

Technical Working Party for Fruit Crops

TWF/51/7

**Fifty-first Session
Nîmes, France, July 6 to July 10, 2020****Original:** English
Date: June 22, 2020**DUS EXAMINATION OF MUTANT VARIETIES OF APPLE***Document prepared by an expert from the European Union**Disclaimer: this document does not represent UPOV policies or guidance***BACKGROUND**

1. The TWF, at its forty-seventh session in Angers, France, from November 14 to 18, 2016, received a presentation on “DUS examination of mutant varieties of apple” by an expert from the European Union. A copy of the presentation is provided in the Annex to document TWF/47/21.
2. The TWF agreed on the importance of exchanging information among PVP Offices about applications received at national level, especially for some apple mutation groups where similar varieties might be submitted in various countries. Such an exchange would help to allow all relevant varieties of common knowledge to be taken into consideration and, if appropriate, included in the growing trial for the examination of distinctness. It further agreed on the importance of exchanging information about rejected varieties, which might be the subject of ongoing procedures in other UPOV members.
3. The TWF agreed with the proposal made by the expert from the European Union to collect information on applications under process and existing varieties for certain apple mutation groups among UPOV members and to report to the next session of the TWF how this data has been/ could be used and what could be the possible next steps and solution (see document TWF/47/25 “Report”, paragraphs 67 to 69).

PROJECT PRESENTED AT THE TWF/48

4. In a first instance and as a pilot, the European Union proposed that information be exchanged focusing on the ‘Gala’ apple mutation group. The reason was that varieties of this group are grown and applied for PBR worldwide, offering a wide geographical range potentially contributing to this survey. An excel sheet was designed to collect administrative and technical data and sent out to participants identified during the last TWF and also to TC representatives from UPOV members having practical experience for apple DUS testing but not included during the last TWF.
5. Eleven UPOV members participated in 2017 (see table in the Annex of document TWF/48/9). 140 different records were communicated, out of which 85 different varieties were identified. It was still not excluded that the same variety bears different names within these 85 varieties. A first analysis reveals that nearly 75% of the varieties (63 out of 85) are only known by a single Authority. This result was communicated to participants in June 2017 and suggested room for improvement in the exchange of information on Gala mutant between UPOV members testing this species.
6. A first step was identified as exchange descriptions. Some authorities provided a link to the available description (AU available in the last column of the excel sheet in the Annex), others provided directly the description in the spreadsheet (NZ). The most efficient way to exchange such descriptions would be discussed.
7. In a context where mutation varieties are potentially similar, it is probably desirable that some material is available for DUS testing authorities at some point. The name of the title holder is mostly indicated and that title holder should be the most reliable source of information to indicate whether material of the variety is available and where in a given territory. In case that material is not available, it could be deemed relevant to initiate procedures for importation of this material.
8. The TWF was invited to comment on these results and propose a follow-up.

CONCLUSIONS FROM THE TWF/48

9. The TWF considered document TWF/48/9, and received a presentation on a “DUS examination of mutant varieties of apple” by an expert from the European Union, a copy of which is provided in document TWF/48/9 Ad. (see document TWF/48/13 “Report”, paragraphs 101 to 105).

10. The TWF agreed that in the case of DUS examination of mutant varieties of apple the exchange of information among DUS offices was important in order to ensure that the authorities were aware of all potentially existing similar varieties. It further agreed that the information provided in TQ Section 6 was not always sufficiently informative and, therefore, good coordination among offices was required.

11. The TWF agreed that the expert from the European Union should coordinate a project to exchange information among authorities involved in DUS testing for apple to share information on the following principle:

- by electronic means;
- twice a year, probably in January and July when trials are planned in the northern and southern hemisphere respectively;
- including information on Gala and Fuji types or other mutant types at a later stage;
- including information on the most similar varieties grown by the authorities in the DUS trials.

12. The TWF further agreed that it would be useful to approach the breeders to check availability of plant material from all varieties listed as mutants in each territory.

13. The TWF invited the expert from the European Union to report on the work done at its next session.

DEVELOPMENTS AFTER TWF/48

14. The exercise was renewed in March/April 2018 and extended to mutants of ‘Fuji’. Eight UPOV members replied. Additional mutants of ‘Gala’ were mentioned by Argentina (AR), Czech Republic (CZ), New Zealand (NZ) and the European Union (QZ). It could be noted that 9 new mutants were applied in the EU since the last exercise. The excel sheet (see table in the Annex of document TWF/49/8) contains now 154 records representing 93 varieties.

15. For ‘Fuji’, 9 countries provided data and the table contains 83 records and 55 varieties (see table in the Annex II of document TWF/49/8). Please note that the status of protection of these varieties was not up to date.

PRESENTATION AT THE TWF/49

16. The TWF, at its forty-ninth session held in Santiago de Chile, Chile, from November 19 to 23, 2018, considered document TWF/49/8 and noted the developments reported by an expert from the European Union since the forty-eighth session of the TWF in 2017 (see document TWF/49/12 “Report”, paragraphs 45 to 48).

17. The TWF discussed the situation where a variety is bred in a certain environment, DUS tested in another environment and not distinct in the DUS test. The breeder may bring indications that their variety may be distinct in the environment where it has been bred. The group noted that this problem is less likely to take place in countries having a system of DUS testing at breeders premises since the DUS test would take place under the conditions desired by the breeder. It also noted that because of the interaction GxE, a variety may not necessarily be distinct from another variety in all environments. The TWF noted that investigations are taking place in this respect in the European Union. The TWF invited the expert from the European Union to report on the progresses made on that subject matter and the work done at its next session.

18. The TWF agreed that, in the case of DUS examination of mutant varieties of apple, the exchange of information among DUS offices was important in order to ensure that authorities were aware of all existing potentially similar varieties.

19. The TWF agreed that the expert from the European Union should continue to coordinate the project to exchange information among authorities involved in DUS testing of apple to share information, as it provided an important source of information on the most similar varieties. It further encouraged all members involved in DUS testing of apple to contribute to this exchange of information.

DEVELOPMENTS AT THE TWF/50

20. The TWF considered document TWF/50/10 and received a presentation on “DUS examination of mutant varieties of apple” by an expert from the European Union. A copy of the presentation is provided in the Annex to document TWF/50/10 Rev. (see document TWF/50/13 “Report”, paragraphs 45 to 49).

21. The TWF noted the developments since the forty-ninth session of the TWF in 2018. The TWF noted that, without an appropriate variety collection for the DUS examination, the accuracy of the DUS report might be affected, which could inhibit cooperation and exchange of DUS reports between PVP Offices for apple mutant varieties.

22. The TWF was informed by the European Union that discussions were being held in the European Union on the possibility to observe applications for mutant varieties of apple in a different location because of the strong influence of the environment on the fruit color. It was observed that some varieties were bred in an environment quite different from the conditions under which the DUS testing was conducted in a centralized testing system. The TWF agreed that the current UPOV guidance provided for fruit crops explained that tests were normally conducted at a single location and it might not be appropriate to deviate from this guidance in particular cases (e.g. Gala mutant varieties).

23. The TWF noted the comment made by the expert from the European Union that measurements for characteristics (instead of visual observations) had proven to be useful in court cases based on DUS reports. The TWF agreed that image analysis could be considered for the observation of color but recalled that statistical analyses were not commonly used in the DUS examination for fruit crops.

24. The TWF invited the expert from the European Union make a presentation at its fifty-first session on further developments in the European Union on DUS examination of mutant varieties of apple.

PRESENTATION AT THE TWF/51

25. The TWF will receive at its fifty-first session, a presentation from the expert from the European Union on recent developments, a copy of which is reproduced in the Annex of this document.

26. The TWF is invited to comment the progress made on that subject matter, and to propose a follow-up.

[Annex follows]



DUS examination of mutant varieties of apple

UPOV TWF
Nimes, 7. July 2020

1

DUS examination of apple mutant varieties

- Mutants are sometimes very close, decisions in respect of Distinctness are often negative and contested
- Need to organize the trial with the candidate and reference variety under strictly the same conditions
 - Same age
 - Same rootstock
 - Side by side in the trial
 - Health status?



DUS examination of apple mutant varieties

- Plant material requirements:

The plants should be accompanied by a Plant Passport or a Phytosanitary Certificate and a recognised certificate indicating that the plant material has been lab-tested to give a negative result for:

- Apple Chlorotic Leaf Spot Virus (ACLSV) [ELISA]
- Apple Mosaic Virus (ApMV) [ELISA]
- Apple Rubbery Wood
- Apple Stem Grooving Virus (ASGV) [ELISA]
- Apple Stem Pitting Virus (ASPV).

Please note that with respect to fruit, the plant material supplied should be visibly healthy, not lacking in vigour or affected by any important pest or disease, especially virus.

⇒ Trust the breeder that the certificate is related to the plant material submitted



TWF 2020

3

DUS examination of apple mutant varieties

- Issue: some plant material standing in the DUS trial tested and found to be infected by one of the viruses it should be free from according to the requirements.
- Mostly mutants
- Viruses mostly transmitted by grafting but other ways of contamination not excluded.

⇒ Plant material destroyed, DUS trial restarted



TWF 2020

4

DUS examination of apple mutant varieties

- Reflections on a future procedure
- For mutants, sampling and testing carried out by the examination offices on the plant material received
- Results could be contested in the breeder has other results, issue of false positive / false negative in laboratory tests
- Reference varieties will need to be tested as well



TWF 2020

5

DUS examination of apple mutant varieties

- Reflections on a future procedure
- The procedure should be in place for the 2021 submission of material campaign
- Will be developed in cooperation with breeders and EU apple experts
- DUS testing of apple mutants will be more and more costly!



TWF 2020

6