Innate® Potatoes

Russet Burbank, Ranger Russet, and Atlantic

What?

There are two generations of Innate® potatoes:

1. The first generation of Innate® potatoes doesn't turn dark when cut or bruised and has lower levels of an amino acid called asparagine, which forms acrylamide when regular potatoes are cooked. (Acrylamide is a chemical compound linked to cancer.)
2. The second generation of the Innate® potato has all the traits of the first generation, plus lower reducing sugars and resistance to late blight, the disease that caused the Irish potato famine.

How?

In order to provide the traits in Innate® potatoes, DNA sequences from wild or cultivated potatoes are inserted into desirable potato varieties. This results in plants with less of the enzymes that cause discoloration when potatoes are cut or bruised, the formation of reducing sugars, and the development of asparagine.

To provide late blight protection, a resistance gene (R-gene) from an Argentinian wild potato species is inserted into the desirable potato varieties. R-genes enable the plant to detect an invading pathogen and initiate a response that restricts the spread of the pathogen.

Additional Benefits

Less waste: Less bruising leads to more grade-A potatoes going to market, and less waste. Potato bruising costs the industry $298 million annually. Reduced waste would mean more potatoes produced on less land, translating to lower production costs and decreased CO_2 emissions. Innate® potatoes also have better quality after storage, thanks to lower reducing sugars in the potato (which also contributes to reduced acrylamide).

Fewer pesticides: Resistance to potato late blight enables reduction of chemical applications by 50%.

Environmental benefits: According to academic estimates, if all fresh potatoes in Canada had Innate® Generation 2 traits, potato waste (in-field, during storage, packing, retail and foodservice for fresh potatoes) could be reduced by 93 million kilograms. In addition, CO_2 emissions could be reduced by 14 million kilograms, water usage reduced by 13 billion litres, and a total of 154,000 fewer pesticide hectare-applications would be needed.

Original Research

Scientists based at Simplot Plant Sciences in Boise, ID, USA (2000-present)

Commercial Development
Simplot Plant Sciences, a division of the J.R. Simplot Company (headquartered in Boise, ID)

Registration
Canada A: 2016 B: 2017

USA A: 2014 B: 2015

Consumer concerns and answers

Can Innate® potatoes end up in the environment or mix with non-GMO potatoes via pollen or seed
Potatoes are grown through "vegetative propagation"- that is, from a piece of tuber from the parent plant rather than from true botanical seed, and are self-pollinated. In addition, Innate® potatoes are managed by Simplot and its licensees in accordance with the Stewardship Program. This program controls seed and commercial production, directing seed tubers and harvested potatoes to authorized growers, packers, processors, and marketers who agree to abide by crop stewardship requirements. Requirements for stewardship by licensed growers and processors help to direct Innate® potatoes in the marketplace and to facilitate separation between Innate® and conventional potatoes.

References

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