



GM Food Crops in China, India and East Africa

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The latest on GM food production developing countries?

- China January 2013: no GM rice, yes to GM maize
 - Demand for rice declining & no imports – per capita & total,
 - Demand for maize surpassing supply: currently imports of 5.4 million tons plus 3 million DDGs - Projections – 26 million tons imports
 - Chinese firm of firms will commercialize Bt maize in 2015/16, Monsanto & others will be allowed in 2020.
- Kenya March 2013. Ministry of Health bans import and consumption of GM foods because cancer associated with RR maize – based on Serelini journal article, Sept 2012
- India September 2012 Parliamentary Agricultural Committee Report – GM crops useless for India. Should be 10 year ban Farmers got no benefit from Bt cotton

Outline

- Where countries are at with GMOs
- What we plan to do in our research project
- Detailed case studies of GM maize in China, India, East Africa
- Where GM maize is going in these countries

State of GM Food in China, India, and East Africa

- China – Production of Bt cotton, disease resistant papaya
 - 2 rice and one maize events approved for production 2009 but Ministry of Ag has not allowed commercialization
 - Many traits approved for import and consumption - mainly oils and feed
 - Mandatory labeling since mid 2000s
- India – Production of Bt cotton
 - Bt eggplant approved but Minister “vetoes” it –
 - Field trials of Bt/RR maize almost completed but stalled
 - Soybean oil extensively imported but other GM food imports not allowed
 - Mandatory labeling required but not implemented
- Kenya – No production of GM crops
 - Bt maize and GM drought tolerant maize in field trials
 - Bt and RR maize imported from S.Africa in past. GM maize/soy approved for food. Nov 2012 ban on GM food imports and consumption. ...
 - Mandatory labeling regulations gazetted in 2012,

Active Anti-GM Groups – “Masters of Communication”

1. High risk and US government and corporate pressure to accept GM food

Firestorm Erupts Over Transgenic Rice Study in Chinese Children

by Mara Hvistendahl and Martin Enserinkon 11 September 2012, 5:34 PM



Scary science. A cartoon on the Web site of China's state news agency Xinhua.

Credit: Zhu Huiqing

Anti-GM message:

2. Health risk: Serelini 2012 publication on cancer in rats and RR maize goes viral – European Food Safety Authority & Academies of Science say it is not science but.....

3. World Bank Study: International Assessment of Agricultural Science and Technology for Development says GM not needed

4. Organic farmers and traditional farmers will have incomes reduced

Policy Model

- If safe GM traits are to be approved, there will have to be groups in economy and government that lobby for them to overcome active opposition from NGOs and doubts of consumers.
- There will have to be institutions that the groups can use for influencing government and/or
- There will have to be individuals and groups within the government with political goals that can be furthered by the introduction of GMOs

Case Studies of Maize industries

	Production 2011/12	Animal feed as % production	Current imports (tons)	Projected imports 2021/22 (tons)
China	185 million	70-75%	5 million	18 to 26 million
India	21 million	40-50%	-2 million	- 2 million
Kenya	3 million	5%	0.4 million	Not available

Maize GM supply systems

- India - Monsanto has stacked Bt/RR at last stage of the biosafety regulation process
- China –
 - “Chinese” seed company (listed on NASDAQ), Origin, has an approved high phytase maize but not commercialized
 - Chinese private feed and seed company, Da Beinong, investing heavily in developing own Bt event
 - Chinese state owned enterprise, Sinoseeds, part of Sinochem, also working on own Bt event (and RR???)
 - Foreign companies not allowed to do biotech research or introduce GM maize
- Kenya – public-private partnerships with royalty free traits
 - WEMA project – African Agricultural Technology Fund, Monsanto provides Bt & Drought tolerance genes, Government research (KARI) and CIMMYT – Gates Foundation money

Who should support GM maize? Expected income based on experience

	Experience GM crops (Bt cotton)					
	Govt. scientists	Seed cos.	Pesticide Industry	Farmers	Cotton industry	Foreign trade
China	Large??	Medium	Negative	Large	Large	Reduced imports
India	Small	Large	Negative	Large	Large	Exports
Kenya	Small	None	None	None	None	None

Who should support GM maize? (will model in our project) Who actively supports (Green)?

	Hypotheses of expected income from GM maize					
	Govt. scientists	Seed cos.	Pesticide Industry	Farmers	Feed industry	Foreign trade
China	Large	Medium	Medium	Large	Medium?	Reduce imports
India	Medium	Large	Medium	Large	Medium?	Increase exports
Kenya	Large	Small	Small	Large...	???	Reduce imports

Government biosafety institutions weak and governments in transition

	Biosafety authority	Governments
China	Weak and Opaque	New government March 2013
India	Weak, new structure proposed State governors restricting research	Weak coalition government Elections next year
Kenya	New, strong on paper, Ministry of Health ignored it	Elections in March, results challenged in court

China case: potential winners & losers

- Bt and RR maize Benefits
 - Insecticide producers lose, herbicide producers win
 - Chinese biotech/seed companies win first....eventually MNCs (Pioneer first?), small medium companies lose
 - Farmers win – Bt yields and reduced pesticides
 - HH income up – more time for non-farm –
 - Feed and livestock industry – project large imports of 26 million tons (plus DDGs) – benefits unclear
 - Economics
 - Reduce current problems of trade disruptions due to LLP and politics
 - Reduce local prices if current tariff structure remains in place
 - Less upward pressure on global maize prices
 - Political – prevent dependence on US
 - Consumers – lower pork and poultry prices but don't know it

Who is supporting/opposing GM maize and rice?

- China –
 - Support
 - Government & university scientists
 - Foreign biotech/seed companies through Cargill and ISAAA and a few local biotech/seed companies through direct connection to MOA.
 - US maize and soy producers & US government
 - Oppose
 - Urban (Hong Kong) environmental organizations and academics (grassroots environmental protests against polluted water and air).
 - Local seed firms
 - ?? Consumers organizations??

Why the disconnect between potential benefits and support?

- Chinese seed industry has little research capacity, fears competition from companies with GMOs
- Farmers have no political voice or power in China
- Feed and livestock still getting plenty of maize and there are advantages to imported maize – uniform, cleaner, better quality, less mycotoxins....
- Livestock consumers have been protected from maize price rises like 2008 price spikes by government policies

India benefits and losses – Bt + HT maize

- Monsanto and big Indian seed companies could win, small companies lose
- Generic Roundup producers win/Insecticide and other herbicide producers lose
- Farmers' yields and profits up
- Exports of maize to S.E. Asia could be threatened by GM??
- Feed and poultry industry should get lower priced maize for feed
- Poultry consumers get lower prices unless there is too much concentration in poultry industry

Indian lobbying

- Pro –
 - ABLE – biotech industry; Croplife – MNC seed/pesticide; National Seed Association of India – seed companies
 - Three major farmers organizations – Confederation of Indian Farmers Associations (CIFA) from A.P., Bharat Krishak Samaj, from Haryana; Shetkari Sanathana. Maharashtra
 - A few scientists – Deepak Pental
 - Industry associations – CII, Assocham, FICCI
- Con –
 - One left wing farmers organization Punjab --- Bhartiya Kisan Union (BKU) – also producers of basmati rice....
 - Insecticide industry
 - Environmental NGOs – Gene Campaign, Vandana Shiva,....
- Silent - seed guys, many scientists

Kenya case: benefits & losses from Bt, Drought tolerant, HT maize production

- Benefits

- Small and medium seed companies first beneficiaries from WEMA (but not as much as in India?)
- Large and medium farmers capture benefits of productivity increasing GM maize because prices supported by government pricing and 50% tariff on maize imports
 - Bt and DT will be royalty free
 - HT commercial
- Maize millers, feed industry & livestock industry could benefit depending on how the government fixes Kenyan maize prices and import prices.....

- Losses

- KENFAP horticulturalists who export to Europe??? Not clear how they would lose – cross pollination with baby corn??? With sweet corn???? .

Who lobbies for and against?

- For – pro-GM NGOs like AATF, ISAAA
 - Biotech companies
 - USAID through PBS
 - Grain producers association (farmers association)
- Against –
 - Kenya Biodiversity Coalition
 - KOAN – Organic farmers
 - Biodiversity organizations
 - Greenpeace, Friends of the Earth, Biovision
 - Consumers information network...
 - KENFAP (farmers organization)
- Silent
 - Scientists (some of MPs scientists???)
 - Millers/Feed companies (except on labeling regulations)

Why support or oppose

- Supporters
 - AATF, PBS, ISAAA - US government funding, Gates Foundation, biotech companies
 - Grain producers – could reduce costs make profits...
- Opponents
 - KOAN, Biodiversity groups get support from Greenpeace, Friends of Earth (Pelum), Biosis (Biodiversity) EU and European bilaterals...
- Silence
 - Biotech scientists are mainly supported by pro-biotech donors – not clear why they do not speak out (more research needed)
 - Millers and feed industry profits depend more on government maize price and tariffs than on farm productivity (although local maize should be 50% cheaper because of tariff)
 - KENFAP?????

Future for GMOs

- China - No rice, but yes maize in 2016
 - Government worried about huge maize imports for strategic reasons -
 - Don't want to be dependent on US
 - Believe me now in 2013 after past forecasts??
- India - Bt cotton worked, Seed industry & most farmers groups pushing GM maize, few people eat maize, But weak government which can't make decisions
- Kenya - no strong industry or farmers lobbies for GM, but depending on election results, Bt cotton and Bt maize could go ahead.

Comments and assistance welcome

Thanks