



# United States of America

**The United States of America is the world's leader in biotech crop planting since 1996. In 2016, 72.92 million hectares were planted to major biotech crops.**

In 2016, the USA planted 72.92 million hectares of biotech crops, an increase of 7% from 2015, and the third highest planted acreage since 1944. The USA planted the following biotech crops: maize, soybean, cotton, canola, sugar beet, alfalfa, papaya, squash, and potato.

Of the 38.10 million hectares planted to maize in the USA in 2016, 92% or 35.05 million hectares were biotech. This area is comprised of 3% insect resistant (IR), 13% herbicide tolerant (HT), and 76% stacked IR/HT.

The total area planted to soybean in the USA in 2016 was 33.87 million hectares, of which 94% or 31.84 million hectares was biotech HT soybean.

Biotech cotton was planted on 93% of the total cotton area (~3.7 million hectares) comprised of 4% IR, 9% HT, and 80% stacked IR/HT.

Canola was planted on 690,000 hectares in 2016, the fourth largest planting on record in the USA. 90% (621,000 hectares) was planted to herbicide canola.



The area planted to sugar beet in 2016 was ~472,000 hectares at 100% adoption. Introduced in 2016, farmers prefer biotech sugar beet which provided superior weed control, cost effective, and easier to grow than conventional sugar beet.

In 2016, 1.23 million hectares herbicide tolerant alfalfa in the USA were planted for hay, haylage, and green chop. The planted area was composed of 1.214 million hectares herbicide tolerant and 20,000 hectares of altered lignin alfalfa (HarvXtra™).

Small areas of biotech virus resistant squash (1,000 hectares) and PRSV resistant papaya in Hawaii (1,000 hectares) continued to be grown in the USA in 2016. Other biotech crops approved for commercial cultivation in the USA since 1996 include creeping bent grass, flax, melon, plum, potato, rice, and tobacco.

The new generation of biotech crops are fruit and vegetable staples that can be eaten raw or cooked. These include PRSV resistant papaya, Innate™ potato (with non-browning, low acrylamide content potential,



low reducing sugars and bacterial blight resistance traits), non-browning Arctic® apple, and biotech salmon.

### ADOPTION OF BIOTECH CROPS

As of November 2016, US regulators have approved 44 single maize events since 1996 with insect resistance, herbicide tolerance, drought tolerance and stacks thereof, for food, feed, and cultivation. In 2016, MON 87419 with stacked herbicide tolerance (glufosinate and dicamba) and MZIR098 with glufosinate-resistance and stacked IR (multiple) were approved for food, feed and cultivation.

Roundup Ready® soybean was the first and most successful HT soybean to be commercialized in the USA since 1996 with 24 GM soybean events approved for food, feed, and cultivation by 2016.

Biotech cotton was planted since 1996 and 28 events with insect resistance, herbicide tolerance, and stacked IR/HT have been approved for food, feed, and cultivation.

There are 20 biotech canola events approved for food, feed and cultivation in the USA (as of November 2016). Canola yield increased by 6% since the introduction of GM varieties.

Since 2009, three herbicide tolerant sugar beet events have been approved for food, feed, and commercialization in the USA.

There have only been two herbicide tolerant alfalfa events approved for food, feed, and cultivation in the USA since 2005.

### MODERNIZING THE US REGULATORY SYSTEM

In 2016, the Federal Government took an important step to ensure public confidence in the regulation of biotechnology products. The U.S. Environmental Protection Agency, U.S. Food and Drug Administration, and U.S. Department of Agriculture released two documents to modernize the Federal regulatory system for biotechnology products.

The first document was a proposed Update to the *Coordinated Framework*. It has a comprehensive summary of the roles and responsibilities of the three principal regulatory agencies.

The second document, the *National Strategy for Modernizing the Regulatory System for Biotechnology Products*, ensures that the Federal regulatory system can efficiently assess the risks, if any, associated with future biotechnology products.



### BENEFITS FROM BIOTECH CROPS

In the 20 years of commercialization of biotech crops (1996-2015), the USA accrued the highest benefits at US\$72.9 billion and US\$6.9 billion for 2015 alone. The US, one of the first six countries to commercialize biotech crops has been benefiting from the technology, and is expected to retain its position with the most number of new biotech crops and traits being developed and commercialized.

### CONCLUSION

The USA remains at the forefront of biotech/GM crops development and commercialization. As the major biotech crops soybean, maize and cotton in the US reach its optimum adoption of 93%, new crops and traits have been developed and commercialized. Expansion of planted areas for these new crops and traits are expected as consumers realize the benefits and accompanying cost reduction of the technology.

### SOURCE

ISAAA. 2016. Global Status of Commercialized Biotech/GM Crops: 2016. *ISAAA Brief No. 52*. ISAAA: Ithaca, New York.

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