



# About Us

OKANAGAN SPECIALTY FRUITS INC.  
(OSF)



- Okanagan Specialty Fruits® is an agricultural biotechnology company specializing in the development of novel tree fruit varieties using bioengineering.
- OSF's flagship product is its Arctic® apple varieties, which stay orchard fresh longer. In November 2017, Arctic® Golden became the first Arctic apple variety launched in select U.S. test markets.
- In 2019, Arctic apples' retail availability throughout the U.S. expanded and a new variety was introduced: Arctic® Granny. Both varieties were introduced to the U.S. foodservice industry that same year.
- Arctic® Fuji will be the next variety available in 2022.

## MISSION

- Leading the market with Arctic branded fruit products that consistently deliver an exceptional eating experience to consumers through transparent stakeholder outreach, communication and innovative science.

## COMPANY FACTS

- OSF was founded in 1996 by apple and cherry growers Neal and Louisa Carter.
- OSF was acquired by Third Security, LLC in February 2020.
- OSF's headquarters is based in Summerland, B.C., Canada.



Interested in covering Arctic apples? We are happy to facilitate requests such as interviews, fact-checking, images for use, and samples. Please send all inquiries to:

[media@okspecialtyfruits.com](mailto:media@okspecialtyfruits.com) | 1.855.404.0101 | [www.arcticapples.com](http://www.arcticapples.com)





# Timeline



- **1996:** • OSF founded by Neal and Louisa Carter
- **2002:** • Arctic apple science proven
- **2003-2005:** • Field trials planted in Washington and New York States
- **2010-2011:** • Petitions requesting regulatory approval submitted in Canada and the U.S.
- **2012-2013:** • Public comment periods held by USDA<sup>1</sup>, APHIS<sup>2</sup> and CFIA<sup>3</sup>
- **2015:** • Cleared regulatory obligations for Arctic® Golden and Arctic® Granny for USDA, FDA<sup>4</sup>, CFIA and HC<sup>5</sup>
  - First commercial orchard of Arctic apples planted in Washington State
  - OSF acquired by Intrexon Corporation (NASDAQ: XON)
- **2016:** • Arctic® Fuji received USDA approval
- **2017:** • Arctic® Golden fresh slices became the first Arctic product for sale in select U.S. test markets
- **2018:** • Arctic® Fuji received HC and CFIA approval
  - OSF released Arctic ApBitz® dried apple snacks on Amazon.com
  - Arctic® Fuji trees planted in Washington State orchards
  - Application submitted for regulatory approval in Argentina and Mexico
- **2019:** • Arctic® Granny became commercially available
- **2020:** • Arctic® Fuji received FDA approval
  - OSF acquired by Third Security LLC

<sup>1</sup> USDA - United States Department of Agriculture  
<sup>2</sup> APHIS - Animal and Plant Health Inspection Service  
<sup>3</sup> CFIA - Canadian Food Inspection Agency  
<sup>4</sup> FDA - Federal Drug Administration  
<sup>5</sup> HC - Health Canada

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# Arctic Apples



Arctic apples are just like other apples only they don't brown prematurely thanks to the help of bioengineering. We've used the apple's own genes to "turn off" the enzymes that make apples brown when they are bitten, sliced or bruised.

Arctic apples keep their orchard-fresh taste longer, offering an unparalleled "just-picked" eating experience; and are still just as wholesome as their conventional counterparts.

Arctic apples are a convenient way for consumers to enjoy apples and increase apple consumption.

*To learn more about the science behind Arctic apples, please visit "Our Science" section in our Media Kit or online at [www.okspecialtyfruits.com](http://www.okspecialtyfruits.com).*

- Commercially, there are two Arctic apple varieties available: Arctic® Golden and Arctic® Granny. Both are available in fresh, ready to eat slices and Arctic ApBitz® dried apple snacks.
- The fry-cut ApBitz® snacks came from OSF's desire to reduce waste and use all of the Arctic apples regardless of size or shape.
- In retail, Arctic apple slices are available in contact free, 5 oz. & 10 oz. Grab 'N Go bags.
- For foodservice applications, Arctic apple slices are available in 40 oz. packages in both sliced and diced options. A 2 oz. package is also available.



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# Arctic Apples



## OUR ORCHARDS

- All commercial Arctic apple trees are planted in Washington State.
- Arctic apple orchards employ state-of-the-art technology, optimizing the use of resources while delivering high-quality fruit.
- Approximately 1,350 acres of trees are currently planted.
- An estimated crop of over 18 million pounds of Arctic apples will be harvested in 2021.

## AWARDS

- 2013 Biotech Canada Gold Leaf Award. Early Stage Company of the Year – Industrial and Agriculture
- 2014 Summerland Chamber of Commerce Business and Community Excellence Award – Technology and Innovation Excellence
- 2014-2015 Produce for Better Health Fruit & Veggies – More Matters Champion Award
- 2016-2018 Produce for Better Health Fruit & Veggies – More Matters Role Model Award
- 2019 Nominee Summerland Chamber of Commerce Business and Community Excellence Award – Agriculture and Agri Business Excellence
- 2019 Produce For Better Health – Industry Have A Plant™ Promoter Award
- 2020 Produce for Better Health – Industry Have a Plant™ Promoter Award



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# Arctic Apples:

## SUPPORTING SUSTAINABILITY

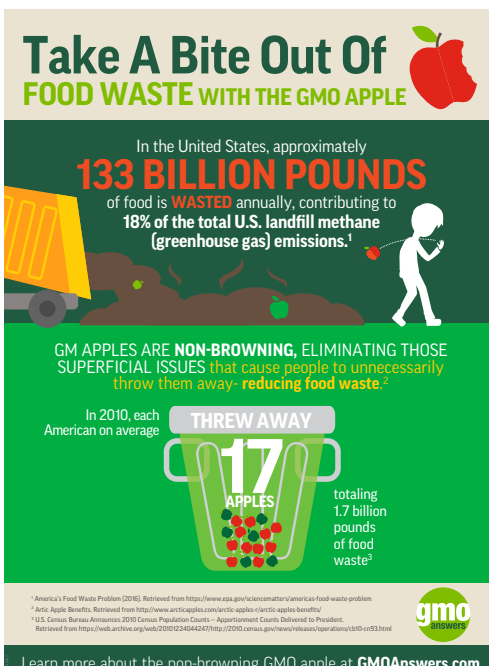


Arctic apples provide a sustainable solution to less food waste and improved apple consumption.

Consumers no longer have to worry about half-eaten apples. Arctic apples stay orchard fresh longer; keeping their visual appeal and fresh taste longer than conventional apples.

Arctic apples are perfect for pre-made dishes, platters or new applications where, at one time, you had to worry about the apples turning brown or the need to add preservatives that affect flavor. Fewer apples will be thrown away, reducing food waste and boosting overall apple consumption.

- **Extended Shelf Life:** Arctic fresh apple slices retain their orchard-freshness with a 28-day shelf life compared with the 18-21 day industry average; reducing waste at retail, foodservice establishments and home.
- **Supply Chain:** The Arctic Advantage™ benefit means that less fruit is wasted during harvest, packing, processing, and shipping, so more high-quality apples reach consumers.
- **Retailers:** Arctic apple slices are the perfect option for consumers, who increasingly seek healthy, ready to eat snacks. Our contact free, Grab 'N Go packaging makes it easier than ever to eat on the run, without sacrificing nutrition or taste.
- **Foodservice:** Arctic apples offer “Less Prep, Less Waste, Better Taste.” Because Arctic apples stay orchard fresh longer, they offer new menu opportunities for foodservice operators where apples are not generally used, such as in salads, charcuterie boards or whatever else can be imagined!



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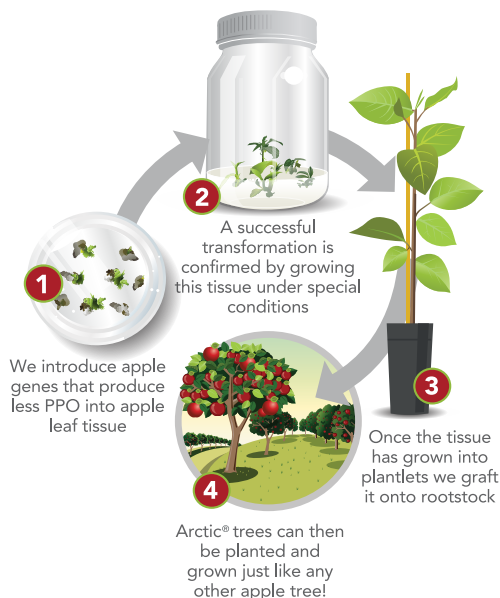
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# The Science

## BEHIND ARCTIC APPLES



Arctic apples are just like other apples only they don't brown prematurely thanks to the help of bioengineering. The science behind Arctic apples involves enzymatic browning, which occurs when apple cells are damaged (e.g., through biting, slicing, and bruising).

- There is a key difference between browning caused by fungal/bacterial contamination (e.g., rotting) and enzymatic browning. Enzymatic browning is superficial browning that often leads to unnecessary food waste. Arctic apples do not mask or hide rot and actually make it easier to tell when an apple is still good to eat.
- When apple cells are damaged through biting, slicing and bruising, the damage causes an enzyme called polyphenol oxidase (PPO) to react with the fruit's phenolic content. This results in a brown-toned melanin that stains the fruit and consumes the fruit's Vitamin C and antioxidant content.
- Arctic apples likely better retain their nutritional content of antioxidants and Vitamin C because enzymatic browning does not take place.
- Arctic apples use the apple's own genes to turn off the genes that produce PPO. This is accomplished through a process called RNA-interference (RNAi), a naturally occurring pathway frequently used in agricultural bioengineering.
- Multiple regulatory reviews and extensive field trials (and over 10 years of data and studies) have demonstrated that Arctic apple trees grow, respond to pests, flower, fruit and harvest just like any apple trees under the same growing conditions.



Left: Conventional apple. Right: Arctic apple.

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# Management Team

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## NEAL CARTER, CO-FOUNDER AND PRESIDENT

Neal Carter has over 30 years of experience working as both a bioresource engineer and orchardist. In his travels, he's experienced firsthand the value that biotechnology can offer across all manner of crops and improvements. In particular, in the mid-90s he came across research being done by CSIRO – an Australian federal government agency for scientific research – to enhance potatoes with a nonbrowning trait through biotechnology.

As an apple grower, Neal was very aware that apple consumption had been declining for decades while obesity rates had simultaneously been sharply rising. Neal and his wife Louisa felt that they could help boost apple consumption through a similar biotech approach with apples, as nonbrowning apples would be more appealing and convenient. Additionally, they felt this small genetic change could also significantly reduce food waste, as nearly half of all apples produced end up wasted, many due to superficial bruising.

*"What inspires me most with OSF is our ability to truly make a difference with advancements in biotechnology. Biotech crops are already saving lives and they have the potential to save thousands more. I've been across the globe to over 50 countries and have witnessed firsthand poverty-stricken villages and the hardships they face in feeding their families. If we can all embrace the technology that will aid us to efficiently and sustainably produce the food we need to feed this planet we can make a powerful impact on the sustainability of both the environment and people across the world. It doesn't get much more motivating than that!"*

– Neal Carter

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**JENNIFER ARMEN, VICE PRESIDENT, BUSINESS AND CORPORATE DEVELOPMENT**

A 30-year veteran in the specialty crops arena, Jennifer has spent her career in the post-harvest crop protection and vegetable seed industries. Trained as a botanist, mycologist and plant pathologist, she has relied on her technical training to support her business and marketing functions in the industry. Since 2010, Jenn has worked with OSF in a variety of activities and now is the Vice President of Business and Corporate Development for the company.



**DON WESTCOTT,  
VICE PRESIDENT, OPERATIONS, SALES AND MARKETING**

Shortly after completing post-secondary programs in Marketing and Management at BCIT, Don began his career in the tree-fruit industry. Over the past 24 years, Don's passion has grown along with his expertise, gained through positions in grower services, production logistics and planning, and marketing management. Don joined the OSF team in 2017, where he is excited to play an integral role in the successful development and delivery of innovative and nutritious fruits.



**MUHAMMAD TAHIR,  
DIRECTOR, RESEARCH AND REGULATORY AFFAIRS**

After earning a PhD in Plant Breeding and Genetics at Washington State University, Tahir established an impressive career with leading agricultural science companies as well as teaching and research in areas related to genetics, functional genomics, biotechnology and crop breeding. Tahir joined OSF in 2020.

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**BOB WILKINSON, DIRECTOR OF SALES**

Born and raised in Illinois, Bob studied at Chicago State University and has worked in sales management for top food brokers and produce suppliers in the industry. He joined OSF in the summer of 2020 as the Director of Sales.



**MARCY KEEHN,  
DIRECTOR OF HUMAN RESOURCES AND ADMINISTRATION**

Marcy's career started as a counselor, where she worked with people with disabilities, children and youth, and then transitioned into employment counseling. She also has extensive experience as an operations manager for a provincial program where she was responsible for managing staff, subcontractors, client management systems and contracts. Her education includes an undergrad in Child and Youth Counselling and a Master's Degree in Conflict Analysis and Management. Marcy joined the OSF team in Summerland, BC in April of 2019.



**REBECCA CATLETT,  
DIRECTOR OF MARKETING & COMMUNICATIONS**

Rebecca earned a Bachelor of Science in Management of Business and Information Systems from George Fox University and has an extensive background in agriculture. Working on communications and marketing strategies with global teams has given Rebecca insight into multiple aspects of the supply chain from seed to table. She joined OSF in 2019 as Director of Marketing & Communications.

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# What's Next



- In the fall of 2022 there will be limited commercial availability of the Arctic® Fuji.
- OSF will seek commercial approval in countries beyond the U.S. and Canada, along with approval for additional Arctic apple varieties in the coming years. Arctic® Gala and Arctic® Honey will be next.
- New trees take several years to reach peak fruit production, so availability will increase gradually each year for the foreseeable future.



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