UPOV

International Union for the Protection of New Varieties of Plants

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Technical Working Party for Fruit Crops **TWF/49/11**

Forty-Ninth Session
Santiago de Chile, Chile, November 19 to 23, 2018

Original: English
Date: November 14, 2018

MATTERS RELEVANT IN DUS EXAMINATION FOR THE FRUIT SECTOR

Document prepared by the European Union

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BACKGROUND

1. The Technical Working Party for Fruit Crops (TWF), at its forty-eighth session, held in Kelowna, British Columbia, Canada, from September 18 to 22, 2017 agreed to discuss the item "Matters relevant in DUS examination for the fruit sector" at its next session (see document TWF/48/13 "report", paragraph 162).

PROJECT

2. The Community Plant Variety Office of the European Union (CPVO) is currently financing a project to harmonize the DUS testing of apple varieties in exchanging identical samples of fruits, observing them and confronting the observations. Possible differences could lead to discussions on a refinement of the wording of the characteristic, the method of observation or the methodology for the transformation of observations to notes. The result of these discussions will be used in the forthcoming discussions on the UPOV apple Test Guidelines.

Objective

3. The objective of this project is to organize an exchange between the 5 CPVO entrusted examination offices for apples, which could prepare a few identical samples of fruits (objective: 3 varieties per examination office) and dispatch them to the other examination offices. Examination offices receiving the fruits will make the observations according to their usual procedures and results could be confronted. The exercise would bring to light differences that may exist:

- In the interpretation of the characteristic
- In the method of observation
- In the methodology of transformation of observations to notes

Work done

4. The Work done:

- Dispatching examination offices observed and described the fruits before sending them in January 2018
- As soon as they were in receipt of the fruits, examination offices made the observations
- Characteristics 24 to 54 of the CPVO protocol / UPOV guideline were be observed
- Observations were communicated to the CPVO
- The CPVO compiled the results and sent them out in July 2018

Results

5. The CPVO produced an excel file, with one sheet per variety including the description made by the respective examination offices (see table in the Annex of this document). In each of these sheets, a column 'spread' was added calculating for each characteristic the maximum difference between notes attributed for QN characteristics. In case there are 3 notes difference or more, the cell appears in pink. It remains grey when there are 2 notes difference or less. Lines related to PQ characteristics are in yellow. A sheet 'Overview' was created, compiling for each variety and each QN characteristic the maximum spread there may be between

notes. The sum of these differences gives an indication on how differently a stage of expression is attributed between examination offices for each characteristic. In other words, characteristics with a lot of pink cells are reported quite differently, those with white cells are reported in a similar way.

6. For example, the reporting of characteristics 'Fruit: area of russet on cheeks' and 'Fruit: area of russet around eye basin' look very harmonized. To the opposite, the reporting of stage of expressions of characteristics 'Fruit: ratio height/diameter', 'Fruit: width of stripes' or 'Fruit: size of eye' seems to be very variable.
The following table gives a full overview of the situation for QN characteristics:

nb	Characteristic	type	Sum
24	Fruit: area of russet around eye basin	QN	**2**
25	Fruit: area of russet on cheeks	QN	**3**
26	Fruit: bloom of skin	QN	**11**
27	Fruit: greasiness of skin	QN	**14**
28	Fruit: crowning at calyx end	QN	**15**
29	Fruit: area of russet around stalk attachment	QN	**16**
30	Fruit: ribbing	QN	**17**
31	Fruit: aperture of locules (in transverse section)	QN	**20**
32	Fruit: size	QN	**23**
33	Fruit: thickness of stalk	QN	**23**
34	Fruit: diameter	QN	**25**
35	Fruit: relative area of over colour	QN	**27**
36	Fruit: firmness of flesh	QN	**29**
37	Fruit: depth of stalk cavity	QN	**30**
38	Fruit: intensity of over colour	QN	**32**
39	Fruit: height	QN	**33**
40	Fruit: width of stalk cavity	QN	**33**
41	Fruit: depth of eye basin	QN	**34**
42	Fruit: width of eye basin	QN	**34**
43	Fruit: length of stalk	QN	**38**
44	Fruit: length of sepal	QN	**41**
45	Fruit: number of lenticels	QN	**41**
46	Fruit: size of eye	QN	**42**
47	Fruit: size of lenticels	QN	**43**
48	Fruit: width of stripes	QN	**46**
49	Fruit: ratio height/diameter	QN	**47**

Discussion

7. Reasons for different reporting may be:
- Different interpretations of the characteristic
- The same observation for a given characteristic but a different methodology to transform the observations to notes
- Other reasons?

Preliminary comments

8. EU Experts remarked that an apparent lack of harmonization depends on the scale: for a characteristic with 3 stages of expression, the range of variation in the notes attributed by examination offices will be more limited.

EU Experts noted that for QN characteristics, examination offices have all their own procedures to attribute notes based on their reference varieties and the range of variation of their collection. Some experts explained that they preferably use the reference varieties from the protocol but not necessarily.

9. Experts also noted that the influence of the environment on the expression of varieties is not linear. Some varieties show less variation in the expression of their characteristics over years than others. Ideally, reference varieties should vary to the same extend as the overall collection in order to minimize variations in variety descriptions: this requires that examination offices have already observed reference varieties over time. Another possibility is also to use more than one reference variety in order to mitigate the effect of the environment.

10. Some experts prefer measurement to visual assessment, this should be foreseen in the future Test Guidelines as an alternative method of observation of characteristics.

11. The lack of harmonization in the observation of a characteristic like the ‘Fruit: ratio height/diameter’ was puzzling and experts suggested that raw data are collected in order to investigate more on differences.

Way Forward

12. The TWF is invited to comment on these results and to propose a follow-up.

[Annex follows]

ANNEX

Please see the xls version

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