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TC/XII/6
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UPOV

INTERNATIONAL UNION FOR THE PROTECTION OF NEW VARIETIES OF PLANTS

GENEVA

TECHNICAL COMMITTEE

Twelfth Session
Geneva, November 13 to 15, 1978

DRAFT REPORT

prepared by the Office of the Union

Opening of the Session

1. The Technical Committee (formerly called the Technical Steering Committee and hereinafter referred to as "the Committee") held its twelfth session in Geneva at the Headquarters of UPOV from November 13 to 15, 1978. The list of participants appears in Annex I to this report.

2. The session was opened by Mr. A.F. Kelly, Chairman of the Committee, who welcomed the participants. The Committee observed a minute's silence in memory of Mr. J.I.C. Butler, who passed away earlier this year, and as a tribute to the merits he had acquired in the work of the Committee.

Adoption of the Agenda

3. The Committee adopted the agenda as appearing in document TC/XII/1 Rev.

Adoption of the Report of the Eleventh Session

4. The Committee unanimously adopted the report of its eleventh session as appearing in document ST/XI/6, after having replaced the word "last" in the sixth line from the end of paragraph 16 by the word "next" and after having agreed that the last sentence of paragraph 11 meant that the Committee would continue to apply the words proposed in Taxon, as long as it was practical to use them.

Data Recording and Interpretation

(a) Testing of Distinctness

5. The Committee agreed on paragraphs 1 to 17 of Annex II of document ST/XI/6, which reflect the results of former discussions on data recording and interpretation, and adopted these paragraphs after having deleted the words "Preliminary Thoughts on" in the title and the last sentence of paragraph 9. The complete text is reproduced in paragraphs 1 to 17 of Annex II to this report. The Committee agreed that paragraphs 18 to 26 of Annex II of document ST/XI/6 would be referred to the Technical Working Party for Agricultural Crops for possible inclusion in the draft Test Guidelines for Maize.

(b) Testing of Homogeneity and Stability

6. The Committee had a very detailed discussion on data recording and interpretation with respect to the testing of homogeneity and stability.

7. During the discussion on the testing of homogeneity the Committee was able to agree on various items as reproduced in paragraphs 18 to 25 of Annex II of this report. The Committee noted that the Poisson distribution had been used for establishing the table reproduced in paragraph 19 of Annex II of this report and that a 95% confidence level had been chosen to balance reasonably the consumer's risk and the producer's risk.

8. During the discussions on the testing of stability, the Committee was able for the time being to agree only on paragraphs 26 to 28 of Annex II to this report. In the following paragraphs, therefore, a few of the main ideas expressed during the discussion are restated.

9. Two main views on the testing of stability had been expressed. According to one view, it was accepted that the testing of stability was important, but, since in practice it was not possible to do such a test effectively in the same short period as that in which the variety was tested for distinctness and homogeneity, the testing of stability was limited to the drawing of conclusions from the results of the tests on distinctness and homogeneity. According to the other view, which also accepted that the testing period was too limited to perform a test on stability that would lead to the same certainty as the testing of distinctness and homogeneity, it was nevertheless considered that the authority should, at least, do its utmost during this short period to obtain as much information as possible on the stability of the variety being tested.

10. Because of the existence of these two different views, at least one member State bases its examination normally on one single sample sent in by the breeder, while other member States demand another sample of a different seed lot in the second year of testing.

11. This different treatment was, however, also due to several other reasons independent of the question of stability.

12. The countries demanding a second sample in the second year of testing felt that, if they also demanded one sample only, that would not only limit their possibilities of testing stability, but also raise a few other problems for the breeder. He would have to deliver larger quantities of seed at a stage where he had only small amounts available which he needed also for other purposes, such as the value test, and he would have to be sure that the quality of the material sent in was sufficiently high. Under special conditions, especially in a year with difficult weather conditions, that might be difficult for him to achieve.

13. During the discussions it was also mentioned that in the case of vegetatively propagated varieties a second sample might not be necessary for varieties of perennial ornamentals, while in the case of potato varieties a second sample was demanded for a number of practical reasons (storage difficulties, possible disease infection, responsibility of the offices for multiplication, etc.).

14. In the case of self-pollinated varieties, several member States stated that they demanded two different samples from different generations. It was mentioned that the testing of distinctness and homogeneity could give some indications about stability.

15. In the case of cross-pollinated varieties, it was made clear, however, that additional tests with a second sample would give valuable additional information on stability and thus might be really necessary.

16. Finally, it was recognized that there had to be some assurance that the requirement of one or more samples for testing did not interfere with the determination of the priority of the variety.

Progress Reports by the Chairmen of the Five Technical Working Parties

17. Mr. A.F. Kelly (United Kingdom), Chairman of the Technical Working Party for Agricultural Crops, reported on the last session of his Working Party, which had taken place in Zurich, Switzerland, from May 23 to 25, 1978. The report on that session was reproduced in document TW/28. During its last session, the Working

Party had finalized its work on draft Test Guidelines for Rye for submission to the Committee with a view to their adoption during the current session. It had prepared a first draft of Test Guidelines for Lupins, for Ryegrass and for Sheep's Fescue and Red Fescue for submission to the professional organizations for comments. It had also discussed the draft Test Guidelines for Flax and Linseed but decided to study these draft Test Guidelines for another year before transmitting them to the Committee for final adoption. It had also discussed the list of varieties of ryegrass used in the reference collections in the different member States and agreed to continue the discussion with respect to further characteristics. It further noted the difficulties in establishing a growth stage code for grasses. It noted the results of the Committee's discussions on data recording and interpretation, the preparation of the revised Test Guidelines for Maize by the Maize Subgroup of the Working Party, and the preparation of drawings for the Test Guidelines for Cereals and the harmonization of methods undertaken in the Cereals Subgroup of the Working Party. It also discussed a motion on the harmonization in the DUS testing and description of cereal varieties prepared by ASSINSEL, as reproduced in document TC/XII/4. During that Working Party's eighth session in La Minière, France, from May 22 to 24, 1979, it planned to finalize the draft Test Guidelines for Flax and Linseed, for Lupins, for Maize, for Ryegrass and for Sheep's Fescue and Red Fescue. In addition, it would consider the discussions on data recording and interpretation taking place in the Committee and discuss the question of synthetic varieties. With respect to its long-term program, it took the view that it should restrict itself more to problems of principle and leave the preparation and revision of Test Guidelines to smaller subgroups which would be formed by experts directly involved in the testing of a given species.

18. Mr. Webster (United Kingdom), Chairman of the Technical Working Party for Vegetables, reported on the last session of his Working Party, which had taken place in Hanover, Federal Republic of Germany, from June 6 to 8, 1978. The report on that session was reproduced in document TW/29. During its last session, the Working Party had finalized its work on the draft Test Guidelines for Beetroot, for Cucumber and Gherkin, and for Rhubarb for submission to the Committee with a view to their adoption during the current session. It had prepared a first draft of Test Guidelines for Radish, for Black Radish and for Kohlrabi for submission to the professional organizations for comments. It has also discussed the problems of reference collections and of the meaning of the term "common knowledge." It further noted the information received on disease tests carried out in different member States with respect to Pseudomonas phaseolicola (Burkh) Dowson. It had also started revising the existing Test Guidelines for Garden Peas. It had furthermore noted the results of the discussions on data recording and interpretation taking place in the Committee. In its twelfth session in Avignon (France), from June 5 to 7, 1979, it was planned to finalize the draft Test Guidelines for Black Radish, for Radish and For Kohlrabi and to start discussing working papers on Test Guidelines for Celery, for Cornsalad, for Capsicum and for Leek. It was further planned to continue the discussion on reference collections for cabbage and for spinach, to continue the revision of the Test Guidelines for Garden Peas and to discuss the ASSINSEL motion on the harmonization of the DUS testing and description of cereal varieties. With respect to its long-term proposals, the Working Party agreed to continue its work on the interpretation of test criteria and to include more information on test procedures in the main test guidelines, starting with the Test Guidelines for Garden Peas.

19. Mr. F. Schneider (Netherlands), Chairman of the Technical Working Party for Ornamental Plants, reported on the last session of his Working Party, which had taken place in the Embassy of South Africa in Paris, France, from June 20 to 22, 1978. The report on that session was reproduced in document TW/30. During its last session, the Working Party had finalized its work on the draft Test Guidelines for Lily for submission to the Committee with a view to their adoption during the current session. It had prepared a first draft of Test Guidelines for Berberis, for Chrysanthemum, for Forsythia and for Pelargonium for submission to the professional organizations for comments. It had also started revising the Test Guidelines for Roses and had held a special Ad Hoc Workshop in Wageningen on August 29 and 30, during which it had prepared the working paper for a revised version of the Test Guidelines for Roses. During that Working Party's twelfth session at Hanover (Federal Republic of Germany) from July 17 to 19, 1979, it was planned to finalize the draft Test Guidelines for Berberis, for Chrsyanthemum, for Forsythia and for Pelargonium. It was decided that the revision of the Test Guidelines for Roses would have to be continued and that the discussion on working papers on Test Guidelines for Thuya, for Gerbera, for Kalanchoe and for Narcissus were to be started. It was also planned to discuss the examination of homogeneity and stability of varieties of normally vegetatively reproduced species. With respect to its long-term program, the Working Party agreed to continue revising further

Test Guidelines, especially those for Carnation and for Poinsettia, as well as others when the need arose and to continue preparing new Test Guidelines, especially for those species for which central testing had started or was envisaged. Furthermore, the discussion was envisaged of problems connected with the testing of distinctness of varieties for vegetatively propagated species, the examination of rootstocks, tissue culture and the problems arising in those cases where for a given species varieties existed which were seed propagated in addition to varieties which were vegetatively propagated.

20. Mr. J. Brossier (France), Chairman of the Technical Working Party for Fruit Crops, reported on the last session of his Working Party which had taken place in Florence, Italy, from September 5 to 7, 1978. The report on that session was reproduced in document TW/31. During its last session, the Working Party had finalized its work on the draft Test Guidelines for Almond for submission to the Committee with the view to their adoption during the current session. It had prepared a first draft of Test Guidelines for Apricot and for Hazelnut for submission to the professional organizations for comments. It had also discussed the establishing of working papers for Test Guidelines for Citrus, the discussions of which would, however, have to be continued during the coming session of the Technical Working Party. During the Working Party's tenth session at San Nicolao, Corsica, France, from January 30 to February 1, 1979, it was planned to finalize the work on the Test Guidelines for Apricot and for Hazelnut and to discuss the establishing of working papers for Citrus and for Blackberry. It was also planned to start revising the Test Guidelines for Apple. With respect to its long-term program, the Working Party was of the opinion that the existing Test Guidelines for Apple, for Pear and for Cherry might need to be revised first. With respect to the establishment of new Test Guidelines, it agreed that tropical fruits should receive more attention. As there were too many species for which Test Guidelines could be established, it agreed that the experts would study which of the following species should have preference in the establishment of new Test Guidelines: Pineapple, Avocado, Banana, Blueberry, Chestnut, Eriobotria, Fig, Guava, Japanese Plum, Khaki, Kiwi Fruit, Macadamia, Mango, Mespilus, Olive, Papaya, Pecan Nut, Pistachio, Plum Rootstock, Plantane, Quince, Vaccinium corymbosa, Walnut.

21. In the absence of Mr. M. Bischoff (Federal Republic of Germany), Chairman of the Technical Working Party for Forest Trees, Dr. G. Fuchs (Federal Republic of Germany) reported on the last session of that Working Party, which had taken place in Ghent, Belgium, from September 19 to 21, 1978. The report on that session was reproduced in document TW/32. During its last session, the Working Party had finalized its work on the draft Test Guidelines for Willow for submission to the professional organizations for comments. The Working Party had agreed on example varieties for several of the characteristics in the Test Guidelines for Poplar. At the request of the International Poplar Commission, the Working Party had agreed to start revising the Test Guidelines for Poplar immediately to allow a better harmonization with the registration system used by the International Poplar Commission. During that Working Party's sixth session at Wageningen, Netherlands, from September 25 to 27, 1979, it was planned to finalize the draft Test Guidelines for Willow and to discuss the revision of Test Guidelines for Poplar on the basis of the UPOV Test Guidelines for Poplar, a paper by the International Poplar Commission for the registration of poplars, a paper prepared by experts from France, and any comments received on these three papers. It finally decided to consider the problems arising from the protection of vegetatively propagated and generatively propagated varieties of one and the same species and also from the protection of rootstocks.

Test Guidelines

22. The Committee discussed the adoption of the draft Test Guidelines mentioned in paragraph (1) of document TC/XII/3 and finally adopted, subject to editing, the draft Test Guidelines for the following species:

TG/56/2(proj.) - Almond

TG/58/2(proj.) - Rye

TG/60/2(proj.) - Beetroot

TG/61/2(proj.) - Cucumber and Gherkin

TG/62/2(proj.) - Rhubarb.

23. Since no example varieties for the draft Test Guidelines for Lily (document TG/59/2(proj.)) had been indicated so far by the Technical Working Party for Ornamental Plants, the Committee followed the advice of the Editorial Committee and adopted these draft Test Guidelines subject to the inclusion of example varieties, at least for the main grouping characteristics, and the clarification of several points raised by the Editorial Committee. The Editorial Committee would be authorized to decide whether the Test Guidelines could be published or would have to be presented again to the Committee during its coming session.

24. The Committee noted that the working paper on Test Guidelines for Maize prepared by the Maize Subgroup of the Technical Working Party for Agricultural Crops would first have to be dealt with by the Technical Working Party for Agricultural Crops before it could be sent to the professional organizations for comments, and made the necessary changes in the information on the stages of the different Test Guidelines in document TC/XII/3.

25. On a question from Mr. Duyvendak (Netherlands), the Committee agreed that it should be left to the Technical Working Parties to decide whether for a given species they would prefer to split certain characteristics according to different subgroups, for example inbred lines of maize and maize hybrids, if they felt that they needed for each group the whole scale of the characteristic, which otherwise would not be possible. When splitting, the Working Party had, however, to be sure that the border-line between the groups could be clearly defined.

26. The Committee also discussed the remarks made by the Technical Working Parties as recorded in paragraphs 7 to 9 of document TC/XII/3. It agreed to postpone the question dealt with in paragraph 7 until after the conclusion of the discussion on stability. It recommended the Technical Working Parties to indicate, wherever possible, the main grouping characteristics in the Technical Notes of the Test Guidelines.

27. It also agreed that, apart from the general principle that grouping characteristics could only be characteristics which had been given an asterisk in the table of characteristics, there might be exceptional cases where "attributes"" of varieties could be used for grouping which were not characteristics in the true sense.

28. The Committee referred back the methods for cereals as reproduced in Annexes II to IV of document TC/XII/3 to the Cereal Subgroup of the Technical Working Party for Agricultural Crops and requested that example varieties be included in all three Annexes, that a check be carried out to discover whether the respective ISTA methods could be used in replacement of Annexes II and III, or, if not, why not, and that a few further changes be made in Annex III. The Committee did not recommend the publication of methods in the UPOV Newsletter but thought it wiser to prepare supplements to the respective Test Guidelines and merely announce them in the UPOV Newsletter.

29. With respect to the possibility of organizing a sysposium between the Cereal Subgroup of the Technical Working Party for Agricultural Crops and cereal breeders of ASSINSEL, the Committee reconfirmed the earlier decisions that normally only governmental experts should participate in these meetings and not breeders or representatives of breeder organizations. Occasionally, however, a special separate meeting could be planned, the arrangements of which, however, would have to be channelled through the Office of UPOV.

Offers for Cooperation in Examination and Statistics on the Exchange of Examination Reports

30. The Committee based its discussion on draft no. 2 for document C/XII/6 and draft no. 1 for document C/XII/7, and also on document TC/XII/5. It decided that in the introduction to draft no. 2 for document C/XII/6 an additional paragraph should be added which would make it clear that a report on and a description of a variety for which a report and a description were already available or in preparation should also be provided on request to other member States.

31. It was observed that the philosophy and the circumstances had changed since the establishment of the list of offers and that therefore some States might wish either to withdraw some offers made or add new offers. The Committee noted this possibility and asked the delegates to indicate to the Office of UPOV all changes they wished to make with respect to their country.

32. The Committee agreed that the proposal of the Office of the Union for the presentation of the list of protected Prunus species reproduced in Annex III to this report would require further study and could therefore not be discussed until its next session.

33. The Committee reconfirmed an earlier recommendation that the member States should abstain from selling test results to non-member States of UPOV since this practice could lessen the attractiveness of joining UPOV for such States. It noted, however, that one delegation had asked for the question to be rediscussed and it therefore invited the appropriate body of UPOV to consider the request.

34. The Committee agreed that in future more emphasis should be placed on regionalized testing. It proposed that a working paper be established which would list all species for which at present regional testing took place. That list should then be discussed during its next session.

35. It noted the information on agreements on cooperation in examination and the statistics on the exchange of examination reports contained in draft no. 1 for document C/XII/7.

36. The Committee further agreed to invite all member States to prepare comments or alternative proposals on the technical points of the comments of ASSINSEL on the grouping of vegetable species for the purpose of variety denominations, as contained in document TC/XII/4, and to send them to the Office of UPOV before January 15, 1979.

37. It further agreed to hold a joint session with the Administrative and Legal Committee on November 14, 1979, to discuss in general the problems of bilateral cooperation, regionalized testing and the exchange of test reports already available.

Program for Future Work of the Five Technical Working Parties

38. Under the mandate given to it by the Council, the Committee checked the program of work of the different Technical Working Parties as laid down in document TW/28, paragraphs 40 and 41, document TW/29, paragraphs 19 and 20, document TW/30, paragraphs 16 to 18, document TW/31, paragraphs 14 and 15, and document TW/32, paragraphs 18 and 19. It noted that the results of the discussions of the Technical Working Parties initiated by the President of the Council during the seventeenth session of the Consultative Committee in March, 1978, had already been partly reflected in the programs and that the Technical Working Parties had already partly worked and planned to work in small subgroups when establishing the first Working Paper on Test Guidelines for a given species, before dealing with that species in the Technical Working Party itself. The Committee also referred to the Chairmen of the Technical Working Parties the wish expressed by some experts that, when dealing with species which were only of regional interest, the work on those species could be grouped together in one meeting. It finally approved the programs of the Technical Working Parties as laid down in the above-mentioned paragraphs. It also noted that, during its extraordinary session held on October 18, 1978, the Council had already approved the meetings of the Technical Working Parties for 1979 as indicated in the above-mentioned paragraphs.

39. It recommended the Chairmen and the experts of the different Technical Working Parties to keep a careful watch on the activities in other organizations, associations or groupings dealing with species related to their Technical Working Party in order to ensure that UPOV kept in touch or endeavored to cooperate with those groupings if problems were discussed which might also concern UPOV. It also asked the Office of UPOV to try to achieve closer contacts with the International Organization for Standardization (ISO) and if possible maintain those contacts through a liaison officer.

Program for Future Work of the Technical Committee

40. The Committee noted that the Council had approached, during its fourth extraordinary session held on October 18, 1978, the proposal that the Technical Committee should hold two sessions in 1979. It agreed that its Chairman should propose to the Council that the dates of its thirteenth session be changed and that it be held from March 26 (2.00 p.m.) to March 28, 1979. It furthermore agreed that the dates of its fourteenth session would be from November 12 to 14, 1979. On November 14 a joint session would be held with the Administrative and Legal Committee.

41. During its thirteenth session, the Committee planned to continue its discussions on data recording and interpretation, and especially on the testing of stability. As it had agreed that the results of the discussions as reproduced in Annex II of this report should be sent to the professional organizations for comments, these comments, if any, would be discussed further together with a draft for a revised General Introduction to the Test Guidelines which the Office of UPOV was asked to establish with the Chairman of the Committee. It would also discuss regionalized testing of varieties and the proposal of the Office reproduced in Annex III of this report, the technical aspects of the grouping of vegetable species for the purposes of variety denominations, the draft Test Guidelines finalized by the Technical Working Party for Fruit Crops during its session in January 1978 and the progress report of that Technical Working Party.

[Three Annexes follow]

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Mr. A.F. KELLY, Chairman

III. OFFICE OF UPOV

Dr. H. MAST, Vice Secretary-General
Dr. M.-H. THIELE-WITTIG, Senior Technical Officer
Mr. A. WHEELER, Legal Officer
Mr. A. HEITZ, Administrative and Technical Officer

[Annex II follows]

DATA RECORDING AND INTERPRETATION

Document prepared by the Office of the Union

In connection with the methods used for testing distinctness, homogeneity and stability, the Technical Committee expressed the following preliminary thoughts. It is intended that they will be included in the General Introduction to Guidelines (document TG/1/1) when next revised. They will be sent to the professional organizations in the field of plant breeding and the seed trade for comments before being rediscussed during the thirteenth session of the Technical Committee.

I. TESTING OF DISTINCTNESS

A. General

1. The varieties with which a new variety has to be compared are the varieties of common knowledge as defined in the Convention. A first basis of comparison is normally those varieties maintained in the reference collection of the examining State.

2. For a better definition of the state of a characteristic in the Test Guidelines, example varieties are given whenever possible.

B. True Qualitative Characteristics

3. In the case of true qualitative characteristics (in the sense of discrete, discontinuous characteristics), two varieties have to be considered distinct if they show expressions which fall into two different states of the respective characteristics.

C. True Quantitative Characteristics

4. In the case of true quantitative characteristics--that is, measurable characteristics on a one-dimensional scale--two varieties have to be considered distinct if they are distinct at one testing place at least, provided that the difference between them is clear and consistent. In order to obtain comparable results in the various member States, the number of observations has to be fixed. It is desirable to make a direct comparison between two such varieties. A difference occurring in two consecutive, or in two out of three, growing seasons with one percent significance, based for instance on the application of the Least Significant Difference, is considered a clear difference.

D. Characteristics Observed Visually

5. Visual characteristics are characteristics that are or can be made visible. Differences in taste, smell, feeling, etc., can be dealt with in the same way as visible characteristics.

6. A quantitative characteristic which is normally observed visually but is capable of being measured should be measured, in cases of doubt, if it is the only distinguishing characteristic in relation to another variety. When interpreting visual assessments, two varieties are to be considered distinct if they are distinct at one testing place at least, provided that the difference between them is clear and consistent. In order to obtain comparable results in the various member States, the number of observations has to be fixed. It is desirable to make a direct comparison between two such varieties. When statistical methods are used, the properties of the scale are taken into account and the same confidence levels are borne in mind as for true quantitative characteristics.

7. Quantitative characteristics recorded by visual assessment could be measured given time and adequate facilities. In many cases (e.g. hairiness, glaucosity, curvature, etc.) this would involve quite sophisticated techniques but, in theory, it is possible.

8. Instead of counting the exact number of hairs or measuring the thickness of the wax layer, the varieties are classified on the basis of eye observations. A trained observer can make rapid and reliable classifications. It is indispensable to define the characteristic in question (e.g., either density of hairs or length of hairs).

9. When a fixed scale is used throughout the trials and years, the environmental influence on the varieties is reflected in the figures. Statistical operations on these figures must be preceded by a test on the properties of the scale; e.g., do the observations show normal (Gaussian) distributions and, if not, why not?

10. Visual characteristics are often recorded on a scale that does not satisfy the assumptions of the usual parametric statistics. Even the simple operation of calculating a mean value is not allowed if the notes are taken on a ranking scale not having equal intervals throughout the scale. In this situation, generally only non-parametric statistical procedures are applicable. In such cases it is advisable to use a scale established on the basis of example varieties representative of the different levels of the characteristic. One and the same variety should then always receive the same note and thus facilitate the interpretation of data.

11. Whatever the scale, direct pairwise comparisons are recommended because these have the least bias. In each comparison, it is acceptable to note a difference between two varieties as soon as this difference can be seen with the eye and the observer is convinced that it could be measured if the facilities were available. The simplest criterion for establishing distinctness is of course to require consistent differences (differences with the same sign) in pairwise comparisons, provided that they can be expected to recur in following trials.

E. Combination of Characteristics

12. When having to decide whether two varieties are distinct from one another, cases may arise where two varieties differ in two or more separately assessed characteristics, each below the agreed level of significance.

13. In these cases the combination of characteristics might be a way to establish distinctness. In practice this possibility has already been used when examining the relation between two characteristics as a new characteristic (e.g., length/width ratio).

14. It is often seen that the relation between two characteristics is stable and may show significance when the separate characteristics do not. There are, however, some statistical traps with ratios. It should be checked that the assumptions of the statistical method used are really satisfied.

15. If two characteristics are combined to form one new characteristic and the difference reaches at least the agreed level of significance (1% in at least two years), it is acceptable to use this finding as a basis for establishing distinctness.

16. Another possibility might be to establish distinctness on the basis of a multivariate analysis, e.g., by combining the data of two or more characteristics by Hotellings T^2 or a discriminant function analysis. Care should be taken to avoid the introduction of an artificial combination resulting from the analysis of a limited set of data without having enough experience of its repeatability. The question has also still to be studied whether, in such cases, a minimum level of confidence for each individual characteristic should be required which could be lower than normal.

17. For the time being, no solution can be proposed for the case where two or several characteristics could not be combined. But it might be considered whether in such cases a sufficient number of characteristics might reveal a difference which has to be taken into consideration.

II. TESTING OF HOMOGENEITY

A. General

18. According to Article 6(1)(c) of the Convention, a new variety must be sufficiently homogeneous, having regard to the particular features of its sexual reproduction or vegetative propagation. To be considered homogeneous, the variation shown by a variety must be as limited as possible, depending on the reproductive system of the variety. Possible off-types due to occasional mixture, mutation or other causes require a certain tolerance. Unless stated otherwise in the relevant Test Guidelines, these tolerances should not exceed those set down below.

B. Vegetatively Propagated Varieties and Truly Self-Pollinated Varieties

19. For vegetatively propagated varieties and truly self-pollinated varieties the following table indicates the maximum acceptable number of off-types in samples of various sizes.

Maximum Acceptable Number of Off-Types in Samples of Various Sizes*

N	Maximum Number	N	Maximum Number
2 - 9	0	460 - 529	8
10 - 89	1	530 - 599	9
90 - 149	2	600 - 669	10
150 - 209	3	670 - 739	11
210 - 269	4	740 - 809	12
270 - 329	5	810 - 879	13
330 - 389	6	880 - 949	14
390 - 459	7	950 - 1020	15

C. Mainly Self-Pollinated Varieties

20. Mainly self-pollinated varieties are varieties which are not fully self-pollinated but which are treated as such for testing. For these, a higher tolerance is required and the maximum numbers of off-types allowed in the table for vegetatively propagated varieties and for truly self-pollinated varieties are doubled. The Technical Working Parties are requested to list, within their competence, those crops where this higher tolerance should be applied.

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* Still under discussion.

D. Cross-Pollinated Varieties including Synthetic Varieties

21. Cross-pollinated varieties normally exhibit wider variations within the variety than vegetatively propagated or self-pollinated varieties and it is sometimes difficult to distinguish off-types. Therefore no fixed tolerance can be determined but relative tolerance limits are used through comparison with comparable varieties already known.

22. For measured characteristics the standard deviation or variance should be used as the criterion for comparison. A variety is considered not to be homogeneous in the measured characteristic concerned if--with reference to the Fisher test--its variance exceeds [1.5] times the average of the variances of the varieties used for comparison.

23. Visually assessed characteristics have to be handled in the same way as those which are measured, namely, by comparing them with comparable varieties already known. The number of off-types should not significantly [95% confidence level] exceed those of comparable varieties already known.

E. Hybrid Varieties

24. Single cross varieties have to be treated as mainly self-pollinated varieties, but a tolerance has also to be allowed for inbred plants (sibs). It is not possible to fix a percentage as the decisions differ according to the species and the breeding method. However, the percentage of sibs should not be so high as to interfere with the trials. The Technical Working Parties should fix the maximum percentage tolerated in the Test Guidelines concerned.

25. For double cross or three-way cross varieties, a segregation of certain characteristics is acceptable if it is in agreement with the formula of the variety. If the heredity of a characteristic is known, clear-cut segregating characteristics have to be treated as qualitative characteristics. If the described characteristic is not a clear-cut characteristic, it has to be handled as in the case of normal cross-pollinated varieties; that is to say, the homogeneity has to be compared with that of comparable varieties already known. For the tolerance of sibs, the same considerations apply as in the case of a single cross variety.

III. TESTING OF STABILITY

26. According to Article 6(1)(d) of the Convention, a new variety must be stable in its essential characteristics, that is to say, it must remain true to its description after repeated reproduction or propagation or, where the breeder has defined a particular cycle of reproduction or multiplication, at the end of each cycle.

27. It is not generally possible during a period of 2 to 3 years to perform tests on stability which lead to the same certainty as the testing of distinctness and homogeneity.

28. Nevertheless, during the testing for distinctness and homogeneity careful attention has to be paid to stability. If no facts are discovered which might indicate that the variety is unstable, it can be assumed that the variety is stable.

[Annex III follows]

ALTERNATIVE PROPOSAL FOR THE PRESENTATION OF THE LIST OF PROTECTED PRUNUS SPECIES[3]

(Office of the Union)

Protection						Latin Name	Testing Facilities						English	Français	Deutsch
B	CH	D	DK	F			I	NL	S	UK	ZA				
						Prunus L.: Fruiting varieties (including rootstocks)/Variétés fruitières (y compris les porte-greffes)/Fruchtsorten (einschl. Unterlagen)									
X r				O e		Prunus L. (P. armeniaca L.)			X		X		Apricot	Abricotier	Aprikose
X r		X r		O e		Prunus L.		X	X	X[1]			Cherry	Cerisier	Kirsche
+		+	O e	+		*Prunus avium (L.) L. (P. avium L.)		+ r	+	X	X		Sweet Cherry	Cerisier (cerises douces: guignes, bigarreaux)	Süsskirsche
+		+	X	+		Prunus cerasus L.		+	+	X	X		Morello, Sour Cherry	Cerisier (cerises acides: griottes, amarelles)	Sauerkirsche
+		+		+		Prunus fruticosa Pall.		+	+	X			Dwarf Cherry, Ground Cherry	Cerisier nain de Russie	Steppenkirsche, Zwergkirsche
X r				O e		Prunus L. (P. cerasifera Ehrh.)				X			Myrobalan, Cherry Plum	Myrobolan	Kirschpflaume, Myrobalane
X r				O e		Prunus L.		X r	X				Plum	Prunier	Pflaume
+			X r	+ e		*Prunus domestica L.		+	+	X[2]	X		Plum	Prunier	Pflaume
						Prunus insititia L.				X[2]			Damson, Bullace and Mirabelle	Prunier de Damas - Quetsche (?), ..., Mirabelle	Damaszener Pflaume - Zwetsche (?) Krieche (?), Mirabelle
+ r				+ e		Prunus salicina Lindl.		+ r	+		X		Plum, Japanese Plum	Prunier du Japon, Prunier Japonais	Pflaume
				O		Prunus L. (P. amygdalus Batsch; P. dulcis D.A.Webb; P. amygdalus Bartock; Amygdalus spec.)					+		Almond	Amandier	Mandel
X r				O e		Prunus L. (Prunus persica (L.) Batsch)			X		X		Peach	Pêcher	Pfirsich
						Prunus L.: Ornamental varieties/Variétés ornementales/Ziersorten									
						Prunus L.				X			Ornamental varieties of genus Prunus L.	Variétés ornementales du genre Prunus L.	Ziersorten der Gattung Prunus L.
						etc.							etc.	etc.	usw.

1 Rootstocks only/Porte-greffes seulement/Nur Unterlagen

2 In Denmark and South Africa, only Prunus domestica is mentioned. In the United Kingdom, protection extends to rootstocks being hybrids between P. domestica, P. insititia and P. cerasifera./Au Danemark et en Afrique du Sud, seul Prunus domestica figure dans la liste. Au Royaume-Uni, la protection s'étend aux porte-greffes hybrides entre P. domestica, P. insititia et P. cerasifera./In Dänemark und in Südafrica ist nur Prunus domestica aufgeführt. Im Vereinigten Königreich ist Schutz auf Unterlagen erweitert, die Hybriden zwischen P. domestica, P. insititia und P. cerasifera sind.

3 Amended in the light of information received at the occasion of the twelfth session of the Technical Committee

[End of Annex III and of document]