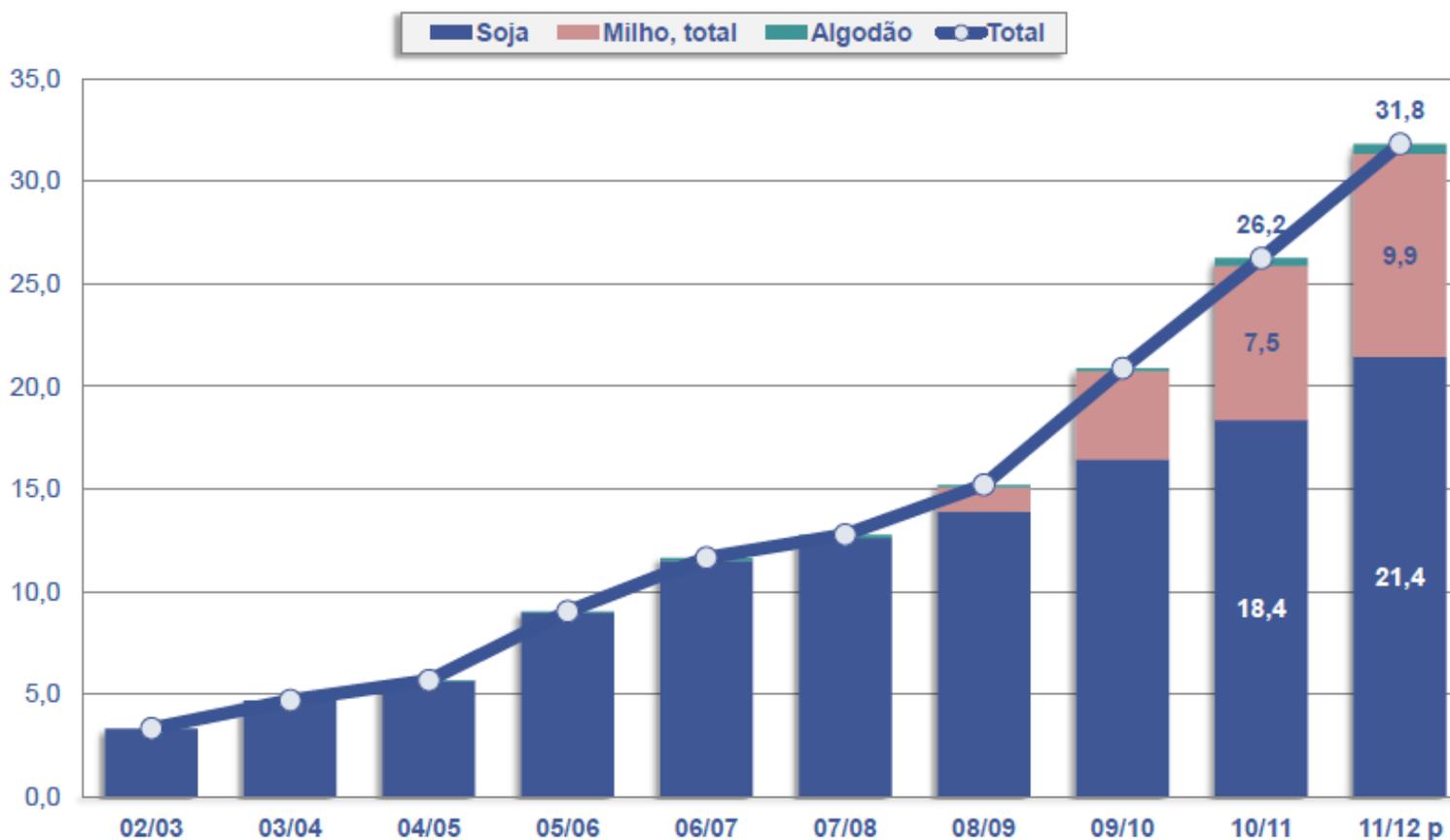
## Economic interest groups

- To influence GM policy there must be
  - Technology that provides potential economic gains or losses
  - Groups must be aware of potential benefits or losses
  - Be well organized, be well connected to politicians or be able to influence media
- Methods of analysis
  - Simulations of which industries could win or lose from GM rice and corn in China and India. Data on current benefits in Brazil
  - Interviews, activities, and media analysis of industry of lobbying activity and influence on policy makers

## Summary of Relative Benefits (+++) & Losses (---) to Stakeholders of GM rice & corn production based on simulations (MNCs = multinational corporations)

Stakeholders	China (projection)		India (projection)		Brazil (actual)	
	Bt Rice	Bt Corn	Rice	Corn	Bt/RR Corn	RR Soybean
MNC biotech/seed	+	+	+	++	+++	+++
Local biotech	++	++	+	0	0	0
Govt bio scientists	++	++	0	0	++	+++
Local seed co	+++	+++	++	+	--	++
Pesticide cos	--	--	--	--	++	+++
Farmers	++	+++	++++	+++	++++	++++
Traders/millers/	+		+/-		++	++
Feed/livestock	+	+++		+	++	++
Food industry	+/-	++			+	+
Consumer price decline	++++	+	++++	+	++	++
Exporters			--		+++	++++

# Brazil million ha. of GM soybeans(soja), corn (milho) and cotton (algodao)



Fonte: CÉLERES® | Atualizado em dezembro/2011

Farmers could be winners in all countries – in Brazil this led to strong pressure for GM production

- Past experience (all began as “Stealth” seed)
  - Bt cotton in China (small farms) and India (small and large farms)
  - Bt rice in China (still illegal) – small farms
  - GM soybeans in Brazil (from Argentina at first) – large and medium farms
- Simulations in China and Indian
  - Millions of small rice farmers will receive benefits -
    - if no price supports GM rice benefits eroded by inelastic demand
    - Fine rice exporters could lose
  - corn farmers benefit – demand more elastic
  - Size of farmer benefits depend on government price support policy

# Consumers

- China and India: Millions of consumers would receive some economic benefits from GM but see little evidence of benefits
  - India & China rice consumers benefits through lower prices but small for individual consumer in China and India – 2 or 3% decline in prices in India, 4% in China
  - GM corn benefits to consumers go through livestock/feed industry passes only a portion of gains through to consumers (<0.1% price declines in China)
- Brazil
  - Most benefits to Chinese consumers of oil and meat, European consumers of meat, and other global consumers
  - Brazilian consumers get lower meat and cooking oil prices

## Industry groups' benefits more mixed

- Pesticides
  - Insecticide producers would lose some profits from Bt
  - Herbicide producers gain profits from herbicide tolerant crops
  - Fungicide producers benefit in Brazil because of soybean rust
- Feed/livestock industry could capture major benefits (Chinese and Indian simulations)
  - China and Indian - main concern is availability of inexpensive corn & soybean imports (both GM) and no disruptions of imports
  - Brazil feed/livestock industry benefits and some of same companies are exporters

# Summary of potential benefits and losses biotech companies.

- China
  - Chinese biotech companies and government institutes/universities could gain profits but IPRs weak
  - Chinese seed companies could make profits in rice because no MNCs allowed and in corn because they own at least 51% of Joint Ventures
  - MNCs eventually will be allowed in GM trait market
- India:
  - Global biotech companies could earn major royalties from GM traits in India and from higher priced hybrid corn and rice because they control the hybrid seed market already.
  - Local firms competitive in rice varieties market
- Brazil
  - Global biotech firms get substantial royalties from soybean and corn (Monsanto's second biggest market after US 2014)
  - Local companies competitive in soybean variety breeding.

## Food exporters & fine rice companies in India and China are active against GM, Brazil exporters support GM

- China – Bt rice production has been a big problem for entire food industry that exports
  - Greenpeace and newspapers regularly finds traces of Bt rice in noodles exported to Europe and in local supermarkets (2014 newspaper expose' in Wuhan )
  - Europe requires extensive pre-export screening of many products
- India – Basmati rice producers
  - Able to stop public sector research on Bt Basmati
  - Trying to stop field trials of any GM rice in their area (US experience justifies this)
- Brazil –
  - grain exporters were major beneficiaries of GM soybeans and corn and provided at least tacit support

Government goals: for interest groups to influence policy their goals must be consistent with groups in government

### Main goals of national governments

- Brazil – increase agricultural exports, strengthen agribusiness, attract foreign investment.....
- India – economic growth supported partially by foreign investment, support local biotech industry, self-sufficient in production of wheat and rice.
- China - build global Chinese biotech firms; self sufficient in production of corn and rice

## Summary of Political Influence of Interest Groups on Ag Technology (subjective assessment by Rutgers team)

Pro-GM (+++) Oppose GM (---)

Stakeholders	China	India	Brazil
MNC biotech/seed	+	++	+++
Local biotech	+++	+	0
Govt bio scientists	+++	+	++
Local seed co	++	++	--
Pesticide cos	--	--	--
Large farmers	+	++	++++
Small farmers	0	++	---
Traders/millers/	+	+/-	++
Feed/livestock	+		++
Grain exporters	-	--	+++
Food industry	-	-	+
Consumers	--	--	++
Environmentalists	-	---	---

## Will Coalitions for GM corn prevail?

- Brazil
  - Supporters: MNC biotech/seed/pesticide industry + EMBRAPA + commercial farmers + exporters
  - Opponents: Some consumer groups + Greenpeace + Landless Rural Workers' Movement
- China –
  - Supporters: Chinese biotech + government biotech scientists + officials at Ministry of Science and Tech and Ministry of Ag.
  - Opponents: Urban consumers + Chinese seed industry
- India –
  - Supporters: MNCs & Indian biotech industry + most farmer organizations + feed and livestock industry???
  - Opponents: Greenpeace & some urban consumers + rice exporters + farmers who are rice exporters + nationalist groups

## Farmers organized and politically powerful in making policy in Brazil: will ensure GM production

- Government supports commercial farming & exports
- Influential anti-GM consumer, environmental, small farm group oppose
- Commercial farmers could see benefits & have power
  - started growing GM soybeans from Argentina in 1996?? or 1997 in Rio Grande do Sul - 5 million “illegal” ha in 2003/4
  - RR Soybean technology particularly suited to medium to large farmers
  - Large and medium sized farmers are organized to prevent land reform: "Bancada Ruralista" in Congress, Governors of states like Mato Grosso do Sul.
- Multinationals biotech make large profits – 2<sup>nd</sup> to US
- Export exports support

## Government led biotech in China – GM corn likely

- Government goals – corn & rice self-sufficiency & Chinese biotech company that is globally competitive with Monsanto
  - Huge and growing imports of corn and DDGs
  - Self sufficient in rice and demand declining
  - Govt. thinks Chinese industry finally has some competitive technology but they won't know until they try it
- Consumer opposition growing stronger but less influence with this government - will not approve GM rice to get GM corn
- Government biotech scientists do most GM research in China and expect to benefit personally
- Other economic interest groups split but not influential
  - Chinese seed and pesticide industry groups split don't expect much
  - Farmers have little influence...
  - Food opposed to GM rice

## India – GM corn uncertain

- Government interested in rapid economic development through foreign and Indian investment
- Urban consumers concerned but not as worried as China and not as organized as Brazil - environmental influence reduced recently
- But few local champions of technology
  - Most farmers organizations support GM but fine rice and soybeans farmers oppose
    - Major activities of farmers organizations are price supports – rice, wheat, cotton – and input subsidies.
    - Technology secondary issue
  - No corn industry association – in part because there is no minimum support price....
  - Some Indian biotech and seed companies support but some seed firms oppose
- Rice exporters remain strong local opponents to GM