

Canada is the fourth largest producer of biotech crops in the world in 2017, with an area of 13.12 million hectares and average adoption rate of 95%.

Canada is one of the six “founder biotech crop countries,” having commercialized herbicide tolerant canola in 1996, the first year of commercialization of biotech crops.

The six biotech crops grown in Canada in 2017 were canola, soybeans, maize, sugar beets, alfalfa, and potato.

Canada was the first country in the world to commercialize biotech herbicide tolerant (HT) canola in 1996. In 2017, 95% of canola planted in Canada was HT canola at 8.93 million hectares. Only 10% of canola produced in Canada is consumed locally, with the remaining 90% exported to various countries.

In 2017, biotech soybeans occupied 85% of Canada’s total area planted to soybeans at 2.50 million hectares. Biotech soybean area in Canada increased by 20%, from 2.08 million hectares in 2016 to 2.50 million hectares in 2017.



Biotech insect resistant (IR) maize has been grown in Canada since 1996 and HT maize since 1999. In 2017, all the 1.78 million hectares planted to maize in Canada was biotech, comprising 18,000 hectares IR; 280,000 hectares HT;

and 1.48 million hectares stacked IR/HT. Maize is used in Canada for livestock feed and ethanol production.

Biotech RoundupReady® sugar beets, launched in Canada in 2008, was estimated at ~15,000 hectares with 100% adoption rate. Sugar beets from Alberta are processed and refined locally by some 400 sugar beet farmers for local consumption or export to the United States.

Biotech HarvExtra® alfalfa with reduced lignin content was planted in Canada for the first time in 2016. In 2017, it was planted on 3,115 hectares or 0.7% of 445,000 hectares alfalfa in the country.

ADOPTION OF BIOTECH CROPS

Since 1996, Canada has approved 177 biotech events for food, feed use, and cultivation of various crops: alfalfa (3), apple (2), Argentine canola (18), cotton (25),



flax (1), maize (67), papaya (1), Polish canola (4), potato (27), rice (1), soybeans (21), squash (1), sugar beets (2), and tomato (4). In 2017, Canada approved six biotech events comprising three stacked trait IR/HT maize events and three stacked potato events. The biotech maize events were Bt11 x MIR162 x MIR604 x MON89034 x 5307 x GA21; MON87427 x MON89034 x TC1507 x MON87411 x 59122 x DAS40278; and MON89034 x TC1507 x NK603 x MIR162. The potato biotech events W8, X17, and Y9 all contain stacked traits for reduced acrylamide potential, black spot bruising tolerance, and fungal disease resistance.

In 2017, a new canola variety, event MS11 with glufosinate-ammonium herbicide tolerance and male sterility traits, as well as a variety that contains long chain omega-3 fatty acids that could provide EPA/DHA omega-3, are in the pipeline for possible release in 2018.

Four Innate® potato events developed by J.R. Simplot were approved in 2016. In August 2017, three Generation 2 Innate® potato events were approved for import, planting,

and commercialization in Canada, complementing the four varieties that were approved earlier.

New biotech products are planned to be commercialized in the country, including the non-browning apple. The Canadian Food and Inspection Agency (CFIA) and Health Canada approved the unconfined environmental release for commercial planting purposes, livestock feed, and food use for apple (*Malus domestica*). Arctic® apple events GD743 and GS784 have been genetically engineered to be non-browning, and will be marketed as Arctic® Golden Delicious and Arctic® Granny Smith. As of this writing, no planting of Arctic® apples has been recorded.

Biotech/genetically engineered (GE) salmon passed Canadian regulations after 25 years since its first application for Food and Drugs Administration approval. Canadian consumers were the first to taste commercialized biotech salmon, which is a variety of Atlantic salmon that needs half the time (18 months only) of its non-GE counterpart to mature. According to the developer AquaBounty

Technologies, they have sold about 4.5 tons of GE salmon in Canada as of August 4, 2017. AquaBounty's chief executive, Ron Stotish, said that they sold the first commercial batch for US\$5.30/lb (\$11.70/kg) (Crop Biotech Update, August 9, 2017).

BENEFITS FROM BIOTECH CROPS

Canada is estimated to have enhanced farm income from biotech canola, maize, soybeans, cotton, and sugar beets by US\$8.04 billion in the period 1996 to 2016 and the benefits for 2016 alone is estimated at US\$817 million (Brookes and Barfoot, 2018).

SOURCE

ISAAA. 2017. Global Status of Commercialized Biotech/GM Crops in 2017: Biotech Crop Adoption Surges as Economic Benefits Accumulate in 22 Years. *ISAAA Brief* No. 53. ISAAA: Ithaca, New York.

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