UPOV

International Union for the Protection of New Varieties of Plants

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Technical Working Party for Fruit Crops

TWF/50/10 Rev.

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DUS EXAMINATION OF MUTANT VARIETIES OF APPLE

Document prepared by the European Union

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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 exercice 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 is 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 dictinct 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 SINCE THE TWF/49

20. The TWF received at its fiftieth 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.

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

[Annex follows]

CPVO
Community Plant Variety Office

DUS examination of mutant varieties of apple

UPOV TWF
Budapest, 24 June 2019

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DUS examination of apple mutant varieties

1. **Background, the current challenges**
2. **The situation of Gala and Fuji mutation varieties under DUS test**
3. **Discussion of a procedure to set up a trial under Mediterranean conditions**
4. **Lessons to be learned from decisions appealed in legal procedures**
5. **Some independent thoughts submitted by a breeder**

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DUS examination of apple mutant varieties

This presentation has been set up for brainstorming purposes.

It does not represent the view of the CPVO.

DUS examination of apple mutant varieties

- Apple varieties mutate easily
- Breeders and growers looking for mutants with the same objective
  - Eg 'Gala' varieties with washed red colour and colouring earlier
  - They find similar or the same mutants
  - They apply in many countries over the world

DUS examination of apple mutant varieties

- Focus on Distinctness

COUNCIL REGULATION (EC) No 2100/94

of 27 July 1994

on Community plant variety rights

Article 7

Distinctness

1. A variety shall be deemed to be distinct if it is clearly distinguishable by reference to the expression of the characteristics that results from a particular genotype or combination of genotypes, from any other variety whose existence is a matter of common knowledge on the date of application determined pursuant to Article 51.

5

DUS examination of apple mutant varieties

- Focus on Distinctness
  - ➢ Which varieties are of common knowledge
    - ✓ Registered in an official register
    - ✓ Commercialized
    - ✓ Existing in publicly accessible collection
      - ⇨ Anywhere in the world, apple is a worldwide crop, worldwide applications

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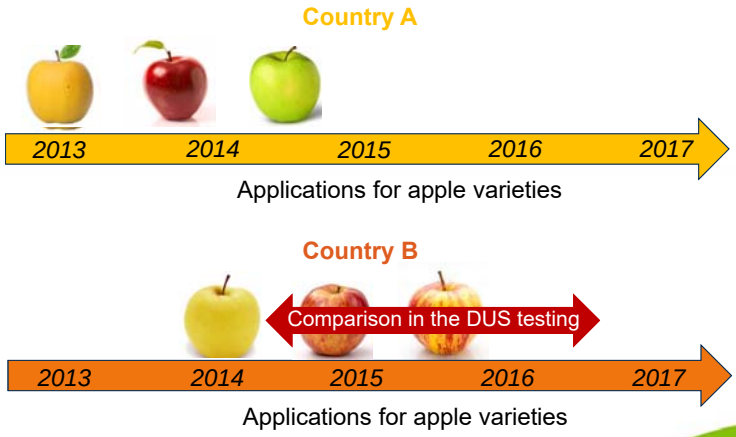
DUS examination of apple mutant varieties

- Focus on Distinctness



TWF 2019

DUS examination of apple mutant varieties

- Focus on distinctness
  - ➢ Possible reasons for such situations?
    - ⇨ Apple: high risk species in plant health Regulations, quarantine procedures (±2 years to import from overseas)
    - ⇨ Licensee/Editor would like to see the variety in his condition before applying
      - ⇨ Restart the DUS trial of the 2014 yellow apple

TWF 2019

DUS examination of apple mutant varieties

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DUS examination of apple mutant varieties

2. The situation

- Current situation 'Gala' and 'Fuji'

  - ➢ Currently 18 applications for Gala and 5 for Fuji
  - ➢ Several situations as described previously

⇨ Restart the DUS trial with all ongoing applications + reference varieties, many decisions put on hold (applications since 2012)

DUS examination of apple mutant varieties

2. The situation
   - Current situation 'Gala' and 'Fuji'
     - ➢ Request for availability of material to all applicants & title holders
       1 year old trees, M9T337: same age, same rootstock
     - ➢ Not all applicants & title holders have it available in 2018, postponed to 2019
       - ⇨ Most varieties submitted, a few missing
       - ⇨ ask for budwood in the future?

DUS examination of apple mutant varieties

2. The situation
   - UPOV activities: See TWF/50/10
     - ➢ Proposal that for some mutation groups, exchange of information between UPOV members takes place as soon as a variety has been applied for plant breeders' rights
     - ➢ Proposal to limit the exchange to Gala & Fuji as a pilot
       - ⇨ EU coordinates the exchange of information, 3rd year in 2019

DUS examination of apple mutant varieties

2. The situation
   - UPOV activities:

     ✓ Consolidated excel file available in Annex
     ✓ 13 UPOV Members replied
     ✓ 154 mutants for Gala representing 104 varieties
     ✓ 84 records for Fuji representing 55 varieties
     ✓ Nearly 75% of the varieties applied to a single authority

     ⇨ Do Member States undertake activities to exchange such varieties?

DUS examination of apple mutant varieties

Without progress on the subject matter, the exchange of DUS reports looks difficult!

DUS examination of apple mutant varieties

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DUS examination of apple mutant varieties

3. Discussion of a procedure to set up a trial under Mediterranean conditions

- Quite some applications from Southern Europe (Italy), examination offices in Northern Europe
- Investigations with the French examination office on the possibilities to have a second location in Southern Europe

DUS examination of apple mutant varieties

3. Discussion of a procedure to set up a trial under Mediterranean conditions

- Investigations ongoing

Bellegarde / Angers

Bellegarde / Angers

⇨ Clear influence of the environment on the phenotype

DUS examination of apple mutant varieties

3. Discussion of a procedure to set up a trial under Mediterranean conditions

- How to involve the second location?

➢ Observation of 'important' characteristics from the protocol only?
But what if a difference is clearly observable in the second location (only) for another characteristic

➢ Observation of characteristics in the second location to be considered as additional characteristics, only made use of if Distinctness cannot be established in Angers?
But they are not really additional as they are part of the protocol

DUS examination of apple mutant varieties

3. Discussion of a procedure to set up a trial under Mediterranean conditions

- How to involve the second location?

➢ Observation of characteristics in the second location foreseen in the CPVO protocol

35. Fruit: ground colour
35.bis <u>For Gala and Fuji mutant only</u>. Fruit: ground colour

(Bis characteristics observed in the second location)

But would significantly enlarge the size of the protocol, 'important' characteristics to be selected?

DUS examination of apple mutant varieties

3. Discussion of a procedure to set up a trial under Mediterranean conditions

- How to involve the second location?

➢ Double DUS test. Varieties would need to be distinct in a unique location, not necessarily in both locations.

Variety not D everywhere in the territory of protection, concrete examples in the agricultural sector

DUS examination of apple mutant varieties

3. Discussion of a procedure to set up a trial under Mediterranean conditions

- How to involve the second location?

  - Ongoing discussions, involving technical and legal considerations, involving examination offices and breeders
  - Clear decision rules necessary

DUS examination of apple mutant varieties

3. Discussion of a procedure to set up a trial under Mediterranean conditions

- How to involve the second location?

  - No modification in current DUS testing procedures before a decision is adopted to modify them

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DUS examination of apple mutant varieties

4. Lessons to be learned from decisions appealed in legal procedures

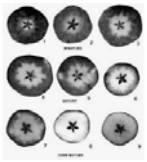
- Distinctness issues, varieties raised by mutation

  - ➢ Positive decision on Distinctness: appeal from the holder of another mutant claiming that the candidate variety is not D from his mutant variety
  - ➢ Negative decision on Distinctness: appeal from the applicant claiming that the candidate variety is D from other mutant varieties
    - ⇨ Technical considerations

DUS examination of apple mutant varieties

4. Lessons to be learned from decisions appealed in legal procedures
   - Distinctness issues, varieties raised by mutation

➢ General issue: judges like to have individual observations documented. Examples:



✓ Char. 56. Time of harvest

✓ Char. 57. Time of eating maturity

⇨ Appellant challenges that the observations have been made at the correct timing, influence on D

⇨ More measured characteristics

DUS examination of apple mutant varieties

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DUS examination of apple mutant varieties

4. Some independent thoughts submitted by a breeder 

- Group of DUS examiners to assess mutants in the EU for more objectivity
- More measurements, involvement of image analysis in order to reduce the room for interpretation
- Documentation of distinctness observed with pictures as much as possible
- Mutants candidates & reference varieties all grafted by the same nursery on the same lot of rootstocks
- Worldwide database of mutant varieties

DUS examination of apple mutant varieties

4. Some independent thoughts submitted by a breeder 

- Specialized technical questionnaire for mutants in which breeders can describe their application in relation to existing mutants
- Innovation: Plant Breeders Rights supports innovation, a mutant should bring an improvement comparted to existing mutants
- Some other characteristics could be looked at like sugar content or firmness of flesh
- Coloration of fruit 40 days before harvest

Challenges in apple DUS trial

- Conclusion

- Input from experts welcome
- Input from breeders welcome

[End of Annex and of document]