

In 2010

- China is a member of the group of six "founder biotech crop countries", having first commercialized biotech crops in 1996, the first year of global commercialization.

- Bt cotton was planted in 3.45 million hectares of the 5.0 million hectares of cotton planted in China - 69% adoption compared with 68% for 2009.

- In Guangdong, principal papaya province in China, virtually all of the 4,625 hectares (99%) of the papaya planted in 2010 was biotech papaya

resistant to the lethal papaya ring spot virus (PRSV) disease.

- Bt poplar, with improved insect resistance, continued to be successfully grown on approximately 453 hectares.

- Two certificates were issued for biotech rice on 27 November, 2009, one for a rice variety (Huahui-1) a restorer line, and the other for a hybrid rice line (Bt Shanyou-63), both of which expressed cry1Ab/cry1Ac and developed at Huazhong Agricultural University (James, 2009a).

- A biosafety certificate was issued for biotech phytase maize; important because maize is the most important animal feed crop in the world. The phytase maize was developed by the Chinese Academy of Agricultural Sciences (CAAS) and licensed to Origin Agritech Limited after 7 years of study at CAAS.

- In China alone, Bt rice can benefit 110 million rice households totaling 440 million beneficiaries, assuming four per family. With 250 million rice households in Asia, the number of potential beneficiaries is a momentous 1 billion people.

- Maize is the most important feed crop, being grown by 100 million maize households (400 million potential beneficiaries) in China alone. Phytase maize can increase the efficiency of meat production. China has 500 million pigs (50% of the global swine herd) and 13 billion chickens, ducks and other poultry.



Biotech Developments

- Three certificates of approval have momentous positive implications for biotech crops in China, Asia and the whole world.**

Population: **1,336.3 million**
 GDP: **US\$4,327 billion**
 GDP per Capita: **US\$3,270**
 Agriculture as % GDP: **11.0%**
 Agricultural GDP: **US\$476 billion**
 % employed in agriculture: **41%**
 Arable Land (AL): **143.5 million hectares**
 Ratio of AL/Population*: **0.45**

*Ratio: % global arable land / % global population

Major crops:

- Rice, paddy
- Maize
- Sugarcane
- Vegetables, fresh
- Sweet potato
- Cotton

Commercialized Biotech Crops:

- Bt Cotton
- VR Sweet Pepper
- Bt Poplar
- DR, VR Tomato
- PRSV Papaya

Total area under biotech crops and (%) increase in 2010:

3.5 Million Hectares (-5%)

Farm income gain from biotech, 1997-2009: **US\$9.3 billion**

Benefits of Biotech Crops

- Economic gains at the farmer level from Bt cotton for the period 1997 to 2009 was US\$9.3 billion and US\$1.7 billion for 2009 alone.
- In 2010, 6.5 million small and resource-poor farmers in China continued to benefit from planting 3.45 million hectares of Bt cotton.
- In northern China, there maybe up to an additional 10 million beneficiary farmers cultivating 22 million hectares of crops other than cotton, which also host cotton bollworm, but where infestations have decreased up to ten-fold. Thus, the number of beneficiary farmers in China alone may exceed 15 million.

Biotech Crop Adoption

- China has approved and successfully grown biotech papaya, a fruit food crop for four years, since 2007.
- Transgenic *Populus nigra* has been used to generate an insect resistant *P. deltoides* source in a breeding program designed to generate new hybrid clones.
- There were 3 transgenic poplar lines approved for environmental release and another 5 have been deployed in small-scale field trials in 2010.
- Transformation of poplar with diverse traits such as tolerance to freezing, control of flowering and modification of wood specifications with improved pulping

qualities and more efficient saccharification (conversion of lignocellulose to sugar) are in progress.

- China, the most populous country and the world's largest consumer of edible soybean, approved in 2008 the importation of RR2Yield™ soybean.

Political Support to Biotech Crops

- The Chinese Government's assignment of high priority to agriculture and crop biotechnology, championed by Premier Wen Jiabao, has resulted in handsome returns for China both in terms of strategically important new crops like biotech rice and maize and reflects the growing academic excellence of China at a global level in biotech crops.
- Professor Lin Min, Director of the Chinese Academy of Agricultural Sciences' Biotechnology Research Center, opined that China's agricultural ascent in agricultural science was due to **"rich research resources, constant governmental investment and support, and an expanding pool of world-class talents."**
- The government supports the emergence of private seed companies that conduct R&D in crop biotechnology and develop and distribute both conventional and biotech hybrid seed.
- There is a growing number of collaborative initiatives between Chinese institutions and foreign companies and institutions.

Excerpts from:

James, Clive. 2010. Global Status of Commercialized Biotech/GM Crops: 2010. *ISAAA Brief* No. 42. ISAAA: Ithaca, New York.

Other Sources:

The World Bank. <http://www.worldbank.org/>
Food and Agriculture Organization of the United Nations. <http://www.fao.org/countryprofiles/>

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