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INTERNATIONAL UNION FOR THE PROTECTION OF NEW VARIETIES OF PLANTS

GENEVA

TECHNICAL COMMITTEE

**Thirty-Third Session
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**MATTERS ARISING FROM THE 1996 SESSIONS OF THE TECHNICAL WORKING
PARTIES TO BE DEALT WITH BY THE TECHNICAL COMMITTEE**

Document prepared by the Office of the Union

1. This document summarizes, in Annex I, matters arising from the 1996 sessions of the Technical Working Parties which have to be dealt with by the Technical Committee (hereinafter referred to as "the Committee"). They comprise important subjects discussed or decisions taken by the Technical Working Parties, communicated to the Committee

- (a) for information;
- (b) for information and for a possible decision to be taken by the Committee;
- (c) for a decision to be taken by the Committee;

The headings of the different items are listed on page 1 of Annex I

2. To shorten references to the various Technical Working Parties and the BMT in this document, use is made of the following codes that designate their documents:

TWA: Technical Working Party for Agricultural Crops;
TWC: Technical Working Party on Automation and Computer Programs;
TWF: Technical Working Party for Fruit Crops;
TWO: Technical Working Party for Ornamental Plants and Forest Trees;
TWV: Technical Working Party for Vegetables;
BMT: Working Group on Biochemical and Molecular Techniques and DNA
Profiling in Particular.

[Four Annexes follow]

ANNEX I

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TO BE DEALT WITH BY THE TECHNICAL COMMITTEE**

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I. MATTERS FOR INFORMATION

Information on the European Union

1. Representatives of the Community Plant Variety Office of the European Union, informed the Technical Working Parties that, in September 1994, Community Regulation 2100/94 on Community Plant Variety Rights had entered into force, establishing common legislation for the protection of plant varieties for the whole territory of the European Union. The Regulation was to a very large extent based on the elements of the UPOV Convention of March 1991. In May 1995, two implementing Regulations to the Community regime, on procedures and fees had come into force. The implementation of the Community regime was carried out by the Community Plant Variety Office (CPVO), which had taken up duties in June 1995 at its provisional location in Brussels. So far the CPVO had received applications for Community plant variety rights, covering more than 300 different botanical species. Around 50 per cent of all applications had been for varieties of ornamental species. The examination of the varieties was carried out by examination offices on behalf of the CPVO. Therefore the CPVO made use of the existing examination offices in the Member States. On a provisional basis, examination offices had been designated for more than 100 botanical species. Due to an amendment to the existing Regulation in March 1996, the CPVO now had the possibility of considering examination reports based on the results of a technical examination carried out by a UPOV Member State outside the EU as a sufficient basis for the grant of a Community plant variety right.

(See documents TWA/25/13 Prov., paragraph 6, TWO/29/15 Prov., paragraph 13, TWF/27/18 Prov., paragraph 5, and TWV/30/21 Prov., paragraph 11).

2. The TWO noted that in numerous countries belonging to the European Union (EU), the entry into operation of the Community Plant Variety Office (CPVO) had led to a considerable reduction in the number of applications at national level. In other countries, it had further increased.

(See document TWO/29/15 Prov., paragraph 10).

3. *The Committee is invited to note the above information.*

Varietal Association

4. The TWA noted the remarks by the expert from the EU that the deadline for the experiment to be done in the EU regarding varietal association was the end of December 1997.

(See document TWA/25/13 Prov., paragraph 13).

5. *The Committee is invited to note the above information.*

Cooperation with IPGRI and OIV

6. The TWF noted some comments in writing from IPGRI (International Plant Genetic Resources Institute) on the Test Guidelines for Vine and the fact that IPGRI and OIV (International Vine and Wine Office) planned revising their lists of characteristics. It therefore did not enter into details regarding the new draft for revised Test Guidelines for Grape, but agreed to collect all comments and inform IPGRI and OIV of those comments. The TWF would await the timetables for the revisions planned inside IPGRI and OIV and coordinate their further proceeding with those timetables in order to obtain a final document as close as possible to the other lists.

(See document TWF/27/18 Prov., paragraph 35).

7. The Committee is invited to note the above information.

Relation Between National Listing and Plant Variety Rights System

8. The expert from Israel reported in the TWF and the TWO on the results of questionnaire U 2383, dated March 5, 1996, on the different procedures in the individual member States with respect to the period between the date of application and the granting of rights. He had received 25 replies. In general, States from Eastern Europe had a national listing for fruit varieties. For agricultural varieties, almost all States had a national listing; for vegetable varieties, only a few States provided for such a listing. For ornamental varieties, listing was rarely provided for. DUS testing was done for all varieties, value testing mainly for agricultural varieties. Some special schemes existed for certain varieties. Provisional protection was provided in most States as from the date of application for plant variety protection. Only in a few countries did there exist a requirement for abstention from marketing during that period. Romania had an official national listing for varieties of all species. In the Ukraine, the testing for national listing covered only value tests. More detailed information can be found in Annex II to this document.

(See documents TWO/29/15 Prov., paragraph 21, and TWF/27/18 Prov., paragraph 26).

9. The Committee is invited to note the above information.

List of Species in Which Practical Knowledge has Been Acquired

10. The Technical Working Parties noted an updated version of the list of species in which practical technical knowledge had been acquired (document TC/32/5) and appreciated its availability in electronic form. They asked all experts to inform the Office of UPOV of any changes that might occur in future.

(See documents TWA/25/13 Prov., paragraph 7, TWF/27/18 Prov., paragraph 9, TWO/29/15 Prov., paragraph 16, TWV/30/21 Prov., paragraph 16 and TC/33/5).

11. *The Committee is invited to note the above information.*

Level of Involvement of the Applicant in the Growing Tests

12. The Technical Working Parties noted an updated version of document (TC/32/4) on the level of involvement of the applicant in the growing tests. They found that the document contained very useful information which everybody could study at home in detail. The expert from Australia reported on the start of centralized breeder testing for a few species. The expert from New Zealand in the TWO reported on the start of official central tests for several further species. The expert from New Zealand in the TWA reported that for several species in his country they were changing from breeder testing to official government testing because of the growing number of varieties which would create too much work and problems for the breeders, especially with respect to the growing of the reference collection. The TWO asked the experts to inform the Office of UPOV and/or the TWO of any major changes that might occur in the future.

(See documents TWA/25/13 Prov., paragraph 53, TWF/27/18 Prov., paragraph 8, and TWO/29/15 Prov., paragraph 15).

13. *The Committee is invited to note the above information.*

Testing of agricultural varieties

14. One breeder present in the TWA reported on the position of COMASSO towards the cooperation of breeders in the testing of varieties. COMASSO was of the opinion that

(a) the DUS test for plant variety protection and national listing should be interchangeable;

(b) the test for DUS should be done by official authorities and

(c) when breeders offered cooperation and supplied information, that information should be taken into account for the decision on the variety.

15. With respect to the DUS test for national listing and breeders' rights, COMASSO had noted that for national listing sometimes in one country slightly different results had been obtained with respect to the DUS tests than for breeders' rights, which should not happen. The TWA explained that, from the technical point of view, there should be no difference, however, the basis of comparison would be different. In the case of national listing, the candidate variety would only be compared with other varieties known or marketed in that country, or in case of regional groupings like the European Union (EU), in that region, ignoring varieties outside that country or region, while for plant variety protection it would be compared theoretically to all varieties in the world. This different reference collection used as a basis for decisions could lead to different decisions on the basis of one and the same DUS test.

16. COMASSO was of the opinion that it was not possible and desirable for breeders to maintain in parallel large reference collections for the DUS tests. Thus, the use of official tests was preferred. The TWA referred to the different systems of breeder testing and government testing, both acceptable for UPOV. As COMASSO was a regional European grouping of breeders its position reflected the present situation in Europe. The TWA noted that, although COMASSO was almost a regional subgroup of ASSINSEL and although its position was to cover also non-European States, a similar position had not, as yet, been agreed upon by ASSINSEL, but COMASSO was trying to obtain also a similar position inside ASSINSEL. The expert from Canada, with a breeder testing system, could not make any promises on whether breeders might get together in order to reach central testing in some cases, e.g. for rape seed. All other experts present in the meeting reported that in their countries only official testing was accepted for agricultural crops. For several species, bilateral agreements were also made to have varieties tested by the authority of another State and on the buying of test results obtained by authorities of another State.

17. As to the third request, to also use data from breeders for the decision on DUS, COMASSO stated that it would not like to cooperate without being sure that the information was also taken into account in the end. The breeders' data should be part of the data on which the decision was taken. The expert from France referred to the situation in France with respect to varieties of maize. A system had been developed for the training of breeders with a certain level of breeding activity (a certain minimum number of inbred lines) and the validation of data by comparison with data obtained by the official testing authority. It was, however, difficult to extend that system to varieties of further species. Other experts stated that it was not possible to promise in advance the use of breeders' data in the DUS decision. This had to be decided case by case. Data from the breeder would be compared with own data to see whether they confirmed the official results obtained. Breeders might not always have the full reference collection; sometimes even other candidate varieties not available to the other breeder would have to be compared with the candidate variety.

(See document TWA/25/13 Prov., paragraphs 53 to 57).

18. *The Committee is invited to note the above information.*

Testing of seed propagated ornamental varieties

19. Mr. Jörg H. Selchau from ASSINSEL introduced document TWO/29/13 to the TWO explaining the discussion within ASSINSEL and with the Office of UPOV on the need for protection of seed propagated ornamental varieties and the problems involved (high testing fees, lack of UPOV Test Guidelines, too high uniformity requirements). He explained the comparative trials of new varieties undertaken by breeders of Fleuroselect and asked that it be considered whether these trials could not form the basis, after some amendments if needed, for decisions on plant variety protection.

20. The TWO noted the explanations with interest but needed further information on these trials. Mr. Selchau would send more detailed information to the Office of UPOV, especially the instructions given to the breeders for the layout of the trials and an example, on the basis

of a variety, of the procedure followed for the collection of data, the combination of the 27 sites and the decisions taken on the different results obtained, including a list of species for which such tests were undertaken. If possible, on the occasion of the next session of the TWO, a visit to one of these trials could be foreseen and/or at national level experts from the competent authorities could visit those trials and inform themselves, thereby enabling a fruitful discussion during the next session of the TWO.

(See document TWO/29/15 Prov., paragraphs 33 and 34 and Circular U 2448).

21. *The Committee is invited to note the above information.*

Testing Uniformity, Population Standard

22. The TWC noted the results of a questionnaire on the population standard. Those countries that had encountered problems mentioned that, for ornamental crops and some vegetables, statistics were not felt useful; practical experience was the basis for the fixing of tolerances. Different experts had different opinions. There was high variability caused by environmental conditions. It was difficult to change past practice and to think in admissible "P" categories of seed and the way of doing the observations. Those who had no problems nevertheless used different precisions. Some fixed "P" at 1 per cent, others at 3 per cent, others at 2 per cent for predominately self-pollinated varieties and hybrids and 1 per cent for vegetatively propagated or self-pollinated varieties. Some chose "P" from the seed certification norms. Those who observed yearly variations gave as reasons environmental conditions (the quality of the trials, the expression of characteristics) and the sampling size, the representativity, the quality of the crop expert and the attention given to the plants. Concerning the question whether the population standard should be variable or not, there was a quasi-unanimous answer that there was a variation in the level of uniformity observed for a given sample, and agreement on the origin of that variation, but a fixed population standard from year to year was considered preferable to a variable population standard.

(See document TWC/14/19 Prov., paragraphs 14 to 19).

23. *The Committee is invited to note the above information.*

QALSTAT Computer Program

24. The expert from France demonstrated QALSTAT, a program prepared by France and available to national offices through the expert from France. The software allowed different acceptance probability curves for different sampling schemes to be set up, depending on the uniformity or heterogeneity of the species concerned. It could either give the decision rule for a given sample size or search for the sample size for a given decision rule. More details are given in document TWC/14/17.

(See document TWC/14/19 Prov., paragraph 24).

25. *The Committee is invited to note the above information.*

Image Analysis

26. The expert from the United Kingdom reported in the TWC that the proposal for the FAIR project had not been accepted by the EU, but that a new proposal had been made in the meantime. The TWC also noted that a subgroup of the TWO on image analysis was to meet. It recommended that a DUS specialist also participate and that he should establish a list of general problems which should not be limited to one species only and that the problems be studied on an example.

(See document TWC/14/19 Prov., paragraph 28).

27. *The Committee is invited to note the above information.*

Rewriting of Document TWC/11/16

28. The TWC and TWV noted document TWC/14/3 comprising the rewritten document TWC/11/16. The document, after a summary and an introduction, contained a part explaining the different possible errors in the testing for off-types, the testing in more than one year, referred to the sequential test with several examples, followed by a detailed description of the method for one test, a detailed description of the method for more than one test, an introduction to the tables and figures and a definition of the statistical terms and symbols used, before reproducing the tables and figures for different population standards and acceptance probabilities. The TWC found that the document needed further study, especially with respect to the incorporation of more than one trial, to some linguistic improvements and to the style. The example of the balls might also be replaced by an example with plants. For cases of more than one trial, the combined test should be used for the time being. But the sequential analysis approach would be studied further in order to find a better solution for cases of more than one trial. Until the rewriting was completed, document TWC/11/16 would remain the applicable document.

29. The TWC recalled Annex VI to the report on its last session, which reproduced all the decisions of the Technical Committee on the use of COYD, COYU and of document TWC/11/16. It considered whether an introductory document should be prepared stating on which occasions or for which species a method should be used. While some experts considered the COYD and COYU analyses to be applicable to cross-fertilized species and document TWC/11/16 to self-fertilized and vegetatively propagated species, other experts could imagine all methods being applicable to both groups of species and especially to those which were not completely cross-fertilized or self-fertilized. The TWC finally agreed to place on the agenda for its next session an item on a possible document of the above kind, but without requesting anyone to prepare a draft.

(See document TWC/14/19 Prov., paragraph 30 to 32, and TWV/30/21 Prov., paragraph 25).

30. *The Committee is invited to note the above information.*

Telecommunications, Exchangeable Software and Contacts

31. The TWC noted with appreciation document TWC/14/10, containing a list of electronic mail addresses of experts in the technical bodies of UPOV, a table of database management systems in use in UPOV member States and information on exchangeable software. The TWC invited more countries to supply information and to check the information they had given in the past.

(See document TWC/14/19 Prov., paragraph 35).

32. *The Committee is invited to note the above information.*

List of Statistical Documents Prepared by the TWC

33. The TWC noted with appreciation document TWC/14/5, containing a list of statistical documents prepared by the TWC and document TWC/14/6 with a topic index to documents produced by the TWC. The documents will make it easier to find a particular document on a given subject. In future, documents of the TWC will be more clearly separated between:

- (a) documents for purposes of learning or information of the TWC;
- (b) documents that might be helpful for crop experts and
- (c) documents prepared in view of planned recommendations.

To facilitate the separation of documents into these groups they should start with an abstract and a list of contents. The experts from France, the Netherlands and the United Kingdom would prepare a list of all documents containing UPOV recommendations that were still valid.

(See document TWC/14/19 Prov., paragraphs 36, 51 and 55).

34. *The Committee is invited to note the above information.*

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

Impact of the Test Guidelines of the European Union on the UPOV Test Guidelines

35. One expert from a Member State of the European Union (EU) reported that she would see difficulties in including additional characteristics in the Test Guidelines as that would

increase even more the number of characteristics to be tested for a candidate under an EU application. As the EU, when starting the Community Plant Variety Office, had not yet possessed its own Test Guidelines, it had been provisionally decided to use the UPOV Test Guidelines. That was a very good decision as it ensured harmonization in the testing. Unfortunately the EU had, however, made no distinction between asterisked and non-asterisked characteristics and made all characteristics compulsory for testing. The same was also the situation with many bilateral testing agreements between UPOV member States. In these cases many States did not look at the individual Test Guidelines but obliged the testing State to use all characteristics of the Test Guidelines without respecting whether a characteristic had an asterisk or not, thus making all characteristics *de facto* "asterisk characteristics."

36. As a result of the above two situations, whenever a UPOV Test Guidelines document was under revision, experts from the EU and those having to do bilaterally agreed tests sought to drastically reduce the number of non-asterisked characteristics (sometimes by half) in order to avoid their testing. As in sessions of the UPOV Technical Working Parties, the EU Member States were often in the majority, their proposals were frequently accepted, to the regret of other States. The practice of the EU and of many States which were party to bilateral agreements had negative effects on the establishing of UPOV Test Guidelines for worldwide use and left many valuable characteristics outside the Guidelines if they were not thought to be needed in the EU or certain bilateral agreements whatever their value for other UPOV member States.

37. The TWF was informed that the same concerns had already been raised by the TWA during its session in 1995 and that at that time members of the EU Task Force had been asked to intervene to try to change the decision of the EU, but apparently without success so far.

38. The expert from the Community Plant Variety Office confirmed in the TWF the above decision of the EU. It was, however, only temporary until EU Test Guidelines had been prepared. He explained that the decision had been taken because of the urgent need of the Administrative Council to adopt Test Guidelines to test EU applications and that the decision had had to be taken quickly. In order to avoid difficulties for UPOV, he recommended that whenever UPOV revised Test Guidelines or prepared new Test Guidelines and an expert from a EU Member State was involved, instead of reducing the UPOV Table of Characteristics the expert should prepare a full Table of Characteristics for UPOV and at the same time a list of reduced characteristics for testing of EU applications and send that list to the Community Plant Variety Office. On the basis of such a draft it would be easier and faster to prepare the EU's own Test Guidelines.

39. One expert in the TWA raised the problem of having to undertake tests according to two different lists of characteristics recommended by UPOV and CPVO for a country which was both a member of UPOV and the EU. The expert from the breeders insisted that the EU should follow the UPOV Test Guidelines as much as possible. The expert from the EU explained that the problems came from the legal framework, the EU preparing binding rules, while UPOV only recommendations. The EU had already prepared some EU Test Guidelines and for the others it would follow UPOV Test Guidelines. Several experts expressed the view that it seemed impossible to prepare fixed lists of characteristics useable in several countries.

40. The TWV noted differences in the forms and number of characteristics used for DUS testing for UPOV, for national lists, for the European Union (EU) Plant Variety Office or for the EU Catalogue and asked whether further harmonization might not be possible.

(See documents TWA/25/13 Prov., paragraph 9, TWF/27/18 Prov., paragraphs 44 to 48, and TWV/30/21 Prov., paragraphs 12 to 14).

41. The Committee is invited to note the above information and to consider possible steps to be taken.

Trade Names

42. The TWO noted the results of the discussions in the Technical Committee on the request to include in the Technical Questionnaire a request to give the trade name. It repeated all arguments in favor and finally repeated again its request to the Technical Committee for inclusion of the trade name. The best place considered was next to the variety denomination but with the addition “optional.” The applicant should not be forced to give the trade name if he did not want to.

Use of Different Variety Denominations

43. The TWV noted the use of different denominations and/or trade names in different countries for the same variety, partly in order to prevent parallel imports from other countries, which had led to confusion among growers but apparently was legal in certain countries.

(See document TWO/29/15 Prov., paragraph 29 and TWV/30/21 Prov., paragraph 21).

44. The Committee is invited to note the above information and to consider possible steps to be taken.

Picture of the Variety Added to the Official Variety Description

45. The TWO and TWV noted that several States had added to the official variety description a color photo of organs of the variety or made such photo even part of the description. While most experts found that an additional photo provided very useful information, it could not recommend all States to follow the same procedure. At present, the printing of the color would still pose severe problems. In future, the use of photos on the screen may facilitate things. In the Netherlands, some commercial flower sales organizations were already proposing descriptions of flower lots for sale by telephone and computer, including color photos of the plant material. An unresolved question in respect of color photos forming part of official descriptions was to whom the copyright belonged: Could the applicant claim copyright if he supplied the photo or would he have to accept unlimited use of his photo together with the description of his variety once protected?

(See document TWO/29/15 Prov., paragraph 9, and TWV/30/21 Prov., paragraph 22).

46. *The Committee is invited to note the above information and to consider possible steps to be taken.*

Discoveries

47. Several experts in the TWO reported on difficulties in the handling of applications for varieties of material discovered in the wild or bought in a local market in a distant country. Some governments were very sensitive to the protection of pure discoveries and would require at least some type of breeding before accepting the application. Where the material was derived from clonal material obtained in the market, the original material would be considered a variety even if marketed under the species name and rights would thus be refused for lack of novelty.

(See document TWO/29/15 Prov., paragraph 11).

48. *The Committee is invited to note the above information and to consider possible steps to be taken.*

Definition of Off-type

49. The Technical Working Parties noted that the Technical Committee had discussed the amendment to the definition of off-types proposed by the TWF and had agreed that each Technical Working Party should discuss the definition of off-types again, as the definition would be different depending on the form of propagation, and submit a proposal to the next session of the Technical Committee. They furthermore noted that they should especially consider the handling of impurities, admixtures (genetically unrelated plants), and whether all mutations in parts of an organ or only “significant” mutations should lead to considering the plant in question an off-type.

50. The TWO had major difficulties in considering an amendment to its previous proposal. Having noted the difficulties encountered by the TWF in cases of large plants like trees, it finally proposed to delete from its definition the words “in parts of an organ” and proposed to add “in any characteristic” to make it clear that not only characteristics observed as a routine were affected. The TWF noted the proposal formulated by the TWO and agreed to that proposal reading: “Each plant which showed a clear mutation in any characteristic was considered an off-type.”

51. The experts from the breeders in the TWA stated that the scope of off-type for fruit crops was far greater than for agricultural crops. For agricultural crops they proposed to limit the characteristics to those given in the Test Guidelines. The TWA, however, agreed that obvious off-types even if only in characteristics not routinely observed would also be counted

and could lead to a rejection of a candidate variety. The TWV considered that for the testing of uniformity of seed propagated varieties, in addition to any plant which was sufficiently different from the rest of the plants of the variety in the trial in any characteristic used as a routine for the DUS testing, any plant clearly and obviously different in a characteristic not used as a routine for DUS testing could also be considered as an off-type. Thus, also in seed propagated varieties, even in a characteristic never observed before, any plant different to the rest of the plants of the variety could be considered as an off-type and might lead to the rejection of the variety as long as the difference in that characteristic was obvious and clear.

(See documents TWA/25/13 Prov., paragraph 12, TWF/27/18 Prov., paragraph 18, TWO/29/15 Prov., paragraphs 26 and 27, and TWV/30/21 Prov., paragraph 20).

52. The Committee is invited to note the above information and to consider possible steps to be taken.

Admixtures

53. With respect to impurities and admixtures, the TWO confirmed its agreement that any impurity or admixture would be considered an off-type in the same way as any plant showing a clear mutation in part of its organs in any of its characteristics. The expert from the United Kingdom in the TWA mentioned the difficulty in separating off-types and admixtures. The TWA agreed that where a separation was possible, clear admixtures would not be considered off-types.

(See documents TWA/25/13 Prov., paragraph 12, TWO/29/15 Prov., paragraph 28).

54. The Committee is invited to note the above information and to consider possible steps to be taken.

Relative Uniformity in Self-Fertilized Varieties

55. The consideration of characteristics which are important for description and/or to establish distinction, but which are strongly influenced by the environment, as asterisk characteristics, raised considerable discussion among the TWV. One expert was of the opinion that these characteristics should be used for distinction but not for the description of the variety, as the expression of that characteristic would differ from country to country and the description would therefore have no meaning outside the country where it was carried out. Other experts were of the opinion that characteristics important for distinction were also good for description purposes and by indicating the country where the description was made the problem could be overcome. The TWV discussed how to assess uniformity of environmentally dependent important characteristics in self-fertilized species. In the case of crops where characteristics such as shape or size had an environmental component in their expression, they should be considered in the same way as the characteristics for open pollinated varieties,

where only relative uniformity was assessed. The TWV agreed to present the question to the Technical Committee for discussion.

(See document TWV/30/21 Prov., paragraphs 8 and 9).

56. The Committee is invited to note the above information and to consider possible steps to be taken.

Application of COYD to Self-Fertilized Varieties

57. The TWA noted that the TWC had explained that from the purely statistical point of view the COY method could also be applied to self-fertilized crops. The TWA also noted that at present it was, however, only applied to grasses, clover, legumes, fodder beet, sugar beet, further herbage crops or in one country to all cross-fertilized crops (as long as the number of varieties permitted) and to semi cross-fertilized crops (not purely cross-fertilized or purely self-fertilized crops). Some experts stated that the COY method had been developed for cross-fertilized crops. For self-fertilized crops, the basic assumptions of the method (e.g. Gaussian distribution) might not be fulfilled. For self-fertilized crops fixed uniformity was also required while for cross-fertilized crops a relative uniformity would apply. Thus it was difficult to apply COY to self-fertilized varieties.

58. The TWA finally concluded that the COY method was not excluded from being applied to self-fertilized crops. However, before application it had to be ensured that all requirements of its application were fulfilled. The reverse was true in the same way. Document TWC/11/16 was not excluded from being applied to cross-fertilized varieties.

(See document TWA/25/13 Prov., paragraphs 47 and 48).

59. The Committee is invited to note the above information and to consider possible steps to be taken.

Preparation of Documents for Coming Sessions

60. The TWA agreed that all documents for Test Guidelines for the next session should be prepared before the end of March, 1997. Having had the experience during the present session that many new versions of Test Guidelines had not been available till the first day of the session thus not allowing discussion with colleagues testing the respective crop at the national level, the TWA agreed to be stricter in future. The Office of UPOV was asked to check in future which planned documents had been prepared and prepare and circulate a new draft Agenda, deleting all items from the Agenda for which no planned documents had been received at the Office of UPOV one month before a given session. The same decision was also taken by the TWV.

(See document TWA/25/13 Prov., paragraph 72, and TWV/30/21 Prov., paragraph 51).

61. *The Committee is invited to note the above information and to consider possible steps to be taken.*

Test Guidelines to be Handled by Two Technical Working Parties

62. The TWA noted a working paper on Test Guidelines for Opium Poppy prepared by the TWV. It felt that it was in a difficult position as it considered that species to be more an agricultural crop, especially as in certain countries it would fall under national certification schemes and thus had to respect all those rules. The TWA further recalled its experience with respect to the establishing of Test Guidelines for Peas, prepared mainly by the TWV, which it considered not so fortunate. This had led to the adoption of Test Guidelines which for agricultural pea varieties still created problems and were difficult to apply. It did not want to repeat this experience with opium poppy. On the other hand it did not want to delay the preparation of the Test Guidelines for Opium Poppy. It therefore asked those countries in which opium poppy would fall under the agricultural area to request their experts to give all comments on document TWV/30/7 to their national expert in the TWV in order to ensure them being considered for the coming session of the TWV in July 1996. The resulting document should then also be circulated to the experts of the TWA. Depending on the comments on the resulting document, the Chairman would have to decide whether to request in the session of the Technical Committee a postponement of the adoption of that document, should it be submitted.

63. To avoid similar situations in the future, the TWA would check the plans of the other Technical Working Parties more carefully to ensure that they were aware of the preparation of Test Guidelines in which the TWA also had an interest and could participate in their preparation at an earlier stage. Experts were reminded that the last page of the Annex on Test Guidelines of the report on the sessions of the Technical Committee would show all species for which any of the Working Parties planned the preparation of new or revised Test Guidelines.

(See document TWA/25/13 Prov., paragraphs 68 and 69).

64. *The Committee is invited to note the above information and to consider possible steps to be taken.*

Working Papers on Test Guidelines for Rootstocks

65. When discussing a document and comments on a working paper on Test Guidelines for *Prunus* Rootstocks the question arose in the TWF whether to prepare one common Test Guidelines document for rootstocks of the whole genus or several documents for different species within that genus especially where Test Guidelines for fruit varieties already existed for some of them.

66. There were mainly the following three questions to be resolved:

(a) Some rootstocks are seed propagated, others are vegetatively propagated. Thus different degrees of uniformity have to be applied: in the case of cross-pollinated varieties a relative uniformity compared to existing varieties with a limited number of characteristics; in the case of self-pollinated varieties a certain variation has to be allowed between the plants; in the case of vegetatively propagated varieties no more off-types than fixed by the population standard and acceptance probability fixed in any characteristics.

(b) Is it possible to observe for rootstocks any characteristics of the young stage, omitting flower and fruit characteristics? What happens if later on it becomes apparent that the variety is not uniform in a fruit characteristic (if it shows too many off-types in a flower or fruit characteristic)?

(c) Is it really necessary to establish separate Test Guidelines for rootstocks? How many applications for rootstock varieties exist? Would it be easier and feasible to amend existing Test Guidelines for fruit varieties to also cover rootstocks?

67. As a result of these questions, the following possible solutions emerged:

(a) The existing Test Guidelines for fruit varieties would be amended to cover also rootstocks. They would receive a number of additional characteristics of the young stage of the plants and possibly some others of the mature stage, added at the end of the Table of Characteristics and applicable only to rootstocks. In addition some of the existing characteristics would be amended to cover also all possibilities of rootstocks (e.g. additional states of expression would be added).

(b) Separate Test Guidelines for rootstocks would be prepared in parallel for each of the species for which Test Guidelines for fruit varieties existed.

(c) In addition to amended Test Guidelines covering fruit varieties and rootstocks under (a) another Test Guidelines document would be prepared to cover one or more well-defined species (e.g. *Prunus mahaleb*) for which no fruit varieties existed but several applications were received for rootstocks.

(d) In addition to amended Test Guidelines covering fruit varieties and rootstocks under (a), another Test Guidelines document would be prepared to cover all rootstock varieties not otherwise covered.

(e) In addition to separate Test Guidelines for rootstocks mentioned under (b), another Test Guidelines document would be prepared to cover one or several other well-defined species (e.g. *Prunus mahaleb*) for which no fruit varieties existed but several applications for rootstocks had been received.

(f) In addition to separate Test Guidelines for rootstocks mentioned under (b), another Test Guidelines document would be prepared to cover all rootstock varieties not otherwise covered.

(g) One single Test Guidelines document would be prepared to cover all rootstocks of a given genus (e.g. one document for all rootstocks of *Prunus*).

68. In order better to judge the consequences of the above possible solutions it was proposed to take an example and prepare documents for each of these solutions, study them and all their advantages and disadvantages.

69. Before doing that, however, it was proposed to obtain more information on the present situation of rootstocks. For that purpose it was agreed to prepare a questionnaire.

(See document TWF/27/18 Prov., paragraphs 39 to 43).

70. The Committee is invited to note the above information and to consider possible steps to be taken.

The Use of Image Analysis in DUS Testing

71. The TWO concluded in its discussion on image analysis that, in the ornamental field, image analysis was still under research and not yet applicable for decisions on DUS and also not as a tool for measuring, e.g. length or width of plant organs. It was necessary to continue the research and to reach conclusions on the harmonization of the methods. For the future, it was therefore insufficient if only the experts continued discussions in the TWO sessions. Discussions should be held at two levels and experts engaged in research should also meet and exchange information, discuss problems and try to find solutions.

72. The TWO, at the invitation of the experts from Germany, agreed to hold a Subgroup Meeting on Image Analysis at Hanover, Germany, on September 26 and 27, 1996 [later the session changed to October 1 and 2, 1996]. The Subgroup's agenda should cover an exchange of information and an inventory of the state of research in each country, including the hardware and software used, for which species the research had been successful, the use of the technique and a collection and discussion of the questions and problems encountered during the present research and a discussion of the questions raised by the TWO. The TWO agreed that only real problems and difficulties should be discussed, such as the analysis of leaf variation in *Ficus* varieties (in order to find an objective proof of difference in variation), the saving of time in the measurement of length and width in numerous *Pelargonium* varieties or the question of repeatability of results. The Subgroup should also consider giving advice to other States on how to start with image analysis in a given State (hardware, software), how far one program could be used for different species and on how to work from existing photos or photos taken at different testing places and centrally processed by image analysis. Results of image analysis should be harmonized so as to enable their use by all member States.

73. The Subgroup Meeting should be aimed mainly at the experts engaged in research on image analysis in ornamental species, but should also be open to other experts working in other species or other interested experts. The Chairman of the TWO should chair the first meeting. Depending on the outcome of the first meeting, either a second meeting would be proposed in connection with the next session of the TWO, to allow broader participation, or simply a report on the first meeting would be presented to the TWO.

(See document TWO/29/15 Prov., paragraphs 4 to 8).

74. The TWA noted the stage of discussions on the use of image analysis in the different Technical Working Parties. It noted that a Subgroup on Image Analysis would meet in autumn in Hanover, Germany, October 1 and 2, 1996, and that, although being a meeting of the Subgroup of the TWO, other interested experts actually doing research on image analysis were also welcome.

(See document TWA/25/13 Prov., paragraph 52).

75. The Committee is invited to note the above information and to consider possible steps to be taken.

Sequential Analysis

76. The Technical Working Parties noted the updated document (TC/32/6) on sequential analysis prepared by the TWC and that the Technical Committee had recommended that each of the Technical Working Parties act in connection with the TWC and look further into the sequential analysis method as one of the possible approaches for the future, which aimed at reducing the sample size to be used in the testing of uniformity in order to avoid the rejection of good varieties or acceptance of bad varieties.

77. The TWA considered it a good document. But it did not yet help towards the original objective of looking for cost efficient small samples. The TWA needed even smaller samples (e.g. 20 seeds) than foreseen in that document. Thus further advice from statisticians was necessary. Each expert was asked to contact its national statistician and to return to the next session of the TWA with further comments or proposals. A critical examination of the present practical work was needed. The main question was how to reduce the sample size, at least at the start of the test, to save time and money. Experts were also asked to try to apply the method in document TC/32/6 and report during the next session on their different experiences.

78. For ornamental species the TWO saw no means of applying that method. The TWF also concluded that the method did not seem to be useful in its area of species tested, of which most were propagated vegetatively. The TWV also considered the method not useful for vegetable crops.

(See documents TWA/25/13 Prov., paragraph 51, TWC/14/19 Prov., paragraph 25, TWF/27/18 Prov., paragraph 10, and TWO/29/15 Prov., paragraph 17, and TWV/30/21 Prov., paragraph 30).

79. The Committee is invited to note the above information and to consider possible steps to be taken.

Report on New Developments in the Electronic Area in Member States

80. The TWC received from some of its experts short reports on recent developments in their countries. Several experts reported on the further inclusion of the DUST package prepared by Mr. C. Weatherup, United Kingdom, in their system. The experts from the United Kingdom explained that the program would be upgraded to run under Windows. The experts from the United Kingdom also reported on a SMART project with advanced training for scientists based on World Wide Web (WWW) technology and another training program to train scientists in variety identification. More detailed information is reproduced in Annex V of document TWC/14/19 Prov. The TWV also took note of that project. The expert from France reported on the successful reception of data from VCU trials on diskettes, and on the planned change of the database next year from a centralized system to a multi-location NT/ORACLE client/server system. The expert from Germany reported on the creation of a page on INTERNET in the German Agricultural Network including also a list of Test Guidelines used. It was intended to also make reference to UPOV Test Guidelines. All protected and listed varieties would be placed there as well. He referred to contacts between the European Union (EU) Office and Seed Quest On-line for adapting the Common Catalogue to the Seed Quest on-line computer system. A working group was formed to prepare a concept but had not met so far. The advantage would be that changes would be immediately available everywhere. The expert from Israel reported that he had obtained the Common Vegetable Catalogue on diskette from the NAKG in the Netherlands. The expert from IPGRI (International Plant Genetic Resources Institute) reported on IPGRI's list of about 70 different descriptions and the plan for close cooperation with UPOV in the future.

(See document TWC/14/19 Prov., paragraphs 7 and 52, and TWV/30/21 Prov., paragraph 28).

81. *The Committee is invited to note the above information and to consider possible steps to be taken.*

UPOV Documents in Electronic Form

82. The Technical Working Parties noted the discussions held in the Technical Committee on the usefulness of documents in electronic form. They also noted that a first distribution of technical reports had been made on discs. They again strongly supported making available the UPOV documents in electronic form. This should not be restricted to reports of meetings but should cover various other documents, especially Test Guidelines and other more important documents. Several experts considered availability via e-mail or on-line to be the best possibility.

83. The TWF concluded to continue the distribution of technical reports in electronic form for a second year. In addition, all experts would also send their working papers on Test Guidelines in electronic form to the Office of UPOV. Taking the example of Test Guidelines for Pear, it would make a trial to submit all comments to the Working Paper in electronic form to be combined by the expert from Israel into one single document.

84. The TWO concluded that the ideal situation would be if all UPOV documents available to the general public could be made available on Internet or on the monthly UPOV-ROM. If this were too far reaching, UPOV should decide on a more limited number of documents which should, however, include at least all UPOV Test Guidelines and some other important technical documents. To make a start in its area, the TWO agreed to submit in future drafts for amended Test Guidelines in electronic form to the Office of UPOV. The Office of UPOV would circulate to the experts the draft Test Guidelines for Serruria and Firelily in the new presentation (Table of Characteristics in four languages) in order to ensure that everyone used that new format for their new drafts. Until a decision had been taken by the Technical Committee and/or the Council of UPOV on the general policy, the Office of UPOV should, on individual requests, send documents in electronic form to the requesting expert as far as possible and available. One problem still to be solved was the handling of diagrams in the Test Guidelines.

(See documents TWA/25/13 Prov., paragraph 11, TWF/27/18 Prov., paragraph 17, and TWO/29/15 Prov., paragraphs 24 and 25).

85. *The Committee is invited to note the above information and to consider possible steps to be taken.*

UPOV-ROM Plant Variety Database

86. The Technical Working Parties noted the latest stage of preparation of the UPOV Plant Variety Database on CD-ROM (UPOV-ROM). Several experts acknowledged with appreciation the efforts which had been made by the Office of UPOV in advancing the CD-ROM project. They invited all participants to contact their respective colleagues at the national level for them to also see and appreciate the information on the first production disc.

87. At the request from the Office of UPOV, the TWC discussed various details of the production disc and agreed that

(a) the minimum information should not be changed; in the beginning, however, it should be applied with great tolerance;

(b) incomplete dates are still valuable and should be maintained, the lacking information replaced by blanks or zeros;

(c) the validation date to be given should be the date the output from the national database was made;

(d) names of old varieties for which protection or listing had lapsed should be kept according to the present rules of the State concerned but the crop experts should discuss the question of a possible harmonization of the periods. Some experts thought the names should be kept permanently in the database.

88. The expert from the breeders in the TWA and the TWV asked about the possibility of a direct access to the UPOV-ROM by breeders. The TWA noted that the availability of the

UPOV-ROM for non-member States and the private sector had not yet been decided, but would be discussed at the next Council meeting in October 1996.

(See documents TWA/25/13 Prov., paragraph 16, TWC/14/19 Prov., paragraphs 5 and 6, TWF/27/18 Prov., paragraphs 24 and 25, TWO/29/15 Prov., paragraphs 42 and 43, and TWV/30/21 Prov., paragraph 18).

89. *The Committee is invited to note the above information and to consider possible steps to be taken.*

Visually-Assessed Characteristics

90. The Chairman of the TWC briefly recalled that the TWC had discussed several methods in the past which might be helpful in judging visually-assessed characteristics but had not made any recommendations on their use. They were just offers for help. If any other Technical Working Party needed help it could approach the TWC. The expert from Germany added that the methods were just explorative methods. So far, winter wheat, pelargonium and broad beans had been chosen as examples. The vegetable expert from Germany reported on his experience with the method when applied to celeriac. He repeated his report also in the TWV. As a result

- (a) it appeared that in several characteristics only part of the whole scale was used;
- (b) it showed whether the minimum distance was set the right way;
- (c) it determined the discriminative power of each characteristic;
- (d) it showed in a histogram the distribution of the varieties in the characteristics;
- (e) it gave a complete biometrical evaluation whereby the COY method might cause less varieties to be declared distinct than visual assessment;
- (f) it showed the correlation between characteristics.

91. The TWA agreed that the method explained by the TWC and already applied to broad bean was a good tool to help find the best characteristics and that it should in principle be applied to all visually-assessed characteristics for all Test Guidelines at the time of their preparation or revision. It noted that the TWC had made an offer to help whenever a Technical Working Party would like to apply the method to a further species and would continue with the Test Guidelines for Sunflower.

(See documents TWA/25/13 Prov., paragraph 50, TWC/14/19 Prov., paragraphs 8 to 11, and TWV/30/21 Prov., paragraphs 24 and 29).

92. *The Committee is invited to note the above information and to consider possible steps to be taken.*

Acceptance Probability Curves to Define an Appropriate Sample Scheme

93. The TWC noted document TWC/14/4 on acceptance probability curves to define an appropriate sample scheme. The document prepared by experts from France on the basis of uniformity studies on varieties made for UPOV gave an example of how the use of acceptance probability curves could help to define a sampling scheme. The points of view of the different persons concerned by the variety were confronted, and a solution which should satisfy everyone was sought. In part 1, a short introduction to UPOV was given; in part 2, two different situations of uniformity studies were explained (biological heterogeneity between plants in a variety, and plants in a variety which are usually alike); part 3 explained how the studies were done in practice; part 4 reproduced the history of the choice of the sample size and the decision rule in UPOV, in part 5, on acceptance probability curves, it was explained what the curves showed, how they were computed, what they looked like in an example and finally a solution was sought by understanding the aims and concerns of different persons (e.g. scientific director, breeder, user, UPOV crop expert); part 6 included a study on whether it was possible to satisfy everyone and in part 7 the question was opened up for other studies. The document concluded that in all cases, unless there had been a law or a regulation already accepted, it was important to define the aims and concerns of the different kinds of persons dealing with the problem. Trying to translate this information in acceptance probability curves was a good way to illustrate and permit discussion. The concerns were often more important than the goals when an agreed solution had to be found. Ready access to a computer program to explore the possibilities assessed by the discussion was necessary if people wished to be able to look for solutions or adapt a solution when the conditions differed. The QALSTAT program was appropriate for this. The TWC appreciated the document with its explanations and agreed to present it to the Technical Committee.

(See document TWC/14/19 Prov., paragraphs 21 and 22).

94. *The Committee is invited to note the above information and to consider possible steps to be taken.*

Consequences of the Introduction of New Characteristics for Already Protected Varieties

95. The TWA noted document TWA/25/5 containing a proposal to include in an Annex of the Test Guidelines for Ryegrass characteristics on electrophoresis in the same way as already done for maize, barley and wheat and with the same reservations on the usefulness of those characteristics. The TWA had a long discussion on the possibilities of using electrophoretic characteristics in cross-pollinated species, especially with regard to the testing of uniformity, whether it was possible to request the breeder of an earlier similar variety to maintain his variety fixed in the frequencies of alleles and whether a difference in frequencies of alleles

could be used to establish distinctness as the varieties were by definition not uniform in those characteristics.

96. The TWA noted that whenever a new characteristic was introduced, the problem arose whether that introduction might lead to additional obligations for breeders of varieties which had not been tested for that characteristic. The majority of the member States was of the opinion that that should not be the case. Breeders could not be requested from a certain date onwards to make their varieties uniform in new characteristics or to keep them uniform in case they happened to be uniform. As this position had already been applied to traditional new characteristics it should also be applied to electrophoresis characteristics. The problem, however, arose of what would happen if the first variety (A) shifted in the previously non-observed characteristics towards the new variety (B) in a way that reduced the difference between the two varieties to below its acceptable minimum. Would B lose its protection? Would A be considered unstable as the plant material deposited at the time of application would be different to that on the market although there was no difference to the variety description established at the time of granting the right to A? Should the breeder be warned that he had to keep his variety stable with respect to additional characteristics not mentioned in the description? The TWA concluded that the answer to these questions was not a technical but a legal matter and should thus also be addressed to the Technical Committee as well as to the Administrative and Legal Committee.

97. While these were already difficult questions to be answered for traditional characteristics, they were even more difficult in cases where there was only a difference in frequencies of alleles, e.g. one variety with 20 per cent alleles a and 80 per cent alleles b, the other with different percentages which the breeder of variety B may easily select from variety A or even reach by mixing the alleles in the required percentage.

98. The TWA furthermore noted that from the purely technical point of view it was possible for a breeder to make his variety uniform (e.g. 100 per cent of one allele only) but that it was not considered necessary by the breeder and also by the experts of the TWA. Reference was made to similar cases, e.g. hilum color in broad beans or flower color in lucerne. For lucerne there had been no problem as the genetics were known and it was not possible to produce copies with different frequencies. For broad beans, however, UPOV decided not to use the characteristic for distinctness purposes if both varieties were not uniform. Different frequencies of hilum color were not acceptable for distinctness purposes, while the TWA was not completely opposed to accepting gene frequencies. However, more discussions would be necessary.

99. The TWA agreed that it should not put itself under pressure to accept these new methods only because a lot of research had taken place in different countries and authorities now demanded results in their use for DUS purposes. If they created more problems than they solved, if they placed too high a burden on the shoulders of the breeders, if they were not practically workable or might lead to an erosion of the PVR system, experts should have the courage to stop discussions and say "no" to these methods. It was thus also important to obtain the views of the breeders.

100. One expert proposed a ring test for ryegrass to check the system before introducing it. The problem was that there was no absolute uniformity but only different frequencies would

be observed. There were no example varieties for a given allele, but the alleles were quantitatively spread over the varieties. In the ring test, plants, e.g. with allele a and plants with allele b reproduced vegetatively, should be exchanged to ensure all use the same alleles with the same name and also seed lots of varieties should be exchanged to verify whether different offices reached the same results.

101. As for ryegrass, tetraploid varieties also existed and a further difficulty would be to find the correct number of plants to be tested. For this question statisticians should be asked for help. Some experts feared that the minimum number of plants in tetraploid varieties with 35 possible combinations would bypass 1000. Others wondered whether the Hardy Weinberg Equilibrium to be tested after one year was applicable to check whether the variety was really a cross-fertilized variety and not just an artificial mixture of plants with different alleles. The problem was thus not a problem of uniformity but of stability of the frequencies.

102. As frequencies meant that it was not possible to check uniformity, stability of the frequencies had to be ensured. It was, however, so far unclear whether the genetic frequency had to be checked (which may change in cases where pollination was not random or the variety was not in equilibrium) or the allele frequencies (which may change through selection). The number of plants to be observed would largely depend on which of the two alternatives was applied. In the case of a real population the estimation of allele frequencies could be sufficient to check stability. As the same allelic distribution could be reached in synthetic varieties with different mixtures of different sets of alleles, genotypic frequencies had to be checked to avoid accepting mixtures of two varieties. This would lead either to less reliable information because of low numbers or to increased costs in case of very high numbers of plants to be tested.

103. Some experts warned that apparently that method would go too far, that much more effort than normally made in DUS testing would have to be accepted and that too much time, effort and money would have to be spent. If the effort and problems were too much and the method too complicated, it could not be applied.

104. The TWA noted that document TWA/25/5 had made the various problems very visible. It finally agreed

(a) to present the legal questions on possible additional requirements for the breeder of a similar earlier variety to the Technical Committee and to the Administrative and Legal Committee (CAJ);

(b) to continue further discussions on uniformity, as uniformity could not be applied but only stability of frequencies,

(c) to ask advice from the TWC on the number of plants in tetraploid varieties to be observed and whether the chi-squared test was at all applicable;

(d) to obtain the opinion of breeders;

(e) to rediscuss the meaning of "significantly different" and "reasonably stable";

(f) to rediscuss the question of example varieties and of a ring test

(g) to ask the expert from the United Kingdom to prepare a new document as a result of the above discussions.

105. The inclusion or non-inclusion of electrophoretic characteristics in the Test Guidelines for Ryegrass would depend on the outcome of the above-mentioned steps and on the results of a ring test to be started at a later stage.

(See document TWA/25/13 Prov., paragraphs 25 to 35).

106. The Committee is invited to note the above information and to consider possible steps to be taken.

Information From the Last BMT Session

107. The Technical Working Parties noted the report on the third session of the Working Group on Biochemical and Molecular Techniques and DNA Profiling in Particular (BMT), that the next session of the BMT was scheduled to be held in Cambridge, United Kingdom, from March 11 to 13, 1997, and that further work and discussions were needed within the BMT. Scientists needed more information on the UPOV aspects and UPOV experts needed more information on the techniques. All aspects of the methods needed to be studied further to clarify all the unresolved points and all Technical Working Parties should discuss the subject in more detail and report to the Committee. The item would therefore remain on the agenda for the next session of the Committee, although no BMT session would have taken place in the meantime.

108. Some experts warned that the TWO should pay more attention to these methods and encourage other people to look into their research on DNA methods also on ornamentals. Others repeated that enough other characteristics were available in the ornamental area and the DNA methods were not needed for DUS testing. They may be useful for identification but unless results could be linked to phenotypic expressions they were not useful for distinctness purposes. The TWO noted that some research was done in this field with *Pelargonium* in France, *Calluna* in Germany and roses in Spain. It will follow that research. The TWO finally agreed to await further progress in knowledge of these methods. For the testing of distinctness in the ornamental field these methods were at present not needed as sufficient morphological and physiological characteristics were available. Having noted paragraphs 36 and 38 of the report from the last BMT session (document BMT/3/18), the TWO agreed with the conclusions of the BMT stated in these paragraphs which read as follows:

“Final Conclusions: The Working Group agreed that the new techniques for DNA profiling were a powerful tool to provide detailed information on the relationship between varieties. They supplied considerable background on a variety and were also very useful for the identification of existing varieties. They would be very useful for the estimation of essential derivation together with other sources of data (e.g. breeding history). The Working Group was not, however, in

a position to recommend its use for distinctness purposes. Many questions emerged, especially concerning the genetic map, the link between markers and genes, the link between markers and possible expression of a gene in the phenotype, and the whole question of uniformity. It therefore finally proposed that the Technical Committee not recommend the use of DNA profiling for DUS purposes before all these open points had been clarified or before harmonized protocols had been established for the use of DNA profiling (if its use was ever accepted for DUS testing).

“The Working Group favored the approach of ASSINSEL which was to keep the judgment of essential derivation as far as possible separate from the DUS testing and that the criteria of essential derivation had to be judged species by species. At present information on DNA profiling should only be complementary information which may help the expert in the testing but which would not be used for distinctness testing.”

(See document TWO/29/15 Prov., paragraphs 38 to 41).

109. The Committee is invited to note the above information and to consider possible steps to be taken.

Documents for the Next BMT Session

110. *Review of Cluster Analysis:* The TWC noted document TWC/14/8 comprising a review of methods for cluster analysis of marker data. The document summarized the various molecular techniques now available for varietal identification, which are more powerful than traditional morphological comparisons and isozyme techniques. Statistical analysis of DNA profile data usually consisted of three steps: (i) scoring the profile; (ii) calculating the genetic distances; (iii) summarizing genetic relationships, e.g. as a dendrogram. Dendrograms were useful for studying the genetic relationships among crops cultivars or inbred lines. The document described the computational steps for generating dendrograms from marker data. The type of distance measure suitable for analyzing a given data set depended on the data. Therefore, the type of data arising from DNA profiles and how to score such profiles were described. A brief account was given of some distance and similarity measures in common usage and a short description of some common clustering algorithms. Under “Type and scale of marker data” the banding data and allelic data were handled; under “Genetic distance measures” binary banding data, measures that ignore negative matches and measures which treat positive and negative matches alike, and allelic frequency data and band frequency data were treated; under “Clustering methods” the Unweighted Pair-Group Method using Arithmetic average (UPGMA) method, the single linkage (nearest neighbor), the complete linkage (furthest neighbor) were explained as well as other properties of the previous methods abbreviated under the acronym SAHN—Sequential (S), Agglomerative (A), Hierarchic (H) and Non-overlapping (N)—were explained; under “Choice of clustering method” possibilities of choices were mentioned and statements of other authors cited. At the end, references to other articles followed and in an appendix an example for deriving allele frequencies and band frequencies from banding patterns and considering a monomeric single-

locus enzyme showing triallelic variations in a cross-pollinating population of a diploid species. The TWC noted the difficulties of working with band frequencies instead of allele frequencies if knowledge of the genetics was missing and also when it was not known whether certain enzymes were monomer or polymer where different numbers of bands would stand for the same locus.

(See document TWC/14/19 Prov., paragraphs 38 to 40).

111. The Use of the Analysis of Molecular Variance (AMOVA) for Distinctness Studies: The TWC noted document TWC/14/15 on the use of the analysis of molecular variance (AMOVA) for distinctness studies. After a short introduction, the document explained the principles of the method, its application to distinctness studies, special cases, the testing procedure and finally gave some examples of its application. The analysis was established for cases where data were available in samples from different populations or different subdivisions of the same population. It had been developed for haploid data but had been extended for diploid data as well. Pairwise comparisons could be performed to test for significant differences in gene frequencies between two varieties. It concluded that AMOVA was a multilocus alternative to the traditional computation of chi-squared distances. A higher weight was given in the method to genotypical combinations. It seemed to be slightly more discriminant but the present testing procedure was not yet satisfying. The TWC noted that the software for AMOVA was available as follows: anonymous Ftp, acasun1.unige.ch, directory pub/comp/win/amova.

(See document TWC/14/19 Prov., paragraph 41).

112. Similarity, Clustering and Dendrograms: The TWC noted document TWC/14/14 on similarity, clustering and dendrograms. The document laid down the possible uses but also the possible abuses of dendrograms by scientists. There were numerous different methods. Several of them, although with different names or even unnamed, did similar things while others did different things or were applicable only to certain situations or under certain conditions. Thus it had to be carefully studied first whether a given method was applicable to a given situation. Unfortunately in many cases scientists would not do this evaluation before applying a method and would just apply a method and would be satisfied with it if they liked the results coming from the method. This was a wrong and dangerous approach which unfortunately was very frequent. Thereafter some primary questions were explained which had to be answered before applying a method for grouping: Is there a natural grouping? Are groups/clusters of known shape sought? Are known "controls" available to mark "groups"? Are proposed clustering methods appropriate to the (biological) mechanism that generated the data? Are hierarchical "tree/branch" methods appropriate? Are methods of density search, clumping and partitioning appropriate? How many groups are desired? Are overlapping groups allowed? Have the data been screened for other values? etc.

113. Furthermore the following agglomerative methods and several clustering methods were explained: nearest neighbor (single linkage); furthest neighbor (complete linkage); centroid cluster (UPGMC--unweighted pair group); medium cluster--Gower's method (WPGMC--weighted pair group); group average cluster (UPGMA--unweighted pair group average) and Ward's Method--Orloci (error of sum of squares). Thereafter followed non-hierarchical methods as there were decisive methods; partitioning methods; K-cluster means methods and

density search methods. The document concluded with dendrograms and alternatives to dendrograms as there were contour intervals, contours with minimum spanning "tree," first and second order distances and the "ball and rod" method. It pointed out the frequent misuse of dendrograms. Dendrograms were just the visualization of data in a non-mathematical way showing a certain relationship. They should be read from top to bottom and not only at the bottom. They could rotate as for example a child's mobile. As for a child's mobile, if a part was taken out the whole mobile would become unstable, dendrograms should not be used with parts left out.

114. Several experts of the TWC stressed again that dendrograms were helpful as a quick screening tool but were not the final result they were often wrongly taken for. They were also not giving a pedigree. In many cases scientists wrongly stopped research when reaching a dendrogram that allowed only a first look at the question. This common approach was a dangerous tendency.

(See document TWC/14/19 Prov., paragraphs 42 to 46).

115. Statistical Analysis of Molecular Marker Data: The TWC noted document TWC/14/18 on statistical analysis of molecular marker data, prepared for non-specialists. Several points in the paper were also covered by the preceding papers, however, the principal coordinate analysis was only reported in that paper. The TWC agreed that it was necessary to work more with molecular scientists and to improve the link between the methods and statistics.

(See document TWC/14/19 Prov., paragraph 47).

116. Follow-up of Documents for BMT: The TWC agreed that documents TWC/14/8, TWC/14/14 and TWC/14/15 be given in the present form to the Chairman of the BMT for comments. In addition they would be slightly amended by adding as needed a list of contents, a summary, the limitations or restrictions of the methods and mentioning which method was applicable to self-fertilized crops and which to cross-fertilized crops (populations). Also, some parts of the overhead tables or diagrams should be incorporated. The amended versions should be ready by the end of September 1996 for distribution to the BMT. The TWC stressed that it was important that the documents be placed on the agenda for the next session of the BMT and presented orally during that session.

(See document TWC/14/19 Prov., paragraph 48).

117. The Committee is invited to note the above information and to consider possible steps to be taken.

III. MATTERS FOR A DECISION TO BE TAKEN BY THE COMMITTEE

Rewriting of the COY Analysis

118. The TWC considered document TWC/14/7 comprising the rewritten document on the COYD method a good reference paper. After a summary and an introduction, it made

reference to the previous UPOV distinctness criterion, explained the combined over years distinctness criterion, made a proviso on the limitations of the method, explained the refinement of the method through the Modified Joint Regression Analysis (MJRA) and explained the implementation of the method, giving also some publications as references. An example of part of the output program TWRP was given in a table, showing variety means and results of analysis of variance of characteristics, a comparison of varieties and the distinctness status of candidate varieties. The statistical details of the COYD analysis and the MJRA refinement method were given in an annex. It had been considerably improved compared with document TC/30/3 and was shorter and better structured. The TWC proposed to submit the document to the Technical Committee in order to replace document TC/30/4. Only some small changes at the end of PROVISIO should be made and the part on the MJRA should be shortened. The part of document TC/30/4 on the COYU should be reproduced unchanged. The amended version is reproduced in document TC/33/7 for approval by the Technical Committee.

(See document TWC/14/19 Prov., paragraphs 33 and 34).

COYD-Long-term LSD

119. The TWC reconfirmed its basic principle of always using the COYD method if there were more than 20 degrees of freedom, and the long-term LSD if there were less than 20 degrees of freedom available.

(See document TWC/14/19 Prov., paragraph 23).

Results of Running the COYD Program Distributed on Diskette During the TWC Session to Check Whether National Implementations are in Concordance with the Latest Version of DUST

120. The TWC encouraged more countries to run the data on the diskette distributed during the TWC session in 1995 in the down-loaded and in the national computer incorporated program and verify whether the results would be the same results as those reproduced on the diskette.

(See document TWC/14/19 Prov., paragraph 37).

121. *The Committee is invited to take the necessary decisions.*

Transgenic/GM Varieties

122. The expert from France reported in the TWA on applications for GM varieties of melon and maize. One application for melon was for national listing, 14 applications for maize were for national listing and 5 applications for plant breeders' rights. France planned to request a "Type C" release in the European Union. The expert from Germany reported that there had

been no applications for GM varieties in Germany but it expected to receive an application this autumn for GM varieties for oilseed rape, which had herbicide resistance, at present "Type C" release was applicable but a change to Type B was contemplated. At the request of the Chairman, the expert from the breeders in the TWA explained the different release groups for GM varieties, according to European Community Directive 19220. The expert from Denmark reported that in her country GM varieties first had to pass the Ministry of the Environment. At present there was one application for a herbicide resistant fodder beet variety. The expert from Israel reported on an application for a GM variety of vegetable used in a breeders' program. The expert from the Netherlands reported that they had received applications for GM varieties for starch-modified potatoes and had carried out DUS testing under "Type B release." The expert from Canada reported that the Biotechnology Unit dealt with GM varieties in Canada and, in the Canadian system, breeders would do the tests. One application for potato and several applications for rape seed varieties have been received as GM varieties. The TWV noted that in several States applications for protection for GM varieties had been received or were already under test.

(See document TWA/25/13 Prov., paragraphs 4 and 5).

123. The Technical Working Parties noted the decision of the Technical Committee to request from the applicant a statement in the Technical Questionnaire whether the candidate variety is a transgenic/GM variety or not. Recognizing the problem that no single definition of GM variety existed, and that the different rules for its release made it difficult to apply GM variety worldwide, they agreed that this matter should be discussed in the CAJ before the question whether the candidate variety was a GM variety was included in the Technical Questionnaire of the Test Guidelines. If a positive decision was reached, the TWA proposed to include in the Test Guidelines for Rape Seed under paragraph 4.3 the request for a statement whether the variety was a GM variety with the following wording:

"4.3(i) Does the variety require prior authorization for release under legislation concerning the protection of the environment, human and animal health, in the country in which the application is made?

Yes [] No []

"Has such authorization been obtained?

Yes [] No []"

(See documents TWA/25/13 Prov., paragraphs 7 and 58, TWF/27/18 Prov., paragraph 11, TWO/29/15 Prov., paragraph 18, and TWV/30/21 Prov., paragraph 33).

124. *The Committee is invited to take the necessary decisions.*

New Alleles or Correction of Alleles for Certain Species:

125. New Alleles for Wheat: The TWA noted the result of a ring test which proposed to amend characteristic 28 (Glutenin composition: allele expression at locus Glu-B1) of the Test Guidelines for Wheat (TG/3/11) by including a further state of expression referring to bands 6.1 + 22 with the example variety Schwabenkorn. It approved that proposal and proposed to submit the document to the Technical Committee for adoption and publication as Addendum to document TG/3/11 after completion of the explanations and correction of an error. To speed up the procedure, as agreed during the last session of the Technical Committee, the Professional Organizations should be given time to comment on the above amendment by correspondence before the session of the Technical Committee in October 1996. All changes are reproduced in document TC/33/6.

(See document TWA/25/13 Prov., paragraphs 38 and 39).

126. The Committee is invited to take the necessary decisions.

127. New Alleles for Barley: The TWA noted the result of a ring test which proposed to amend characteristics 31 and 32 of the Test Guidelines for Barley (TG/19/10) by including two new C-hordein alleles (characteristic 31) and four B-hordein alleles (characteristic 32). It approved that proposal and suggested submitting the document to the Technical Committee for adoption and publication as Addendum to document TG/19/10 after completion of the explanations. To speed up the procedure, as agreed during the last session of the Technical Committee, the Professional Organizations should be given time to comment on the above amendment by correspondence before the session of the Technical Committee in October 1996. All changes are reproduced in document TC/33/6.

(See document TWA/25/13 Prov., paragraphs 40 and 41).

128. The Committee is invited to take the necessary decisions.

129. Correction of Alleles of Maize: The TWA noted corrections proposed on the Allele expression at Locus PGM1 and PGM2 of characteristics 42.1 and 42.2 of the Test Guidelines for Maize. It approved that proposal and proposed to submit the document to the Technical Committee for adoption and publication as Addendum to document TG/2/6 after having corrected characteristic 42.2. The TWA noted that two of the alleles had no example varieties as they were in private lines only. To speed up the procedure, as agreed during the last session of the Technical Committee, the Professional Organizations should be given time to comment on the above amendment only up to the session of the Technical Committee in October 1996. All changes are reproduced in document TC/33/6.

130. The TWA would still check a new allele. For that purpose next year a ring test would be organized in which the Czech Republic, Hungary, Poland, Slovakia and Spain and also Romania would participate. The expert from France would distribute the required seed lots.

(See document TWA/25/13 Prov., paragraphs 42 to 44).

131. *The Committee is invited to take the necessary decisions.*

Harmonization of States of Expression and Notes for Different Characteristics

132. The TWF noted several documents on harmonization in the Test Guidelines. It also noted that the TWO had followed the example laid down in document TWV/29/7 and approved by the Technical Committee on the wording of attitude characteristics. It could, however, not follow that strict ruling. It considered that several different situations existed which would require different wordings or different Notes. It would thus be wrong to try to impose a certain wording. It would have to make more studies and collect the different cases, not only for attitude but also for other characteristics. Once having agreed on certain examples, a possible procedure to ensure better harmonization could be to observe the plant, note down a wording, compare it with the examples, decide whether one of the examples fitted or whether a different wording had to be chosen and re-check the solution with the plant on its applicability.

133. For the collection of standard examples, the TWF agreed to start with document TWF/27/16. All experts were asked to inform the expert from South Africa of any objections to the characteristics and their states of expression, to the explanation of the terms and to the translations listed. Any comments on document TC/27/5 or document TC/26/4 Rev. should also be sent to the expert from South Africa. As a further step, other example terms and translations of certain terms would be added, also standard diagrams for certain terms appearing frequently should be foreseen as well as a more detailed proposal for the order of characteristics as reproduced in TG/1/2 paragraph 42 to 44 and some standardized Technical Notes.

134. The expert from Germany reported in the TWF on an extract from the adopted Test Guidelines for Apple, Cherry and Peach with characteristics containing only two states. She recommended that in future the TWF should more carefully consider whether there was always a clear cut dividing line and whether two states alone were sufficient.

135. The expert from South Africa finally explained that there were in principle six categories of characteristics, some with the possibility of quantitative states or qualitative states of expression depending on the variety or the characteristic. The categories are reproduced in Annex III to this report. The TWF asked the Editorial Committee to respect the decision of the TWF on the attribution of different Notes, depending on the case, and not try to change the Notes without reflecting on a given case.

136. The TWO noted several documents on the harmonization of states of expression and Notes in the UPOV Test Guidelines. It agreed that there was a real need for further harmonization. It also agreed, however, that where it had intentionally chosen for a given situation to present a characteristic in a quantitative or qualitative way, that decision should not be overridden by the Editorial Committee. As an example, the case of shape was mentioned with the states "concave, straight, convex" which, depending on the species could

have the Notes 1, 2 and 3, or 3, 5 and 7 if the intermediate states 2 and 4 and the extremes were needed.

137. The TWO noted the decision of the Technical Committee on the proposals for attitude presented by the TWV and applied it directly in some Test Guidelines. It considered, however, that there might be cases where the proposals could not be applied. They should also not apply to the growth habit. The TWO will look in more detail at several quantitative characteristics. The expert from South Africa will prepare a document for discussions during the next session. Moreover, as far as possible, the Chairman of the TWO should attend the Editorial Committee session in order to avoid the Editorial Committee overlooking justified differing presentations in Test Guidelines.

138. The TWV discussed how to reach more harmonization in the wording and giving of Notes to states of expression in the Test Guidelines and agreed on certain preferred words and Notes for frequently occurring cases. It will continue looking for more systematic ways of presenting characteristics. The agreed preferred words and Notes are reproduced in Annex IV to this document.

(See documents TWF/27/18 Prov., paragraphs 27 to 33, TWO/29/15 Prov., paragraphs 30 to 32, and TWV/30/21 Prov., paragraph 23).

139. The Committee is invited to take the necessary decisions.

Definitions of Categories of Characteristics and the Conditions of Their Use for the Description of Varieties

140. The Technical Working Parties noted the discussions in the Technical Committee and the need to have a clearer understanding and a definition of the different categories of characteristics used. They noted the draft presented during the Technical Committee session and reproduced in paragraph 64 of document TC/32/7 Prov. which comprised the following categories:

(a) Asterisk Characteristics

Characteristics recommended by UPOV for use on all varieties in every growing period over which examinations are made and always included in the variety descriptions, except when the state of expression of a preceding characteristic or regional environmental conditions render this impossible.

(b) Non-Asterisk Characteristics

Characteristics considered useful by UPOV for DUS testing and description, but not all UPOV member States recommended their routine use.

(c) Routine Characteristics

– All UPOV asterisk characteristics;

- Some UPOV non-asterisk characteristics if selected by a given State for routine testing;
- Some additional non-UPOV characteristics if selected by a given State for routine testing.

(d) Additional/Supplementary Characteristics

Any characteristic used in addition to the characteristics recommended by UPOV or in addition to those used routinely at national level.

(e) Complementary Characteristics

Characteristics which cannot be used at all to establish distinctness, but provide useful information of the variety. Example: DNA marker.

(f) Last Resort Characteristics

Special case of additional characteristics used only under the following conditions:

- (i) with the agreement of the applicant
- (ii) if all other characteristics fail to establish distinctness
- (iii) a test procedure has been agreed between the competent authority and the applicant
- (iv) if used, can establish distinctness in combination with other characteristics but also, in the extreme case, alone.

141. The TWF agreed to those definitions but proposed to add a further definition:

“(g) Grouping Characteristics

Characteristics which are suitable to divide the variety collection into clearly distinguishable groups. Grouping characteristics are all part of the characteristics appearing in the Technical Questionnaire. They should enable the examiner to place the candidate variety next to all relevant varieties either in data comparison or in the growing trial. Their purpose is to make comparisons only within the relevant group, with the exception of groups that are close to each other (e.g. “color,” with the states “green, yellow green, yellow, orange red, red, red purple, purple”).”

142. The TWA discussed at length the definitions of categories of characteristics, in particular, “Complementary Characteristics” and “Last Resort Characteristics.” The experts from Germany and from the breeders proposed deleting the Last Resort Characteristics from the categories of characteristics, but the expert from France emphasized the importance of keeping them. The expert from the Netherlands explained that the Last Resort Characteristic was strongly connected to electrophoresis and it would be useful for the identification of the varieties if it was used in combination with some smaller morphological characteristics. The TWA noted the necessity of reflecting on the way of handling the characteristics in the definitions of categories of characteristics for making a concrete basis for decisions. It agreed

that further discussions would be needed not only in each Technical Working Party, but also in the Technical Committee and that discussion should also take place in the CAJ.

(See documents TWA/25/13 Prov., paragraph 10, TWF/27/18 Prov., paragraph 16, TWO/29/15 Prov., paragraph 23, and TWV/30/21 Prov., paragraph 17).

143. *The Committee is invited to take the necessary decisions.*

Screening of Varieties

144. Use of Electrophoresis in *Poa pratensis* and in Potato: The TWA noted document TWA/25/7 of which the intent was not to propose the use of electrophoretic methods for distinctness purposes, but only to identify reference varieties and to facilitate grouping in the lay-out of the tests. By comparing the whole lanes (electrophoresis pattern) and not just individuals bands of all varieties in the reference collection, those varieties could be identified which were most similar and needed to be grown next to the candidate variety. So far the genetic background of the bands was not known, however, and more information was still needed.

145. Several experts of the TWA expressed themselves in favor of that method of screening. The description of the candidate given by the applicant was normally very poor. Moreover, not all descriptions of all other varieties in the reference collection were available in computerized form. Therefore it was not possible to use all characteristics used for distinctness purposes also for screening varieties. In addition variety descriptions changed from year to year and from location to location. Characteristics independent of environment were therefore of considerable help. Thus electrophoresis would be of great assistance in screening all varieties. One was never sure whether the reference collection covered all relevant varieties. There was always a risk that some were missing and 100% safety could never be guaranteed. In the past the reference collection had comprised mainly local, national or regional varieties with, in total, a reduced number. Nowadays varieties in far away countries had also to be considered. To find in that large number the closest varieties with electrophoresis was considered of more help than restricting the comparisons with traditional characteristics to regional reference collections only. The whole screening had to be a balanced risk between what was ideally to be done and what was financially possible. The experts insisted that these methods were not used alone but in addition to some other selected characteristics. Thus in reality a combination of characteristics was used. It was comparable to the use of electrophoresis as a last resort in the establishing of distinctness.

146. Other experts of the TWA warned again of using electrophoretic characteristics for screening varieties. UPOV had taken the view that those characteristics might be useful but that they might not be sufficient on their own to establish distinctness and thus had placed them in an Annex to the Test Guidelines. Although stating that they would not be used for distinctness, when using electrophoresis for screening the reference collection and for grouping the varieties, electrophoretic characteristics were *de facto* used for distinctness and for grouping. A use for grouping meant a *de facto* introduction into the Table of Characteristics and a use as any other characteristic or even as the first characteristics to be

applied for distinctness. Normally only the most reliable characteristics would be used for grouping. A risk therefore existed that some reference varieties placed in another group would never be compared with the candidate variety. The experts added that differences found in electrophoresis lanes normally had no correlation to morphologic differences. Varieties distinct in the field might not be distinct in electrophoretic characteristics and *vice-versa* varieties distinct in electrophoretic characteristics might show no morphologically distinct features in the field. The meaning of individual bands was so far also not known. As *Poa* varieties would be tested centrally in the Netherlands for European Member States it was important that these States were informed of that procedure of using those characteristics for screening of which several States had not been aware and on which they expressed their concern.

147. The TWA agreed that the whole question of screening varieties with new methods, some even thought of using DNA markers for screening, and in general the definition of characteristics needed to be discussed in the Technical Committee. For some of them the use for prescreening could only be acceptable if these characteristics had been approved and included in the Table of Characteristics as any other characteristic accepted for DUS testing. Several countries might also not be able to handle those methods. There was a need to draw more clearly a line between additional/supplementary characteristics which could be used alone to establish distinctness and complementary characteristics which could not at all be used to establish distinctness but which could provide additional useful information on the variety. The TWA therefore finally concluded to ask the Technical Committee:

(a) to discuss and give advice on the possible use of new methods (electrophoresis, DNA marker) not accepted for distinctness purposes for the screening of the reference collection and selection of varieties to be compared with candidate varieties, and to find either a way of including them in the UPOV testing system and set up clear rules for prescreening, or clearly express itself against such use and

(b) to discuss and advise on how to combine characteristics (last resort characteristics) for distinctness purposes instead of using characteristic by characteristic separately.

(See document TWA/25/13 Prov., paragraphs 17 to 23 and 49).

148. The TWF noted document TWF/27/15 on DNA electrophoresis patterns facilitating the screening of reference varieties in DUS testing. In the documents studied no relations were found between the banding patterns and morphological characteristics. As expected for mutants, although morphological differences were seen, banding patterns were identical. These methods were therefore not promising so far for screening varieties in vegetatively propagated varieties.

(See document TWF/27/18 Prov., paragraph 21).

149. *The Committee is invited to take the necessary decisions.*

Chairmanship

150. As the terms of the office of the individual chairmen of the Technical Working Parties were to end at the close of the coming ordinary session of the Council, they unanimously recommended to the Technical Committee that it propose the following experts as chairmen of the Technical Working Parties for the coming three years:

TWA: Mr. Aubrey Bould, United Kingdom
TWC: Mr. John Law, United Kingdom
TWF: Mr. Chris Barnaby, New Zealand
TWO: Mr. Joost Barendrecht, Netherlands
TWV: Mr. Baruch Bar-Tel, Israel.

151. The BMT had not met since the last session, therefore no proposal for the BMT has been made.

(See documents TWA/25/13 Prov., paragraph 73, TWC/14/19 Prov., paragraph 57, TWF/27/18 Prov., paragraph 53, and TWO/29/15 Prov., paragraph 51 and TWV/30/21 Prov., paragraph 51).

152. The Committee is invited to take the necessary decisions.

[Annex II follows]

ANNEX II

The relation between National Listing and Plant Variety Rights

Question number:	A F O V						requirements	marketing allowed	purpose	provisional protection		additional information	
	1	2	2	2	2	3				DUS 4	5		6
<i>COUNTRY</i>													
ARGENTINA	yes	yes	yes		yes	Law	yes	purity maintenance scheme; field performance for certified varieties	no	identification of marketed varieties and avoidance of synonyms	no		test by breeder, checked by examiner
AUSTRALIA	no							VCU; not obligatory for vegetables	yes	alert growers to commercial characteristics	yes	1 year	
AUSTRIA	yes	yes			yes	Law	yes	VCU for agr. crops only;denomination	no	listing of varieties that are important	no		
BELGIUM	yes	yes	yes	yes	yes	Law;1	yes	VCU for agr. crops only;denomination	yes for agric. crops and vegetables on national or EC list	trade allowance	yes	from application	
BOLIVIA	yes	yes			yes	Law	yes	VCU;purity;denomination;sample	yes	merit for Canadian production	yes	only licensed multiplication back to applicant	
CANADA	yes	yes				Law	yes	VCU;purity;denomination;sample	yes		no;10	before application, according to novelty conditions	
CZECH REPUBLIC	yes	yes	yes	yes	yes	Law;2	yes	VCU for agric. crops (except non-fodder grasses) and grapes agr. value+description	no	satisfactory quality of all economically important species	no;10	before application, according to novelty conditions	
CHILE	yes	yes				Law	no	VCU for agr. crops only	yes;for agricultural species	protect breeders' rights and farmers information to consumer and to certification authorities	yes	x	
DENMARK	yes	yes			yes	Law	yes	VCU for agr. crops only	yes;if on list of another EC country	DUS is tool for certification, to guarantee transfer of genetic improvement to user; VCU for checking main characteristics and discard varieties with low value	yes	from application	
FRANCE	yes	yes	yes		yes	Law;3	yes	VCU for agr. crops only	no;for agric. and vegetable species	protect the consumer	yes		
GERMANY	yes	yes	yes	yes	yes	Law;4	yes	VCU for agr. crops only;denomination	yes for ornamentals and fruit; no for agric. and vegetable varieties	protect farmers certification and quality	no		NLIs are based on EC directives
HUNGARY	yes	yes	yes	yes	yes	Law	yes	VCU;denomination	no; except with provisional permission	provide farmers with list of suitable varieties	yes	no restrictions	
INDIA	yes	yes	yes	yes	yes	Law	no	VCU	yes	certification and quality	no		in process of PBR legislation
IRELAND	yes	yes				Law	yes;7	VCU;denomination;maintenance	yes;if on CC or OECD list	provide farmers with list of suitable varieties	yes;11	after application on applicants risk	
ISRAEL	yes	yes			yes	Law	no	VCU	yes;provisional	protect farmers	yes	from application	
ITALY	yes	yes				Vol.							
JAPAN	no												
MEXICO	yes	yes	yes		yes	Law	yes	description	no	certification	no		in process of PBR legislation
NETHERLANDS	yes	yes			yes	Law;5	yes	VCU for agric. crops	no	trade regulations;recommendation	no		
NEW ZEALAND	no										yes	from application;12	
NORWAY	yes	yes	yes	yes	yes	Law	yes	VCU	yes	certification;classification	yes	from application	
POLAND	yes	yes	yes	yes	yes	Law	yes	VCU	no	protect farmers	yes	from application	
ROMANIA	yes	yes	yes	yes	yes	Law	yes;8	VCU	no	control quality	yes	from the date of publication	
RUSSIA	yes	yes	yes	yes	yes	Law	yes	VCU	no	protect users	yes	not allowed	
SLOVAKIA	yes	yes	yes		yes	Law	yes	VCU	no	recommendation	no	x	
SOUTH AFRICA	yes	yes	yes		yes	Law	yes		no		yes	from PBR grant	
SPAIN	yes	yes	yes		yes	Law	yes	VCU for agric. crops	no;9	to know the material marketed	no		
SWEDEN	yes	yes			yes	Law	yes	VCU for agric. crops	yes;if on CC or OECD list	certification	yes	from application	
SWITZERLAND	yes	yes				Law;6	yes	quality, agricultural value	no	quality, agricultural value	yes	normally with PBR application	
UNITED KINGDOM	yes	yes			yes	Law	yes	VCU for agr. crops only	no	1.ensures seeds of a variety are sold under one name 2.ensures named varieties sold to growers are distinct 3.assures that seed purchased in UK and EU has been tested according to common standards 4.ensures a market for seed producers	yes;		

Remarks

- 1 voluntary for fruit. to be changed-already regulated, but not yet in praxis
- 2 ornamentals voluntary from July 1, 1996
- 3 voluntary for fruit,including strawberries for selling certified plant materi
- 4 optional for ornamentals and fruit
- 5 vegetables EC rules
- 6 voluntary for apple and pear

- 7 DUS only on nationally bred potato varieties; for others purchasing test reports
- 8 only for varieties protected under the Patent Law
- 9 yes, under some conditions
- 10 if granted, protection takes effect from date of application
- 11 on request per variety
- 12 applicants are aware of the risk that a variety may be refused protection

ANNEX III

STATES OF EXPRESSION AND NOTES OF CHARACTERISTICS

Categories of Characteristics

1. True qualitative characteristics with no in-between states
(very few examples)
 - Ex.1: solid flush (1), striped (2), mottled (3)

2. Non-linear quantitative characteristics (presented in a qualitative way)
 - Ex.2: Color: green (1), yellow (2), orange (3), red (4), purple (5)
 - Ex.3: Shape: ovate (1), elliptic (2), round (3), obovate (4)

3. Linear quantitative characteristics with no fixed point (presented in a quantitative way)
 - Ex.4: Size: small (3), medium (5) large (7)
 - or Ex.5: very small (1), small (3), medium (5), large (7), very large (9)
 - or Ex.6: very small (1), very small to small (2), small (3), small to medium (4), medium (5), medium to large (6), large (7), large to very large (8), very large (9)
 - Ex.7: Color intensity: weak (3), medium (5), strong (7)
 - Ex.8: Shape/width: narrow (3), medium (5), broad (7)

4. Linear quantitative characteristics with a fixed point at one extreme end
 - (a) Quantitative expression
 - Ex.9: absent or very weak (1), weak (3), medium (5), strong (7), very strong (9)
 - or Ex.10: Alternative for Ex. 9 only for cases where a clear (genetically based) absence exists
 - (i) absent (1), present (9) followed by another characteristic
 - (ii) weak (3), medium (5), strong (7)--in cases where it is required to clarify the different degrees of presence

(b) Qualitative expression

In some cases one may choose to regard example 9 (and 10) qualitatively:

Ex. 11: absent or very weakly expressed (1), weakly expressed (2), strongly expressed (3)

Ex. 12: closed (1), partly open (2), fully open (3)

Ex. 13: adpressed (1), slightly held out (2), strongly held out (3)

Ex. 14: attitude: upward (1), slightly outwards (2), strongly outwards (3)

5. Linear quantitative characteristics related to a fixed balancing point in the middle of a scale with limited possibilities

(a) Quantitative expression

Ex. 15: far above (1), above (3), same height (5), below (7), far below (9)

Ex. 16: strongly concave (1), concave (3), flat (5), convex (7), strongly convex (9)

Ex. 17: much smaller (1), smaller (3), same size (5), larger (7), much larger (9)

Ex. 18: much closer to base (1), closer to base (3), in middle (5), closer to apex (7), much closer to apex (9)

Ex. 19: Attitude: erect (1), semi erect (3), horizontal (5), semi-pendulous (7), pendulous (9)

TWV proposal: to fix states, even if asymmetrically, e.g. erect (1), semi-erect (3), horizontal (5)

TWF accepts TWV proposal for cases of attitude where the axis is vertical.

Ex. 20: deeply depressed (1), depressed (3), flat (5), pointed (7), strongly pointed (9)

(b) Qualitative expression

In some cases one may choose to regard these characteristics qualitatively

Ex. 20: concave (1), flat (2), convex (3)

Ex. 21: closer to base (1), in middle (2), closer to apex (3)

Ex. 22: depressed (1), flat (2), pointed (3)

6. Linear quantitative characteristics related to fixed points not necessarily at extreme end or at middle of scale--to be qualitative (?) because of wording difficulty

Ex. 23: narrow elliptic (1), elliptic (2), round (3), oblate (4), flat oblate (5)

Ex. 24: elliptic (1), broad elliptic (2), round (3)

Ex. 25: acute (1), obtuse (2), rounded (3), truncate (4), emarginate (5)

[Annex IV follows]

ANNEX IV

STATES OF EXPRESSION OF CHARACTERISTICS

The TWV agreed to try to apply the following rules and the following states of expression and Notes and only deviate from the recommended ones if really necessary:

1. The characteristics should be complete in their wording to be self understood even without the states of expression. The qualifying word should always be included in the wording of the characteristic.

Thus instead of:

Apex: short acuminate, etc.

Area: small, medium, large

Calyx: non enveloping (1), enveloping (2)

It should read:

Shape of apex: short acuminate, etc.

Size of area: small, medium, large

Calyx enveloping: absent (1), present (9).

2. Color

In general, scales like: light green, green, dark green, grey green, blue green, etc., should be avoided and replaced by two characteristics:

- color and
- intensity of color.

In view of the large numbers of “colors” used, it is not advised to use one scale including all colors. However, creation will be studied of:

- one color scale containing the primary colors used: white, yellow, green, brown, purple, blue, black, etc.,
- followed by a characteristic indicating a secondary color component: absent, whitish, yellowish, greenish, etc.,
- followed by a characteristic on the intensity of the color.

For the more specific colors, the TWO approach with the RHS Colour Chart number could be followed.

3. Cover/Covering

Slight differences in the wording of the expressions should be avoided.

It is proposed to use only: not covered (1), partly covered (2), fully covered (3).

4. Degree

Differences in the wording of the expressions weak/medium/strong, sparse/medium/dense, slight/medium/strong should be avoided.

It is proposed to use only: weak (3), medium (5), strong (7).

5. Density

Density may be two dimensional (sparse (3), medium (5), dense (7)) and three dimensional (loose (3), medium (5), dense (7)).

It is proposed to use both wordings depending on the special case.

6. Depression

For depression, two different ways weak/medium/strong and shallow/medium/deep are used.

It is proposed to use only: Depth of depression: shallow (3), medium (5), deep (7).

7. Diameter

Two scales are used: small/medium/large and narrow/medium/broad.

It is proposed to use only: Diameter: small (3), medium (5), large (7).

8. Distribution/Division

In view of the particularity of species, different scales exist.

No standardized proposal has been made.

9. Earliness

It is proposed to replace Earliness by Time of (harvest) maturity: early (3), medium (5), late (7).

10. Expression of Silvering

As this characteristic is closely related to resistance characteristics, the opposite order of the states of expression is very confusing. On the occasion of a revision it should be changed into: Silvering: absent (1), present (9).

11. Height

Three different scales are used: short/medium/tall, short/medium/high and low/medium/high.

It is proposed to use only: short (3), medium (5), tall (7).

12. Intensity

Two scales are used: weak/medium/strong for various characteristics and light/medium/dark for colors.

It is proposed to use for colors only: light (3), medium (5), dark (7).

13. Number

A number of scales are in use (9); standardization seems difficult as the species have different demands.

No standardized proposal has been made.

14. Shape

Thirty-three different shape characteristics are included in the thirteen vegetable Test Guidelines. Shape is used for the entire object, sections of the object or specific parts of the object. Almost exclusively the expression numbers 1, 2, 3, 4, 5, etc., are used, rarely 3, 5, 7. The general order elliptic/round/transverse elliptic is not always applied.

It is proposed to use drawings for shape characteristics for correct understanding, especially by the breeders/applicants.

15. Speed

Two scales are used: slow/medium/fast and slow/medium/rapid.

It is proposed to use: slow (3), medium (5), fast (7).

16. Weight

Three different scales are used: low/medium/high, small/medium/high and small/medium/large.

It is proposed to use: low (3), medium (5), high (7).

17. Width

Two scales are used: narrow/medium/broad and thin/medium/thick.

It is proposed to use either:

- width: narrow (3), medium (5), broad (7), or (if applicable)
- thickness: thin (3), medium (5), thick (7).

18. Cupping/Profile/Shape

Different wordings to indicate similar situations exist with convex (3)/plane (5)/concave (7), concave (1)/plane (2)/convex (3), concave (3)/flat (5)/convex (7), concave (1)/flat (2)/convex (3).

It is proposed to accept different wordings according to different situations as follows:

Shape in cross section

- concave (1), flat (2), convex (3) or
- concave (1), flat (3), convex (5) or
- concave (3), flat (5), convex (7).

[End of document]