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INTERNATIONAL UNION FOR THE PROTECTION OF NEW VARIETIES OF PLANTS
GENEVA

TECHNICAL COMMITTEE

Forty-Fifth Session
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MATTERS ARISING FROM THE TECHNICAL WORKING PARTIES

Document prepared by the Office of the Union

1. This document summarizes certain matters arising from the 2008 sessions of the Technical Working Parties (TWPs) which are not expressly covered by specific agenda items. The matters arising are presented in two sections. The first section, "Matters for information and for a possible decision to be taken by the Technical Committee (TC)", identifies matters raised by the TWPs, which may require a decision to be taken by the TC. The Office of the Union (Office) has highlighted aspects where the TC may wish to take a decision by introducing a proposed decision paragraph shown in italics. The second section, "Matters for information", is provided for the information of the TC but does not require decisions at this stage.

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
TWPs:	Technical Working Parties
TWV:	Technical Working Party for Vegetables

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I. MATTERS FOR INFORMATION AND FOR A POSSIBLE DECISION TO BE TAKEN BY THE TECHNICAL COMMITTEE

Matters arising after the grant of a breeder's right

4. At its forty-fourth session, held in Geneva from April 7 to 9, 2008, the Technical Committee (TC) noted the Technical Working Party for Vegetables (TWV) proposal for the possible development of a document to provide guidance on matters concerning distinctness, uniformity, stability and novelty which are brought to the attention of an authority after the grant of a breeder's right and the status and use of the "official" variety description. The TC also noted the comments of the Enlarged Editorial Committee (TC-EDC) that there would be practical advantages in dealing with all aspects of stability in a single document and the proposal of the TC-EDC that the TC, in conjunction with the CAJ, might consider an amendment to the title of TGP/11, with the document being clearly separated into two parts:

Part I: Examining Stability (Article 12 "Examination of the Application", of the 1991 Act of the UPOV Convention)

Part II: Stability after the grant of a breeder's right (Article 22(1) "Cancellation of the Breeder's Right", of the 1991 Act of the UPOV Convention)

5. The TC agreed that the view of the CAJ should be sought with regard to whether it would be appropriate to pursue those proposals (see document TC/44/13 "Report", paragraph 118).

6. At its fifty-eighth session, held in Geneva on October 27 and 28, 2008, the CAJ considered document TGP/11/1 Draft 5 "Examining Stability", in conjunction with document CAJ/58/2 "TGP documents". The CAJ agreed that document TGP/11 should consider only the examination of stability in the context of the DUS examination and that a separate document should be developed to provide guidance on matters concerning distinctness, uniformity, stability and novelty that are brought to the attention of an authority after the grant of a breeder's right (see document CAJ/58/6 "Report on the Conclusions", paragraph 11).

7. The view of the CAJ on this matter will also be considered in conjunction with document TGP/11 "Examining Stability", under agenda item 6 "TGP documents" of the forty-fifth session of the TC (see document TC/45/5).

8. In accordance with the clarification of the CAJ, it would not be appropriate to seek to develop a document on matters concerning distinctness, uniformity, stability and novelty that are brought to the attention of an authority after the grant of a breeder's right within the TGP series of documents. However, the CAJ might consider that such a document could be included within its approach for the preparation of information materials concerning the UPOV Convention (see document CAJ/52/4, paragraphs 8 to 10).

9. The TC is invited to consider whether to propose to the CAJ that, within its approach for the preparation of information materials concerning the UPOV Convention, a document be developed to provide guidance on matters

concerning distinctness, uniformity, stability and novelty that are brought to the attention of an authority after the grant of a breeder's right.

Development of common databases for the management of variety collections

10. The Technical Working Party on Automation and Computer Programs (TWC), at its twenty-sixth session held in Jeju, Republic of Korea, from September 2 to 5, 2008, discussed the following documents concerning databases for the management of variety collections.

(a) Information on Zea mays *common database*
(document TWC/26/16, prepared by experts from France, Germany, Spain and the Community Plant Variety Office of the European Community (CPVO))

11. The TWC considered document TWC/26/16, presented by Mr. Sylvain Grégoire (France). It was explained that the purpose of the project was to develop a database for use by the project partners in the management of reference collections and that it was not intended to publish descriptions from the database.

(b) A research project co-financed by the Community Plant Variety Office of the European Community (CPVO): "Management of winter oilseed rape reference collections"
(document TWC/26/18, prepared by experts from the United Kingdom)

12. The TWC considered document TWC/26/18, presented by Mr. Sylvain Grégoire (France). He explained that the document had been prepared primarily for consideration at the eleventh session of the Working Group on Biochemical and Molecular Techniques, and DNA-Profiling in Particular (BMT), to be held in Madrid, from September 16 to 18, 2008.

(c) Correlation between different types of distance/similarity measures on a set of Winter Oilseed Rape characteristics of different types (nominal to ratio scale)
(document TWC/26/20, prepared by experts from Germany)

13. The TWC considered document TWC/26/20 and a presentation made by Mr. Uwe Meyer (Germany), a copy of which is reproduced in document TWC/26/20 Add.. It was noted that the type of characteristic should be checked in Tables 1 and 2. For example, UPOV numbers 13 and 14 should be changed from QL to QN.

14. The TC is invited to note that the matter of variety description databases will be considered under agenda item 10 "Publication of variety descriptions" (see document TC/45/9).

Applications for varieties with low germination

15. At its forty-second session, held in Cracow, Poland, from June 23 to 27, 2008, the Technical Working Party for Vegetables (TWV) considered documents TWV/42/13 "Applications for varieties with low germination" and TWV/42/15 "Applications for varieties with low germination: ISF proposal".

16. In introducing document TWV/42/13, the expert from the Netherlands noted that the UPOV Test Guidelines did not specify germination standards and it was a matter for members of the Union to set an appropriate germination standard: in many cases, that was based on the commercial seed standards. However, he noted that it would be important for UPOV to develop suitable guidance concerning varieties with particularly low germination in order to develop a harmonized approach.

17. A representative of the International Seed Federation (ISF) noted that the situation concerned specifically parent lines. An expert from the Netherlands noted that all varieties were potentially parent lines, which would make it difficult to develop criteria limited to parent lines.

18. The TWV Chairman sought clarification on whether the low level of germination of the types of varieties addressed in document TWV/42/13 and TWV/42/15 affected the expression of the characteristics of the variety in such a way as to adversely affect the DUS examination. An expert from the Netherlands explained that that was sometimes the case. An expert from Germany explained that variable times of germination and different levels of vigor would make it difficult to assess uniformity.

19. The TWV discussed the possibility of requiring the breeder to submit pre-germinated seed or plantlets. A representative of ISF suggested that it would be advisable to avoid the need for selection of seed or plants by the breeder before the sample was submitted for DUS examination. An expert from France noted that there was a risk that the seeds which did not germinate might have a different genotype than those which did germinate. An expert from the Netherlands noted that there was always a theoretical possibility that non-germinated seeds would have a different genotype. The TWV noted that, with regard to parent lines, the risk could be addressed by considering the uniformity of the hybrids, or possibly by the use of biochemical or molecular techniques.

20. The TWV agreed that it was important to consider how it might be possible to resolve the situation in a way which would allow breeders to obtain protection for varieties which would necessarily have low germination. In that respect, it was agreed that it would be necessary to have information on specific cases. An expert from the Netherlands agreed to present results of work in the Netherlands on such varieties, at the forty-third session of the TWV.

21. The TC is invited to note that this matter will also be considered in conjunction with the revision of document TGP/7 "Development of Test Guidelines" (see document TGP/7/2 Draft 2, ASW 1 (TG Template: Chapter 2.3) – Seed quality requirements) [(c) Types of varieties with low germination].

Method of calculation of COYU

22. The TWC considered document TWC/26/17 "Some consequences of reducing the number of plants observed in the assessment of quantitative characteristics of reference

varieties[1]" and a presentation by Mr. Kristian Kristensen (Denmark), a copy of which is reproduced as document TWC/26/17 Add..

23. Document TWC/26/17 states the following with regard to the current method of calculation of COYU:

> "Conclusions
>
> "18. From the above it can be concluded that the variances calculated in the present system do not reflect the expected value of the true variance as they are too small, partly because the expected value of RMS [residual mean square] from the ANOVA is less than the expected value of $Var(Y_v)$ and partly because only the number of varieties used in the local adjustment influence[s] this variance (and not the total number of reference varieties). However, the present method probably adjusts for this bias by using a large t-value (by using a small α-value). Also it can be concluded that the residual mean square (RMS) may depend significantly on the number of observations recorded as the component of RMS that depends on the number of observations (degrees of freedom) was not a negligible part."

24. The TWC noted the following possible actions to address the bias in the present method of calculation of COYU, as identified and commented on by Mr. Kristensen:

(i) Ignore the biases
(comment: the test will most probably be too liberal);
(ii) Correct only for the bias introduced by the smaller sample sizes
(comment: the test will be too liberal, but will be comparable to those in the past);
(iii) Correct only for the present bias
(comment: the test will be conservative, but not comparable to the past);
(iv) Correct for all biases
(comment: there will be no biases, but the tests will not be comparable to the past)

25. The expert from the Netherlands speculated that the smoothing spline could be a valid alternative to the moving average proposed in COYU. The expert from Poland wondered whether the possible correlation on the trend values would influence the results. The expert from Denmark explained that the value of the expected residual mean square depended only on the variances and thus was independent of the correlation between the trends. An expert from France considered that the conclusions on the influence of the reduction in the number of plants in COYU presented in the document were very relevant, given that the reduction in the number of plants was under consideration by many UPOV members in order to reduce costs in DUS examination. He wondered whether some adaptation in the program should be made. An expert from the United Kingdom considered that it would be useful to perform some simulations to see the effect of the reduction in the number of plants as well as to explore possible routines to be incorporated into COYU, such as the one proposed by the expert from the Netherlands. He offered to cooperate in that task. The expert from Denmark explained that he had made a simulation which had confirmed the bias of the present method of calculation of COYU. He added that it would be possible to incorporate another trend

[1] The term "reference varieties" here refers to established varieties which have been included in the growing trial and which have comparable expression of the characteristics under investigation.

correction method in the simulation program, but he did not have experience in the use of the smoothing spline method.

26. The TWC agreed that Denmark and the United Kingdom should prepare a new document, including a simulation using the smoothing spline method. It was noted that that would also allow experts further time to reflect on the situation and possible ways forward.

27. The TC is invited to:

(a) note the discussions concerning the current method of calculation of COYU;

(b) inform the TWPs at their sessions in 2009 of these discussions; and

(c) request the TWC to make its recommendations to the TC concerning the proposals set out in paragraph 24.

Assessing uniformity by off-types on the basis of more than one sample or sub-samples

28. The TWC considered document TWC/26/8 "Population standards used for assessing uniformity by off-types on the basis of more than one sample", prepared by experts from Germany, the United Kingdom and the Office of the Union.

29. The TWC agreed that a questionnaire could be issued on the basis of the Annex to document TWC/26/8, with the amendments that the first line of page 2 should read "barley" instead of "wheat" and that the header for "II" should read "II – Example of 2-step test for the assessment of uniformity of characteristics observed on a sample size of 100 plants or parts of plants". However, the TWC noted that the example provided in the Annex to document TWC/26/8 indicated that it would be useful for the TWC to discuss the use of such an approach.

30. A copy of the questionnaire, with the amendments agreed by the TWC is reproduced in the Annex to this document.

31. The TC is invited to consider:

(a) the example provided in the questionnaire;

(b) to whom the questionnaire should be sent; and

(c) subject to the results of any questionnaire, whether this approach should be considered for inclusion in a future revision of document TGP/8.

Database to research TWC working documents

32. At its twenty-fifth session held in Sibiu, Romania, from September 3 to 6, 2007, the TWC discussed the development of an Access database to search for TWC documents.

33. The TWC noted the concerns of the TC with regard to a database to search for TWC documents and, in particular, the need for care with regard to the use of Technical Working Party session documents, which the TC had noted did not represent an agreed UPOV position and did not contain comments made on those documents by the relevant UPOV bodies (see document TC/43/12 "Report on the Conclusions", paragraph 9). In order to address those concerns, the TWC agreed that the title of the database should be amended to "Database to research TWC working documents" and agreed that a warning on the status of the documents and the purpose of the database should be automatically presented at each opening of the database. It also confirmed that the CDs containing the database would only be distributed to the participants at the relevant TWC session. The TWC confirmed the value of the database as a tool for TWC experts to develop new methods.

34. At its forty-fourth session, held in Geneva from April 7 to 9, 2008, the TC discussed the development by the TWC of a database to search for TWC working documents. The TC agreed that, as proposed by the TWC, the title of the database to search for TWC working documents should be amended to "Database to research TWC working documents" and agreed that a warning on the status of the documents and the purpose of the database should be automatically presented at each opening of the database. It also agreed that the CDs containing the database should only be distributed to the participants at the relevant TWC session. The TC noted that the TWC had confirmed the value of the database as a tool for TWC experts to develop new methods.

35. At its twenty-sixth session, held in Jeju, Republic of Korea, from September 2 to 5, 2008, the TWC considered document TWC/26/13, introduced by Mr. Thomas Drobek (Germany), and received a presentation on the latest edition of the "Database to research TWC working documents". The TWC noted with appreciation that, in accordance with the request of the TC, a warning on the status of the documents and the purpose of the database was automatically presented at each opening of the database. The TWC welcomed the latest edition of the CD-ROM containing the database to search for TWC working documents, which was distributed to participants at the session.

36. The TC is invited to note the developments concerning the "Database to research TWC working documents", provided by the experts from Germany, and distributed to the participants at the twenty-sixth session of the TWC.

II. MATTERS FOR INFORMATION

Matters raised by CIOPORA at the Technical Working Party for Fruit Crops

37. At its thirty-ninth session, held in Lisbon, Portugal, from June 2 to 6, 2008, the Technical Working Party for Fruit Crops (TWF) considered the following matters, which had been raised by the International Community of Breeders of Asexually Reproduced Ornamental and Fruit-Tree Varieties (CIOPORA), on the basis of document TWF/39/8.

(a) Assessment of color evolution in apple mutants

Matter raised by CIOPORA:

> "Mutations of apple varieties very often appear on the over color, with differences in the intensity of the original color, or in the proportion of fruit surface covered, or in the early appearance of the coloration. This is a characteristic that can have a significant impact on the commercial development of a variety and that is of importance for the applicants. To date, the fruit color as a criteria of distinction and as defined in UPOV document TG/14/9 (Test-guideline for apples) is only assessed at full maturity, while full maturity is not a commercial stage as apples are harvested by the fruit growers earlier than full maturity for a proper commercialization. Consequently, the breeders / applicants consider that the evolution of the coloration should be assessed at an earlier stage during the DUS and be considered as a full characteristic."

38. The expert from the Community Plant Variety Office of the European Community (CPVO) reported that the CPVO was investigating the possibility of developing characteristics for over-color before eating maturity, but noted that it would be difficult to fix a time for observation based on a later, unknown maturity date. It was considering whether a time after flowering might be a solution. The expert from France noted that DUS examiners were not prevented from using a suitable characteristic because it had not been included in the UPOV Test Guidelines up to that point. The expert from Germany noted that it might be beneficial not to fix a specific timing for such characteristics in the UPOV Test Guidelines, in order to preserve the flexibility to respond to new developments. The expert from the European Community reported that there had been mention of a possible CPVO project on this matter and explained that, if that materialized, he would be able to make a report at the following TWF session. The Technical Director of UPOV confirmed that it was not necessary for appropriate characteristics to be included in the UPOV Test Guidelines in order for them to be used for DUS. He noted that the matter could be considered at the following TWF session where, on the basis of information provided, consideration could be given to a (partial) revision of the UPOV Test Guidelines or the notification of an "additional characteristic" according to the procedure explained in document TGP/5 "Experience and Cooperation in DUS Testing", Section 10 "Notification of Additional Characteristics". The representative of CIOPORA supported that approach.

(b) Phytosanitary status of material

Matter raised by CIOPORA:

> "CIOPORA supports the requirement that the plants supplied for DUS examination be visibly healthy, of good vigor and not affected by any important pest or diseases. In general this should be interpreted in the way that the plants should be free from the

> 'quarantine diseases' and from others that would be likely to affect the expression of the plant characteristics. In some UPOV members […] much more than the 'important pests and diseases' are mentioned. This seems not to be in line with the UPOV Test Guidelines and imposes a huge burden on breeders who have to submit plant material."

39. An expert from Spain explained that material needed to be free from quarantine diseases and from diseases which would affect the expression of DUS characteristics. He also explained the importance of preventing infection of varieties in the reference collections. It was explained that the necessary plant health certificates would need to accompany the submitted material and that there would be a visual inspection as far as other diseases were concerned. The expert from France endorsed the need for care with regard to diseases which could affect the health of reference collections. An expert from Poland noted that the specification of phytosanitary requirements for plant passport purposes was not a matter for UPOV. The representative of CIOPORA explained that breeders would respond to clear phytosanitary requirements.

(c) Duration of DUS examination for fruit varieties

Matter raised by CIOPORA:

> "The DUS Test Guidelines provide for a minimum duration of the examination, i.e. generally two independent growing cycles. However, especially in fruit tree species the DUS examination often takes much longer, mainly because of the slow growing plants. This leads to high costs for the DUS examination and to the granting of the PBR titles only a long time after the variety has been successfully introduced into the market. As a result the breeder is not able to control the exploitation of his variety in this important period of the life-time of his variety. CIOPORA would like to discuss possible ways to limit the total cost of DUS tests and to speed up the granting of the PBR title. One way to save time could be to conduct the DUS examination at the premises of the breeders, examining trees that have been planted by the breeders prior to the application for Plant Breeders´ Rights. Such possibility is already mentioned in UPOV document TG 1/3, chapter 3.2 and further explained in UPOV document TGP/6."

40. The expert from Australia reported that their testing of fruit varieties on breeders' premises resulted in an average time of 5.2 years from application to grant of a plant breeders' rights. In theory, that time could be shorter, but in practice a longer time was necessary to ensure that all the necessary comparator varieties were included in the trial. The expert from New Zealand reported that there was the possibility of DUS testing at breeders' premises in New Zealand but that option had not been used in recent times by breeders for pip and stone-fruit crops because it did not appear to be cheaper or quicker than centralized testing. The average time for the completion of a DUS test was 5 years. The expert from the European Community reported that it had used DUS testing on a breeder's premises for an apple rootstock GMO variety, but it had proved to be complicated because of the need to train the breeder for the conduct of the test and for visits by the DUS examiner. The expert from Germany reported that its DUS protocol had been changed to request young trees instead of budwood for grafting in order to reduce the time of DUS testing; however, the need for two years of establishment for young trees had meant that the time had not been reduced. An expert from South Africa reported that its breeder-based DUS trials allowed the period of DUS testing to be completed in 3 years. She noted that the breeders were familiar with the requirements of the trial and usually planted the necessary reference varieties with their candidate varieties at the time of application. The expert from France explained that it sought

to keep the DUS testing period to a minimum and to avoid delays, for which a justification would need to be provided. He explained that delays of more than 2 years were not accepted. An expert from Spain reported that, for some crops, breeders' plots were used to examine adult trees, but he explained that it was necessary for the trees to be close to the reference collection and for the sample to correspond to the same sample on which the DUS trial was being conducted. The expert from Slovakia noted that it would not be possible to find a general solution because it would depend on the particular circumstances for each member of the Union. However, she noted that breeders would have provisional protection during the period of DUS testing. An expert from Mexico reported that for some species it might be appropriate to use top-worked plants to accelerate the process of examination, i.e. to examine the fruit from mature trees at an early stage whilst young trees were developing for the examination of tree characteristics. An expert from Poland noted the need of having the candidate varieties and the reference collection in close proximity. The representative of CIOPORA expressed her appreciation of the exchange of views.

(d) Cost of reference collections

Matter raised by CIOPORA:

"A significant part of the costs for DUS examination for fruit tree varieties results of the maintenance of the large living reference collections. While CIOPORA is not questioning the relevance of such reference collections, we are wondering if they could be managed in a more rational way in order to generate lower costs."

41. The expert from France explained the need for the cost of reference collections to be supported by the application fees. An expert from Spain supported the need for reference collections to be managed in an effective way and the need to reduce the size of the reference collections where appropriate. However, he also noted that the size of reference collections increased each year with the addition of new varieties and also explained that reference collections were also used for purposes other than for DUS examination, e.g. as germplasm collections. The expert from the European Community reported on a project for the management of reference collections of peach and explained the benefits of coordination between DUS testing centers to avoid unnecessary duplication. The expert from New Zealand noted that the costs of maintaining reference collections for DUS purposes should reflect their use for that purpose and should not be used to cover their use for other purposes. The Technical Director of UPOV recalled that the management of reference collections was an important topic of discussion in UPOV and there were continuing efforts to find effective solutions.

Experience with new types and species

42. In its consideration of document TGP/13/1 Draft 12, at its thirty-ninth session, the TWF noted the amendments to the text of paragraph 2.4.2 and discussed the need to consider practical issues of access to wild populations in order to determine if they might constitute varieties of common knowledge. It also discussed the issue of how to determine the boundary of populations. It was agreed that it could be helpful to encourage breeders to provide parent material or representative plants of original population to assist in the DUS examination of new varieties.

43. The TWF agreed that it would not be possible to provide detailed guidance on those matters in document TGP/13, but concluded that it would be of assistance to hear reports from experts on their particular experiences with new types and species. On that basis, the TWF agreed to add an item for such presentations at its fortieth session and invited experts to prepare such reports. It also agreed that breeders might be invited to explain developments with regard to new types and species.

44. The Technical Working Party for Ornamental Plants and Forest Trees (TWO), at its forty-first session, held in Wageningen, Netherlands, agreed to add an item for reports from experts on their particular experiences with new types and species at its forty-second session and invited experts to prepare such reports. It also agreed that breeders might be invited to explain developments with regard to new types and species.

45. The Technical Working Party for Vegetables (TWV), at its forty-first session, held in Nairobi, Kenya, from June 11 to 15, 2007, noted that the TWF and TWO had agreed to add an item for reports from experts on their particular experiences with new types and species at their sessions in 2009 and agreed that it would be interesting to hear about the outcome of that initiative before agreeing to the inclusion of such an item in a future TWV agenda.

Test Guidelines: introduction for less well-known species

46. The TWV, at its forty-second session, held in Cracow, Poland, from June 23 to 27, 2008, agreed that, for less well known species, it would be helpful for the Leading Expert to provide a brief introduction to the species at the start of the subgroup discussions on new draft Test Guidelines.

Development of a set of example varieties for North East Asia for the Test Guidelines for Strawberry

47. At the thirty-ninth session, the TWF received an interim report on the possible development of a regional set of example varieties for North East Asia for the Test Guidelines for Strawberry from Mr. Kiyofumi Nakamura (Japan). A copy of that report is presented as Annex III to document TWF/39/10 Rev. “Report”. The TWF noted the conclusion of the report that, for qualitative characteristics, the results were the same in the greenhouse and field. For pseudo-qualitative characteristics (e.g. shape and color) and for some quantitative characteristics (e.g. ratios), the descriptions of varieties in the greenhouse and field were very similar and were not expected to result in different states for the varieties. However, for some quantitative characteristics (e.g. length, width, vigor etc.), the differences between varieties grown in the greenhouse and field were likely to result in different states for some varieties. For that reason, it would be difficult to compare the Japanese example varieties, which were developed for greenhouse conditions, with the example varieties in the UPOV Test Guidelines, which had been bred for growing in the field. With regard to the possibility of developing a set of example varieties for North and East Asia, Mr. Nakamura explained that the DUS test in China was conducted in the field, which would make it difficult to compare Japanese and Chinese example varieties. Many Japanese varieties had been introduced in the Republic of Korea; however, the Republic of Korea had also bred new strawberry varieties. Mr. Nakamura had, therefore, concluded that it would not be possible to develop a regional set of example varieties for the time being.

48. In its discussion on the revision of document TGP/7, GN 28 "(TG Template: Chapter 6.4) – Example varieties", the TWF recalled the presentation by Japan on the comparison of example varieties of strawberry grown in the greenhouse and field, noting that there was good correspondence for qualitative, pseudo qualitative and some quantitative characteristics (e.g. ratios) and suggested to concentrate discussions on those quantitative characteristics where there was less good harmonization. It suggested that Japan should be encouraged to present the results of its work on Strawberry at the other Technical Working Parties.

49. A summary of the interim report on the possible development of a regional set of example varieties for North and East Asia for the Test Guidelines for Strawberry was presented at the forty-first session of the TWO, the forty-second session of the TWV and the thirty-seventh session of the TWA, for consideration in their discussions on the revision of document TGP/7, GN 28 "(TG Template: Chapter 6.4) – Example varieties".

Development of COY

50. The following matters were considered by the TWC at its twenty-sixth session, held in Jeju, Republic of Korea, from September 2 to 5, 2008.

(a) Comparison of COYU and a method based on Bennett's test for coefficients of variation

51. Mr. Wieslaw Pilarczyk (Poland) recalled that, at the twenty-fifth session of the TWC, the Chairperson had noted that the method based on the Bennett's test used the coefficient of variation (which is the standard deviation divided by the mean) and wondered what would happen if there was a negative correlation between characteristics and the standard deviation, which she had sometimes seen in the United Kingdom data. Mr. Pilarczyk had explained that he had not encountered such data and had requested the TWC Chairperson to provide such data for checking in the method based on the Bennett's test.

52. Mr. Pilarczyk reported that it had not been possible to use the United Kingdom data because it had transpired that the data was interval scale data, rather than ratio scale data and it was, therefore, not meaningful to compute a coefficient of variation.

(b) An adjustment to the COYD method when varieties are grouped within the DUS trial

53. The TWC considered document TWC/26/14 and a presentation made by Mr. Adrian Roberts (United Kingdom), a copy of which is reproduced in document TWC/26/14 Add..

54. The expert from Poland highlighted that the proposed adjusted COYD was beneficial when the variety-by-group interaction was larger than the variety-by-year interaction, which might not be the case for all characteristics and asked whether the intention was to apply the revised method on a characteristic-by-characteristic basis. The expert from the United Kingdom clarified that the method could be applied in that way, or could be applied to all characteristics. Experts from Denmark, Kenya and the Netherlands considered that it would be useful to include consideration of whether to use the adjusted COYD method depending on significance of the group-by-year interaction.

55. An expert from France recalled that, in general for self-pollinated crops, when grouping for DUS examination resulted in small groups there was no problem for the assessment of distinctness. He considered that it would be interesting to test the adjusted COYD in a cross-pollinated crop, and offered to prepare a document on that subject. The TWC agreed that France should prepare such a document.

56. The expert from Denmark asked whether there would be an option to select between a comparison by a common multiple joint regression analysis (MJRA) or by one per group. The expert from the United Kingdom considered that it would be better to compare both before integrating them in a single method.

57. In reply to several questions Mr. Roberts explained that a new module could, if considered appropriate, be incorporated into the revised DUSTNT to be completed by February 2009. The expert from the Netherlands considered that it might be too early to recommend that adjustment.

58. The Technical Director recalled that the DUSTNT program included many modules, however, UPOV had specifically endorsed the COYD and COYU methods, and suggested that that should be clarified in the document of exchangeable software and in the DUSTNT program. The TWC agreed that Mrs. Sally Watson (United Kingdom) should prepare a presentation on the modules contained in the program DUSTNT, highlighting those which are involved in COY analysis, for consideration by the TWC at its twenty-seventh session.

59. The TWC agreed to invite experts to propose other DUSTNT modules, which had been used by them, for endorsement in the document on exchangeable software.

[Annex follows]

ANNEX

DRAFT QUESTIONNAIRE
developed by the Technical Working Party on Automation and Computer Programs (TWC)

Population standards used for assessing uniformity by off-types on the basis of more than one sample

1.1 Please complete the following tables and return to UPOV by e-mail to *upov.mail@upov.int*:

Country/Organization:	
Person completing the form	
Name:	
E-mail:	
Tel. No.:	
Fax No.:	

1.2 The acceptable number of off-types tolerated in samples of various sizes is often based on a fixed "population standard" and "acceptance probability". The "population standard" is the maximum percentage of off-types to be accepted if all individuals of the variety could be examined. The "acceptance probability" is the minimum probability of accepting a variety with the population standard of off-types.

1.3 The UPOV Test Guidelines recommend the population standard and acceptance probability and provide the maximum acceptable number of off-types for an appropriate sample size. In some cases, the proportion of off-types in a variety may be assessed in more than one sample (e.g. one growing cycle with more than one sample per growing cycle, one sample per growing cycle with two growing cycles, etc.). Some of the possible situations are described in document TGP/10 draft 7 Examining Uniformity, Section 6. Furthermore, in some cases, to examine uniformity in an efficient manner, a strategy of sequential sampling may be used. In cases where uniformity is assessed on the basis of more than one sample, clear decision rules need to be defined for the varieties concerned.

1.4 This survey is intended to collect information on how uniformity is assessed by off-types for such cases.

An example for barley is given in the following table:

Country: XXXX	Species: Barley (*Hordeum vulgare* L. sensu lato) Test Guidelines: TG/19/10.
I - For the assessment of uniformity of characteristics observed on a sample size of 2000 plants or part of plants. Sample size: 2000 plants Population standard: 0.1 % Acceptance probability: 95 % Uniformity standard: the number of off-type plants or parts of plants should not exceed 5 in 2000.	
II – Example of 2-step test for the assessment of uniformity of characteristics observed on a sample size of 100 plants or parts of plants Sample size: 100 plants or parts of plants Population standard: 0.1 % Acceptance probability: 95 % Uniformity standard: First step, 20 plants or parts of plants are observed. - No off-type plants in 20 plants = the variety is declared uniform. - More than 3 off-type plants = the variety is declared non uniform. - 1 to 3 off-type plants = go to second step Second step: further 80 plants or parts of plants are observed - 3 or less off-type plants in 100 (20 of step 1 + 80 of step 2) plants = the variety is declared uniform. - More than 3 off-type plants in 100 (20 of step 1 + 80 of step 2) plants = the variety is declared non uniform.	
Decision rule: A variety is accepted if, in 2 out of 3 years, the uniformity standard is met in all samples.	

[End of Annex and of document]