



Office of Agricultural Affairs
U.S. Embassy, Paris

Agricultural Biotechnology in the United States Newsletter – March 2010

To our readers: We in the Office of Agricultural Affairs of the U.S. Embassy in Paris would be happy that you inform us of your visits to the United States, so that we can help you organize your meetings and your administrative procedures. Please do not hesitate to share any questions with us on these issues as we are here to facilitate these exchanges.

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1. U.S. Policy:

- **GE Sugar Beet Case:**

- **Washington Post/The Associated Press article, March 16, 2010: Judge Allows Genetically Engineered Beet Harvest, by Paul Elias**¹

A federal judge on March 16 said farmers can harvest their genetically engineered sugar beets this year, ruling the economic impact too great and that environmental groups waited too long to request that the crop be yanked from the ground and otherwise barred from the market.

(...) U.S. District Court Judge Jeffrey White last year sided with the environmental groups when he ruled that federal regulators five years ago improperly approved the genetically engineered crop for market. White said in September that further environmental studies are required before the United States Department of Agriculture can decide the issue but didn't decide the next legal steps.

In January, the Center for Food Safety, Earthjustice and several other groups and organic farmers asked White to immediately halt the planting and harvest of all genetically engineered beets while determining how to resolve the lawsuit, which was filed in 2007. The groups sued the USDA over its approval, and the biotech company Monsanto Co., which develops genetically engineered seeds, joined the lawsuit on the government's side.

(...) The judge also said such an order would cause an economic catastrophe - 95 percent of sugar beets are genetically engineered with a bacteria gene to withstand sprayings of Monsanto popular weed killer Roundup. Half the nation's sugar supply is derived from beets and a Monsanto expert testified that 5,800 jobs and \$283.6 million in growers' profits would be lost if he shut down the market, which stretches across 1 million acres in 10 states.

(...) Now the battle turns to whether the judge will bar future plantings of genetically engineered seeds while a new Monsanto application is pending before the USDA. (...) White scheduled a July 9 hearing to decide whether to ban future plantings. (...)

- **Reaction of the U.S. Sugar Industry Biotech Council:**

<http://www.sugarindustrybiotechcouncil.org/2010/03/16/update-on-us-district-court-activity-by-sugar-industry-biotech-council-3/>

- **Monsanto's Reaction:**

<http://monsanto.mediaroom.com/index.php?s=43&item=818>

- **GE Alfalfa Case:**

Ag Groups Weigh-in on Supreme Court Case for Biotech Alfalfa²

¹ <http://www.washingtonpost.com/wp-dyn/content/article/2010/03/16/AR2010031603833.html>

The U.S. Supreme Court will decide whether a lower court acted hastily and incorrectly by banning the cultivation of biotech alfalfa despite extensive scientific evidence documenting the safety of the crop. A coalition of agricultural organizations filed on March 8 a joint friend-of-the-court brief to the Supreme Court in support of the petitioners in "Monsanto Co. v. Geertson Seed Farms."

The brief was submitted by the American Farm Bureau Federation, Biotechnology Industry Organization, American Seed Trade Association, American Soybean Association, National Alfalfa and Forage Alliance, National Association of Wheat Growers, National Cotton Council and National Potato Council.

The groups urge that the lower courts' decision to approve an injunction without adequately hearing the key evidence must be reversed "to protect the farmers who choose to grow genetically-engineered crops, as well as the public benefits that agricultural biotechnology brings to producers and consumers around the world."

In the lower court case, environmental groups and individual organic alfalfa farmers sued the United States Department of Agriculture (USDA), claiming that USDA's decision to grant deregulated status to glyphosate-tolerant (or "Roundup Ready®") alfalfa violated the National Environmental Policy Act.

The courts in the Ninth Circuit determined that USDA should have done an environmental impact statement (EIS) before it decided to deregulate, and the court ultimately enjoined almost all planting and sale of Roundup Ready® alfalfa pending the issuance of the EIS.

In 2005, USDA'S Animal and Plant Health Inspection Service (APHIS) concluded that there is no significant impact on the human environment due to granting non-regulated status to Roundup Ready® alfalfa. Following the lower court's ruling, APHIS completed a 1,400-page document as its draft EIS, and again has recommended that Roundup Ready® alfalfa be deregulated and that farmers be allowed to grow it.

This is an important case because it will be the first time the high court has weighed in on the risks of genetically engineered crops. Of the more than 10,000 cases appealed to the Supreme Court each year, only about 1 percent is accepted for review on the merits and oral arguments. This matter is scheduled for oral argument on April 27. A decision is expected from the Court by June.

- USDA Seeks Public Comment on Draft Environmental Impact Statement for GE Alfalfa³

The U.S. Department of Agriculture's Animal and Plant Health Inspection Service (APHIS) announced on December 14 the availability of a draft environmental impact statement (EIS) that evaluates the potential environmental effects of deregulating alfalfa genetically engineered (GE) to be resistant to the herbicide glyphosate, known commercially as Roundup. This GE alfalfa is commonly referred to as Roundup Ready (RR) alfalfa.

APHIS considered two alternatives in the draft EIS: to grant nonregulated status to the two RR alfalfa lines, or to maintain the lines' status as regulated articles. APHIS analyzed these alternatives with regard to their potential environmental impacts, socioeconomic impacts, as well as human health and safety

² http://bio.org/news/pressreleases/newsitem.asp?id=2010_0309_01&p=yes

³ <http://www.aphis.usda.gov/newsroom/content/2009/12/alfalfa.shtml>

impacts.

APHIS originally deregulated two lines of RR alfalfa (J101 and J163) in 2005. The agency prepared this draft EIS to comply with a February 2007 judgment and order by the U.S. District Court for the Northern District of California. The court did not overturn APHIS' 2005 conclusions regarding the safety of the RR alfalfa for food and feed purposes, but rather concluded that APHIS had not adequately documented potential, or lack of potential, environmental impacts.

APHIS is seeking public comment on the draft EIS and will consider all public comments submitted during the comment period before finalizing the EIS or making any decisions regarding the regulatory status of RR alfalfa. The comment period will be open for 60 days from the date of publication in the Dec. 18, 2009, *Federal Register*. Preliminarily, APHIS concluded that there is no significant impact on the human environment due to granting nonregulated status to RR alfalfa.

To obtain feedback and take comment from members of the general public APHIS is scheduling four public meetings. These meetings will take place in conjunction with the Western Alfalfa Seed Conference in Las Vegas, Nev., the week of Jan. 17, 2010; the Mid-America Alfalfa Expo in Kearney, Neb., the week of Feb. 2, 2010; and the Nebraska Sustainable Agriculture Society Annual Healthy Farms/Rural Advantage Conference in Lincoln, Neb., the week of Feb. 2, 2010. APHIS will also hold a public meeting in the Washington D.C., area during the week of Feb. 8, 2010. Exact meeting dates and locations will be published in the *Federal Register*, posted on the APHIS Web site and will be announced in a future press release.

- RR Alfalfa Qs and As:

http://www.aphis.usda.gov/publications/biotechnology/content/printable_version/faq_alfalfa.pdf

- **Other Products in the Pipeline:**

- USDA Reopened Comment Period for Environmental Assessment Study on GE Eucalyptus Hybrid⁴

On January 19, 2010, the U.S. Department of Agriculture's Animal and Plant Health Inspection Services (APHIS) reopened the comment period for an environmental assessment for a proposed controlled field release of a genetically engineered clone of a Eucalyptus hybrid by ArborGen, LLC. This action will allow interested persons additional time to prepare and submit comments on the revised environmental assessment.

The purpose of this release is to continue research on the effectiveness of gene constructs which are intended to confer cold tolerance; to test the efficacy of a gene introduced to alter lignin biosynthesis; and to test the efficacy of a gene designed to alter fertility. APHIS made the environmental assessment available to the public for review and comment.

- USDA Opened Public Comment on Deregulation of GE Corn Modified for Insect

⁴ <http://www.aphis.usda.gov/newsroom/notices/content/2010/eucahybrid.shtml>

Resistance⁵

On January 13, 2010, the U.S. Department of Agriculture's Animal and Plant Health Inspection Service (APHIS) sought public comment on a petition to deregulate corn genetically engineered (GE) to resist certain caterpillar insect pests of corn. APHIS has regulated this variety of corn through its notification and permitting process since 1999.

The petition for deregulation, submitted by Syngenta Biotechnology, Inc., is in accordance with APHIS' regulations concerning the introduction of GE organisms and products and is available for the public's review and comment. As part of the decisionmaking process, APHIS also prepared a draft environmental assessment (EA) and plant pest risk assessment for review and comment.

Following the comment period, APHIS makes a determination of nonregulated status if it can conclude that the organism does not pose a plant pest risk. If APHIS grants the Syngenta Biotechnology, Inc. petition for deregulation, this GE corn and its progeny would no longer be regulated articles. The product could then be freely moved and planted without the requirement of permits or other regulatory oversight by APHIS. In addition to APHIS review, Syngenta Biotechnology, Inc. submitted the appropriate documents to FDA and EPA to address requirements specific to those agencies.

2. Biotechnology and Food Security:

- **Africa Rice Congress (March 22-26, 2010) in Bamako, Mali⁶**

Innovation
and partnerships
to realize
Africa's rice
potential



22-26 March 2010
Bamako, Mali
www.AfricaRice.org

Africa Rice Congress 2010 has as its main theme: 'Innovation and partnerships to realize Africa's rice potential'. The Congress brings together representatives from the public and private sector, civil society organizations, farmer associations and research and extension communities engaged in the development of Africa's rice sector.

The Congress will take stock of advances in rice science and technology aimed at enhancing rice productivity in farmers' fields, while protecting environmental services and coping with climate change. The Congress will also provide opportunity to discuss institutional innovations, policies and key investments needed to significantly increase rice production in sub-Saharan Africa, develop competitive and equitable rice value chains, reduce imports and enhance regional trade.

The Africa Rice Congress will be organized by the [Africa Rice Center](http://www.AfricaRice.org) (AfricaRice) under the distinguished patronage of the Malian Authorities.

⁵ <http://www.aphis.usda.gov/newsroom/content/2010/01/gecrnmet.shtml>

⁶ <http://www.africaricecenter.org/AfricaRiceCongress2010/index.html>

- **FAO International Technical Conference on Agricultural Biotechnologies in Developing Countries (ABDC), March 1-4, 2010⁷**



The conference took place in Guadalajara, Mexico, was hosted by the Government of Mexico and co-sponsored by the International Fund for Agricultural Development (IFAD). The Consultative Group on International Agricultural Research (CGIAR), the Global Forum on Agricultural Research (GFAR), the International Centre for Genetic Engineering and Biotechnology (ICGEB) and the World Bank were major partners in this initiative. This conference brought together about 300 policy-makers, scientists and representatives of inter-governmental and international non-governmental organizations from 68 different countries.

Agricultural biotechnologies in developing countries should address the specific needs of smallholders and, to do so, should encourage their participation and that of all stakeholders in the decision making process, conference participants stated.

The conference agreed on the key elements necessary to put agricultural biotechnologies at the service of the developing world: increased investments, international cooperation and effective and enabling national policies and regulatory frameworks.

Every country should have a clear national vision for the role of biotechnologies, and examine the options and opportunities within the context of national economic, social and sustainable rural development and environmental strategies and objectives, the conference recommended.

The conference agreed on the need for effective and enabling national biotechnology policies and regulatory frameworks that facilitate the development and use of appropriate biotechnologies in developing countries.

- **ISAAA Annual Report on Biotech Crops⁸**

The International Service for the Acquisition of Agri-biotech Applications (ISAAA) released its annual report on the global status of commercialized biotech crops in 2009. In 2009, 14 million farmers planted 134 million hectares (330 million acres) of biotech crops in 25 countries, up from 13.3 million farmers and 125 million hectares (7 percent) in 2008. Notably, in 2009, 13 of the 14 million farmers, or 90 percent, were small and resource-poor farmers from developing countries.

⁷ <http://www.fao.org/biotech/abdc/conference-home/en/>

⁸ <http://www.isaaa.org/resources/publications/briefs/41/pressrelease/default.asp>

Brazil surpassed Argentina as the second largest grower of biotech crops globally. Impressive growth of 5.6 million hectares to 21.4 million hectares, up 35 percent from 2008, was the highest absolute growth for any country in 2009.

Burkina Faso's biotech cotton area soared from 8,500 hectares to a substantial 115,000 hectares, or from 2 percent to 29 percent of the country's total cotton area – the largest percentage growth on record at 1,350 percent. Progress continued in the rest of Africa with a significant 17 percent increase in South Africa to reach 2.1 million hectares and a 15 percent increase in Egypt to total 1,000 hectares of Bt maize.

Bt cotton in India has revolutionized cotton production in the country with 5.6 million farmers planting 8.4 million hectares in 2009, equivalent to a record 87 percent adoption rate. India gained US\$1.8 billion from Bt cotton in 2008 alone and reduced insecticide use by half.

Biotech rice and the drought tolerant trait have been identified as the two most important drivers globally for future biotech crop adoption. China's biosafety clearance of insect-resistant rice is likely to spur faster development of biotech rice and other biotech crops in other developing countries. Meanwhile drought tolerant maize is expected to be deployed in the United States in 2012 and sub-Saharan Africa in 2017.

ISAAA predicts future adoption increases will also come from:

- significant expansion of biotech soybean, maize, and cotton in Brazil.
- commercialization of Bt cotton in 2010 by Pakistan, the fourth-largest cotton growing country.
- expansion of Bt cotton in Burkina Faso with potential adoption of biotech cotton and/or maize in other African countries including Malawi, Kenya, Uganda, and Mali.
- adoption of golden rice by the Philippines in 2012 and Bangladesh and India before 2015.

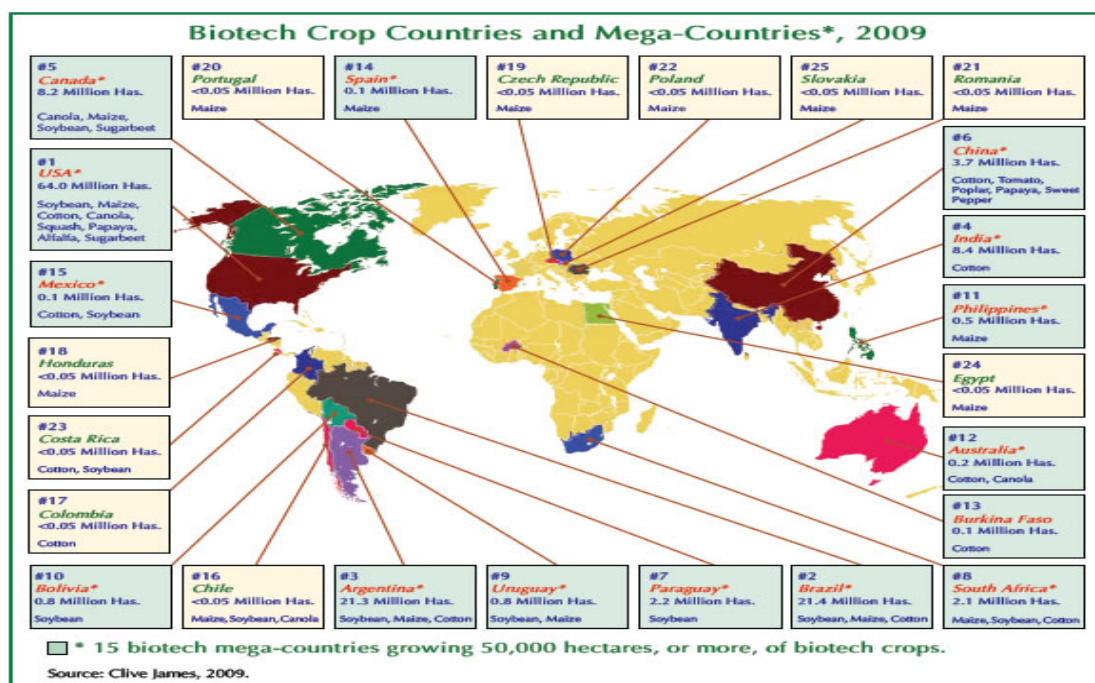


Figure 1. Global Map of Biotech Crop Countries and Mega-Countries in 2009

- **ARS - Bringing Better Grapes a Step Closer to Reality⁹**

A team of USDA [Agricultural Research Service](#) (ARS) researchers has found a way to speed things up by developing a way to identify genetic markers in the grapevine's genome that can be linked with specific traits, such as fruit quality, environmental adaptation, and disease and pest resistance.

Computational biologist, geneticists, and research leader have developed a relatively fast and inexpensive way to identify genetic markers not only in grapes, but also in other crops by using modern sequencing approaches. The researchers used the technology to sequence representative portions of the genomes from 10 cultivated grape varieties, six wild varieties and the clone of Pinot Noir originally sequenced by scientists in 2007. They developed filters that allowed them to make corrections for common sequencing errors, and discovered thousands of high-quality single nucleotide polymorphisms, or SNPs, which are genetic markers that can serve as signposts for showing how plants are related to each other.

They then used 9,000 of those SNPs in a custom-designed assay to examine DNA patterns at defined points along each cultivar's genome. They found the SNPs contained enough data to identify the relationships and geographic origins of the cultivars. The work was published in [PLoS One](#).

Improved technology is expected to make it possible to one day sequence the entire genomes of large numbers of grapes. But in the meantime, the work will help researchers identify portions of the grape genome where they can find genes that confer desirable traits, offering better information for breeders developing new varieties. The technique also should make it easier to identify the origins of other types of plants, characterize relationships in other plant collections, and accelerate genetic mapping efforts in a number of crop species.

- **ARS Scientists and Colleagues Sequence Genome of Major Agricultural Pest¹⁰**



An international group of researchers that includes three [Agricultural Research Service](#) (ARS) scientists has sequenced the genome of the pea aphid, an achievement expected to lead to better controls and a deeper understanding of a major agricultural pest. The work was published this week in [PLoS Biology](#) by the [International Aphid Genomics Consortium](#), a group that includes researchers from the United States, France, Japan, Spain and Australia.

Aphids spread diseases that cost gardeners and farmers hundreds of millions of dollars each year. Sequencing an aphid genome will help scientists decipher how they reproduce, adapt to new surroundings and develop insecticide resistance. More than 20 aphid species are known to be resistant to current insecticides, and farmers in many areas have been forced to increase

⁹ <http://www.ars.usda.gov/is/pr/2010/100323.htm>

¹⁰ <http://www.ars.usda.gov/is/pr/2010/100223.htm>

insecticide use in recent years.

Genome data continues to advance the understanding of insect biology. Genomes from the honey bee, mosquito, fruit fly, silkworm moth and red flour beetle have already been sequenced. Comparing them with the aphid genome may lead to identification of genes that play key roles in how aphids and other insects feed, reproduce, spread diseases and fight off pathogens, according to Evans.

The pea aphid *Acyrtosiphon pisum* is found throughout the United States and Canada. It infests gardens and cultivated fields of peas, sweet peas, sweet clover and alfalfa. Scientists in more than 35 labs worldwide use it to study a wide range of issues.

- **Public-Private Partnership to Improve Maize Harvests 30-50 percent and Provide Options for African Smallholder Farmers¹¹**

A group of public and private agriculture organizations announced on February 17 an alliance that will improve food security and livelihoods in sub-Saharan Africa. The alliance will create and share new maize varieties that use fertilizer more efficiently and help smallholder farmers get higher yields, even where soils are poor and little commercial fertilizer is used.

The collaboration, known as Improved Maize for African Soils (IMAS), will be led by the International Maize and Wheat Improvement Center (CIMMYT) and funded with \$19.5 million in grants from the Bill & Melinda Gates Foundation and USAID. The project's other partners – Pioneer Hi-Bred, a DuPont business; the Kenya Agricultural Research Institute (KARI); and the South African Agricultural Research Council (ARC) – also are providing significant in-kind contributions including staff, infrastructure, seed, traits, technology, training, and know-how.

IMAS participants will use cutting-edge biotechnology tools such as molecular markers – DNA “signposts” for traits of interest – and transgenic approaches to develop varieties that ultimately could significantly increase yield over currently available varieties, with the same amount of nitrogen fertilizer applied and/or when grown on poorer soils. The varieties developed will be made available royalty-free to seed companies that sell to the region's smallholder farmers, meaning that the seed will become available to farmers at the same cost as other types of improved maize seed.

Maize yields of smallholder farmers in sub-Saharan Africa are a fraction of those in the developed world, due mainly to the region's poor soils and farmers' limited access to fertilizer or improved maize seed. Because of high transportation costs due to poor roads and rail systems in their countries, African farmers often pay as much as six times more than their U.S. and European peers for fertilizer. As a result, they apply far less than the amounts needed to produce vigorous crops.

¹¹ <http://www.pioneer.com/web/site/portal/menuitem.46a38374fe929fcde580e580d10093a0/>

3. Biotechnology and Climate Change:

- **ARS - Plant Hormone Increases Cotton Yields in Drought Conditions¹²**



A naturally occurring class of plant hormones called cytokinins has been found to help increase cotton yields during drought conditions, according to [Agricultural Research Service](#) (ARS) scientists.

Cytokinins promote cell division and growth in plants. In cotton, cytokinins stimulate the growth of the main plant stem and branches. Commercially produced cytokinins are routinely applied in apple and pistachio orchards to promote fruit growth.

ARS in Texas found that applying cytokinins to cotton crops can increase yields in water-limited environments with reduced irrigation or no irrigation.

Half of the U.S.-produced cotton is grown in the arid high plains of Texas. In addition to a short growing season, 60 to 65 percent of the acreage in the area is dry land and relies on rainfall for soil moisture. Young cotton seedlings have small root systems, making it difficult for them to reach available soil water. Cytokinins trick the young plant's water stress defenses, prompting the plant to quickly build a bigger root system to access deep soil moisture. They also stimulate the growth of a protective wax on the surface of the plant that helps reduce water loss.

Tests conducted by ARS found one application of cytokinins produced a 5 to 10 percent increase in yields under water-reduced conditions. Additionally, tests determined that cytokinins didn't help or hinder yields under fully irrigated or rainy conditions, making it safe for use in all weather environments. There is also no extra work involved for the grower because cytokinins can be applied when conducting normal weed-management practices early in the season. To be effective, the cytokinins should be applied at a relatively low concentration to cotton seeds or to cotton plants at an early stage of development. ARS is working closely with commercial companies to make this material available to cotton growers in the future.

- **USDA Scientists Sequence Genome of Biofuel Model Crop¹³**

[U.S. Department of Agriculture](#) (USDA) scientists and their colleagues at the [Department of Energy \(DOE\) Joint Genome Institute](#) announced that they have completed sequencing the genome of a kind of wild grass that will enable researchers to shed light on the genetics behind hardier varieties of wheat and improved varieties of biofuel crops. The research was published in February 2010 in the journal [Nature](#).

¹² <http://www.ars.usda.gov/is/pr/2010/100310.htm>

¹³ <http://www.ars.usda.gov/is/pr/2010/100210.htm>

The grass, *Brachypodium distachyon*, can be used by plant scientists as a model organism that is similar to but easier to grow and study than important agricultural crops, including wheat and barley. The *Brachypodium* genome is similar to that of the potential bioenergy crop switchgrass. But the smaller genome of *Brachypodium* makes it easier to find genes linked to specific traits, such as stem size and disease resistance. *Brachypodium* also is easier to grow than many grasses, takes up less laboratory space, and offers easy transformation, which means scientists can insert foreign DNA into it to study gene function and targeted approaches for crop improvement in the transformed plants.

A major stumbling block in using switchgrass or any perennial grass as a biofuel crop is the difficulty in breaking down its cell walls, an essential step in producing ethanol from cellulosic biomass. *Brachypodium* may hold the key to finding ways to produce plant cell walls that are easy to break down. Researchers shared *Brachypodium* seeds with more than 300 labs in 25 countries and gave scientists worldwide free access to a draft sequence of the *Brachypodium* genome long before the work was formally published. The sequencing project was carried out through the [DOE-JGI Community Sequencing Program](#).

4. Upcoming Events:

- **International Association for Plant Biotechnology (IAPB) Congress (June 6-11, 2010)¹⁴**

The congress will include 12 plenary speakers from a range of institutions who will deliver lectures that range from climate policy and implications for agriculture, to cutting edge experimental science and applications of science that enhance the lives of humankind, as well as forward looking research that projects uses of biotechnology into the future. Congress attendees will have the opportunity to interact with leading scientists from a range of disciplines, including in plant, microbial, and biomedical research.

- **Biotechnology Industry Organization International Convention (May 3-6, 2010)¹⁵**

The BIO International Convention features keynotes and sessions from key policymakers, scientists, CEOs, and celebrities. The Convention also features the BIO Business Forum (One-on-One Partnering), hundreds of sessions covering biotech trends, policy issues and technological innovations, and the world's largest biotechnology exhibition. A wide range of issues will be covered, including prospects for biotech wheat, implications of asynchronous approval for international trade, the global experience of the Cartagena Protocol on Biosafety, how public perception affects adoption of technologies that help feed the world, the acceptance of the new consumer-oriented biotech crops on the market. FDA Commissioner Margaret Hamburg will present bioscience and biosecurity priorities of the Obama Administration.

¹⁴ <http://www.iapb2010.org/default.asp>

¹⁵ <http://convention.bio.org/default.aspx>

Please see abstract of these presentations at:

<http://bio2010.bdmetrics.com/sessionsearch.aspx?configId=1&day=7&track=29100130>.

5. Background information:

- U.S. regulatory framework: <http://usbiotechreg.nbio.gov>
- List of regulated and deregulated products:
http://www.aphis.usda.gov/biotechnology/brs_main.shtml
http://www.aphis.usda.gov/brs/not_reg.html
- Adoption of biotechnology and its production impacts:
<http://www.ers.usda.gov/Data/BiotechCrops/>

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