

Viewpoint: 3 biotech foods you can't buy at Costco thanks to anti-GMO activism

I enjoy shopping at Costco. I've been a member since the days when it was called [Price Club](#). I like the diverse and yet selective range of products they offer, and of course their reasonable prices. I find the staff friendly and helpful and I appreciate the fact that the employees must be treated fairly since so many are the same folks I've seen working there for years. The food court is an awesome deal and I almost always get my gas at Costco because it is the lowest price option in the area. The free sample thing is fun and sometimes educational. The store is well lighted, and its aisles are uncluttered. Their wine selection is great, and Costco is where I always get my eye exams and glasses.

I particularly appreciate the way that they keep much of their fresh produce in a walk-in cold room. Yes, it's a bit uncomfortable, but by keeping these foods cold until sale, they are extending the shelf-life for the consumer and thus reducing food waste. Yes, the packages of produce they sell are large, but I can share them with friends and neighbors in cases where I can't get through the whole amount in time. I think it is really cool that Costco uses the empty boxes from their produce shipments to package up a customer's purchases to take home. It is also my understanding that Costco negotiates reasonable, long-term supply contracts with the grower/shippers who supply their fruits and vegetables. Treating farmers well is a big plus on my list.

So, you can see that there is a lot that I like about Costco. But there are three specific food items I would really like to be able to buy there, but it seems unlikely that they will become available. This is because, like many retailers, Costco does not want to wade into the controversy surrounding genetically engineered foods, commonly called "GMOs." As a scientist who has been [watching the advances in molecular genetics since 1976](#), I find it tragic that the opponents of this method of plant improvement have been so successful in suppressing even the most logical applications for food. In many cases, the losers here are that [small minority in our society that still feeds us](#). The even greater tragedy is the extent to which those groups have [blocked](#) even free, improved crops for farmers in the developing world.

But there are three specific foods I'd like to talk about which have been specifically modified for the benefit of consumers and which have actually made it through the tortuous regulatory process that the crop biotech industry self-imposed well before the first commercial plantings of biotech crops of the mid 1990s. Overall, I think of Costco as a rationally, ethically run business that values its customers and respects their intelligence. Carrying these three foods would be a great way to demonstrate that respect.

Product 1: [Arctic® Apples](#)

arctic apples package

Non-browning genetically engineered 'Arctic apples' now on sale—but not at Costco

A seven employee, farmer-founded business in British Columbia called [Okanagan Specialty Fruits](#) (OSF) developed apples that don't turn brown when cut or bruised. They did this by simply turning off the gene for the enzyme called [Polyphenol Oxidase](#) which is what causes the browning and also degrades things like vitamins in the process. The patent they needed to license to do this was from [CSIRO](#), a government

sponsored research organization in Australia. Some plants, especially those in the nightshade family, have that same enzyme as part of their pest defense, but it isn't really needed for the human-tended and [already quite “genetically modified”](#) versions of those species.

OSF was acquired by the brave, diversified biotech company, [Intrexon](#) in 2015 and they began commercial production of the apples in 2015, launching in test markets in the Midwest in 2017. It takes several years for new orchards to come into production, but as of today there are around 1,235 acres of several varieties being grown in the US and in Canada (Arctic® Grannys, Arctic® Goldens, and Arctic®Fujis). These apples are being sold in some grocery chains in the U.S.

I once met all 7 of those employees (the company has now grown to 27) during their research phase and they mailed me a box of the apples back in 2014. They were really cool! You can cut them even as much as several hours before you eat them, and they still taste and smell like a freshly cut apple. You can keep apples from browning with something like citric acid, but that changes the taste and smell. Imagine slicing these for the kid's lunch, bringing sliced apples to a potluck or getting them at a salad bar. These [apples can also be dried](#) without the need for sulfites so that the taste is not compromised and they are not problematic for people with an allergic response to that preservative.

Costco – would you please start offering these apple products among your apple options? At least at my Carlsbad, CA Costco, you only offer 2 or 3 non-organic choices of apple cultivars not including my favorites. I reluctantly deal with that limitation, but don't your customers that care a lot about food waste and flavor also deserve the [choices they would prefer?](#)

Product 2: [Innate® White Russet™ Potatoes](#)

simplot innate potato mcdonalds si

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An agricultural supply and potato processing company called [Simplot](#) has a relatively small biotech subsidiary called [Simplot Plant Sciences](#). They developed non-browning potatoes by turning off the same gene as is in the Arctic® Apples – PPO. In addition, using all genetic material from potatoes ([“cisgenic”](#)), they reduced the amount of the amino acid asparagine which can be converted to acrylamide – a possible carcinogen – during frying.

They also worked with the [Sainsbury Laboratory](#) in the UK and the [2Blades Foundation](#) to move some disease resistance genes from inedible, wild potatoes into commercially relevant cultivars. This is a really good thing for the potato growers because they have to spend far less time, fuel and money on fungicide sprays to control [“Late Blight”](#), the disease that caused the [Irish Potato Famine](#). This would have been extremely difficult to do with conventional breeding because potatoes very rarely reproduce through seeds.

Back in 2016, I was gifted a bag of these potatoes by Simplot. I put up a [video of making hash browns](#) with these and with regular potatoes. With the White Russets™ I was able to grate them and take my time forming them into nice shapes and to fry them without any of the browning that is normally unavoidable. They came out nicer looking and crispier. My conclusion was that these potatoes could “make America grate again.”

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So, these non-browning produce options are much better in terms of the sensory experience, but they also help to reduce food waste throughout the supply chain and at the consumer level.

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Today making a non-browning crop is even easier using something like [CRISPR technology](#), and the USDA has concluded that it [isn't even something that needs to be regulated](#). People have been working on non-browning [mushrooms](#), and they should totally work on non-browning versions of bananas, lettuce and avocados! A way to reduce food waste and give customers a better sensory experience sounds like a good thing for a Costco to offer. Costco: could we please get these options at your stores?

Product 3: [AquaAdvantage® Salmon](#)

Costco is a [major marketer of salmon](#) in the US and they do a great job of that. Salmon is a delicious fish and a [healthy option](#) for consumers. But there is an even healthier and more environmentally desirable kind of salmon Costco could be selling in the near future. A small company in Canada licensed a technology from the University of Toronto and the Memorial University of Newfoundland [in 1996](#) (That's a very innovative country, eh?). It was a genetically engineered line of Atlantic Salmon with a growth-related gene from chinook salmon and a promoter from Ocean Pout, which allows these fish to grow far faster and with less need for food. [These improved fish](#) can gain a pound of weight from a pound fish feed making them 10 times as efficient as some wild-caught fish.

feed efficiency

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These [AquaAdvantage® Salmon](#) are raised in inland aquaculture tanks and only sterile female fish are in the tanks. So in the extremely unlikely case that they escaped to the ocean, they would not have any effect on wild fish populations.

This multi-layered safety protocol has been scrutinized by regulators in the US and Canada over many years, resulting in FDA approval in November of 2015 and the final approval for commercial sale in Canada in 2016. [4.5 tons were sold in the second quarter of 2018](#). The first US production site [opened in 2019](#) in Indiana. Ideally more sites can be placed near other population centers to minimize energy use for shipping. The terrestrial production eliminates issues of water pollution sometimes associated with ocean "farmed" salmon, "wild-caught salmon" or true oceanic fishing sources.

[Editor's note: Read [AquaBounty 'on track' to sell GM salmon by year's end \(2020\), despite court ruling calling for more environmental impact data](#) to learn more.]

The entire salmon industry has been shifting away from fish meal and fish oil for feed and these AquaAdvantage salmon will be at the cutting edge of that trend. The industry is beginning to source feed from the crop [Camelina](#) or [yeast](#), both of which have been modified to produce [health-promoting omega-3 fats](#), and even the astaxanthin pigment that gives salmon its red color. There are also some efforts to raise [insects to feed to the fish](#). These land-based sources can allow many more people to improve their diet without putting more stress on ocean resources. The other upside is that by using these feeds it is possible to avoid the mercury and microplastics issues that are unavoidable in ocean water. These pollutants can ["bioaccumulate"](#) in the ocean food chain, having gotten there because of littering and from coal-powered electricity generation.

aqua

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AquaBounty salmon raised in land-based tanks. Image: AquaBounty

These are all great examples of [Ecomodernism](#) – the philosophy that technology can be a means of

achieving environmental goals. Doesn't this seem like the sort of "green," healthy option that a company like Costco ought to be offering their customers? If Costco would rise above the [threats from anti-GMO](#) groups and offer these options alongside "conventional" or "organic," I believe there would be lots of scientists like me: experts who would happily volunteer to answer customer questions during a launch program at one of those sample carts we so often enjoy at the stores.

(Disclaimer: Although I know scientists and business people from all these companies, writing this article was something I wanted to do and not anything they asked me to do or for which I was compensated. This article was also not written on behalf of the non-profit CropLife Foundation, for which I work part time [recording a podcast](#).)

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