Agronomic Spotlight

Seminis grow forward

Selecting Sweet Corn Varieties

(Sold by Seminis In the United States under the Brand Performance Series® Sweet Corn)

- Food, feed and environmental safety of biotech crops has been affirmed in the United States by the Food and Drug Administration, U.S. Department of Agriculture, and the Environmental Protection Agency for insect-protected traits, as well as other global regulatory agencies and scientific bodies.
- The use of biotech sweet corn has been shown to reduce insecticide use and offer other environmental benefits.
- Providing accurate information on biotech sweet corn will help customers make choices that best suit their needs.

For those growing and selling biotech sweet corn, answering customers' questions and concerns requires adequate knowledge of the properties of the product and its biotech traits, as well as an understanding of the issues that buyers (and their customers) may be concerned about. Being open, upfront, and providing accurate, science-based information will help address the needs and concerns of growers, retailers, and consumers.

What is biotech sweet corn?

"Biotech sweet corn" can also be referred to as "genetically modified" (GM) or a "genetically modified organism" (GMO). The way biotech in plants works is that one or a few genes that contain certain traits, like herbicide tolerance or pest resistance, are transferred into the plant using biotechnology techniques. The traits are then integrated into different varieties using classical corn breeding. In many cases, it would not be possible to introduce these traits using only traditional breeding methods.

Biotech traits currently used in sweet corn consist of resistance to insect pests, including corn earworm, European corn borer, fall armyworm, and rootworms, as well as tolerance to certain herbicides (in the case of Performance Series® Sweet Corn, certain brands of glyphosate). These traits are described more fully in the Seminis Agronomic Spotlight "Optimizing the Use of Biotech Sweet Corn".

Is Biotech sweet corn safe to eat?

Biotech crops, including sweet corn, undergo more testing and oversight before commercialization than any other crop product, including those that are not improved through genetic engineering. On average, it takes 13 years and costs $130M to bring a biotech crop to market.[1] First, each biotech product undergoes years of testing to ensure that it is as safe as its non-biotech equivalent. On average, more than 75 different studies are performed to ensure they are safe for people, animals and the environment These products then go through a rigorous approval processes at global regulatory agencies. In the United States, these products are reviewed by the Food and Drug Administration (for food/feed safety), the Department of Agriculture (for safety in agricultural production), and sometimes by the Environmental Protection Agency (for safety when a biotech trait confers pest resistance).[2,3]

In addition to the government safety approvals mentioned above, global scientific and health organizations, including the World Health Organization, the American Medical Association, the United States National Academy of Sciences, and the British Royal Society, have all stated that eating foods made from GM crops is safe and no more risky than eating food crops that have not been improved through genetic engineering.

Dr. Bruce Chassy (a professor emeritus of biotechnology at the University of Illinois) has stated that "Genetically-engineered foods are rigorously tested before marketing. These tests are designed to ensure there are no adverse effects on human health now or in the future. There is an abundance of scientific evidence and published research, as well as more than 15 years of experience with GE crops that provide strong evidence of their safety. There is no credible scientific evidence that they cause allergies or that they would have any long-term health effects." [4]

A note about GM food disclosure in the US

In 2016, the United States passed the National Bioengineered Food Disclosure Law, and, as of 2017, regulations to implement the law are currently being drafted. Regardless of how this law is implemented, it is important for growers to know their markets. Be aware of the customer's needs and preferences. Be upfront about biotech products and the traits the products contain. Provide accurate information on the cultivars that are grown, and make sure that the information is readily available to buyers, retailers, and consumers.

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Is Biotech sweet corn safe for the environment?

Scientific evaluations of the environmental impacts of biotech crops have found favorable environmental outcomes associated with the use of crops, including those containing traits for insect resistance and herbicide tolerance. In 2016, after a review of >900 studies during a two-year review process, the United States National Academy of Sciences found no conclusive evidence of cause-and-effect relationships between GE crops and environmental problems.[5]

The use of biotech sweet corn with insect resistance can significantly lower the number of insecticide applications needed to manage corn earworm, European corn borer, and various rootworm species, reducing the impact on non-target insects such as predators, parasitoids, and honey bees. On average, since the introduction of biotech field corn in the U.S., use of insecticides on corn were shown to have decreased by 90% between 1995 and 2010 (Figure 1).[6]

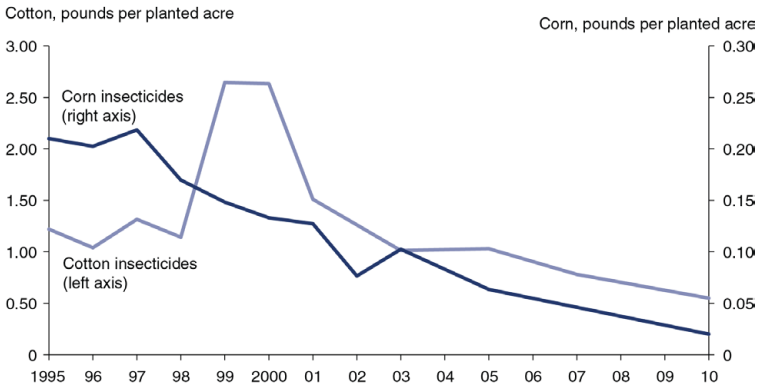

Figure 1. Insecticide use in corn and cotton, 1995-2010. Source: USDA Economic Research Service using data from USDA National Agricultural Statistics Service Agricultural Chemical Usage Reports.[6]

Fewer insecticide applications also reduce the use of fossil fuels and CO_2 emissions from application equipment. Overall the use of biotech crops globally has led to a reduction in CO_2 emissions that are equivalent to removing ten million cars from the road for one year.[5] Lower CO_2 emissions also result from the use of biotech sweet corn with herbicide tolerance because the ability to use post-emergence herbicides increases the adoption of reduced tillage and no-till production systems. This, in turn, increases the amount of carbon sequestration in the soil.[5] As compared to some of the soil-applied pre-plant/pre-emergence herbicides, the glyphosate herbicides used with Performance Series® sweet corn are less persistent in the soil and less likely to contaminate sources of drinking water.[4]

On the subject of biotech crops leading to an increase in the development of herbicide resistant weeds, Dr. Chassy notes that "Resistance has occurred with many herbicides used on non-GE crops; multiple herbicide-resistant weeds have emerged in conventional crops through poor stewardship of herbicides. Where we have seen resistance to herbicides used in GE crops, (less than 1 percent of land planted with GM herbicide tolerant crops), alternative herbicides are still effective. The key requirement to minimize the emergence of resistance to the herbicides used on crops is careful management." [4]

Sources:

[1] McDougall, P. 2011. The cost and time involved in the discovery, development and authorisation of a new plant biotechnology derived trait. Crop Life International.
[2] USDA-APHIS. 2017. How the federal government regulates biotech plants. https://www.aphis.usda.gov/aphis/ourfocus/biotechnology/sa_regulations/ct_agency_framework_roles.
[3] Best Food Facts. 2012. GM foods: Are they dangerous? https://www.bestfoodfacts.org/gmfoodsdangerous/.
[4] Best Food Facts. 2012. Genetically-engineered sweet corn – Is it safe? https://www.bestfoodfacts.org/ge_sweet_corn_is_it_safe/.
[5] Genetically Engineered Crops: Experiences and Prospects. The national Academies Press. ISBN 978-0-309-43738-7.
[6] Fernandez-Cornejo, J., Wechsler, S., Livingston, M., and Mitchell, L. 2014. Genetically Engineered Crops in the United States. ERR-162 U.S. Department of Agriculture, Economic Research Service.

IMPORTANT: Produce Marketing and Stewardship Requirements: This product has been approved for import into key export markets with functioning regulatory systems. Any crop or material produced from this product can only be exported to, or used, processed or sold in countries where all necessary regulatory approvals have been granted. It is a violation of national and international law to move material containing biotech traits across boundaries into nations where import is not permitted. It is the growers' responsibility to talk to their produce handler or purchaser to confirm their buying position for this produce so that the marketing requirements can be met.

Herbicide Information for Performance Series® sweet corn: Roundup PowerMAX®, Roundup PowerMAX® II and Roundup WeatherMAX® herbicides are approved for use on Performance Series® sweet corn (containing the Roundup Ready® trait) in all U.S. states, the District of Colombia and Puerto Rico. If the directions for use on sweet corn with Roundup Ready® 2 Technology (which includes Performance Series® sweet corn) are not listed in the product label that is attached to the product you purchased, contact your Monsanto Company representative.

Performance Series® sweet corn Insect Resistance Management (IRM) – Post-Harvest Requirements: Crop destruction must occur no later than 30 days following harvest, but preferably within 14 days. The allowed crop destruction methods are: rotary mowing, discing, or plowing down. Crop destruction methods should destroy any surviving resistant insects.

B.t. products may not yet be registered in all states. Check with your Monsanto representative for the registration status in your state.

All growers in Idaho and Oregon who intend to plant Performance Series® sweet corn must contact Seminis Vegetable Seeds, Inc. at 866-334-1056 to order Performance Series® sweet corn seed. Performance Series® sweet corn may only be sold into the Treasure Valley area of Idaho and Oregon (which consists of Ada, Canyon, Gem, Owyhee, Payette and Washington counties in Idaho and Malheur County in Oregon) during the time period beginning on January 1 and ending on February 15 of each calendar year.

All information concerning Performance Series® sweet corn hybrids given orally or in writing by Monsanto or its employees or agents, including the information in this communication, is given in good faith, but is not to be taken as a representation or warranty by Monsanto as to the performance or suitability of Performance Series® sweet corn hybrids, which may depend on local climatic conditions and other factors. Monsanto assumes no liability for any such information. This information shall not form part of any contract with Monsanto unless otherwise specified in writing.

ALWAYS READ AND FOLLOW PESTICIDE LABEL DIRECTIONS. Roundup Ready® 2 Technology contains genes that confer tolerance to glyphosate, an active ingredient in Roundup® brand agricultural herbicides. Agricultural herbicides containing glyphosate will kill crops that are not tolerant to glyphosate. Performance Series®, Roundup PowerMAX®, Roundup Ready 2 Technology and Design®, Roundup Ready®, Roundup WeatherMAX® and Roundup® are registered trademarks of Monsanto Technology LLC.

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