

GRUR Annual Meeting
SPECIAL COMMITTEE ON THE PROTECTION OF PLANT VARIETIES /
SPECIAL COMMITTEE ON BIOTECHNOLOGY

New plant breeding methods
trapped between different systems of protection ?

Perspectives of UPOV

Peter Button
Vice Secretary-General, UPOV



International Union for the Protection of New Varieties of Plants

September 16, 2021

PREVIEW

1. What is protected by UPOV?
2. How the breeding method may affect the plant breeder's right (EDV)
3. The latest situation in UPOV

What is a Plant Variety?

The term "species" is a familiar unit of botanical classification within the plant kingdom. However, it is clear that within a species there can be a wide range of different types of plant. Farmers and growers need plants with particular characteristics and that are adapted to their environment and their cultivation practices.

A plant variety represents a more precisely defined group of plants, selected from within a species, with a common set of characteristics.



SPECIES
(Click to display)

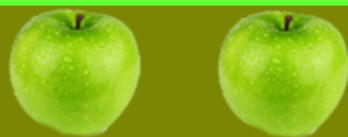
PLANT KINGDOM
(Click to display)

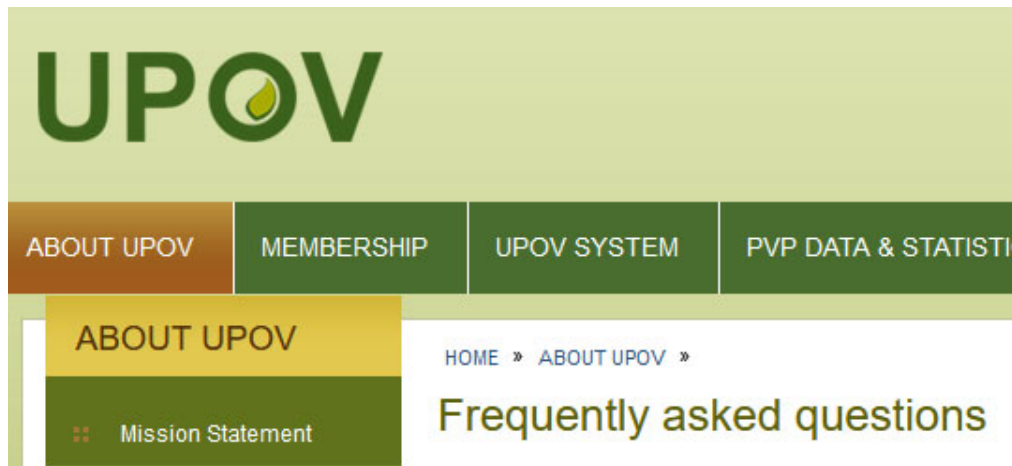
VARIETIES
(Click to display)

What is a Plant Variety?

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including breeding method

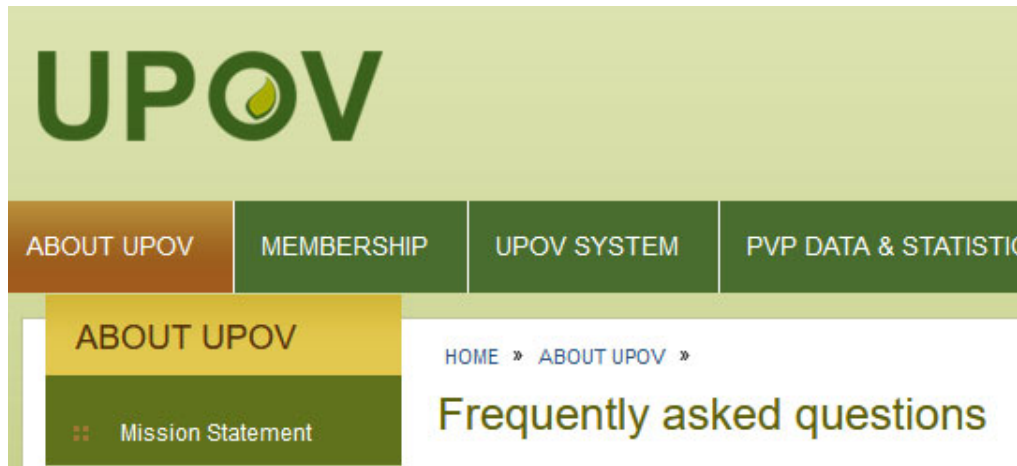
Can I use plant variety protection to protect the following

- a trait (e.g. disease resistance, flower color)
- a chemical or other substance (e.g. oil, DNA)
- a plant breeding technology (e.g. tissue culture)?



No. The definition that a variety means a "plant grouping" clarifies that a trait, a chemical or other substance and a plant breeding technology do not correspond to the definition of a variety.

UPOV



The UPOV Convention makes no restriction with regard to the methods or techniques by which a new variety is “bred”.

UPOV

PREVIEW

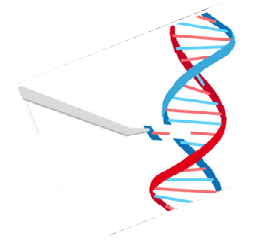
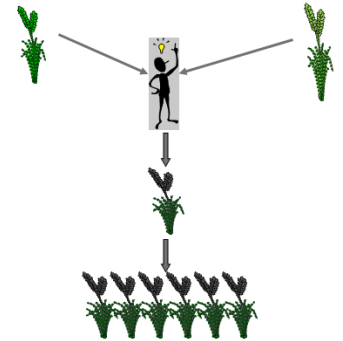
1. What is protected by UPOV?
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Essentially Derived Varieties

PURPOSE:

to ensure **sustainable** plant breeding development by:

- providing effective protection for the breeder
- and
- encouraging cooperation between breeders and developers of new technologies such as genetic modification



Scope of the Breeder's Right (1991 Act)

Article 14

Scope of the Breeder's Right

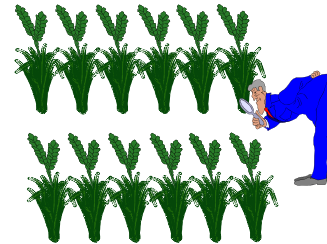
- (1) [*Acts in respect of the propagating material*]
- (2) [*Acts in respect of the harvested material*]
- (3) [*Acts in respect of certain products*]
- (4) [*Possible additional acts*]
- (5) [*Essentially derived and certain other varieties*]**

VARIETIES COVERED (1991 Act)

In addition to the protected variety itself,

VARIETIES:

- **not clearly distinguishable** from the protected variety
- whose production **requires the repeated use** of the protected variety
e.g. hybrids produced using a protected variety (1978 Act also)
- which are **essentially derived** from the protected variety



Breeder's exemption

Article 15

Exceptions to the Breeder's Right

(1) [*Compulsory exceptions*] The breeder's right shall not extend to

(i) acts done privately and for non-commercial purposes,

(ii) acts done for experimental purposes and

(iii) acts done for the purpose of breeding other varieties, and, **except where the provisions of Article 14(5) apply**, acts referred to in Article 14(1) to (4) in respect of such other varieties.

[...]

Article 14

Scope of the Breeder's Right

(1)[*Acts in respect of the propagating material*]

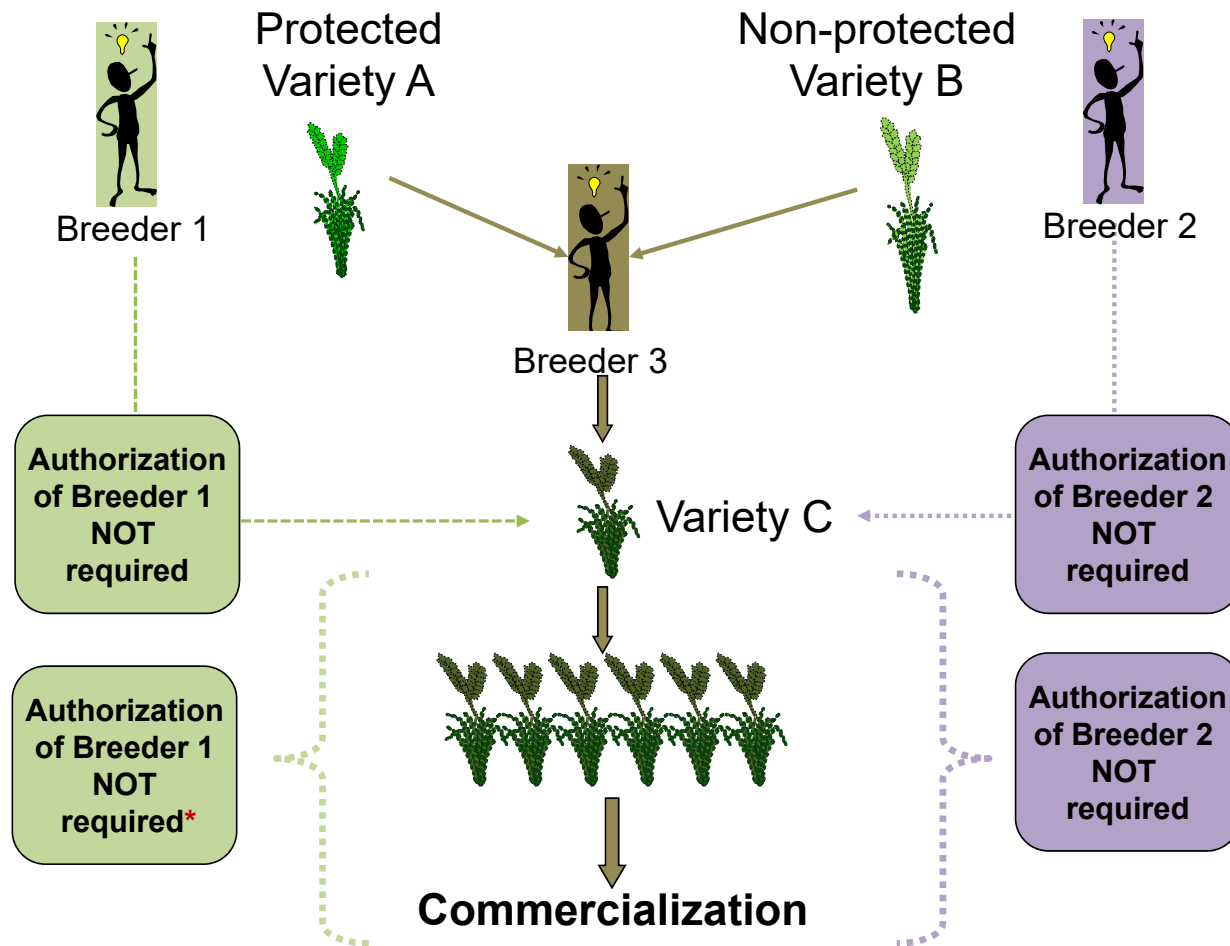
(2)[*Acts in respect of the harvested material*]

(3)[*Acts in respect of certain products*]

(4)[*Possible additional acts*]

(5)[*Essentially derived and certain other varieties*]

Breeder's exemption



* Except for:

- (i) varieties which are essentially derived from the protected variety, where the protected variety is not itself an essentially derived variety,
- (ii) varieties which are not clearly distinguishable in accordance with Article 7 from the protected variety and
- (iii) varieties whose production requires the repeated use of the protected variety.

Essentially Derived Varieties

Article 14

Scope of the Breeder's Right

(5)[*Essentially derived and certain other varieties*]

(a) [...]

(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

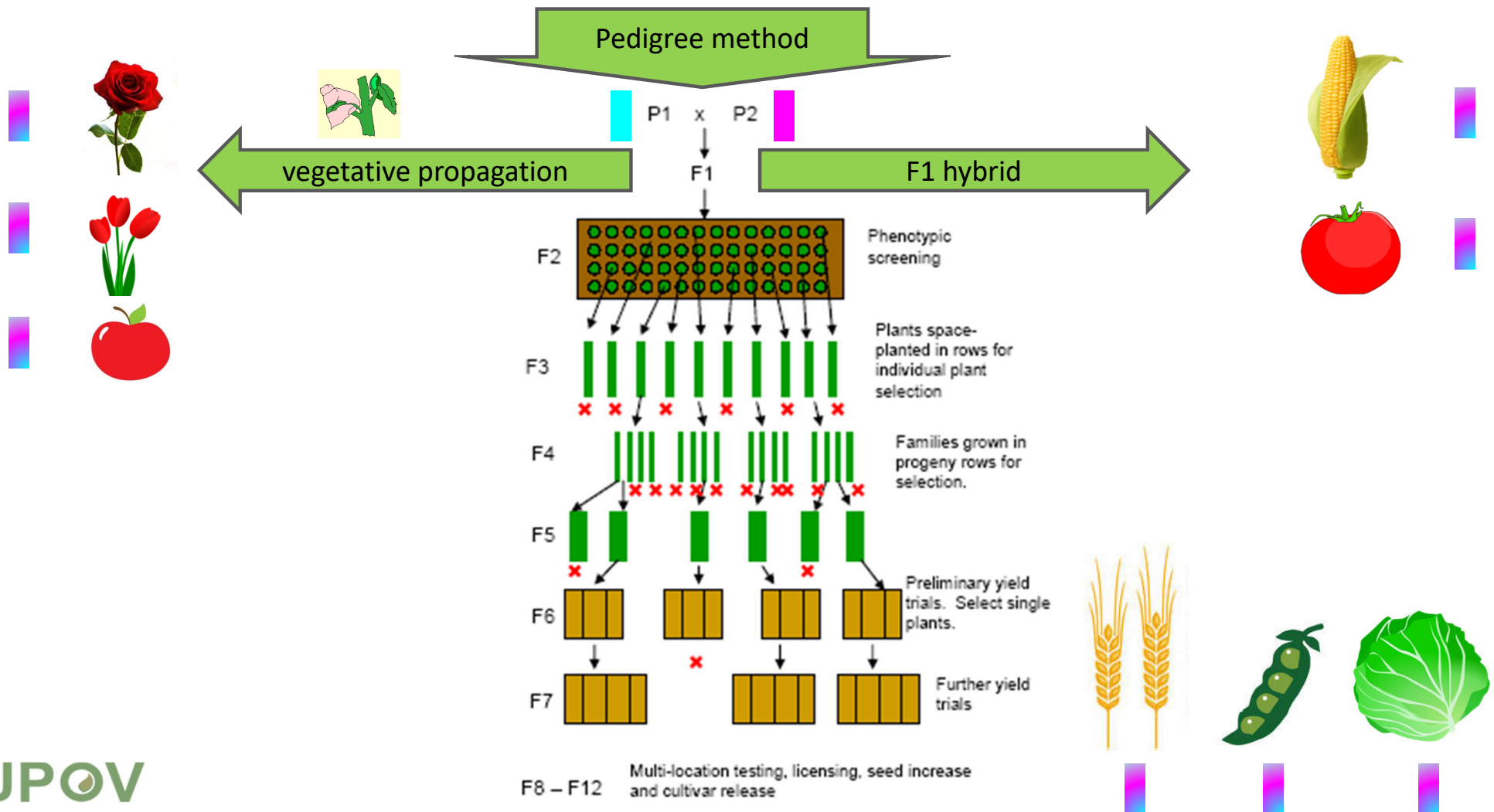
(iii) **except for the differences which result from the act of derivation, it conforms to the initial variety in the expression of the essential characteristics** that result from the genotype or combination of genotypes of the initial variety.

Essentially Derived Varieties

May be obtained for example by:

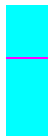
- **selection** of a natural or induced **mutant**
- **selection** of a **somaclonal variant**
- **selection** of a **variant individual** from plants of the initial variety
- **back-crossing**
- transformation by **genetic engineering**

Plant breeding methods

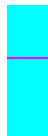


Plant breeding methods (continued)

Mutation



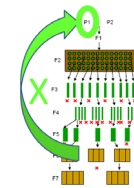
Somaclonal
variant



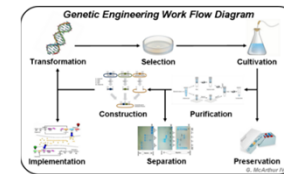
Variant individual



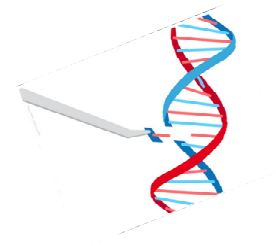
Backcrossing



Genetic
engineering



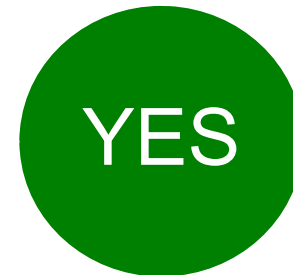
Gene editing



Essentially Derived Varieties

Can EDVs be protected in their own right?

- same criteria for protection

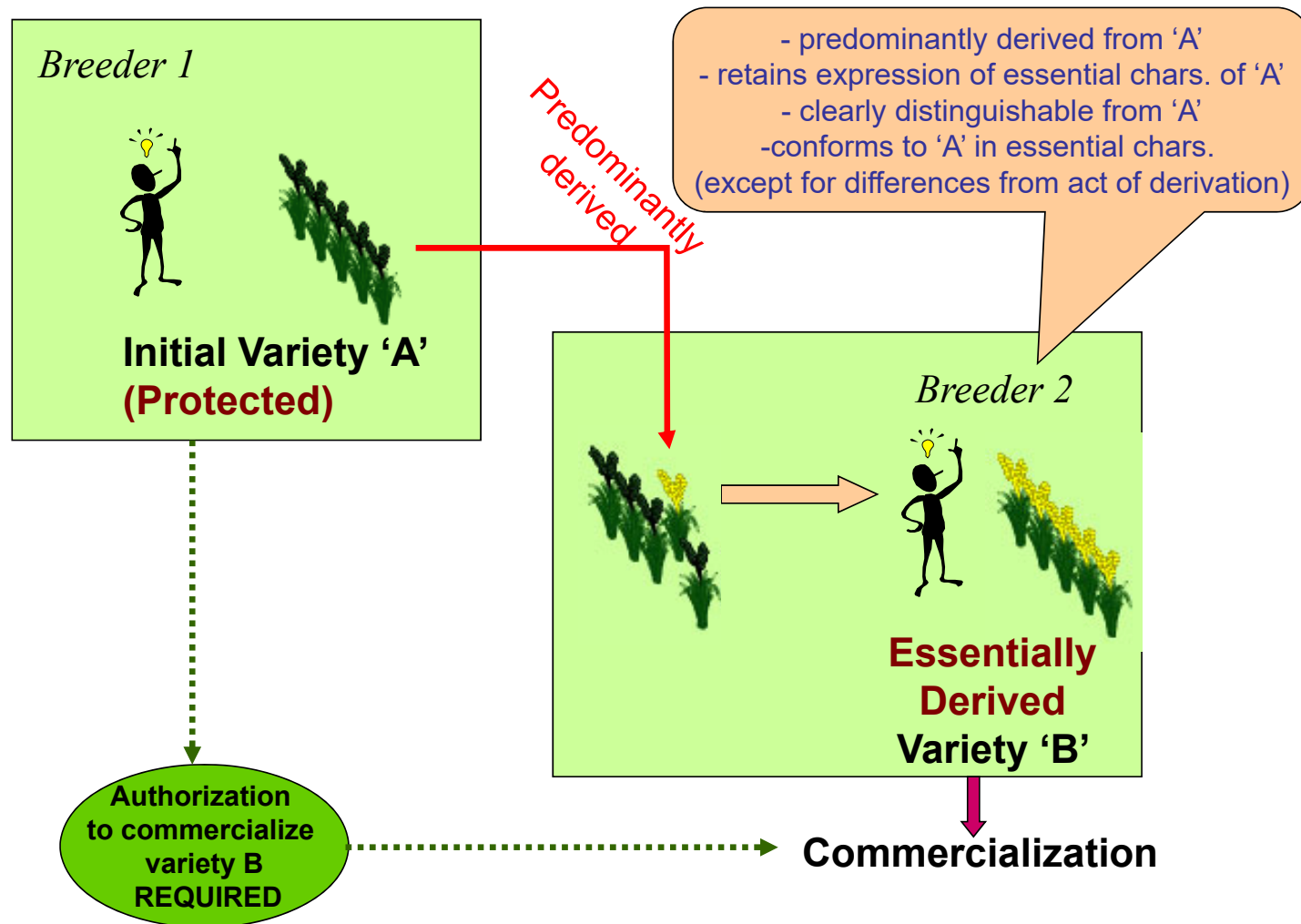


Can EDVs be commercially exploited?

**Requires the authorization of the PBR holder of the
INITIAL VARIETY and the PBR holder of the EDV**



Essentially Derived Varieties



Essentially Derived Varieties

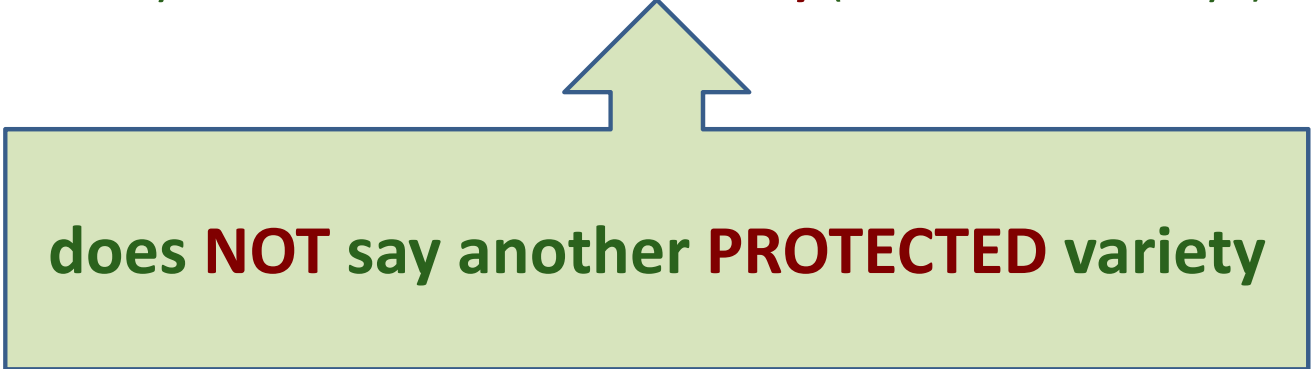
Article 14

Scope of the Breeder's Right

(5)[*Essentially derived and certain other varieties*]

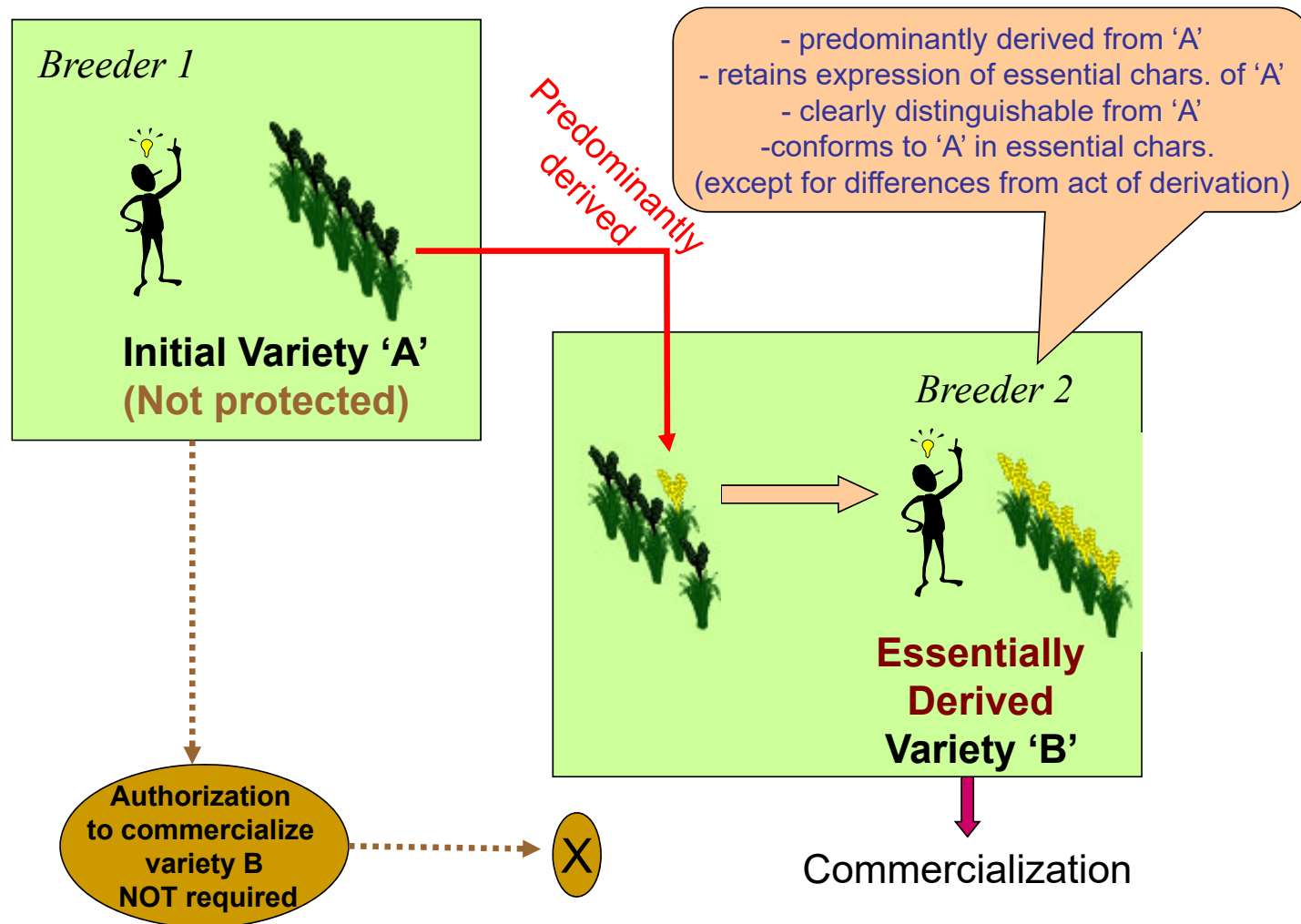
(a) [...]

(b) For the purposes of subparagraph (a)(i), a variety shall be deemed to be essentially derived from **another variety** ("the initial variety") when



does **NOT** say another **PROTECTED** variety

Essentially Derived Varieties



Scope of the Breeder's Right (1991 Act)

Article 14

Scope of the Breeder's Right

(5)[*Essentially derived and certain other varieties*]

(a) **The provisions of paragraphs (1) to (4)*** shall also apply in relation to

(i) varieties which are essentially derived from the protected variety,
where the protected variety is not itself an essentially derived variety,

Article 14*

Scope of the Breeder's Right

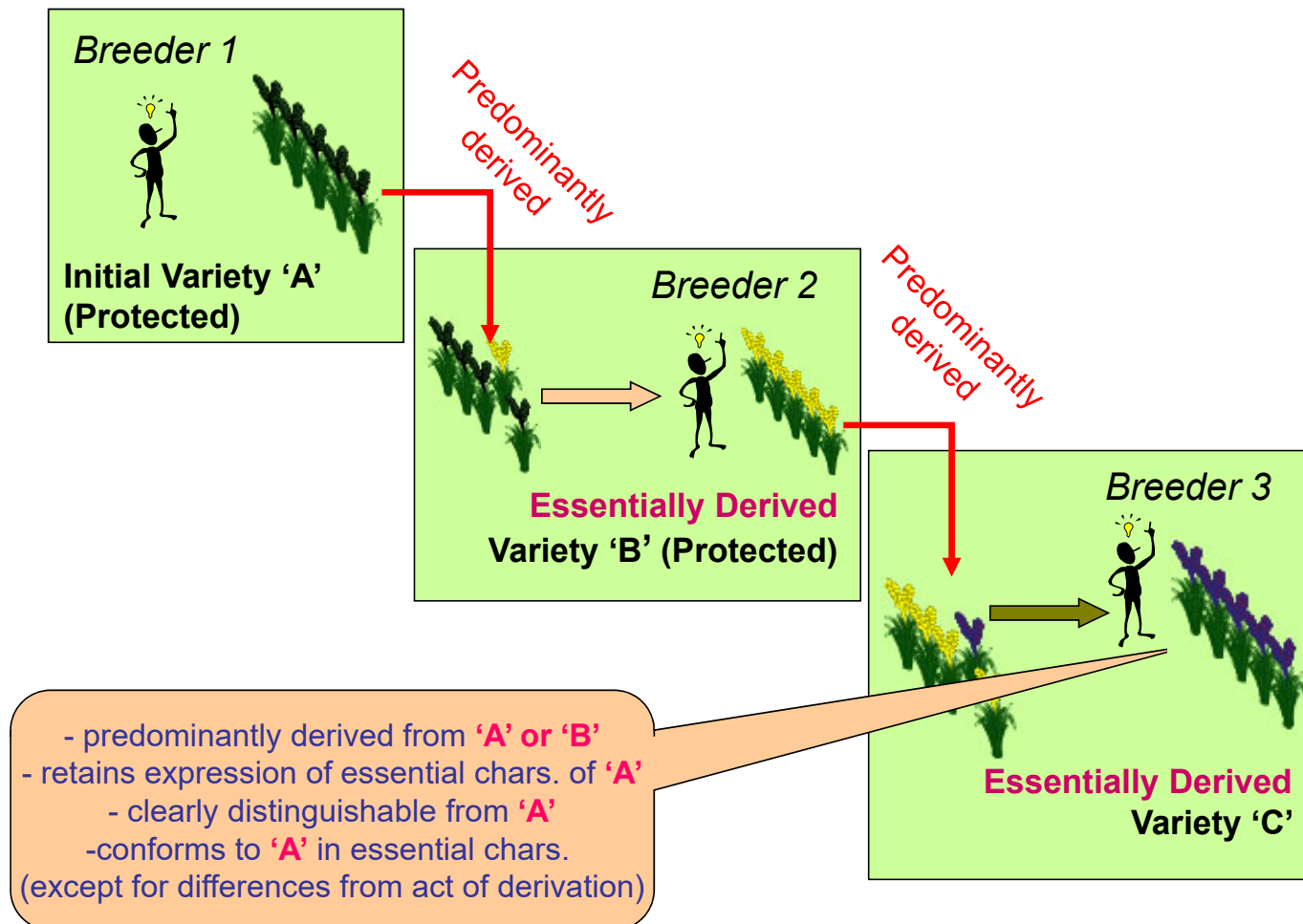
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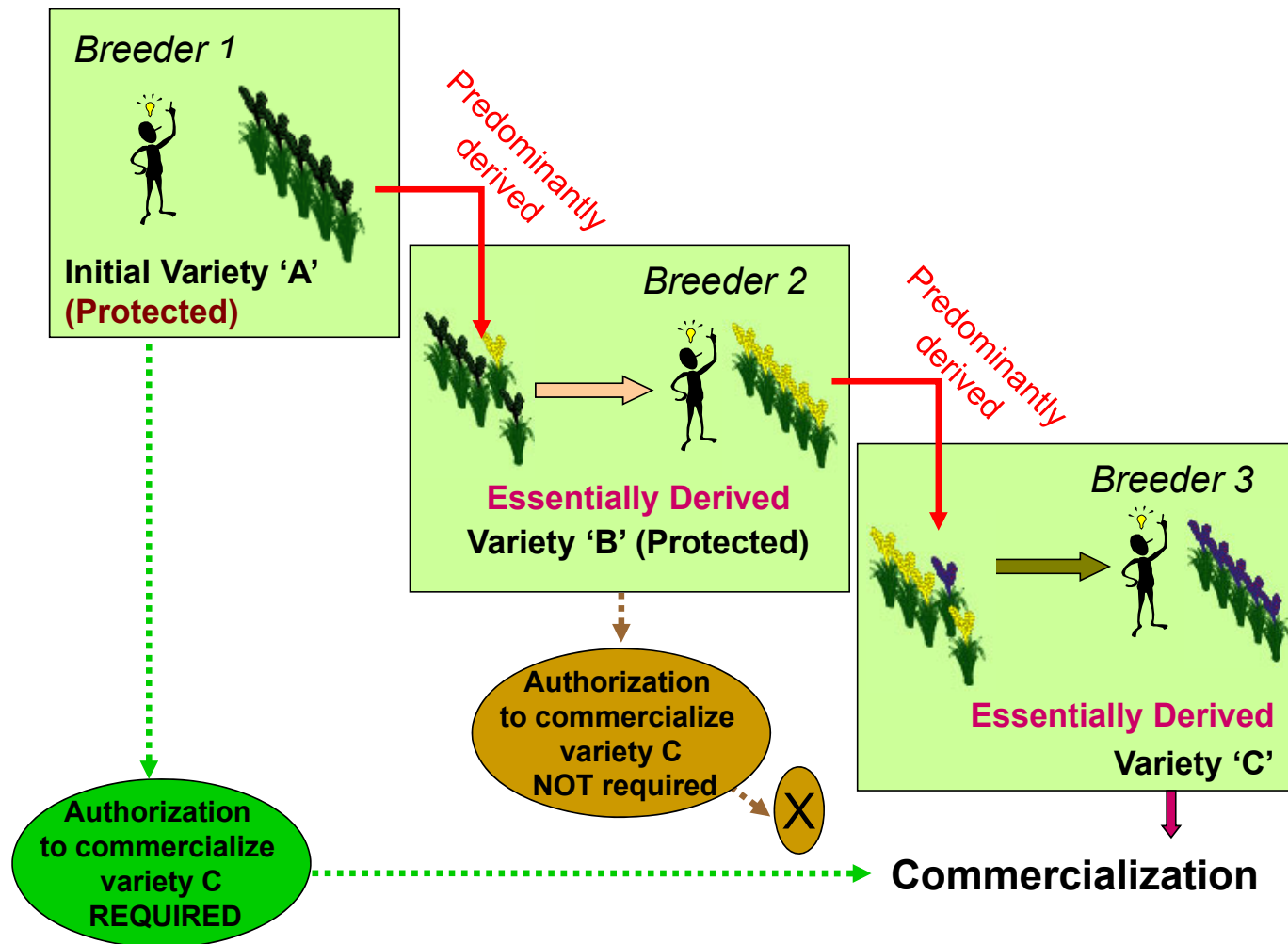
(3)[*Acts in respect of certain products*]

(4)[*Possible additional acts*]

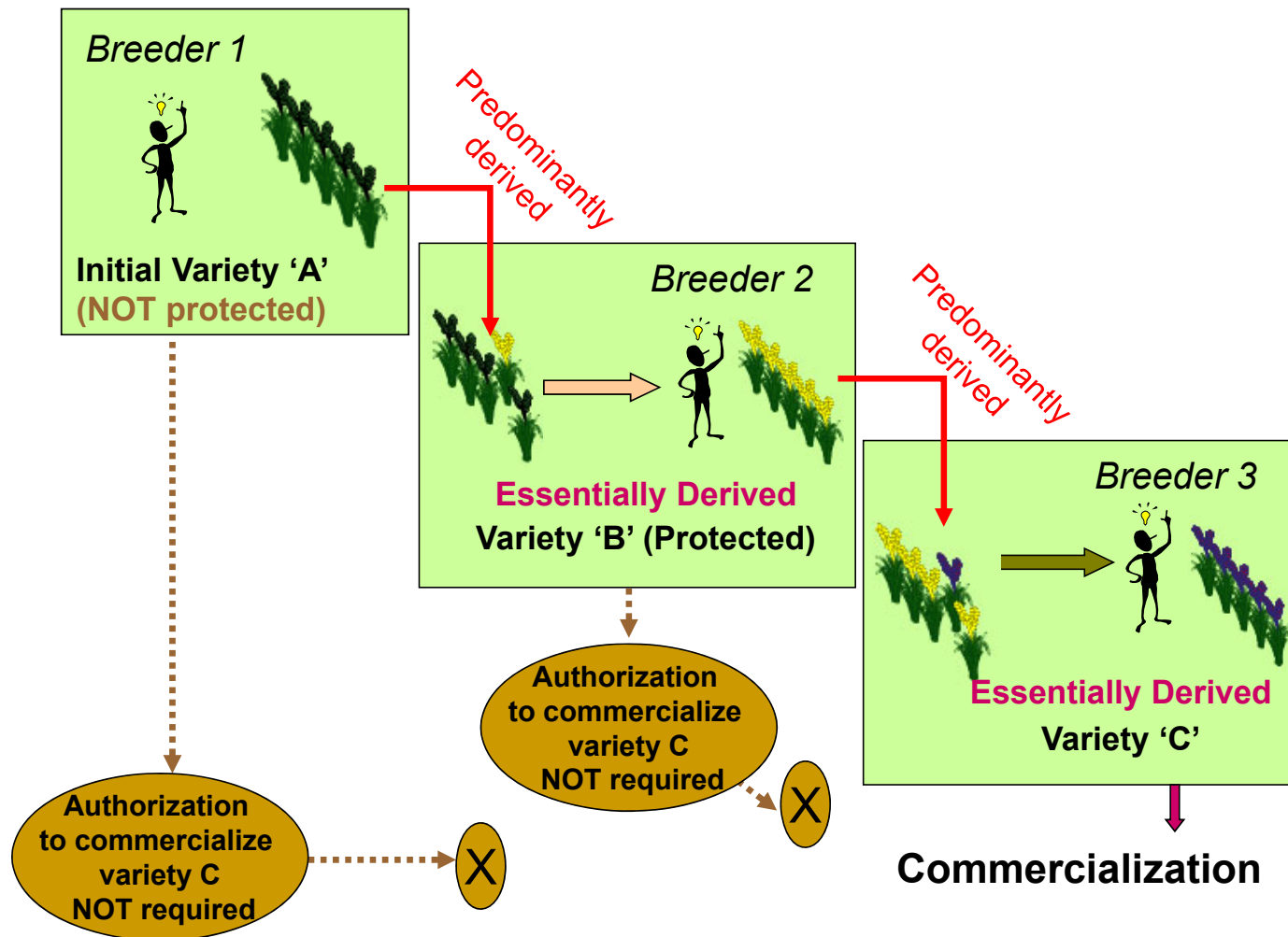
Essentially Derived Varieties



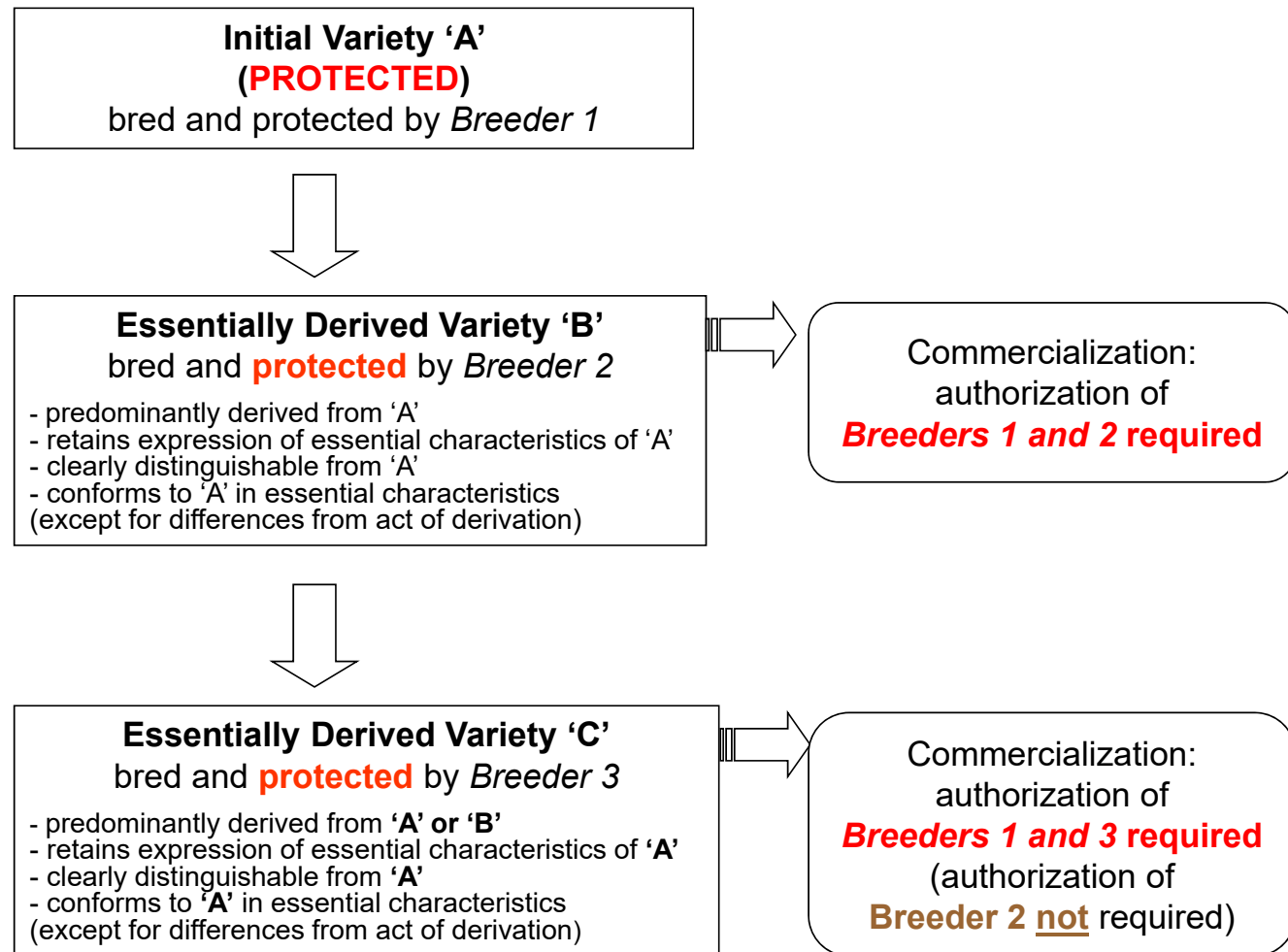
Essentially Derived Varieties



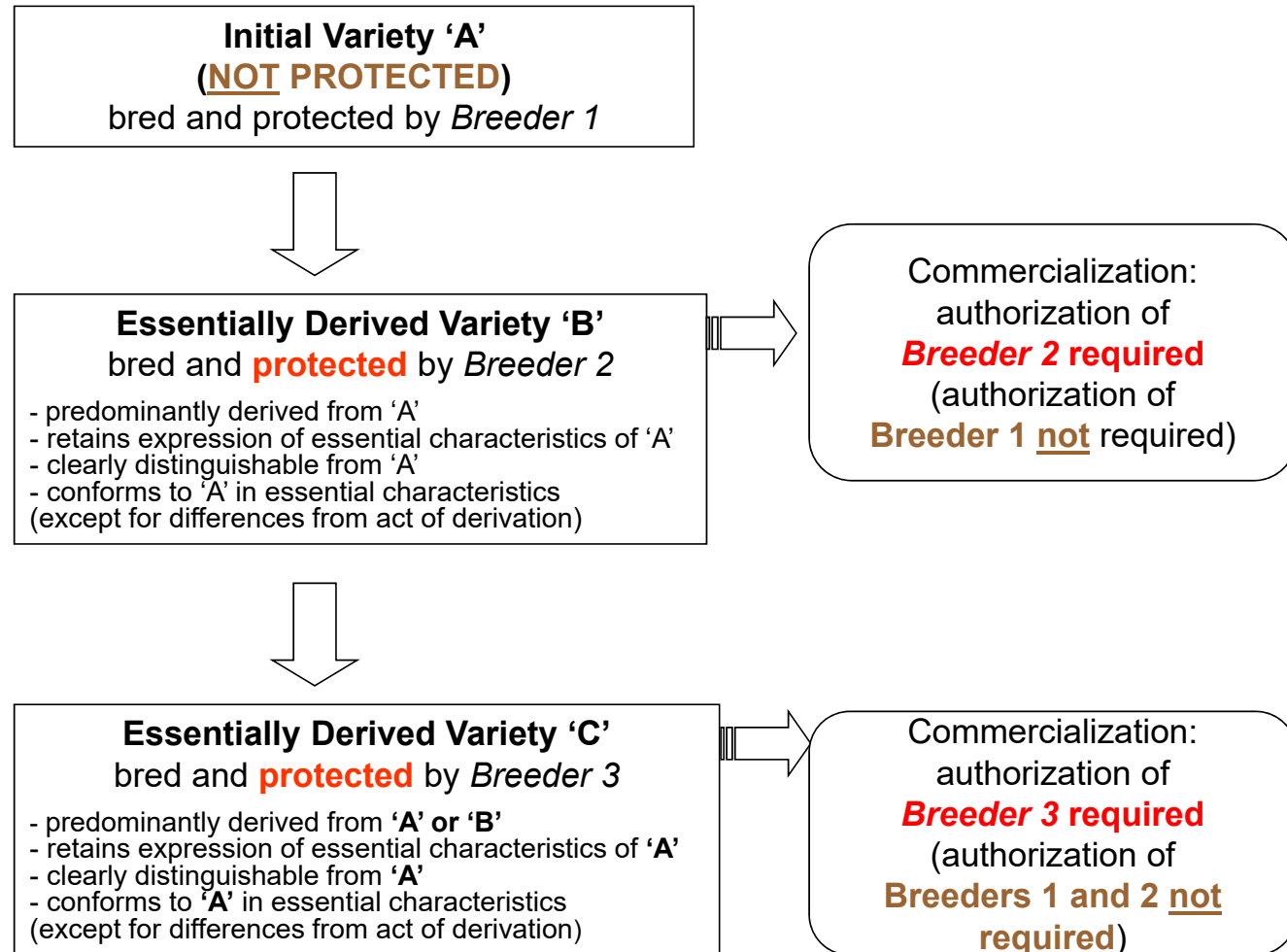
Essentially Derived Varieties



Essentially Derived Varieties



Essentially Derived Varieties



PREVIEW

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International Union for the Protection of New Varieties of Plants

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UPOV/EXN/EDV/2

Original: English

Date: April 6, 2017

**EXPLANATORY NOTES ON ESSENTIALLY DERIVED VARIETIES
UNDER THE 1991 ACT OF THE UPOV CONVENTION**

Document adopted by the Council
at its thirty-fourth extraordinary session
on April 6, 2017



Seminar on the Impact of Policy on Essentially Derived Varieties (EDVs) on Breeding Strategy



UPOV

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Seminar on the Impact of Policy on Essentially Derived Varieties (EDVs) on Breeding Strategy (UPOV/SEM/GE/19)

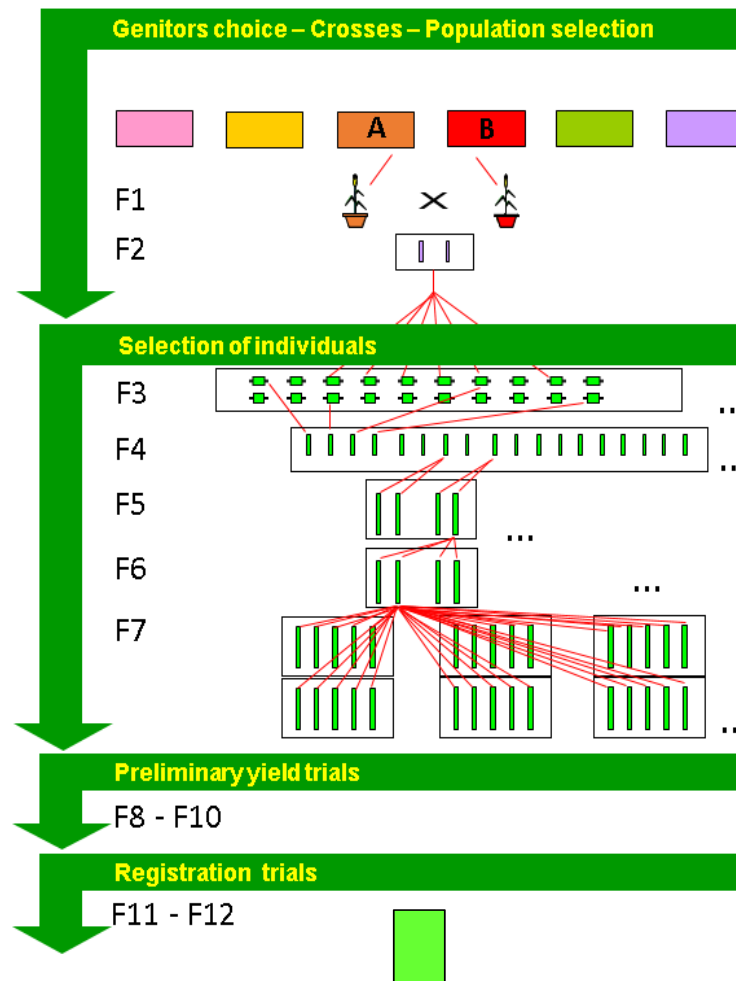
October 30, 2019 (Geneva, Switzerland)

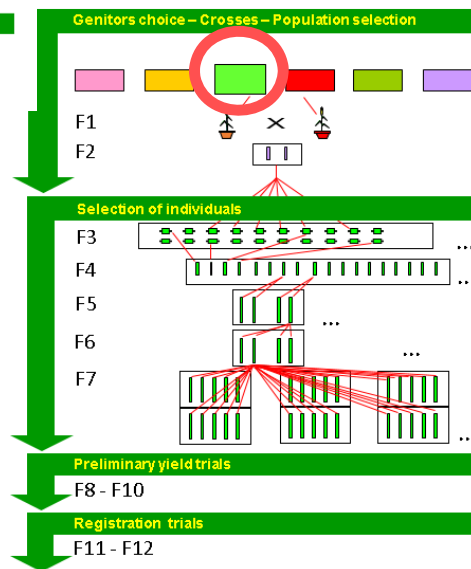
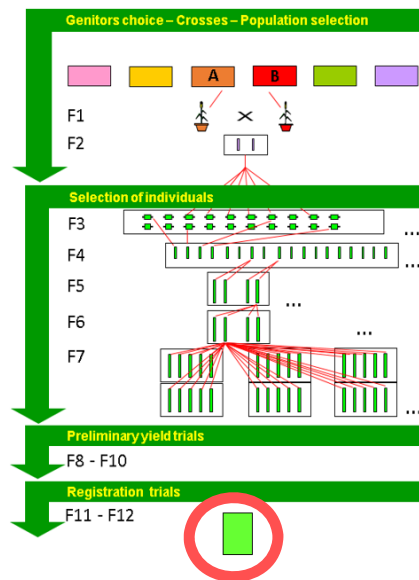
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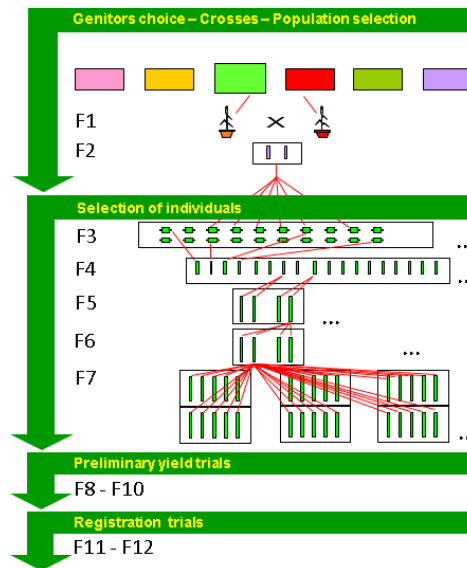
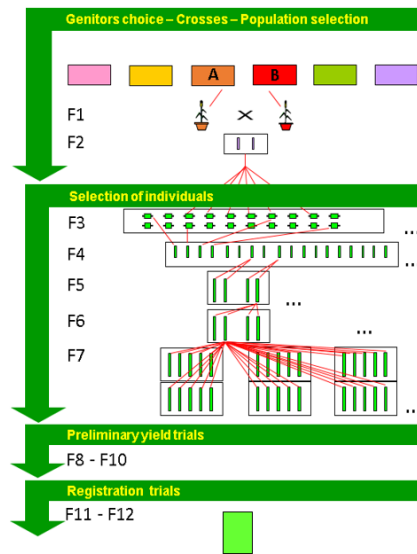
[Online registration](#)



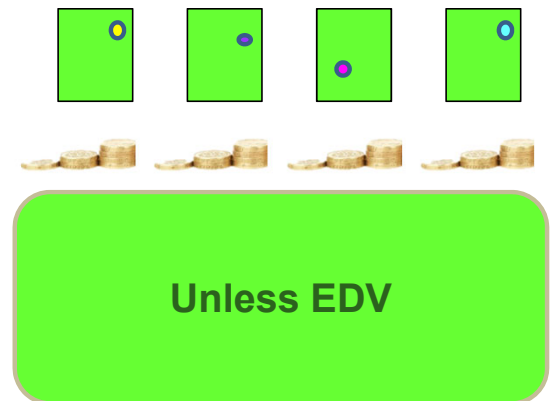
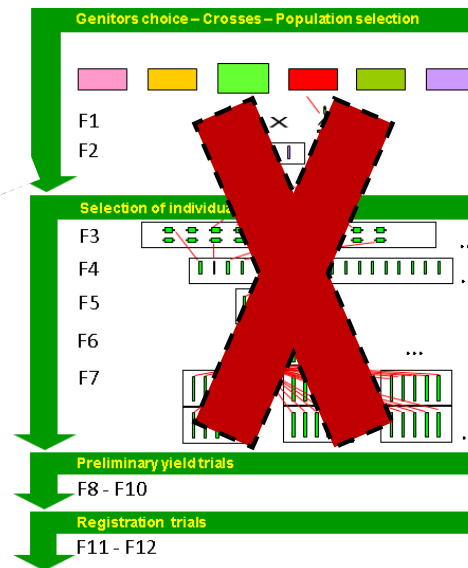
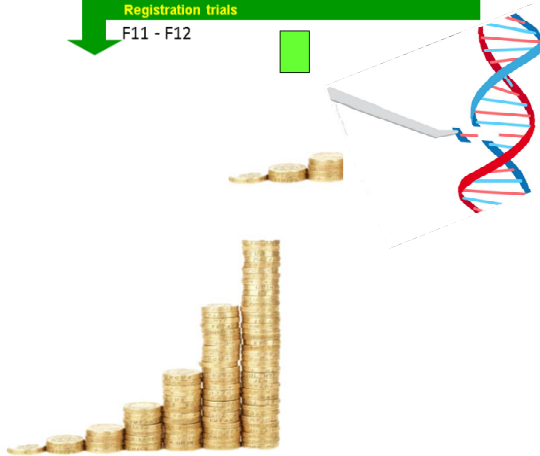
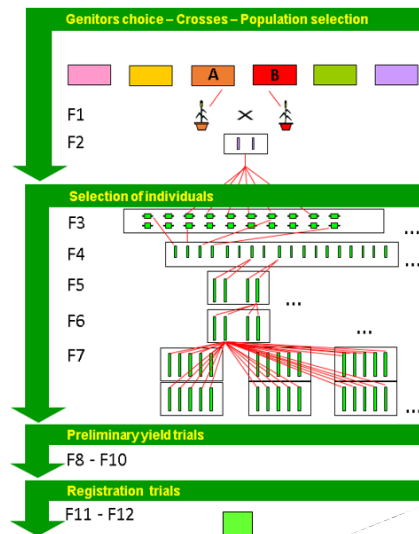




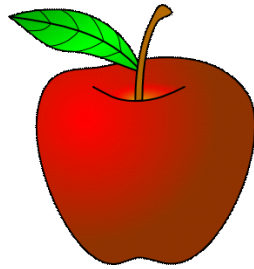
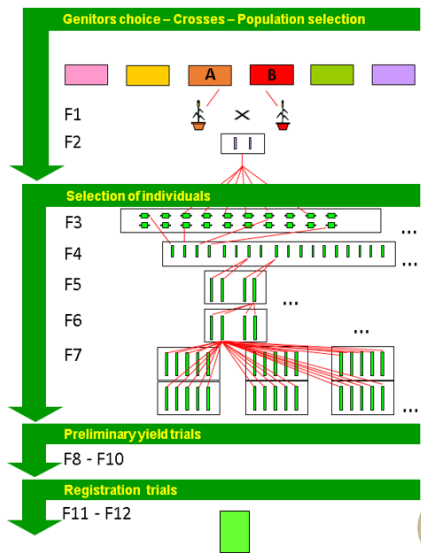
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UPOV



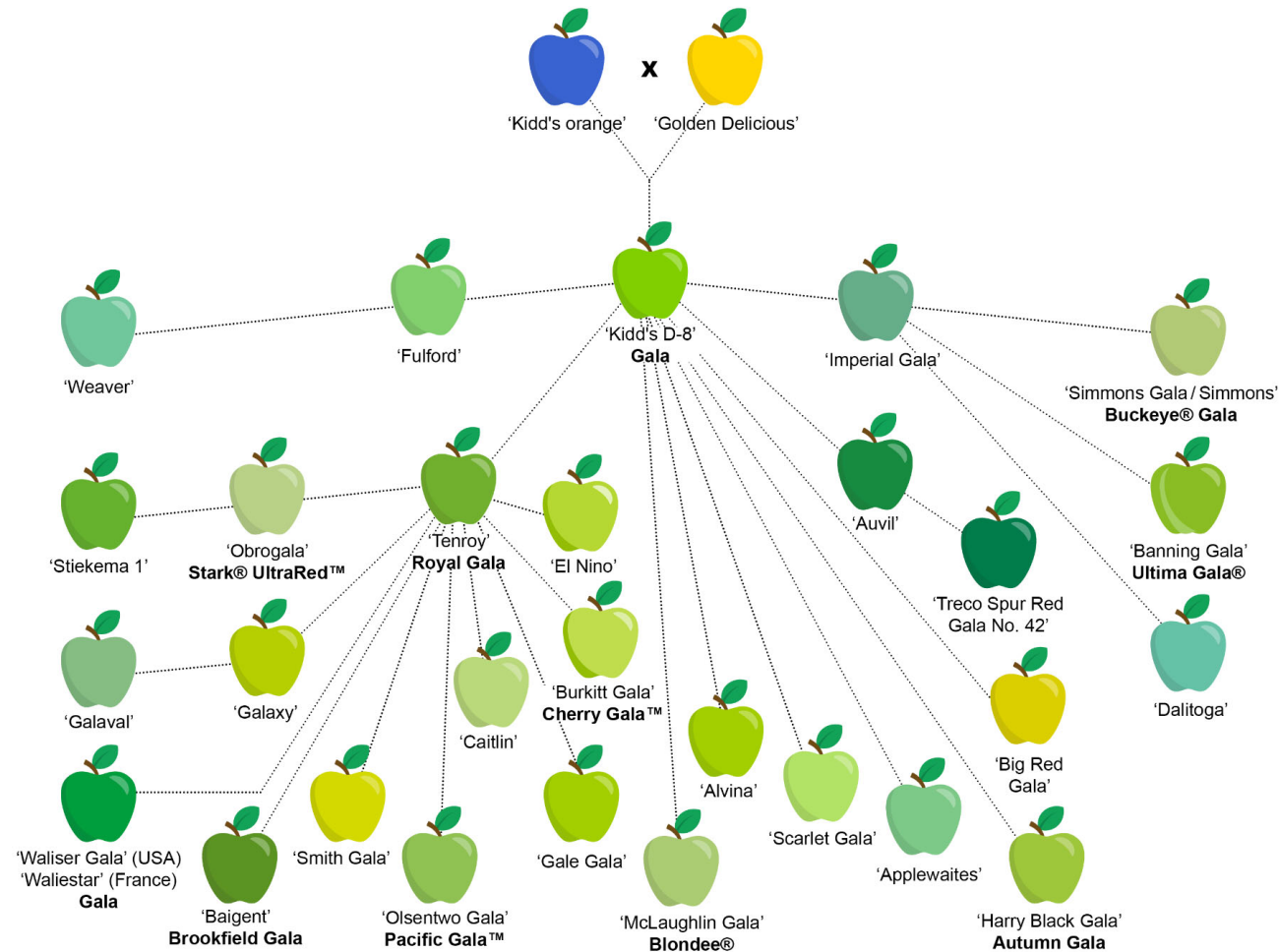
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UPOV

Mono-parental EDV example in Apple

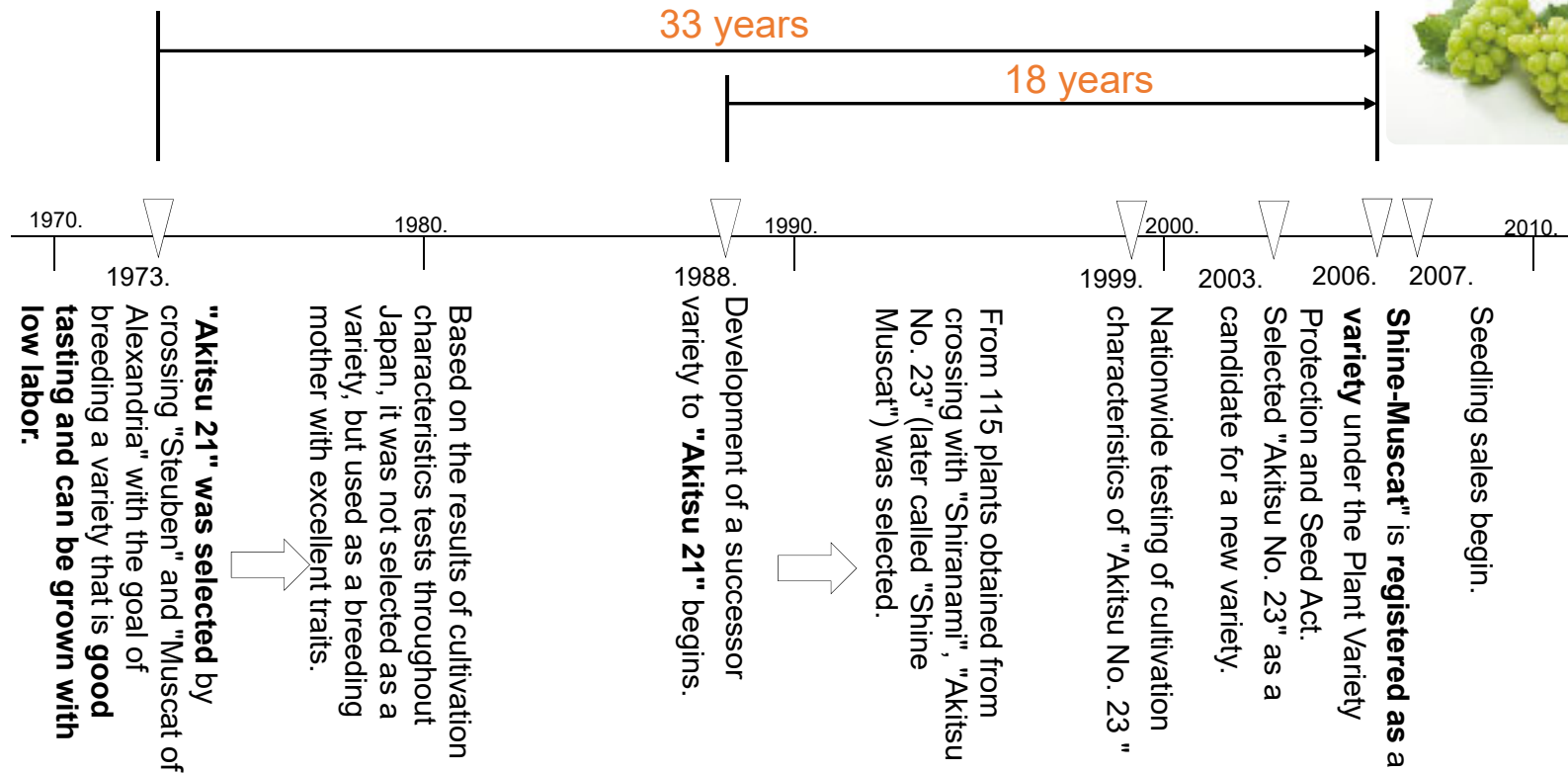
A subset of naturally-occurring mutations of 'Kidd's D-8 apple (marketed as 'Gala')



New Plant Variety Development requires a lot of time and cost.

- The grape variety "**Shine Muscat**" developed by the National Agriculture and Food Research Organization(NARO) took **33 years** from the selection of the parent line "Akitsu 21" to its registration, and **18 years** from the start of crossbreeding tests of "Akitsu 21".
- In the last 18 years alone, **13 researchers have been involved in the development of the variety.**

Long Progress in the development of "Shine Muscat" variety at NARO



UPOV EDV Seminar - Summary



- Evidence that the current UPOV guidance does not reflect the practice amongst breeders in the understanding of essentially derived varieties (EDV).
- *Evolution of breeding techniques has created new opportunities/incentives for predominately deriving varieties from initial varieties, more rapidly and at a lower cost.*
- Clear indication from presentations and discussions that the understanding and implementation of the EDV concept influences breeding strategy – therefore, it is ***important that UPOV guidance is tuned to maximize benefits to society in terms of maximizing progress in breeding.***



**United
Nations**



Food Systems Summit 2021

What is the Food Systems Summit?

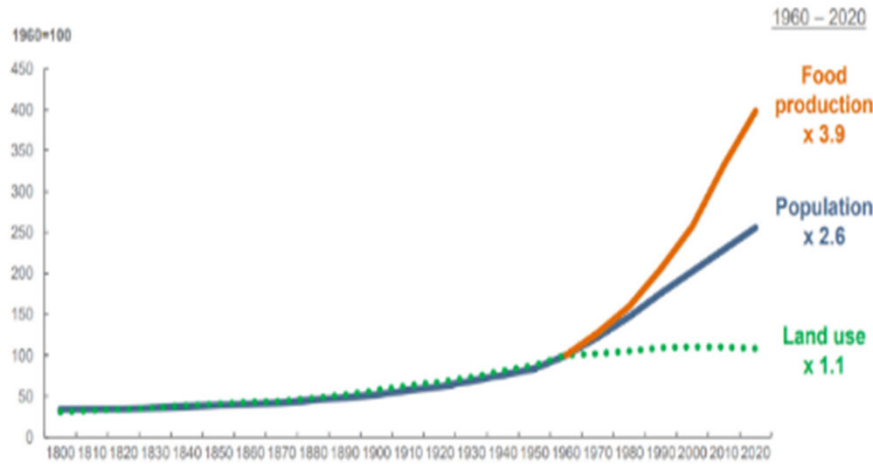
In 2021, UN Secretary-General António Guterres will convene a Food Systems Summit as part of the Decade of Action to achieve the Sustainable Development Goals (SDGs) by 2030. The Summit will launch bold new actions to deliver progress on all **17 SDGs**, each of which relies to some degree on healthier, more sustainable and equitable food systems.

The Summit will awaken the world to the fact that we all must work together to **transform** the way the world produces, consumes and thinks about food...





Historically, greater food production meant greater land use; but there has been a “decoupling” since about 1960



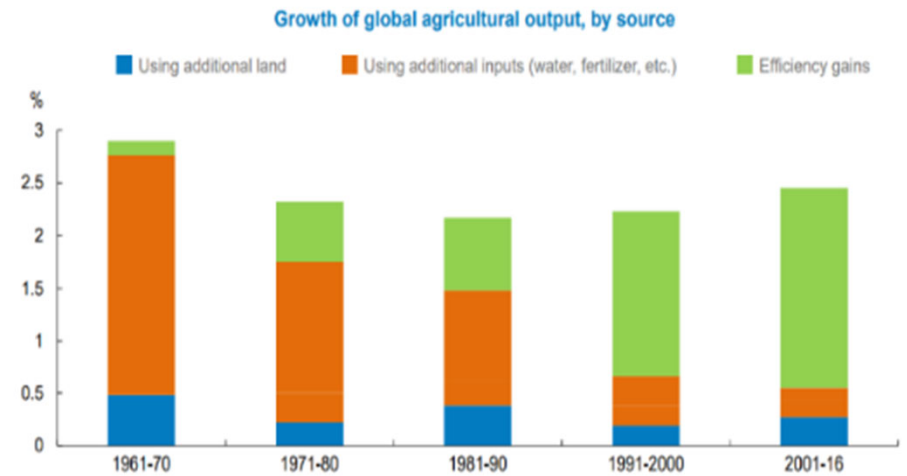
Source: Population data from Maddison's historical statistics for 1820-1949, UN Population Division for 1950-2030, 1880 and 1819 extrapolated from Maddison. Agricultural (crops and pasture) land data for 1860-2010 from the History Database of the Global Environment (HYDE 3.2), Koen Goldewijk et al. (2017). Global agricultural production data for 1860-2010 from FAOSTAT (Net Agricultural Production Index). 2020 value from the OECD/FAO Agricultural Outlook.

www.oecd.org/food-systems

Source: Koen Deconinck, Food Systems Webinar, OECD Trade and Agriculture Directorate



This “decoupling” was initially driven by greater use of inputs, but production growth increasingly comes from efficiency gains



Source: USDA Economic Research Service, International Agricultural Productivity estimates (November 2019 revision)
www.oecd.org/food-systems

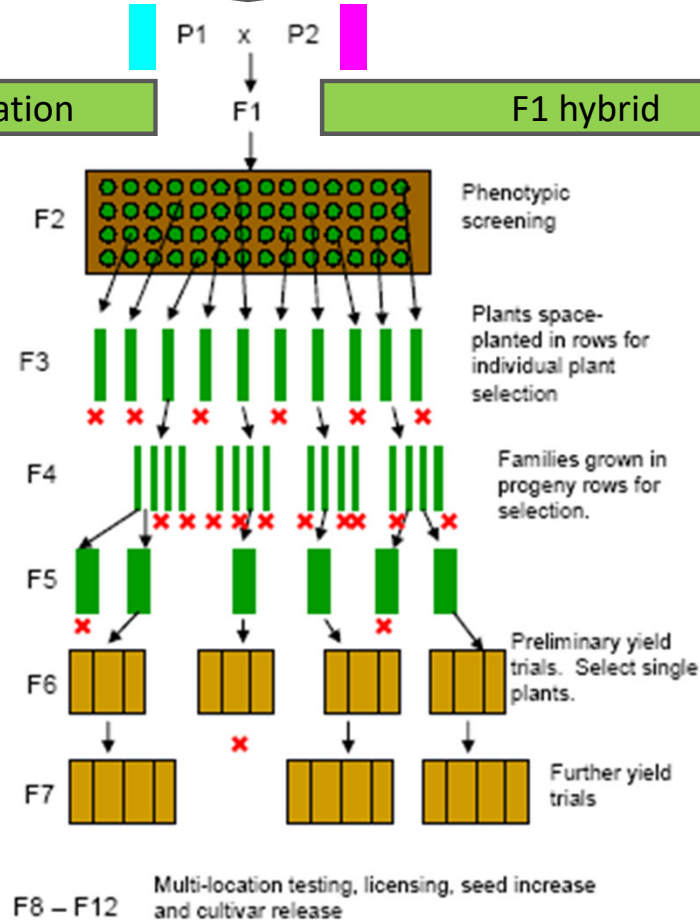
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Plant breeding methods

Pedigree method

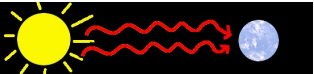
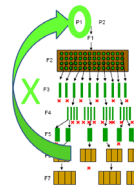
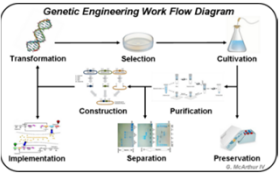
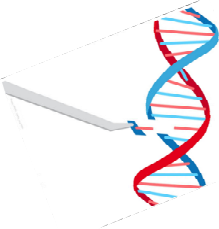
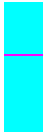
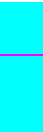
vegetative propagation

F1 hybrid



UPOV

Plant breeding methods (continued)

Mutation	Somaclonal variant	Variant individual	Backcrossing	Genetic engineering	Gene editing
					
					
					
					

Essentially Derived Varieties

Seminar on the
Impact of Policy on Essentially Derived Varieties (EDVs)
on Breeding Strategy



October 2019

**Working Group on Essentially
Derived Varieties (WG-EDV)**

to draft a **revision** of the
**Explanatory Notes on
Essentially Derived Varieties**
for consideration by the
Administrative and Legal Committee (CAJ).