

US Experience

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Rising global food demand and increasing resource limitations necessitate innovative interventions for affecting the sustainable intensification of agricultural systems. Safe and appropriate use of science and technology, including biotechnology, is paramount to meeting agricultural challenges and consumer needs of the 21st century.

With that in mind the U.S. Coordinated Framework for the Regulation of Biotechnology was established in 1986. It describes the Federal system for evaluating modern biotechnology products. The three main agencies responsible for regulating the safe use of genetically engineered (GE) organisms are APHIS, the U.S. Environmental Protection Agency (EPA), and the U.S. Food and Drug Administration (FDA). FDA has primary responsibility for ensuring the safety of human food and animal feed, as well as proper labeling and safety of all plant-derived foods and feeds. EPA regulates pesticides, including plants with plant-incorporated protectants (pesticides intended to be produced and used in a living plant), to ensure public safety. EPA also regulates pesticide residue on food and animal feed. APHIS regulates the introduction of certain GE organisms that may pose a risk to plant health. As GE plants approach the commercial stage, one, two, or all three of the Coordinated Framework agencies may review the new biotech product, based on the characteristics of the product and its intended use.

APHIS has determined nonregulated status for a range of GE plants since the first determination in 1992. Some of these GE plants have not been commercialized, whereas others make up the majority of production in the U.S. In 2012, the adoption of GE corn reached 88%, GE cotton 94% and GE soybeans 93%. It is ultimately the marketplace that determines commercialization of the deregulated products.

The high level of adoption of GE crops in the U.S. is due to the environmental and economic benefits that the growers have experienced. The use of GE crops has facilitated significant reductions in pesticide spraying and has contributed to significantly reducing the release of greenhouse gas emissions from agricultural practices. Because weed control is more efficient, farmers can till the soil much less, which has decreased erosion and preserved topsoil. There have also been substantial net economic benefits at the farm level attributable to the use of GE crops. In addition to fuel, labor, and herbicide savings US farmers have experienced yield increases.

In 2012/2013, the U.S. consumed domestically over 2/3 of its corn and 2/5 of its soybean production and exported approximately 1/4 of its corn and soybean production. The top 5 export markets for US corn in 2012 were Japan, Mexico, China, South Korea, and Venezuela. The top 5 export markets in 2012 for US soybean exports were China, Mexico, the EU, Japan, and Indonesia, where China represented the majority of the total soybean exports.

Looking forward in the next 10-15 years products are expected to continue to address production concerns such as viral resistance, stress tolerance, but also input efficiency, and breeding speed. Under development are also crops that will offers end user benefits such as nutrient enhanced products and change in oil composition – high oleic, omega 3, etc.