

Technical Committee

TC/53/17

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**REVISION OF DOCUMENT TGP/8: PART II: SELECTED TECHNIQUES USED IN DUS EXAMINATION,
NEW SECTION: EXAMINING DUS IN BULK SAMPLES**

Document prepared by the Office of the Union

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EXECUTIVE SUMMARY

1. The purpose of this document is to report on developments concerning guidance on examining DUS in bulk samples for inclusion in a future revision of document TGP/8.

2. The TC is invited to:

(a) consider the proposed guidance for examining DUS in bulk samples as presented in the Annex to this document, for inclusion in a future revision of document TGP/8;

(b) consider whether to invite the drafter from the Netherlands to further develop the proposed guidance in the Annex to this document in order to include parameters for selecting among the approaches listed and to provide more examples with data from routine measurement of characteristics such as chemical content or 1000 seed weight;

(c) consider the amendment proposed by the drafter on the approach “Plant number”, as presented in paragraph 19 of this document; and

(d) note the plan by France to provide other examples of characteristics based on bulk samples for vegetable crops.

3. The structure of this document is as follows:

EXECUTIVE SUMMARY1

BACKGROUND2

DEVELOPMENTS IN 20162

 TECHNICAL WORKING PARTY ON AUTOMATION AND COMPUTER PROGRAMS.....2

 TECHNICAL WORKING PARTY FOR ORNAMENTAL PLANTS AND FOREST TREES.....2

 TECHNICAL WORKING PARTY FOR VEGETABLES2

 TECHNICAL WORKING PARTY FOR AGRICULTURAL CROPS3

 TECHNICAL WORKING PARTY FOR FRUIT CROPS4

ANNEX: Status on uniformity requirements in bulk characteristics

4. The following abbreviations are used in this document:

- TC: Technical Committee
- TWA: Technical Working Party for Agricultural Crops
- TWC: Technical Working Party on Automation and Computer Programs
- TWF: Technical Working Party for Fruit Crops
- TWO: Technical Working Party for Ornamental Plants and Forest Trees
- TWPs: Technical Working Parties
- TWV: Technical Working Party for Vegetables

BACKGROUND

5. The background to this matter is provided in document TC/52/18 "Revision of document TGP/8: Part II: Selected Techniques Used in DUS Examination, New Section: Examining DUS in Bulk Samples".

DEVELOPMENTS IN 2016

6. Following the invitation by the TC, at its fifty-second session, held in Geneva from March 14 to 16, 2016, the expert from the Netherlands developed draft guidance as reproduced in the Annex to this document.

Technical Working Party on Automation and Computer Programs

7. The TWC considered document TWC/34/11 (see document TWC/34/32 "Report", paragraphs 35 to 38).

8. The TWC noted that guidance for examining DUS in bulk samples would be developed on the basis of the criteria set out in document TWC/34/11, paragraph 22, and agreed with the proposal by the expert from the Netherlands to use the approach "Control of the characteristic before it is accepted in the relevant guideline".

9. The TWC also agreed that approaches "subplots" and "plant number" would be acceptable on the basis of examples and discussions in the relevant Technical Working Parties, as proposed in the Annex to document TWC/34/11.

10. The TWC noted that DNA markers could be used to assess characteristics on the basis of the existence of a reliable link between the marker and the characteristic and there was no need to develop guidance in this regard under a general guidance for characteristics observed on the basis of bulk samples.

Technical Working Party for Ornamental Plants and Forest Trees

11. The TWO considered document TWO/49/11 (see document TWO/49/25 Rev. "Revised Report", paragraphs 29 to 33).

12. The TWO noted the proposed guidance for examining DUS in bulk samples as presented in the Annex to document TWO/49/11, for inclusion in a future revision of document TGP/8.

13. The TWO considered the proposed approach to assess uniformity of individual plants for different varieties to validate the characteristic before being used in DUS examination and agreed that for vegetatively propagated ornamental plants the number of applications per crop would not be sufficient to provide over-years data from many varieties.

14. The TWO noted the reports from members on experiences with assessing chemical component characteristics and agreed on the technical difficulty and cost implications to obtain a sufficient quantity of certain chemical components to assess uniformity on individual plants.

15. The TWO agreed that characteristics assessed on the basis of bulk samples could provide complementary information for the analysis of distinctness in direct comparison of pairs of varieties for certain crops and agreed that the future guidance should set parameters for selecting among the approaches listed in the Annex to document TWO/49/11.

Technical Working Party for Vegetables

16. The TWV considered document TWV/50/11 (see document TWV/50/25 "Report", paragraphs 34 to 38).

17. The TWV considered the proposed guidance for examining DUS in bulk samples as presented in the Annex to document TWV/50/11, for inclusion in a future revision of document TGP/8.

18. The TWV received the confirmation by the drafter of the proposed guidance (Ms. Amanda van Dijk (Netherlands)), that in the paragraph reproduced below, the 3 subsamples are per plot, and proposed to read the following:

“(2015, d) Subplots.

“Making use of subplots in order to indicate the uniformity of the characteristic. Only one observation per plot, but there are more subplots in the trial. An example is dry matter content in Onion. There are three subsamples in the trial. It is possible to work with 3 subsamples per plot for an indication of uniformity. (see: TGP/8.6).”

19. The TWV was not in favor of reducing the number of plants as proposed in the guidance and the paragraph reproduced below, because it was important to have the full range of expression of variation:

“(2015, i) Plant number.

“Use a different number of plants for this characteristic to be tested in the guideline that is in congruence with the nature of the characteristic. For example: in a certain guideline it is mentioned that 60 plants have to be judged for uniformity. If the characteristic involved is not suitable for judgment of 60 plants, one can propose a lower number of plants for the relevant characteristic for example 5 plants.”

20. The TWV noted that the proposed guidance did not present enough examples for examining DUS in bulk samples. Therefore, the TWV requested the drafter to further elaborate on the proposal and to include more examples, as requested by the TC, at its fifty-second session. It noted that the expert from France planned to provide other examples of characteristics based on bulk samples for vegetable crops.

Technical Working Party for Agricultural Crops

21. The TWA considered document TWA/45/11 (see document TWA/45/25 “Report”, paragraphs 33 to 36).

22. The TWA considered the proposed guidance for examining DUS in bulk samples as presented in the Annex to document TWA/45/11, for inclusion in a future revision of document TGP/8.

23. The TWA noted that the TC had agreed to invite the Netherlands to develop guidance, with the inclusion of examples, for examining DUS in bulk samples, and agreed that the following criteria proposed by the TC were a good basis for inclusion in a future revision of document TGP/8 (see document TWA/45/11, paragraph 22):

- (a) “the characteristic should fulfill the requirements of a characteristic, as set out in the “General Introduction to the Examination of Distinctness, Uniformity and Stability and the Development of Harmonized Descriptions of new Varieties of Plants” (see document TG/1/3, Section 4.2.1);
- (b) “there should be knowledge of the genetic control of the characteristic;
- (c) “the suitability of the characteristic should be validated through an initial assessment of uniformity on individual plants;
- (d) “information on plant-by-plant variation and differences between growing cycles should be provided (data from routine measurement of the characteristic from different years);
- (e) “a full description of the method of assessment should be provided;
- (f) “states of expression should be based on existing variation between varieties considering environmental influence.”

24. The TWA agreed with the TWV that the proposed guidance did not present enough examples for examining DUS characteristics on the basis of bulk samples and that the drafter should be requested to further elaborate the proposal including more examples, as requested by the TC, at its fifty-second session. The TWA agreed that further development of guidance on bulk samples should be subject to the availability of appropriate examples with data from routine measurement of characteristics such as chemical content or 1000 seed weight.

Technical Working Party for Fruit Crops

25. The TWF considered document TWF/47/11 (see document TWF/47/25 "Report", paragraphs 33 and 34).

26. The TWF considered the proposed guidance for examining DUS in bulk samples, as presented in the Annex to document TWF/47/11, for inclusion in a future revision of document TGP/8. The TWF agreed with the TWV and the TWA that the proposed guidance did not present enough examples for examining DUS in bulk samples, and therefore requested the drafter to further elaborate on the proposal and to include more examples, as requested by the TC at its fifty-second session.

27. *The TC is invited to:*

(a) consider the proposed guidance for examining DUS in bulk samples as presented in the Annex to this document, for inclusion in a future revision of document TGP/8;

(b) consider whether to invite the drafter from the Netherlands to further develop the proposed guidance in the Annex to this document in order to include parameters for selecting among the approaches listed and to provide more examples with data from routine measurement of characteristics such as chemical content or 1000 seed weight;

(c) consider the amendment proposed by the drafter on the approach "Plant number", as presented in paragraph 19 of this document; and

(d) note the plan by France to provide other examples of characteristics based on bulk samples for vegetable crops.

[Annex follows]

STATUS ON UNIFORMITY REQUIREMENTS IN BULK CHARACTERISTICS

Document prepared by an expert from the Netherlands

1. From the discussions in the TWPs in 2015 and in the TC it is clear that there is not much room to deviate from the standard way to observe characteristics in order to establish if the Uniformity requirements are fulfilled.

2. From the options that were proposed in 2015 (see Annex I in documents TWA/44/17, TWC/33/17, TWF/46/17, TWO/48/17 and TWV/49/17) only three approaches (a, d and i) were deemed acceptable by the members of all TWP's. Unfortunately no data were available to further study the pros and cons of these approaches. Therefore it is proposed to accept at this moment only approach a. In future other approaches can be re-discussed.

3. Acceptable approach:

(2015, a) Control of the characteristic before it is accepted in the relevant guideline.

Before a new characteristic is accepted as a bulk characteristic within a UPOV Test Guidelines, the uniformity is checked for a significant number of varieties using a plant by plant method for the required number of plants in the relevant Test Guidelines. In this way it is observed that the characteristic in itself is suitable as a UPOV characteristic on the basis that the uniformity may be checked.

4. Approaches that may be acceptable in future, if data are available and the method is discussed and accepted in the relevant Technical Working Party:

(2015, d) Subplots.

Making use of subplots in order to indicate the uniformity of the characteristic. Only one observation per plot, but there are more subplots in the trial. An example is dry matter content in Onion. There are three subsamples in the trial. It is possible to work with 3 subsamples per plot for an indication of uniformity (see: TGP/8.6).

(2015, i) Plant number.

Use a different number of plants for this characteristic to be tested in the guideline that is in congruence with the nature of the characteristic. For example: in a certain guideline it is mentioned that 60 plants have to be judged for uniformity. If the characteristic involved is not suitable for judgment of 60 plants, one can propose a lower number of plants for the relevant characteristic for example 5 plants.

5. Item for Re-discussion

In line with the rapid development of DNA techniques, an approach where the uniformity of an application is judged by judging the DNA pattern for the required number of plants in the relevant guideline is well feasible. Therefore it is proposed to re-consider this option as a way to establish the suitability of bulk samples in a characteristic.

[End of Annex and of document]