



THIS IS BIOTECH

BEYOND MOOSE AND MOUNTAINS: BUILDING CANADA'S BIO-BASED ECONOMY.



Okanagan Specialty Fruit: The Apple of Everyone's Eye

Okanagan Specialty Fruits, Summerland, BC

It's the darling of the fruit world. But the fruit touted for its ability to keep away doctors is also the fruit that bears the shame of too-often ending up half eaten and ignominiously tossed into the nearest wastebasket. For all its deliciousness, the ubiquitous apple has a problem – it turns brown within minutes of its delicate inner flesh being exposed to air or handled too roughly.

The technical name is enzymatic browning, and it can't help itself. But Okanagan Specialty Fruits is a company saving the apple, along with other popular tree fruits using novel biotechnology to ensure the fruit remains wholesome, healthy, chemical free and non-browning.

The Summerland, B.C. company has developed a clever and non-chemical way to silence the enzyme that causes browning (polyphenol oxidase or PPO), which is the first sign of fruit spoilage. When this gene is rendered ineffective, the apple - as with most tree fruit - simply skips the discolouration stage. Apples that don't scuff or turn brown when exposed to the air are a slice of heaven for consumers and fruit producers.

While consumers have seen non-browning apple slices for some time in fresh-cut prepared fruit trays and sliced bagged fruit, it was always through the use of expensive anti-oxidant dips or through breeding low browning varieties, which still turned brown within two to three hours. Okanagan Specialty Fruits' approach using biotechnology yields a chemical-free improvement that amplifies or silences the gene activity that can deliver the trait changes desired such as non-browning.

Farmers and agricultural scientists are tinkerers by nature. The manipulation of plants by humans has been around for at least 9,000 years. Without cross breeding to create domesticated plants, it is doubtful that humans would have survived. Today, all of our principal food crops come from domesticated varieties, including the apples we eat; these are the result of crossbred existing tree fruit varieties to produce new varieties with certain desired traits.

But what used to take agricultural scientists decades to do because of the limits of conventional breeding is now speeded up and intensified by the development of precision breeding or gene therapy.



Okanagan Specialty Fruits say their silencing of the browning gene is the equivalent of removing one railway crossing from a railroad track stretching all across North America and replacing it with another piece of the same track. The company has also spent close to a decade testing these apples and, prior to commercialization, they will have passed rigorous regulatory and safety standards. In the end, the apples remain apples in terms of natural decay time, but they just don't exhibit the browning stage.

"The exciting thing about a non-browning apple is that this quality trait is well recognized by growers, fruit packers, the food service industry and consumers; everyone along the value-chain benefits from a non-browning apple," says Neal Carter, president of Okanagan Specialty Fruits.

Of course, you won't be able to buy an Okanagan Specialty Fruit apple as a never-before-heard-of variety, instead some of North America's favorite apples will soon appear under the company's brand name "Arctic" including Arctic Granny, Arctic Golden, Arctic Gala and Arctic Fuji. The same apples you know and love only now it won't brown in five minutes, or five hours. How do you like them apples?