





- WHY do we we test fruit species varieties?

To improve traceability and promote the dessimination of information on varieties that can be marketed in the EU. The European Commission draws up an EU variety register (FRUMATIS) with an official description based on DUS testing (Distinctness Uniformity Stability) or officially recognised studies (DOR).

• As of 1 January 2017, marketing of fruit plant propagating material is regulated by Directive 2008/90/UE with Implementing Directives 2014/96/UE, 2014/97/UE and 2014/98/UE. This new regulation aims to harmonise quality standards for propagating material across the EU, in particular by requesting the registration of suppliers and varieties. It also covers labelling requirements and inspection of material. Most fruit species commonly marketed in France (except kiwi) are concerned (list in Directive 2008/90/EC), including strawberry plants.

To guarantee the quality of propagation material (seed & plants) in the EU, specific rules must be respected:



- material must be at least of CAC quality (Conformitas Agraria Communitatis) in terms of plant health and variety traceability.
- the material can be certified (voluntary approach) according to the EU directive 2014/98/EU and the French decree of 16 December 2016. The organisations in charge of its implementation are the CTIFL for fruit trees and the SOC-France for strawberries. This guarantees the authenticity of varieties, and the plant health status. There is also a private certification based on more demanding specifications, also managed by the CTIFL: INFEL® certification.
- To support the work of breeders and nurseries by offering technical services:



- varietal identification by genotyping (molecular biology),
- physical and physiological quality testing on seeds,
- 2D or 3D radiography on nuts (chestnut, walnut),
- plant health testing on seeds and seedlings.

Plant Genetic Resources (PGR)



Which operators are officially recognised as managers of PGR collections of fruit species? Since 2018, stakeholders with collections can apply for official recognition as long as they meet the z criteria defined by the

recognition as long as they meet the 7 criteria defined by the Ministry of Agriculture (Art. D.660-3 of the CRPM).

✓ INRAE for its collection of true citrus and their wild relatives, comprising 1001 accessions.

 The CRRG Hauts-de-France for its fruit collections comprising 8 species and 1719 accessions.

Glossary

SOC-France: Official service for control and certification of seeds and plants INOV: French National Office for Plant Breeders' Rights DUS: Distinctness Uniformity Stability CPVO: Community Plant Variety Office CTPS: French Technical Committee for Plant Breeding PVR: Plant Variety Right UPOV: International Union for the Protection of New Varieties of Plants

— WHERE are fruit speciesvarieties registered?

All varieties authorised to be marketed in the European Union are listed in the **FRUMATIS** register (Fruit Breeding Material Information System) which is a compilation of national registers.

There are several possibilities for registering varieties for fruit species:

 Application for a Plant Variety Right: for a new variety, via the INOV for protection in France, and via the CPVO for protection in the EU. This title is obtained after carrying out DUS testing and declaring the variety to be new. It allows the material to be marketed throughout Europe, as well as the production of certified material.



• Registration in an Official Catalogue of an EU Member State: In France, this registration is managed by the CTPS. GEVES is in charge of the technical examinations (DUS). Registration in an Official Catalogue allows the marketing of material throughout Europe, and for some varieties, the production of certified material.



There are (in 2023) 1800 fruit varieties spanning 23 species or species groups in the French Official Catalogue. This includes 1630 on List 1 with an "Official Description" and 143 on List 2 with an "Officially Recognised Description")

 Entry in the French Register: this register allows the descriptions and denominations of varieties that circulate exclusively in France to be recorded in CAC form. This register is managed by GEVES.

Example: apple varieties

For these studies, the trees of candidate varieties are planted at the INRAE experimental unit in Angers, managed by the IRHS (French Research Institute for Horticulture and Seeds). The objective of DUS tests is to describe the candidate varieties and determine whether they are sufficiently distinct from known varieties, uniform in the observed characteristics, and stable over time. After three years of planting, when the first fruits are judged and produced in sufficient quantity, the examiner can start the description work

In the case of apple trees, this involves 57 characteristics, such as the tree's habit, the length of the peduncle or the colour of the fruit flesh. A score is given to each characteristic, either by visual observation or measurement. After two rounds of observation, the official description of the variety is validated. A committee of DUS experts visit the orchard in August to observe the fruit and trees, and then meet in December to observe the fruit in boxes: they support the examiner in the evaluation of Distinctness and Uniformity. The characteristics to be observed, the methods used and the uniformity thresholds are described in a protocol which sets out the recommendations provided by UPOV, allowing a harmonised examination in all member countries.



HOW are varieties identified?

DUS testing

DUS tests verify that the variety is **Distinct** from varieties of common knowledge, **Uniform** and **Stable**, i.e. it maintains its phenotypic characteristics from generation to generation. The tests are conducted using harmonised EU (CPVO) and international (UPOV) protocols, using plant material supplied by the applicant.

DUS testing provides a description of the variety using relevant characteristics. For fruit species, morphological and colour traits are mainly used (leaf shape, fruit colour, etc.), as well as phenological traits such as flowering and ripening times.

• Who carries out DUS testing?

In France, DUS tests are carried out by **INRAE teams** at experimental stations in Avignon, Bordeaux and Angers, as well as **CIRAD** in Guadeloupe and Réunion. GEVES is in charge of supervising this system which is accredited by the CPVO for **apple**, **pear and their rootstocks**, **apricot**, **peach**, **Japanese plum**, **sweet cherry and their rootstocks**, **banana and vanilla**.

• Reference collections

In order to assess the distinctness of candidate varieties from varieties of common knowledge, INRAE has extensive reference collections and specialised experts.



Molecular biology

Molecular marking can be used to create a genetic identity card for a variety. According to UPOV principles, this tool alone cannot be used to determine Distinctness in a DUS test. However, it can be used to easily identify similar varieties within a reference collection and is a powerful tool to confirm certain observations on the uniformity of a batch of plants. All varieties undergoing DUS testing in France are genotyped by BioGEVES: this information can then be used by the authorities or the rights holder in case of a dispute over the marketing of material for example.

SUMMARY-





GEVES also conducts physical, germination and plant health quality testing of plant material (in its SNES seed testing labororatories, in particular NRL plant health for regulated non-quarantine fungi and nematodes on strawberry plants). Variety control and characterisation of collections by molecular biology by the BioGEVES laboratory is also possible.

or TRUE ?

A PVR is a patent

TRUE AFALSE

Patents and PVRs are intellectual property rights with different conditions, scope and exceptions.

Plant variety rights (PVR), also known as plant breeders' rights (PBR), grant the holder an exclusive right to certain acts in relation to the protected variety: production, reproduction, conditioning, offering for sale, selling, marketing, exporting, and importing. PVRs also grant the holder the right to exclude all other parties from using the protected variety without authorisation. However, unlike patented varieties, varieties protected by a PVR can be used freely for plant breeding purposes, thereby facilitating access to genetic diversity. At the end of DUS tests, a variety identity card is produced

TRUE FALSE

When a variety is uniform and distinct, it is described on the basis of phenotypic characteristics (morphological, biochemical or pathological) present in the relevant species protocol. The official description of the variety is variety's identity card.

GEVES can carry out tests on varieties of all fruit species

TRUE ALSE

GEVES and its partners (INRAE, CIRAD) only carry out DUS tests for species or variety types where they have expertise and a suitable reference collection. In other cases (e.g. peach varieties with very low chilling requirements, or citrus fruits), the tests are subcontracted to other EU offices that have the same qualifications as GEVES.

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