

# The apple that never browns wants to change your mind about genetically modified foods

By

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Reporter

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After years of development, protest and regulatory red tape, the first genetically modified, non-browning apples will soon go on sale in the United States.

The fruit, sold sliced and marketed under the brand [Arctic Apple](#), could hit a cluster of Midwestern grocery stores as early as Feb. 1. The limited release is an early test run for the controversial apple, which has been genetically modified to eliminate the browning that occurs when an apple is left out in the open air.

Critics and advocates of genetic engineering say that the apple could be a turning point in the nation's highly polarizing debate over genetically modified organisms (GMOs). While genetic modifications have in the past been mainly defended as a way to protect crops, the Arctic Apple would be one of the first GMOs marketed directly to consumers [as more convenient](#).

"What companies are desperate for is some really popular GMO product to hit the market," said McKay Jenkins, the author of [a forthcoming history](#) of the debate. "Any successful product could lift the cloud over GMOs."

Industry executives predict the apple could open a whole new trade in genetically engineered produce, potentially opening the market to pink pineapples, antioxidant-enriched tomatoes, and other food currently in development.

"We see this as less about genetic modification and more about convenience," said Neal Carter, founder of the company that makes the Arctic Apple. "I think consumers are very ready for apples that don't go brown. Everyone can identify with that 'yuck' factor."

GMO critics say they are hopeful, however, that consumers will continue to show skepticism about the produce. Despite a growing consensus in scientific circles that GMOs pose little risk, environmental and consumer groups have successfully mounted campaigns against GMOs over the past 30 years, successfully limiting the practice to commodity crops like soybeans and corn.

Anti-GMO groups have successfully pushed for GMO crop bans in places like [Boulder County, Colo.](#), and [Sonoma County, Calif.](#), and several major food brands have agreed not to use GM ingredients. Critics have also questioned how consumers will be able to judge the freshness of sliced apples when they don't brown.

“This apple is understudied, unlabeled, and unnecessary,” said Dana Perls, the senior food and technology campaigner with environmental nonprofit Friends of the Earth. “It’s only a matter of time before consumers realize they’re being falsely marketed to ... And then there will be an uproar.”

Carter and his company, Okanagan Specialty Fruits, have bet millions of dollars that this will not be the case. The Canadian fruit-grower, now a fully owned subsidiary of the biotechnology firm Intrexon, has spent the past 20 years developing the Arctic Apple under the direction of Neal and his wife Louisa. Neal, a bioresource engineer and longtime apple- and cherry-grower in British Columbia, planted his first crop of non-browning Golden Delicious and Granny Smith apples in 2003.

After nine years of testing, the Carters petitioned the U.S. Department of Agriculture to deregulate the apples, which would allow them to sell into the U.S. Despite vocal opposition from anti-GMO groups -- who organized petition drives and sent public comments by the tens of thousands -- the agency ruled in February 2015 the apple posed no significant health or environmental risks.

For the Arctic Apple, however, the greatest test is yet to come: whether the convenience of a non-browning apple is enough to convince consumers to look past GMO’s negative reputation.

“I don’t know what their chances are -- it’s a very polarized debate,” said Michael White, an assistant professor of genetics at the Washington University School of Medicine. “But I think this is huge. What the Arctic Apple is doing, trying to push GMOs on their own merits, could lead to a more positive discussion.”

Despite widespread scientific consensus that genetic engineering is not dangerous to human health, the practice remains controversial and poorly understood. Both [the World Health Organization](#) and [the National Academies of Science](#) have concluded that there’s no health reasons for avoiding the current slate of genetically engineered foods.

But in [a 2016 poll](#) conducted by the Pew Research Center, 39 percent of Americans said that they believed GM foods were “worse” for their health than non-GMO foods. And the Non-GMO Project, a nonprofit that opposes genetic engineering and administers the Non-GMO label seen on some North American foods, points out that [nearly 90 percent of American consumers](#) believe that GM products should be labeled, according to Consumer Reports.

Most Americans already consume a large number of GMOs or GMO-derived ingredients every day. [Over ninety percent of all corn and soybeans](#) grown in the U.S. are engineered to improve agricultural efficiency and withstand frequent pesticide applications. The resulting corn and soy are frequently fed to animals intended for human consumption, or routed into processed foods as corn starch, corn syrup, soy lethicin and dozens of other derivatives.

Yet even if consumers already eat GMOs, very few do so knowingly. To date, most agricultural engineering has focused almost exclusively on improving yields for producers. The exceptions are the [Flavr Savr tomato](#) -- the world’s first commercialized GMO, which suffered lackluster

sales and was eventually pulled following its introduction in 1994 -- and the more recent non-browning [Innate Potato](#), currently sold at several stores under the White Russet brand.

But the Arctic Apple has a distinct advantage over its predecessors: It's being sold sliced in 10-oz bags as a convenience snack food. The Carters say they're imitating the baby carrot model, which has proven a success for vegetable growers, helping to [catapult sales of the vegetable](#). Pre-sliced apples, currently treated with chemicals to prevent browning, enjoy a similar popularity in school cafeterias and Happy Meals.

"We might eventually sell them to distributors for service in schools," Carter said. "We thought our initial go-to-market strategy would be through food service. But a significant number of retailers reached out, and we realized -- they're ready for us."

Just in case they're not, of course, Okanagan has hired a marketing consultant and a consumer research firm, convening apple-tasting focus groups and commissioning surveys. Okanagan, which had six full-time employees 14 months ago, plans to quadruple that workforce in the next two years.

The February trial-run is part of that public relations campaign; Okanagan wants to "validate our messaging and go-to-market strategy" before launching commercially in the fall, Carter said. The apples will be available at 10 locations of "a few" regional Midwestern grocery chains, which Carter declined to name, where employees will be on hand to poll customers about their first impressions.

Crucially, the apples' packaging will not explicitly declare that they're genetically engineered -- to get that information, shoppers will have to scan a QR code with a smartphone. This was one of the most controversial points of the Obama administration's GMO labeling law, which requires genetically-modified ingredients be noted with an on-package statement, approved symbol, or electronic code. Okanagan has argued that, thanks to press coverage, most consumers will already know that it's apples are GMOs.

This non-browning technology could theoretically be applied later to any number of tree fruits, including pears and cherries, which Okanagan's scientists have already begun to research.

The success of the Arctic Apple could embolden the creators of other consumer-directed GMOs currently waiting in the wings. The Food and Drug Administration [recently approved an engineered pink pineapple](#) containing the pigment lycopene, which has been found to reduce the risk of cancer and heart disease in consumers who eat tomatoes. In the U.K., researchers have [developed a purple tomato](#) that contains extra antioxidants. And many of America's major agrochemical firms, including DuPont Pioneer and Monsanto, have [indicated a desire](#) to introduce GMOs with marketable consumer benefits, if consumers seem ready to accept them.

That concerns critics of the Arctic Apple and genetic engineering. More than 130,000 people signed [just one of the petitions](#) opposing Okanagan's initial deregulation petition, citing concerns over yet-unknown "negative unintended impacts on human health and the environment."

Among the loudest critics of the apple are Friends of the Earth and Food and Water Watch, both environmental groups, and the Organic Consumers Association, Consumers Union and Center for Food Safety, all of which represent customers. CFS has particularly faulted Okanagan for [not running more tests](#) on the impact of genetic change to the apple tree, as opposed to just the fruit.

“It’s an unnecessary genetic change intended to grow market share,” said Martha Crouch, a plant biologist and consulting scientist for CFS. “It carries with it environmental and health risks. That puts a larger burden of proof on the company that makes it.”

*Correction: An earlier version of this post said that White Russet potatoes are sold at Wal-mart. They are not. We regret the error.*



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