



TWA/35/3 Add.

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INTERNATIONAL UNION FOR THE PROTECTION OF NEW VARIETIES OF PLANTS
GENEVA

TECHNICAL WORKING PARTY FOR AGRICULTURAL CROPS

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TGP DOCUMENTS

ADDENDUM

Document prepared by the Office of the Union

1. This document presents comments made by the Technical Working Party for Vegetables (TWV), at its fortieth session, held in Guanajuato, Guanajuato State, Mexico, from June 12 to 16, 2006 and by the Technical Working Party on Automation and Computer Programs (TWC) at its twenty-fourth session, held in Nairobi, Kenya, from June 19 to 22, 2006, on the draft TGP documents to be considered by the Technical Working Party for Agricultural Crops (TWA) at its thirty-fifth session, to be held in Beijing, China, from July 3 to 7, 2006.

(a) TGP documents to which the Technical Committee has given highest priority*TGP/4 Constitution and Management of Variety Collections*

2. The TWV discussed document TGP/4/1 Draft 7 and agreed to propose the following:

- 3.1.2.2.2 to consider whether to add a recommendation that the breeder should be informed of the supply of parent lines, submitted as a part of the examination of a candidate hybrid variety, to other variety collectors

3. The TWC noted document TGP/4/1 Draft 7 introduced by the Office of the Union. In reply to a question from the expert from the Netherlands about the possible use of molecular markers for the verification in management of variety collections, it was clarified that the situation in UPOV concerning the possible use of molecular markers is set out in documents TC/38/14 -CAJ/45/5 and TC/38/14 Add.-CAJ/45/5 Add., which presented the proposals developed in the *Ad hoc* Crop Subgroups, the recommendations of the BMT Review Group concerning those proposals and the opinion of the TC and the CAJ regarding the recommendations of the BMT Review Group. The TWC made no further comments in respect to document TGP/4/1 Draft 7.

TGP/9 Examining Distinctness

4. The TWV and TWC discussed document TGP/9/1 Draft 7 and agreed to propose the following:

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| 1.4 | Check the positioning of the box | TWC |
| 2.3.1.3 | To delete “S” within the parenthesis of the last sentence | TWC |
| 2.3.3.2 | to read “as a general rule, qualitative characteristics are not influenced by the environment” | TWV |
| 2.3.3.2 | To keep “less likely to be”, even if it cause divergence with the General Introduction | TWC |
| 2.3.3.3 | If possible to provide further guidance for the use of QN and PQ characteristics as grouping characteristics | TWC |
| 2.4.2 | The TWC considered that discrepancies between the characteristics of the variety and the appearance of the variety in the photograph should not be basis for rejecting the application for the variety. That situation of rejection may also be the case for other information provided in the Technical Questionnaire for which an explanation, as presented in the highlighted text of section 2.4.2, has not been developed. Therefore the TWC proposed that the additional text of paragraph 2.4.2 read as follows:

“If such a photograph is required by the testing authority, the breeder should follow the guidelines as close as possible. However, if despite the breeder’s endeavor, the resulting photograph does not meet the required standards, this should | TWC |

- not be a basis for rejecting the application”.
- 2.6.1 to explain that: TWV
- (a) the combined phenotypic distance / GAIA approach is used predominantly with data obtained from the first growing cycle;
 - (b) the differences for individual characteristics used to calculate the combined phenotypic distance should be meaningful; and
 - (c) the combined phenotypic distance / GAIA approach is used to identify similar varieties, but distinctness against similar varieties is then on a characteristic-by-characteristic basis.
- 2.6.1 General The wording is confusing; the section is aimed to be an introduction to combined phenotypic distance approach of selecting varieties for the growing trial but the first two paragraphs explain the characteristic by characteristic approach to testing for distinctness. TWC
- It is too much GAIA oriented and not an introduction to phenotypic distance in general.
- To create a new section:
- 2.6 COMPARISON OF VARIETY DESCRIPTIONS
 - 2.6.1 Introduction (to be developed)
 - 2.6.2 Characteristic-by-characteristic approach (to be developed)
 - 2.6.3 Combined Phenotypic Distance
 - 2.6.4 Methods
 - 2.6.4.1 GAIA (applicable for 2.6.2 and 2.6.3)
 - 2.6.4.2 Other Methods
- 2.6.1.2 To be reworded as follows: TWC
- “2.6.1.2 In the characteristic-by-characteristic/minimum distance approach, at least as a first step, differences between varieties which are less than the minimum difference for a characteristic do not contribute towards distinctness.”
- 2.6.1.5 The paragraph is contradictory. It first states that the parameters for the combined phenotypic distance are determined by the DUS expert and later affirm that it provide an objective basis for decisions of distinctness. TWC
- 2.6.1.6 To replace the word “optimizes” by “helps” and “distinguish” by “identify/select” TWC
- 2.6.1.7 to add “and vegetatively propagated” after “self-pollinated” TWV
- 2.6.2.2 To replace “ANOVA and multiple range tests” by “Mahalanobis and other multivariate methods” TWC
- 4.2.3(a) To add “(PQ)” to Pseudo-qualitative characteristics TWC

4.2.3(b)	Measurements can be helpful even in vegetatively propagated and self-pollinated varieties when there is variability due to environmental effect, e.g. different locations/years.	TWC
4.2.3 (b), (c) and (d)	To have the same structure as the previous subparagraphs (i.e. title, followed by explanation in other line)	TWC
4.3	it was agreed that Section 4.3 should be amended in accordance with the following changes to the schematic summary in 4.3.2: (a) “G” to refer to observation of a group of plants or part of plants and to explain that “G” observations could not be used for the assessment of uniformity by statistical methods; (b) “S” to refer to observation of (at least) the number of single, individual plants or parts of plants recommended in Section 3.5 of the Test Guidelines and to explain that the individual plant data obtained could be used for the assessment of uniformity by statistical analysis; (a) box G1 to show a general overall observation of the plot and not individual plant observations; (c) box G2 to indicate more than one measurement; and (d) to add a new box to the “S” illustration, corresponding to the existing box G1 and indicating that the number of plants observed would correspond to the number of plants specified in Section 3.5 of the Test Guidelines	TWV
4.4	to include reference to taste, flavor and smell for “V”	TWV
5.2.1.1 (b)	to amend the term “combination of characteristics” to avoid confusion with “combined characteristics” as defined in the General Introduction, Section 4.6.3, i.e. where the combination is biologically meaningful, for example the ratio of length to width.	TWV
5.2.1.1 (b)	To delete “or a combination of characteristics”	TWC
5.2.3	It is difficult to identify the titles in pages 24, 25 and 26, making difficult to follow the content.	TWC
5.2.3.14	final sentence: to delete “when based solely on notes”	TWV
5.2.4.9	To check whether the reference in the last sentence should be to paragraph 5.2.4.10 instead of 5.2.4.12	TWC
5.2.4.13	To remove the words “for cross-pollinated varieties” - it is unnecessary	TWC
5.2.4.14	To delete the word “statistical”	TWC
5.2.4.21	to accept the text	TWV
5.2.4.21	To read “5.2.4.21 There are a range of other statistical methods in use in agricultural research that can be used in the examination of distinctness, provided their statistical assumptions are met.”	TWC

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| 5.3 | To explain the reasons for the different order of the methods of observation in the different boxes. | TWC |
| 5.4.2
General | The TWC has little experience in the use of phenotypic distance for the assessment of distinctness and therefore is not in the position to make comments on this section. However, the TWC acknowledge the use of phenotypic distance as one of a number of methods for selecting varieties for the growing trial as well as for organizing the growing trial and would like further clarification in the form of TWC papers from experts on the use of these methods for the assessment of distinctness in the growing trial. The TWC noted that to-date it has looked at determining DUS characteristic by characteristic at the behest of UPOV and that it welcomed the opportunity to investigate the use of combinations of characteristic, both for distinctness and for uniformity testing. It also commented that it was not being given the full guidance on when the phenotypic distance method is to be used and when it is not to be used. | TWC |
| 5.4.2.1 | to use Case 1 and Case 2 as examples and to add an example with a candidate and similar variety with the same notes for length and for width, but with a difference for the combined characteristic width / length ratio | TWV |
| 5.4.2.1 | To explain what is intended to illustrate with each of the examples and to clarify that they are not related to GAIA. | TWC |
| 5.4.2.2 | to be amended to reflect the comments made above in respect of Section 2.6.1. | TWV |
| 5.4.2.2.1.6 | To delete the last sentence. | TWC |
| 6.5 | to accept the text “panels of” | TWV |

TGP/10: Examining Uniformity

5. The TWV and TWC discussed document TGP/10/1 Draft 4 and agreed to propose the following:

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| 2.1 | To clarify that the environmental variation has two components; the environmental component and the observer/technical component. | TWC |
| 3.3 | to explain the cases in cross-pollinated varieties where uniformity is assessed for some characteristics on the basis of off-types and standard deviations, i.e. any off-type plants are identified and then standard deviations are applied (disregarding off-type plants). | TWV |
| 4.2.4.2 | The combination of small differences on individual characteristics to determine off-types is not in consistency with the characteristic by characteristic approach used for the | TWC |

- assessment of distinctness.
- 4.2.4.3 The penultimate sentence to read: “.....For example, a plant does not belong to the species of the candidate variety may not be considered not to be an off-type and might be disregarded...” TWC
- 4.2.5.1 the TWV agreed that Version 2 should be retained, whilst noting that the ISF representatives preferred Version 1. TWV
- 4.3 to explain that measurements might be used to identify off-types where, for example, the observations were done at different times (e.g time of flowering), but to explain that the use of measurements would reflect off-types which could be observed visually. TWV
- 4.4 To include the definition of population standard and acceptance probability in Section 3: Statistical Terms TWC
General
- 4.4.1.1 To read as follows (additions are underlined, deletions are strikethrough): TWC
- 4.4.1.1 The General Introduction (Chapter 6: Section 6.4.1.3) explains that “The acceptable number of off-types tolerated in samples of various sizes is often based on a fixed “population standard” and an “acceptance probability”. The “population standard” can be expressed as the maximum percentage of off-types to be accepted if all individuals of the variety could be examined. The probability of correctly accepting ~~that a variety is as~~ uniform a variety with the population standard of off-types is called the “acceptance probability”.
- 4.4.1.2 to introduce a specific paragraph to explain the higher off-type tolerance for inbred plants in hybrid varieties TWV
- 4.4.1.3 To include that care is needed when choosing the sample size in order to produce a good test. TWC
and
- 4.4.1.4
- 4.5 to correct the cross-reference to 4.4.1.4 TWV
- 5.2 To clarify whether off-types are removed for the calculations for COYU. TWC
General
- 5.2.1.2 Second sentence, to replace “variations” by “variation”. TWC
- 5.2.1.4 To include information on the $1.6 \times$ variance method in TGP/8, to remove the reference to long term LSD and to add mention of the $1.26 \times$ standard deviation method in 5.2.1.4 as the alternative name for the $1.6 \times$ variance method. TWC

(b) Other TGP Documents

TGP/8: Trial Design and Techniques Used in the Examination of Distinctness, Uniformity and Stability

6. The TWV agreed that, as a result of its late availability, it would not be appropriate to discuss document TGP/8/1 Draft 4 at the session. It was agreed that written comments should be sent to the Office of the Union by the end of July.

7. The TWC considered document TGP/8/1 Draft 4 and agreed the following changes:

Table of content	To have upper case in the first word only in the titles of the following sections: PART I: 2.5; 3.4.3; 1.1.8.1; 1.1.8.2; PART II: 3.1.3; 3.1.4; 3.2.9 and 3.2.9.1
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PART I

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| 2.2.2 | To add a paragraph to explain the notion of independence from the statistical point of view, which may differ from the one used by crop experts in DUS testing. |
| 2.2.2.2 | To replace “grown” by “planted/sowed” and to delete “usually considered to be” |
| 2.2.2.3 | To read as follows (additions are underlined, deletions are strikethrough):
“2.2.2.3 For some perennial crops, for example in perennial ryegrass, the age of the plants may significantly influence the expression of characteristics of varieties in subsequent years. In such cases, it is appropriate to observe two independent growing cycles in the form of two separate plantings.”
“NEW However, in some other perennial vegetatively propagated crops <u>which are expensive and slow to establish</u> , for example fruit trees, the two independent growing cycles can be achieved by examining the same plants over two successive years.” |
| 2.2.2.5 | To read as follows (additions are underlined):
“2.2.2.5 Where two growing cycles are conducted in the same year and at the same time, a suitable distance or a suitable difference in growing conditions between two locations may <u>under certain circumstances</u> satisfy the requirement for independence.” |
| 2.2.2.6 | To read as follows (additions are underlined):
“2.2.2.6 Where the two growing cycles are in the same location and the same year, a suitable time period between plantings may <u>under certain circumstances</u> satisfy the requirement for independence.” |
| 2.2.3 | To format Section 2.2.3.1 in the same way as section 2.2.3.2 for clarity. |
| General | To check the cross references in the whole section 2.2.3. |
| 2.2.3.1.3 | To delete the last sentence. |
| 2.2.3.2 (c) | The penultimate sentence of the second paragraph to read as follows (additions are underlined, deletions are strikethrough):
For example, the COYD criterion was <u>tested</u> developed for combining on data over different years and not <u>tested on</u> for combining data from different locations. |

- 2.4
General To consider whether the quotation of TGP/9 can be replaced by cross references.
- 2.5.1.1 To replace “plots” by “plant pots” at the end of the second sentence.
- 2.5.2.1 The first sentence to read as follows (additions are underlined, deletions are strikethrough): “In deciding on trial layout, it is important that local variation ~~is~~ in conditions are controlled.
- 2.5.3.2 The second sentence to read as follows (additions are underlined, deletions are strikethrough): “For example, if tall varieties are planted next to short ones there could be a negative influence of the tall ones ~~on~~ interfering with the short ones and a positive influence in the other direction.”
- 2.6 The first sentence of the first paragraph to read as follows (additions are underlined): “This section describes a number of concepts that are relevant when designing growing trials for which distinctness and/or uniformity are to be assessed by statistical analysis of the growing trial data.”
- 2.6.1
General To explain that the acceptance of H₀ is different for distinctness than for uniformity.
- New paragraph before
2.6.1.4 “Note that if the null hypothesis is rejected for distinctness, this leads to the conclusion that the candidate variety is distinct and, hence may lead to the acceptance of that candidate variety.
- 2.6.1.4 On the other hand, if the null hypothesis is rejected for uniformity, the candidate variety is considered not uniform and this leads to the rejection of that candidate variety.
- 2.6.1.3 The penultimate sentence to read as follows (additions are underlined, deletions are strikethrough): “. If the absolute value test statistic is not greater than its chosen critical value, the null hypothesis H₀ is accepted.”
- 2.6.1.7 The last sentence to read as follows (additions are underlined): “The Crop Expert can reduce the risk of making a type II error by increasing the precision e.g. by increasing the number of replicates and reducing the random variability by choice of number of plants per plot (or sample size), by controlling local, unwanted or nuisance variation through careful choice of experimental design, and improving the way measurements/observations are made and so reducing observer error.
- 2.6.3
General To amend paragraph numbering.
- 2.6.3.1 To move the arrow of the diagram to the right side.
- 2.6.4.1 In the fourth sentence to replace “unbalances” by “partially balanced”.
- 3.1 To number the last paragraph
- 3.2.3 and
3.2.4 Are incomplete paragraphs
- 3.3.1.1 To add bullet points to the list of assumptions of variance methods and to delete “and additivity of year and variety effects for COYD”, and to change “involve randomisation” to “involves randomisation”.

- 4 The TWC considers that this section provides useful information for crop experts and therefore it should be kept in TGP/8. However it has no objection to move Section 4 to other part of TGP/8 if necessary.

PART II

- 1.1 The TWC agreed to modify the section in reply to the comments raised by the TWPs.
- 2 It is necessary to specify the type of LSD to which this section refers to, e.g. within year/cycle LSD. The TWC does not have experience with this technique and it needs advice from other TWP's on the detail to be included in this section.
- 3.1 To replace "criterion" by "criteria" in the title of the section.
- 3.1.1.1 To replace "variations" by "variation" in the third sentence.
- 3.2 To replace explain that a reference variety is an established variety which has been included in the growing trial.
- 3.3 General The TWC considered that TGP/8 should include recommendation on the probability level which can be prepared on the basis of document TWC/23/10 plus the comments of that document from the other TWPs or a reference to TWC/23/10.
- 3.3 Change the title to read "Schemes used for the application of COYD and COYU"
- 5 To reword the introduction in line with the comments made on Section 2.6.1.6 of TGP/9.
- 5.1.1 To replace "distinctness" by "differences" in the first sentence and to do the same where relevant throughout the document, except where referring to "distinct-plus", and to put species names in italics throughout.
- 5.1.2 To replace "distinct" by "different" in the first sentence and to do the same where relevant throughout the document.
- 5.1.3 To add a sentence to clarify that the weighting can be used to nullify the apparent difference.
- 5.2.2 To delete "e" and to make reference to the proper section.
- 5.2 To be renumbered and to change title word "informatin" to "information"
- 5.2.1 "Weighting of characteristics": To clarify that for a given characteristic the matrix is fixed and that it is changed only when there is a good reason and with the agreement of the crop experts and the breeders. To explain that the weightings are selected in order to work always on the safe side. To consider simplifying the formula for weighting.
- 5.2.1.2 In the second sentence to replace "its expertise" by "his expertise".
- 5.2.1.6 To refer to the matrix on page 120 as "Weighting matrix "shape of ear"".
- 6.2.2 To make changes to formulae to insert words "variance components due to" after each variance symbol
- 6.3.1.1 To verify the text of the formula.

TGP/12 Section 1 Special Characteristics: Characteristics expressed in response to external factors

8. The TWV discussed document TGP/12/ Section 1 Draft 3 and agreed to propose the following:

- 1.3 Table (d) (ii) text in square brackets to read “[in general, tolerance is not a suitable characteristic for DUS purposes]”
- 2.3.2 paragraph before “Tolerance” to be deleted. Definition of tolerance to read “Tolerance is the ability of a plant variety to endure biotic stress (including disease) or abiotic stress, without serious consequences for growth, appearance and yield.” Title of Section 2.3 to be amended accordingly.

TGP/13: Guidance for New Types and Species

9. The TWV discussed document TGP/13/1 Draft 6 and agreed to propose the following:

- 2.3 experts from the European Community, in conjunction with experts from the Netherlands, to draft a section on the process for developing descriptions where the variety is the first of the species to be examined for DUS by any member of the Union.

10. The TWC did not have sufficient time to examine document TGP/13/1 Draft 6.

TGP/14 Section 2: Glossary of Technical, Botanical and Statistical Terms Used in UPOV Documents: Botanical Terms

Plant shapes (including hair types)

11. The TWV discussed document TGP/14.2.1(&.2) Draft 5 and agreed to propose the following:

- Section II the TWV expressed concern at the replacement of single overall shape characteristics by a number of characteristics describing the individual components of shape. In particular, it was agreed that a characteristic describing the overall shape was important for variety description purposes. Therefore, it proposed that both approaches should be acceptable. However, it considered that, where an overall shape characteristic was included in the Test Guidelines, it would be worthwhile considering the inclusion of charts such as that in section 2.2, Examples 4 and 5 in the explanations in Chapter 8.

In order to consider the matter further, it was agreed that an exercise should be undertaken. Experts from Germany and France will provide photographs of up to 50 onion varieties and experts from France, the

Netherlands and South Africa will provide photographs of up to 50 varieties of *Cucurbita maxima* to the Office. Selected photographs will then be circulated to the TWV, who will be invited to classify the varieties according to characteristics for overall shape, as contained in the Test Guidelines, and according to components of shape according to the proposals in TGP/14.

Section IV it was agreed that, for the purposes of translation, it would be preferable to use non-botanical terms e.g. “kidney-shaped” rather than “reniform”.

12. Further written comments were also invited to be sent to the Office by the end of November 2006.

13. The TWV agreed that Sergio Semon (European Community) should participate in the TGP14 subgroup on behalf of the TWV.

14. The TWC did not have sufficient time to examine document TGP/14.2.1(&2) Draft 5.

(c) TGP/7: Development of Test Guidelines

15. The TWV agreed that the revision of TGP/7 should include elaboration of the two uses of the grouping characteristics, i.e.

1. [...] “to select, either individually or in combination with other such characteristics, *varieties of common knowledge that can be excluded from the growing trial* used for examination of distinctness.”
2. [...] “to organize the growing trial so that *similar varieties are grouped together*.”

and to consider indicating in Chapter 5.3 of the Test Guidelines for which purpose the grouping characteristics were intended.

[End of document]