

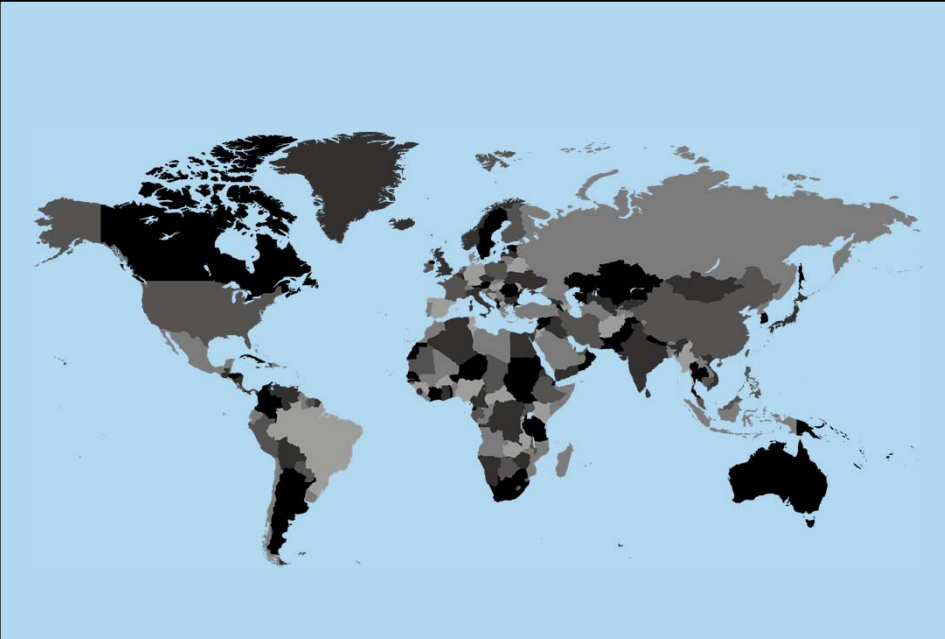


Outlook for Fruit – Seminar on the Impact of Policy on Essentially Derived Varieties on Breeding Strategy

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Future focused

- 1978 » UPOV 1978 Act of the UPOV convention
 - » No EDV concept
- 1991 » UPOV 1991 Act of the UPOV convention
 - » Introduction of the broad EDV concept
 - » “Order of the Diplomatic Conference to immediately start a discussion on the details of the EDV concept
 - » Discussion did not happen until 2007
- 2009 » First EDV Explanatory Notes
 - » Narrowing of the EDV definition
- 2017 » Second EDV explanatory Notes
 - » Narrowing of the EDV definition
- 2019 » ?

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Breeding strategies

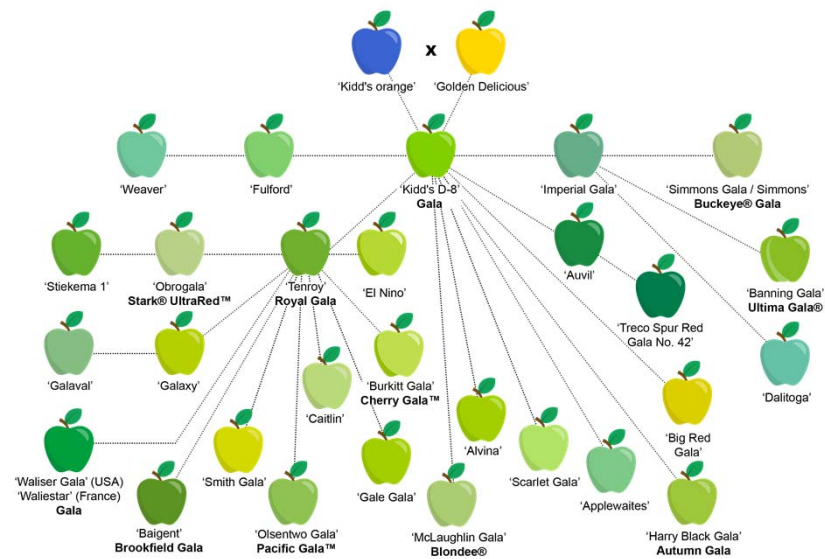
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No EDV concept

- » Conventional crossing
 - » Including deliberate outcrossing and planned backcrossing strategies
 - » Long periods of evaluation
 - » Apples and pears – 20+ years
 - » Blueberries – 15 - 20 years
 - » Raspberries – 10 -15 years
 - » Kiwifruit – 15 - 20 years
 - » Stonefruit – 15 – 20 years
 - » Table grapes – 15 – 20 years
 - » Citrus – 15 – 20 years
 - » Strawberries – 10 – 15 years
- » Naturally occurring mutations
 - » Sports in apples



Example of apple sports



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Breeding strategies

- UPOV 1991 Act of the UPOV convention

Introduction of the broad EDV concept

- » Conventional crossing
- » Naturally occurring mutations
- » New breeding techniques
 - » Genetic Modification



Naturally occurring mutations

- » Pink Lady®
 - » Bringing in sports that meet the brand standards
 - » Bundling IP



Image credit: APAL.



Naturally occurring mutations

Management of production techniques to maintain trueness to type



New breeding techniques

- » Arctic® apples
 - » Arctic® Granny
 - » Arctic® Golden
 - » Arctic® Fuji
 - » Arctic® Gala

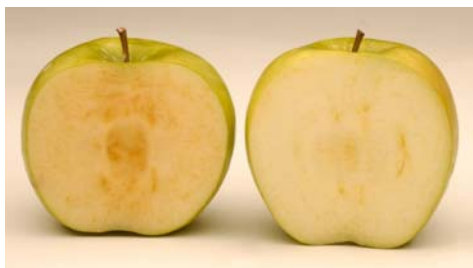
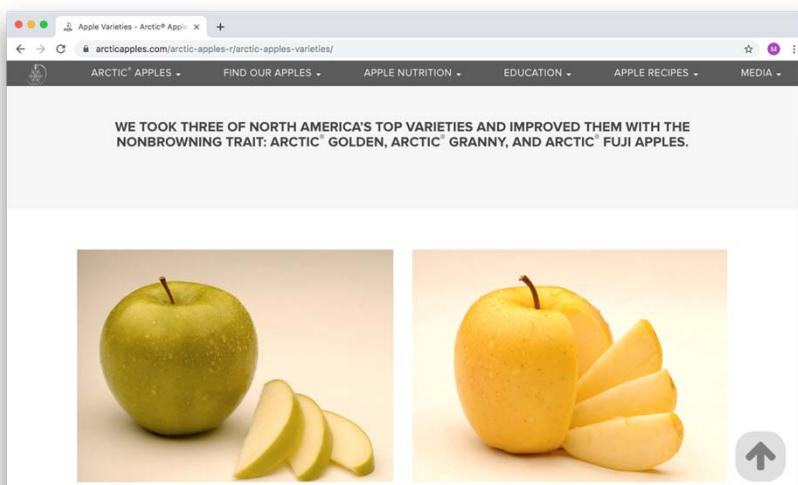


Image credit: Okanagan Specialty Fruits Inc.



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Act Of 1991 International Convention for the Protection of New Varieties of Plants

Article 14 (5) (b) For the purposes of subparagraph (a)(i), a variety shall be deemed to be essentially derived from another variety (“the initial variety”) when

- i) it is predominantly derived from the initial variety, or from a variety that is itself predominantly derived from the initial variety, while retaining the expression of the essential characteristics that result from the genotype or combination of genotypes of the initial variety,
 - ii) it is clearly distinguishable from the initial variety and
 - iii) except for the differences which result from the act of derivation, it conforms to the initial variety in the expression of the essential characteristics that result from the genotype or combination of genotypes of the initial variety.
- c) Essentially derived varieties may be obtained for example by the selection of a natural or induced mutant, or of a somaclonal variant, the selection of a variant individual from plants of the initial variety, backcrossing, or transformation by genetic engineering.



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Breeding strategies

- » Conventional crossing
 - » Increasingly fast tracked and augmented with marker assisted selection and whole genome selection
- » Naturally occurring mutations
- » New breeding techniques
 - » “Conventional” genetic modification
 - » Gene editing
 - » CRISPR
 - » Induced mutations



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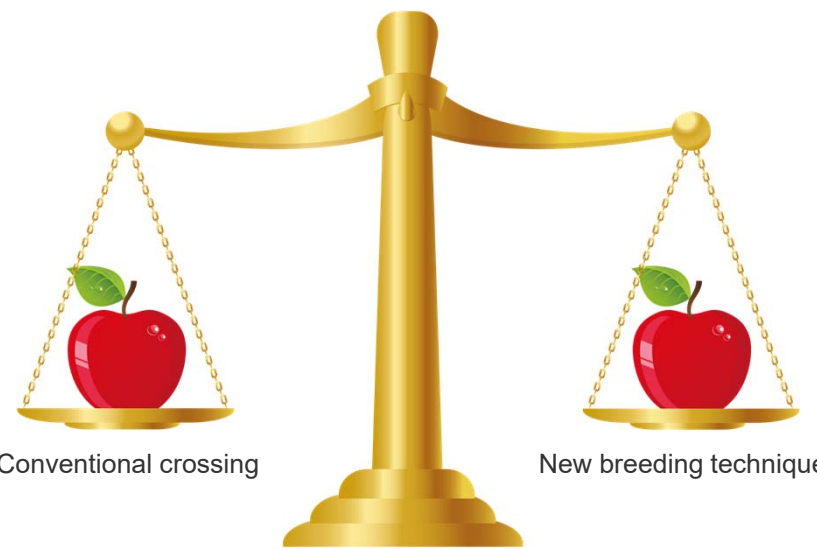


CLARITY

TRANSPARENCY
» System and market

CERTAINTY
» Regardless of breeding strategy employed
» Enforcement

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Conventional crossing

New breeding techniques

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Thank you

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Winner
2017
The
Prime
Minister's
Science
Prizes



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