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INTERNATIONAL UNION FOR THE PROTECTION OF NEW VARIETIES OF PLANTS

Geneva

TECHNICAL COMMITTEE

Forty-Ninth Session
Geneva, March 18 to 20, 2013

REVISION OF DOCUMENT TGP/7: GUIDANCE ON NUMBER OF PLANTS TO BE EXAMINED (FOR DISTINCTNESS)

Document prepared by the Office of the Union

1. The purpose of this document is to present a proposal for a new guidance note to be included in TGP/7, section 4.1.4 on number of plants to be examined (for distinctness).

2. The following abbreviations are used in this document:

CAJ:	Administrative and Legal Committee
TC:	Technical Committee
TC-EDC:	Enlarged Editorial 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
TWV:	Technical Working Party for Vegetables
TWPs:	Technical Working Parties

BACKGROUND

3. The Technical Committee (TC), at its forty-eighth session, held in Geneva, Switzerland from March 26 to 28, 2012, agreed with the proposal made by the Technical Working Party for Agricultural Crops (TWA) (see document TC/48/18, Annex I, paragraph 2) to prepare guidance on:

(a) the number of plants in the trial (see TGP/7/3, Annex 1, Section 3.4)
(b) the number of plants/parts of plants to be examined for the assessment of distinctness (see TGP/7/3, Annex 1, Section 4.1.4)
(c) the Number of plants/parts of plants to be examined for the assessment of uniformity (see TGP/7/3, Annex 1, Section 4.2)

4. The TC at its forty-eighth session, discussed the number of plants to be examined on the basis of a presentation by Mrs. Beate Rücker, a copy of which is presented in Annex I to this document. The TC agreed that guidance for points (a) and (c) would be considered in relation to document TGP/7, GN7 "Quantity of plant material required". With regard to the number of plants/parts of plants to be examined for the assessment of distinctness, the TC agreed that the information provided in the presentation by Mrs. Beate Rücker (Germany) on the number of plants to be examined, under agenda item “Discussion on experiences of members of the Union on measures to improve the efficiency and effectiveness of DUS testing”, would provide a good basis for such guidance. The TC agreed that Mrs. Beate Rücker (Germany), in conjunction

with the Office of the Union, should be invited to prepare draft guidance for consideration by the TWPs in 2012, on the above basis (see document TC/48/22 “Report on the Conclusions”, paragraphs 41 and 42).

5. The draft guidance prepared by Mrs. Rücker was presented to the TWPs, at their 2012 sessions in documents TWA/41/12, TWC/30/12, TWF/43/12, TWO/45/12, and TWV/46/12.

6. The comments of the TWPs on those documents were as follows:

ANNEX II		
General	The TWV agreed with the proposed guidance but highlighted that, in the case of measurements and statistical approaches, the number of plants should be the same for candidate and reference varieties (see document TWV/46/41 “Report”, paragraph 15).	TWV
	The TWO requested to take into consideration that the minimum number of plants should match the number necessary to assess the characteristic requiring the greatest number of plants (see document TWO/45/37 “Report”, paragraph 13)	TWO
paragraph 3	The TWA and the TWV agreed to correct Annex II, paragraph 3 from “qualitative” to “quantitative” (see document TWA/41/34 “Report”, paragraph 16 and document TWV/46/41 “Report”, paragraph 14).	TWA, TWV
paragraph 4	The TWC considered the information provided in document TWC/30/12 and recommended the following changes in paragraph 4 of Annex II (see document TWC/30/41 “Report”, paragraph 14): - The first sentence to read: The following general principles should be taken into account; - The last sentence to read: In that case it may be possible to include in the trial a lower number of plants for varieties with a clear difference (varieties in the variety collection), provided that uniformity does not have to be assessed for these varieties.	TWC
	The TWO agreed that the heading of paragraph 4, Annex II of document TWO/45/12 should read: “Considerations for the number of plants to be observed for distinctness in the case of QN (in some cases PQ) characteristics” (see document TWO/45/37 “Report”, paragraph 12)	TWO
last paragraph	The TWA agreed that the number of plants for candidate varieties and varieties to be compared with the candidate varieties, as set out in the last paragraph of Annex II to document TWA/41/12, needed further clarification with regard to similar varieties of common knowledge. In particular, it was recalled that candidate varieties would also need to be considered as potential similar varieties of common knowledge (see document TWA/41/34 “Report”, paragraph 17).	TWA
	The TWF considered document TWF/43/12 and received a presentation by an expert from Germany on the “Number of Plants to be examined”. The TWF noted the comments on the Guidance Note to be included in TGP/7, Section 4.1.4, contained in Annex II. The TWF highlighted that the number of plants in the variety collection depended on how similar the candidate variety was to the reference varieties and whether it was clear and easy to determine distinctness. (see document TWF/43/38 “Report”, paragraph 11)	TWF

7. In addition, the TWO at its forty-fifth session in Jeju, Republic of Korea, requested further clarification on the number of plants required for description for possible inclusion in the future revision of TGP/7 (see document TWO/45/37 “Report”, paragraph 97).

Comments of the Enlarged Editorial Committee (TC-EDC) in 2013

8. The TC-EDC at its meeting held in Geneva on January 9 and 10, 2013, considered document TC-EDC/Jan 13/4 Rev..

9. The comments of the TC-EDC on document TC-EDC/Jan 13/4 Rev., were as follows:

General	The TC-EDC noted that the Test Guidelines provide guidance on the number of plants of the candidate variety to be included in the ground trial and do not make reference to the number of plants of varieties of common knowledge. Therefore, in addition to including the guidance in document TGP/7: "Development of Test Guidelines", it was suggested that consideration should also be given to including the guidance in a future revision of document TGP/9: "Examining Distinctness".
Paragraph 5.	To read: "If two varieties are very similar it is important to ensure the same precision of the records for both varieties. The number of plants indicated in the Test Guidelines applies to both the candidate variety and the similar variety of common knowledge. The required precision of records depends on the size of the difference between the candidate variety and the varieties of common knowledge. If the difference between two varieties to be compared is very clear, based on variety descriptions, it may be possible to include in the trial a lower number of plants for the variety of common knowledge, provided that uniformity does not have to be assessed for that variety, i.e. varieties in the variety collection."

10. Annex II to this document contains proposed text for a guidance note to be included in TGP/7, section 4.1.4, on the basis of comments by the TWPs at their sessions in 2012, and the TC-EDC at its meeting held in Geneva on January 9 and 10, 2013. The amendments to the text considered by the TWPs at their sessions in 2012 are indicated by highlighting and strikethrough for deletions and highlighting and underlining for additions.

11. The TC is invited to consider Annex II to this document as the basis for the inclusion of a Guidance Note in a future revision of document TGP/7, Section 4.1.4, and in a future revision of TGP/9: "Examining Distinctness".

[Annexes follow]

Experiences of Members of the Union in Measures to Improve the Efficiency and Effectiveness of DUS Testing

Number of Plants to be Examined

Beate Rücker, Germany

Geneva, March 26, 2012

Number of plants specified in the Test Guidelines

(see TGP/7/3)

(a) Number of plants in the trial (Annex 1, Section 3.4)

(b) Number of plants/parts of plants to be examined for the assessment of distinctness (Annex 1, Section 4.1.4)

(c) Number of plants/parts of plants to be examined for the assessment of uniformity (Annex 1, Section 4.2)

TC agreed that guidance should be drafted for these numbers of plants for inclusion in a future revision of TGP/7.

(a) Number of plants in the trial

- plot size in order to ensure a typical expression of the characteristics in the varieties – biological and agronomic elements
- number of plants to be observed for the identification of the typical expression taking into account variation between plants (within the limits of a uniform variety) – **distinctness**, **variety description**, **stability**
- number of plants to be observed for the assessment of **uniformity** under consideration of the genetic structure of the variety

Limiting element depends on the crop, in general the following number of plants apply:

Trial ≥ Uniformity ≥ Distinctness

(b) Number of plants/parts of plants to be examined for the assessment of distinctness

- Aim is the observation of the "typical" expression of characteristics in the given environment
- Critical element is the precision of the observed (mean) expression of the varieties to be compared – important for the consideration what difference is a clear difference

QL: Low number of plants sufficient – not limiting for the number of plants in the trial, definition in TG not crucial for harmonisation

QN: Precision of records influenced by sample size - important for candidate and similar variety – *guidance necessary for harmonisation*

Considerations for the number of plants to be observed for distinctness in case of QN (PQ)

Sample size important because of the relation between SD and LSD. Variation within the variety has to be taken into account for defining a clear difference (by experts judgment or exact statistics).

Observation on the plot as a whole (VG/MG)
– indicated number to be considered as minimum number

Observation on subsample from plot (VG/MG)
– indicated number to be considered as minimum number

Observations on individual plants (VS/MS)
– number of plants important for precision of record
– specific number to be indicated

Considerations for the number of plants for candidate varieties and varieties to be compared with

If uniformity has not to be observed for similar varieties of common knowledge (reference varieties), it can be considered to include in the trial a lower number of plants for the reference varieties.

***Example*: Grapevine** *(German Protocol)*

Number of plants/parts of plants for distinctness: 4 plants
Number of plants/parts of plants for uniformity: 8 plants

Number of plants in the trial:
8 plants for candidate varieties
4 plants for varieties in the variety collection

Remark: Some reference varieties are maintained with less than 4 plants in the permanent collection (sufficient as long as there are very big differences to all candidates). If a candidate is very similar to one of those reference varieties, the latter will be re-planted with 4 plants in the same age as the candidate for direct comparison.

(c) Number of plants/parts of plants to be examined for the assessment of uniformity

- Genetic structure of variety, features of propagation
- Uniformity Method (off-types, variance)

Off-types: Population standard (consideration error alpha and beta)
Not relevant for number of plants for reference varieties

Variance: Variance influenced by sample size (specific number to be defined for harmonisation)
Relative variance methods, incl. COYU (number of plants relevant for candidates and reference varieties)

Thank you!

[Annex II follows]

ANNEX II

PROPOSED TEXT FOR GUIDANCE NOTE TO BE INCLUDED IN TGP/7, SECTION 4.1.4

1. The observation of the '*typical'* expression of characteristics of a variety in a given environment is essential for the assessment of distinctness. The precision of the observed (mean) expression of the varieties to be compared is a critical element for the consideration of whether a difference is a clear difference.

2. In the case of qualitative characteristics, a low number is sufficient to identify the expression of a variety. In general, the number of plants for the assessment of distinctness is not a limiting factor for the number of plants in the trial. Thus, the number of plants for the assessment of qualitative characteristics is not essential for harmonization.

3. In case of quantitative ~~qualitative~~ characteristics (and pseudo-qualitative characteristics), the variation within the variety has to be taken into account for defining a clear difference (by expert judgment or exact statistics). Due to the relation between variation within the varieties and the required difference to be considered as a clear difference for the establishment of distinctness the precision of records is important. The precision of records (mean values) is influenced by the sample size. Therefore, the appropriate sample size should be indicated in the Test Guidelines for the purpose of harmonization.

4. The following general principals should be taken into account:

*Considerations for the number of plants to be observed for distinctness in case of QN (*in some cases *PQ)*

(a) Observation on the plot as a whole (VG/MG)
– the indicated number should be considered as minimum number

(b) Observation on subsample from plot (VG/MG)
– the indicated number should be considered as minimum number

(c) Observations on individual plants (VS/MS)
– the number of plants is important for precision of record
– the specific number should be indicated

Considerations for the number of plants for candidate varieties and varieties to be compared with the candidate varieties

5. If two varieties are very similar it is important to ensure ~~a similar~~ the same precision of the records for both varieties. The number of plants indicated in the Test Guidelines applies to both the candidate variety and ~~to~~ the similar variety of common knowledge ~~as well~~. The required precision of records depends on the size of the difference between the candidate variety and the varieties of common knowledge. ~~is not that crucial~~ If the difference between two varieties to be compared is very clear, based on variety descriptions~~, In that case~~ it may be possible to include in the trial a lower number of plants for the ~~similar~~ variety ~~ies~~ of common knowledge ~~(varieties in the variety collection)~~, provided that uniformity does not have to be assessed for that variety ~~these varieties~~, i.e. varieties in the variety collection.

[End of Annex II and of document]