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WORKING DOCUMENT FOR A NEW
"REVISED GENERAL INTRODUCTION TO THE EXAMINATION OF DISTINCTNESS, UNIFORMITY AND STABILITY AND THE DEVELOPMENT OF HARMONIZED DESCRIPTIONS OF NEW VARIETIES OF PLANTS"

prepared by the Office of the Union

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1. INTRODUCTION

1. According to Article 7 of the 1961/72 and 1978 Acts and Article 12 of the 1991 Act of the UPOV Convention, protection can only be granted in respect of a new plant variety after examination of the variety has shown that it complies with the requirements for protection laid down in those Acts and, in particular, that the variety is distinct (D) from any other commonly known variety and that it is sufficiently uniform (U) and stable (S), or "DUS" in short. The examination, or "DUS Test," is based mainly on growing tests, carried out by the authority competent for granting plant breeders' rights or by separate institutions, such as public research institutes, acting on behalf of that authority or in some cases on the basis of growing tests carried out by the breeder. The examination generates a description of the variety, using its relevant characteristics (e.g. plant height, leaf shape, time of flowering), by which it can be defined as a variety in terms of Article 1(vi) of the 1991 Act of the Convention.

2. The purpose of this document and the associated "TGP" series of documents is to set out the principles which are used in the examination of DUS. The identification of those principles ensures that examination of new plant varieties is conducted in a harmonized way throughout the Contracting Parties of UPOV. This harmonization is important because it facilitates cooperation in DUS testing and also helps to provide effective protection through the development of harmonized, internationally recognized descriptions of protected varieties.

3. The only binding obligations on UPOV Contracting Parties are those contained in the text of the UPOV Convention itself, and this document must not be interpreted in a way that is inconsistent with the relevant Act for the Contracting Party concerned. However, on the basis of practical experience, this General Introduction seeks to provide general guidance for the examination of all species in accordance with the UPOV Convention, and accordingly the document is adopted by the Council of UPOV. In addition, UPOV has developed "Guidelines for the Conduct of Tests for Distinctness, Uniformity and Stability," or "Test Guidelines" for many individual species or other variety groupings. The purpose of these Test Guidelines is to elaborate certain of the principles contained in this document into detailed practical guidance for the harmonized examination of DUS, and in particular to identify appropriate characteristics for the examination of DUS and production of harmonized variety descriptions. Test Guidelines developed prior to this latest version of this document will have been developed in accordance with the version in existence at that time, and will be updated on their next revision.

4. The individual Test Guidelines are prepared by the appropriate Technical Working Party, which is composed of government appointed experts from each Contracting Party, with ~~the added participation, as observers of~~invited experts from other interested ~~Contracting Parties, intergovernmental organizations and non-governmental organizationss~~States and observer organizations. The main international non-governmental organizations in the field of plant breeding and the seed and plant industries are given the opportunity to comment on the drafts of Test Guidelines before their adoption, thus ensuring that the knowledge and experience of breeders and the seed and plant industries is taken into account. Once developed, the Test Guidelines are submitted for approval by the Technical Committee. The list of individual Test Guidelines adopted by UPOV and information on how to obtain copies

of adopted Test Guidelines in electronic form can be found in document TGP/2, "List of Test Guidelines Adopted by UPOV."

5. This document seeks to address all aspects of DUS testing, in addition to providing guidance on the development of Test Guidelines, and is the replacement for TG/1/2, "Revised General Introduction to the Guidelines for the Conduct of Tests for Distinctness, Homogeneity and Stability of New Varieties of Plants," which as the title suggests has served as the introduction to Test Guidelines.

6. Although the Test Guidelines provide detailed practical guidance on certain aspects of the examination of DUS and identify appropriate characteristics for variety description, there are certain general aspects that apply across all Test Guidelines which it would not be appropriate to reproduce in all the individual Test Guidelines.

7. Another situation in which a DUS examiner would use the basic principles contained in the General Introduction, rather than following the detailed recommendations of the Test Guidelines, is where the circumstances of the DUS examination determine that the recommended approach may not be the most appropriate for a particular set of conditions. In these or other circumstances where the Test Guidelines are not followed, the DUS examiner should consider how to proceed in a way that maintains, as far as possible, harmonization in DUS examination and variety description for that species.

8. In addition, the absence of Test Guidelines for the species or variety grouping concerned will obviously lead the DUS examiner to resort to this General Introduction, and there is a specific chapter (Chapter 9, "Conduct of Testing in the Absence of Test Guidelines") in this document for such an eventuality.

9. In conclusion, it is important for any DUS examiner to be familiar with the principles of DUS examination set out in this document, and to consider them in conjunction with the appropriate individual Test Guidelines.

10. This document and its associated documents are kept under review by the Technical Committee. Contracting Parties of UPOV will receive updated documents direct from UPOV, but details of the current versions of all documents are available on TGP/00, which readers are advised to consult if they are in doubt as to the validity of the documents in their possession.

11. A glossary of technical terms, including many used in this document, are catalogued in TGP/14, "Glossary of Technical, Botanical and Statistical Terms Used in UPOV Documents."

2. THE EXAMINATION OF DISTINCTNESS, UNIFORMITY AND STABILITY ("DUS TESTING")

2.1 Requirement for Examination

12. The UPOV Convention (Article 7(1) of the 1961/72 and 1978 Acts and Article 12 of the 1991 Act) requires that a variety be examined for compliance with the distinctness, uniformity and stability criteria. The 1991 Act of the UPOV Convention clarifies that, "In the course of the examination, the authority may grow the variety or carry out other necessary tests, cause the growing of the variety or the carrying out of other necessary tests, or take into account the results of growing tests or other trials which have already been carried out."

2.2 Test Guidelines as a Basis for DUS Testing

13. Where UPOV has established specific Test Guidelines for a particular species or other plant grouping, these represent an agreed and harmonized approach for the examination of new varieties and, in conjunction with the basic principles contained in the General Introduction, should form the basis of the DUS test.

14. Where UPOV has not established individual Test Guidelines relevant to the variety to be examined, the examination should be carried out in accordance with the principles in this document and in particular the recommendations contained in Chapter 9, "Conduct of DUS testing in the Absence of Test Guidelines." In particular, the recommendations in Chapter 9 are based on the approach whereby in the absence of Test Guidelines the DUS examiner proceeds in the same general way as if developing new Test Guidelines.

~~*Explanation*~~

~~*(i) How far the Test Guidelines are reflected in national practice or national law will depend on the situation in each Contracting Party, on its national legislation and on the status that they are given in that legislation. In some Contracting Parties they are no more than guidelines, while in others they have a certain legal force. In most Contracting Parties it is up to the authority responsible for the granting of rights or for the testing of varieties, or the expert responsible for the testing of a given species, to determine how far the Test Guidelines are actually applied in national tests.*~~

~~*(ii) In practice the Test Guidelines are taken over in many Contracting Parties without any change at all (no deletion of characteristics, no addition). In other Contracting Parties all characteristics with an asterisk and a selection of those without are taken over. As they are not exhaustive, further characteristics may be added.*~~

~~*(iii) Although the Test Guidelines are only guidelines, they nevertheless may play a certain role in court proceedings for infringement, as they represent an internationally agreed official opinion based on the technical knowledge of*~~

~~*experts from UPOV Contracting Parties responsible for plant variety protection and for the testing of the species concerned.*~~

2.3 Design of the DUS Tests

15. The design of the growing trial or other tests, with regard to aspects such as the number of growing cycles, layout of the trial, number of plants to be examined and method of observation, is largely determined by the nature of the species to be examined. Guidance on design is a key function of the Test Guidelines. Guidance on the development of Test Guidelines, including the design of the trials and tests, is provided in TGP/7, "Development of Test Guidelines."

2.4 Characteristics as the Basis for Examination of DUS

16. For any variety to be capable of protection it must first be clearly defined. Only after a variety has been defined can it be finally examined for fulfillment of the DUS criteria required for protection. All Acts of the UPOV Convention have established that a variety is defined by its characteristics and that those characteristics are therefore the basis on which a variety can be examined for DUS.

17. The 1991 Act of the UPOV Convention makes this clear by stating in Article 1(vi) that a variety is a plant grouping that can be "defined by the expression of the characteristics resulting from a given genotype or combination of genotypes" and can be "distinguished from any other plant grouping by the expression of at least one of the said characteristics."

18. In addition to their use in defining a variety, characteristics are the basis for examining distinctness, uniformity and stability.

19. In the 1961/72 and 1978 Acts of the UPOV Convention, Article 6(1)(a) specifies that distinctness is established by a variety being "clearly distinguishable by one or more important characteristics," while Article 6(1)(d) requires it to be stable in its "essential characteristics." Although the term characteristic is not specified in the criteria for uniformity, it is clearly implied that the uniformity requirement relates to the characteristics of the variety, given that they are the basis for distinctness and stability.

20. In the 1991 Act of the UPOV Convention, Article 8 states that uniformity is assessed on the basis of a variety being "sufficiently uniform in its relevant characteristics," and Article 9 states that a variety is "deemed to be stable if its relevant characteristics remain unchanged after repeated propagation or, in the case of a particular cycle of propagation, at the end of each such cycle." ~~Although the criteria for distinctness (Article 7) do not require a variety to be *clearly* distinguishable using characteristics alone, t~~The requirement in Article 1(vi) that a variety "can be distinguished from any other plant grouping by the expression of at least one of the said characteristics" means that a variety must~~, at least,~~ be distinguishable by characteristics. ~~Any possible use of aspects other than characteristics in examining~~

~~distinctness under the 1991 Act of the UPOV Convention will be considered in TGP/12, "Non-Traditional Characteristics and Methods for DUS Testing."~~

21. Chapter 4, "Characteristics Used in DUS Testing," considers the various aspects of characteristics for their use in DUS testing.

2.5 Requirements of Material for DUS testing

2.5.1 Representative Plant Material

22. The material to be submitted for the examination of DUS should be representative of the candidate variety. In the case of varieties with a particular cycle of propagation, such as hybrid and synthetic varieties, this means that the material tested should include the final stage in the cycle of propagation.

2.5.2 General Health of Submitted Material

23. The plant material submitted for examination should be visibly healthy, not lacking in vigor or affected by any important pests or diseases and, in the case of seed, should have sufficient germination capacity for the conduct of a satisfactory examination.

2.5.3 Factors That May Affect the Expression of the Characteristics of a Variety

24. The expression of a characteristic or several characteristics of a variety may be affected by factors such as pests and disease, chemical treatment (e.g. growth retardants or pesticides), past effects of tissue culture, different rootstocks, scions taken from different growth phases of a tree, etc. In some cases (e.g. disease resistance), reaction to certain factors is intentionally used (see chapter 4.6.1) as a characteristic in the DUS examination. However, where the factor is not intended for DUS examination it is important that its influence does not distort the DUS examination. Accordingly, ~~D~~depending on the circumstances, the testing authority should ensure either that:

- the varieties under test are all free of such factors or,
- that all varieties included in the DUS test, including varieties of common knowledge, are subject to the same factor and that it has an equal effect on all varieties or,
- in cases where a satisfactory examination could still be undertaken, the affected characteristics are excluded from the DUS examination unless the true expression of the characteristic of the plant genotype can be determined, notwithstanding the presence of the factor.

~~25. Therefore, many individual Test Guidelines require, for example, material that is virus-free, not obtained from tissue culture, of a specific age after grafting or free of chemical treatment. Alternatively, the submitted plant material sent may be used as parent material from which suitable vegetative material is obtained by the national office in order to provide a satisfactory examination.~~

3. COOPERATION IN DUS TESTING

3.1 Cooperation Between Testing Authorities

26. Cooperation with other Contracting Parties can reduce the overall time, expense and number of examiners involved in the DUS tests, and minimize the work involved in the maintenance of variety collections. For details of current international cooperation arrangements and a model administrative agreement for international cooperation in DUS testing, see document TGP/5, "Experience and Cooperation in DUS Testing."

27. The ultimate form of international cooperation is a "centralized" testing system where the entire examination is carried out by one authority on behalf of other Contracting Parties, regardless of the variety concerned or the applicant. This could be for a specific region for example, or, in the case of glasshouse-tested plants, for most if not all Contracting Parties.

~~*Explanation*~~

~~*(i) International cooperation often begins as a mere exchange of variety data which may then develop under a more formal bilateral testing agreement. UPOV has prepared a Model Administrative Agreement for International Cooperation in the Testing of Varieties (Section 19 of the UPOV Collection of Important Documents) to facilitate the conclusion of bilateral variety testing agreements. UPOV has also drawn up a model UPOV Report on Technical Examination and UPOV Variety Description (Section 23 of the UPOV Collection).*~~

3.2 Cooperation with Breeders and Applicants

28. In most countries, variety testing is administered by an official authority, although the breeders participate in the growing tests to varying degrees.

29. Close cooperation with breeders has always been promoted by UPOV, even in the case of Contracting Parties with a strict system of government-conducted testing. Some Contracting Parties have a system whereby breeders or applicants are asked to perform the whole test. They are required to conduct the DUS test and produce a test report in accordance with the principles contained in this document. The decision on DUS is based entirely on the test report supplied by the breeder or applicant, although the Contracting Party may verify the results, for example, by independent examination and publication of the variety description.

30. UPOV has drawn up a list of conditions for the examination of a variety on the basis of DUS tests carried out by or on behalf of applicants or breeders. Details of the conditions are given in document TGP/6, "Arrangements for DUS testing."

Chapter 3 – Cooperation in DUS Testing

31. Document TGP/6, "DUS testing by the Applicant/Breeder," also gives useful information on the different possibilities of applicant involvement in the growing tests.

~~*Explanation*~~

~~*(i) The task of those national authorities that choose to conduct the DUS examination themselves, including their own growing tests, is becoming increasingly demanding, especially since their lists of plant species eligible for protection are continually being extended. These lists have been abandoned under the 1991 Act of the UPOV Convention, and varieties of all botanical taxa must be eligible for protection within a period of five or ten years after it comes into effect in a particular Contracting Party. It is unthinkable for official testing stations to have to provide testing facilities with growing tests for all taxa in which applications may be filed, and Contracting Parties are increasingly considering the adoption of systems of cooperation with breeders and applicants or with the competent authorities of other Contracting Parties.*~~

4. CHARACTERISTICS USED IN DUS TESTING

4.1 Characteristics as the Basis for DUS Testing

32. The basis for using characteristics for the examination of DUS is explained in Chapter 2.4. The purpose of this Chapter is to set out the critical aspects of characteristics and their applications.

4.2 Selection of Characteristics

33. The basic requirements that a characteristic should fulfill before it is used for DUS testing or producing a variety description are that its expression:

(a) results from a given genotype or combination of genotypes
(this requirement is specified in Article 1(vi) of the 1991 Act of the UPOV Convention but is a basic requirement in all cases);

(b) is sufficiently consistent and repeatable in a particular environment;

(c) exhibits sufficient variation between varieties to be able to establish distinctness;

(d) is capable of precise definition and recognition
(this requirement is specified in Article 6 of the 1961/72 and 1978 Acts of the UPOV Convention, but is a basic requirement in all cases);

(e) allows uniformity requirements to be fulfilled;

(f) allows stability requirements to be fulfilled, meaning that it produces consistent and repeatable results after repeated propagation or, where appropriate, at the end of each cycle of propagation.

34. It should be noted that there is *no* requirement for a characteristic to have any intrinsic commercial value or merit. However, if a characteristic that is of commercial value or merit satisfies all the criteria for inclusion it may be considered in the normal way.

35. For inclusion in the Test Guidelines, further criteria are set out in Chapter 4.7, “Functional Categorization of Characteristics” and in document TGP/7, “Development of Test Guidelines.” However, the characteristics included in the individual Test Guidelines are not necessarily exhaustive and may be expanded with additional characteristics if that proves to be useful and the characteristics meet the conditions set out above.

4.3 States of Expression of Characteristics

36. To enable varieties to be tested and a variety description to be established, the characteristics in the Test Guidelines are subdivided into their different states of expression, or "states" for short, and the wording of each state is attributed a numerical "Note." The classification into states of expression will be influenced by the type of expression of the characteristic (see below). Where appropriate (see TGP/7, "Development of Test Guidelines"), example varieties are provided in the Test Guidelines to clarify the states of expression of a characteristic.

4.4 Types of Expression of Characteristics

37. To enable the appropriate use of characteristics in DUS testing it is important to understand the different ways in which characteristics can be expressed. The following section identifies the different types of expression and considers their application in DUS testing.

4.4.1 Qualitative Characteristics

38. Qualitative characteristics are those that are expressed in discontinuous states (e.g. sex of plant: dioecious female (1), dioecious male (2), monoecious unisexual (3), monoecious hermaphrodite (4)). These states are self-explanatory and independently meaningful. All states are necessary to describe the full range of the characteristic, and every form of expression can be described by a single state. The states do not necessarily have any logical order. As a rule the characteristics are not influenced by environment.

4.4.2 Quantitative Characteristics

39. "Quantitative characteristics" are those whose expression can be recorded on a one-dimensional, linear scale and which show continuous variation from one extreme to the other. The range of expression is divided into a number of states of expression for the purpose of description (e.g. length of stem: very short (1), short (3), medium (5), long (7), very long (9)). The division seeks to provide, as far as is practical, an even distribution across the scale. The Test Guidelines do not specify the difference needed for distinctness. The states of expression should, however, be meaningful for DUS assessment.

4.4.3 Pseudo-Qualitative Characteristics

40. In the case of "pseudo-qualitative characteristics" the range of expression is at least partly continuous, but varies in more than one dimension (e.g. shape: ovate (1), elliptic (2), circular (3), obovate (4)) and cannot be adequately described by just defining ~~the~~ two ends of a linear range ~~(e.g. shape: ovate (1), elliptic (2), round (3), obovate (4))~~. In a similar way to qualitative (discontinuous) characteristics–hence the term "pseudo-qualitative"–each individual state of expression needs to be identified to adequately describe the range of the characteristic. ~~Unlike for qualitative characteristics, although the different states describe the~~

~~range of the characteristics, the actual expression can fall between states or various expressions may fall within one single state.~~

4.5 Observation of Characteristics

4.5.1 Trial Design

41. Where possible and useful, recommendations are given in the Test Guidelines for plot size, sample size, number of replications and the ~~duration of the tests~~number of independent growing cycles in order that comparable and reliable results may be obtained by the various Contracting Parties.

4.5.2 Bulk Samples

42. If it is necessary to examine characteristics in the form of bulk samples ~~S~~specific guidance ~~for the handling of characteristics examined in bulk samples~~ will be considered in document TGP/~~12~~10, ~~"Non-Traditional Characteristics and Methods for DUS Testing."~~"Examining Uniformity"

4.6 Special Characteristics

4.6.1 Characteristics Expressed in Response to External Factors

43. Characteristics based on the response to external factors, such as living organisms (e.g. disease resistance characteristics) or chemicals (e.g. herbicide resistance characteristics), may be used provided that they fulfil the ~~normal~~ criteria specified in chapter 4.2. In addition, because of the potential for variation in such factors, it is important for those characteristics to be well defined and an appropriate method established which will ensure consistency in the examination. More details can be found in document TGP/12, "~~Non-Traditional~~Special Characteristics ~~and Methods for DUS Testing~~."

4.6.2 Chemical Constituents

44. Characteristics based on chemical constituents may be accepted provided that they fulfil the ~~normal~~ criteria specified in chapter 4.2. It is important for those characteristics to be well defined and an appropriate method established for examination. More details can be found in document TGP/12, "~~Non-Traditional~~Special Characteristics ~~and Methods for DUS testing~~."

4.6.3 Combined Characteristics

45. A combined characteristic is a simple combination of a small number of characteristics. Provided that the combination is biologically meaningful, characteristics that are assessed

separately may subsequently be combined, for example the ratio of length to width, to produce such a combined characteristic. Combined characteristics must be examined for distinctness, uniformity and stability to the same extent as other characteristics. In some cases these combined characteristics are examined by means of sophisticated techniques such as Image Analysis. In these cases the methods for appropriate examination of DUS are specified in document TGP/12, "~~Non-Traditional~~Special Characteristics ~~and Methods for DUS Testing~~."

46. Combined characteristics are not to be confused with the application of methods such as "multivariate analysis." The potential for use of multivariate analysis ~~is~~ will be considered in document TGP/9~~12~~, "~~Non-Traditional Characteristics and Methods for DUS Testing~~Examining Distinctness."

~~4.6.4~~ 4.7 ~~Non-Traditional~~New Types of Characteristics ~~and New Methods for Variety Testing~~

~~*4.6.4.1 General*~~

47. The use of new types of characteristics, including the possible use of molecular characteristics, will be considered in TGP/15 "New Types of Characteristics~~"~~." ~~The classical methods of DUS testing are based on "traditional" morphological and physiological characteristics. The use of these new approaches, including the potential for use of molecular characteristics, is set out in document TGP/12, "Non-Traditional Characteristics and Methods for DUS Testing."~~

~~*4.6.4.2 Examination of Parental Formula in Hybrid Varieties*~~

~~48. Document TGP/12, "Non-Traditional Characteristics and Methods for DUS Testing" will set out guidance for the possible use of parental formulae in the examination of DUS of hybrid varieties.~~

~~4.6.5 Additional (Non-Test-Guideline) Characteristics~~

~~49. There may be circumstances in the examination of DUS where the use of additional characteristics, i.e. those not contained in the Test Guidelines, is appropriate. For example, the Test Guidelines may not contain an important characteristic because a novel trait may have only recently been introduced into a crop.~~

~~50. It is important for the continued harmonization of variety examination and description that such characteristics fulfil all the normal criteria and that, where appropriate, these additional characteristics are included in the Test Guidelines at the earliest opportunity. Further information can be obtained from document TGP/7, "Development of Test Guidelines."~~

4.~~7~~8 Functional Categorization of Characteristics

51. The nature of each characteristic determines its scope for use in examination of DUS. The following section categorizes the way in which characteristics can be used in the examination and the appropriate criteria.

Functional Categories of Characteristics

Type	Function	Criteria
Standard Test Guidelines Characteristic	Characteristics that are approved by UPOV for examination of DUS and from which Contracting Parties can select those suitable for their particular circumstances.	1. Must satisfy the criteria for use of any characteristic for DUS as set out in Chapter 4.2. 2. Must have been used to ~~establish DUS~~develop a variety description ~~in~~ by at least one Contracting Party. 3. Where there is a long list of such characteristics and, where considered appropriate, there may be an indication of the extent of use of each characteristic.
Asterisked Characteristic	Characteristics that are important for the international harmonization of variety descriptions.	1. Should always be examined for DUS and included in the variety description by all Contracting Parties except when the state of expression of a preceding characteristic or regional environmental conditions render this inappropriate. 2. Accepted as useful for function 1. 3. Particular care should be taken before selection of disease resistance characteristics.

Chapter 4 – Characteristics in DUS Testing

Type	Function	Criteria
Grouping Characteristic	1. Characteristics in which the documented states of expression, even where produced at different locations, can be used to select, either individually or in combination with other such characteristics, varieties of common knowledge that should be included in the growing trial for examination of distinctness. 2. Characteristics in which the documented states of expression, even where produced at different locations, can be used, either individually or in combination with other such characteristics, to organize the growing trial so that similar varieties are grouped together.	1. (a) Qualitative characteristics or, (b) Quantitative or pseudo-qualitative characteristics which provide useful discrimination between the varieties of common knowledge from documented states of expression recorded at different locations. 2. Accepted as useful for functions 1 and 2. 3. Must be an asterisked characteristic and/or included in the Technical Questionnaire.
Additional Characteristic	1. To identify new characteristics, not included in the Test Guidelines, that have been used by Contracting Parties in the examination of DUS and which should be considered for inclusion in future Test Guidelines. 2. To facilitate harmonization in the development and use of new characteristics and provide opportunity for expert review.	1. Must satisfy the criteria for use of any characteristic for DUS as set out in Chapter 4.2. and evidence for this must be available from the submitting Contracting Party. 2. Must have been used to establish DUS in at least one Contracting Party. 3. Such characteristics to be submitted to UPOV for inclusion in document TGP/5, “Experience and Cooperation in DUS Testing.”

5. EXAMINING DISTINCTNESS

5.1 Requirements of the UPOV Convention

52. According to the UPOV Convention (Article 6 of the 1961/72 and 1978 Acts, and Article 7 of the 1991 Act), to satisfy the requirement of distinctness, a variety must be clearly distinguishable from any other variety whose existence is a matter of common knowledge.

5.2 Varieties of Common Knowledge

53. Key aspects for determining whether a variety is a variety and moreover whether its existence is a matter of common knowledge are set out below. These considerations apply equally to all types of variety, whether protected or not, and include plant material such as ecotypes and land-races. Further developments and a more detailed explanation of the issues related to varieties of common knowledge are to be found in document TGP/3, "Varieties of Common Knowledge."

5.2.1 Criteria for a Variety

54. A variety whose existence is a matter of common knowledge must satisfy the definition of a variety set out in Article 1(vi) of the 1991 Act of the UPOV Convention, but this does not necessarily require fulfillment of the DUS criteria required for grant of a breeder's right under the UPOV Convention.

5.2.2 Existence of a Variety

55. Living plant material must be in existence for a variety to be taken into account for distinctness.

5.2.3 Common Knowledge

56. Specific aspects which should be considered to establish common knowledge include, among others:

(a) commercialization of propagating or harvested material of the variety or publishing a detailed description;

(b) the filing of an application for the grant of a breeder's right or for the entering of a variety in an official register of varieties, in any country, which is deemed to render that variety a matter of common knowledge from the date of the application, provided that the application leads to the grant of a breeder's right or to the entering of the variety in the official register of varieties, as the case may be;

(c) existence of living plant material in publicly accessible plant collections.

57. Common knowledge is not restricted to national or geographical borders.

5.3 Clearly Distinguishing a New Variety

5.3.1 Comparing Varieties

58. It is necessary to examine distinctness in relation to all varieties of common knowledge. However, a systematic individual comparison may not be required in relation to those varieties of common knowledge that are within a group known to have specific expressions of characteristics and reliably ensuring that such varieties will be distinct from the candidate variety. In addition, certain procedures (e.g. publication of variety descriptions) may be developed to allow such an approach in some circumstances where there cannot be absolute certainty that all the varieties within such a group will be distinct from the candidate variety, but where those supplementary procedures provide an effective examination of distinctness overall. Such procedures may also be developed to address varieties of common knowledge for which living plant material is known to exist (see chapter 5.2.2) but where, for practical reasons, material is not readily accessible for examination.~~the lack of availability or accessibility of some varieties of common knowledge~~. Any such procedures will be set out in document TGP/9, "Examining Distinctness."

59. Further, ~~W~~where varieties can be ~~further~~ distinguished in a reliable way from a candidate by comparing documented descriptions, it is not necessary to include them in a growing trial with the respective candidate variety. However, where there is no possibility of clearly distinguishing them from the candidate variety, the varieties should be compared with the candidate variety in a growing trial or other appropriate test. This emphasizes the importance of harmonization of variety descriptions in minimizing the workload of the DUS examiner.

60. A Technical Questionnaire, completed by the applicant and submitted with the application, specifies characteristics of importance for identifying the varieties most similar to the candidate. Where necessary those varieties are grown and directly compared with the candidate.

61. Guidance for the management of variety collections is given in detail in document TGP/4, "Management of ~~Reference~~ Variety Collections."

5.3.2 Clearly Distinguishing Varieties by Their Characteristics

62. As explained in Chapter 2, characteristics are the basis for examining distinctness, uniformity and stability.

~~63. In the 1961/72 and 1978 Acts of the UPOV Convention, Article 6(1)(a) specifies that distinctness is established by a variety being "clearly distinguishable by one or more important characteristics." In the 1991 Act of the UPOV Convention, although the criteria for distinctness (Article 7) do not require a variety to be clearly distinguishable using exclusively characteristics, the requirement in Article 1(vi) that a variety can only be established where it can "be distinguished from any other plant grouping by the expression of at least one of the~~

~~said characteristics" means that a variety must, at least, be distinguishable by characteristics. As explained in Chapter 2.4, any possible use of aspects other than characteristics in examining distinctness, under the 1991 Act of the UPOV Convention, will be considered in document TGP/12, "Non-Traditional Characteristics and Methods for DUS Testing."~~

64. A difference only in the level of uniformity of a characteristic, without any resultant change in the overall expression of the characteristic in the variety, is not a basis for establishing distinctness.

5.3.3 The Criteria for Distinctness using Characteristics

65. The UPOV Convention does not elaborate the term "clearly distinguishable~~",~~," however, in order to provide some guidance on the interpretation of the term, the following basis has been developed for the use of characteristics to clearly distinguish varieties. ~~To ensure that a~~A variety ~~is~~ may be considered to be clearly distinguishable if the difference in characteristics is~~must be~~:

- consistent,
- clear.

5.3.3.1 Consistent Differences

66. One means of ensuring that a difference in a characteristic, observed in a growing trial, is consistent is to examine the characteristic on at least two independent occasions. This can be achieved in both annual and perennial varieties by observations made on plantings in two different seasons, or in the case of other perennial varieties by observations made in two different seasons after a single planting. ~~The normal means of ensuring that a difference in a characteristic, observed in a growing trial, is consistent is to conduct the examination over at least two independent growing cycles. It is accepted that a trial grown or, in the case of perennial varieties, planted at the same location in two different seasons represents two independent growing cycles, but g~~Guidance on the possible use of ~~different~~ other approaches, such as two different locations in the same year, is explored in document TGP/9, "Examining Distinctness."

67. However, in some circumstances the influence of the environment is not such that a second growing cycle is required to provide assurance that the differences observed between varieties are consistent. ~~For example, in the case of many vegetatively propagated crops the level of uniformity within a variety, in other words the consistency between individual plants of the same variety, is sufficient to observe that differences between varieties are significantly greater than the variation within a variety, and therefore ensure that these are not due to environmental variation. Furthermore, i~~If the growing environment of the crop is consistent, for example in a greenhouse with ~~fixed~~ controlled temperature and light, it may not be necessary to observe two growing cycles to be confident that any differences observed could be considered consistent in that environment, although this will also be dependent on the features of propagation allowing confidence in the consistency of the observation.

68. The individual Test Guidelines specify whether several independent growing cycles are required to show sufficient consistency (e.g. several years or in certain cases several independent locations or different independent environments), or whether for certain species the growing test could be made in one growing cycle.

~~*Explanation*~~

~~*For most field crops, vegetables and fruit varieties the Test Guidelines specify two independent growing cycles. For ornamental varieties of most species one growing cycle is sufficient, especially if the plants are vegetatively reproduced and grown in a glasshouse under controlled, standardized conditions, as by repeated vegetative propagation they have already proved to be stable.*~~

5.3.3.2 Clear Differences

69. Determining whether a difference between two varieties is clear depends on many factors, and should consider, in particular, the type of expression of the characteristic (Chapter 4.4) being examined, i.e. whether it is expressed in a qualitative, quantitative, or pseudo-qualitative manner.

5.3.3.2.1 Qualitative Characteristics

70. In qualitative characteristics the difference between two varieties may be considered clear if the characteristics show expressions that fall into two different states in the Test Guidelines. Varieties should not be considered distinct for a qualitative characteristic if they have the same state of expression.

5.3.3.2.2 Quantitative Characteristics

71. Quantitative characteristics are considered for distinctness according to the method of observation and the features of propagation of the variety concerned. The different approaches are considered later in this Chapter.

5.3.3.2.3 Pseudo-Qualitative Characteristics

72. A different state in the Test Guidelines may not be sufficient to establish distinctness (see also Chapter 5.5.2.3). However, in certain circumstances, varieties described by the same state of expression may be clearly distinguishable.

5.3.3.3 Use of Parental Formula for Distinctness in Hybrid Varieties

73. Document TGP/9, "Examining Distinctness" will set out guidance for the possible use of parental formulae in the examination of DUS of hybrid varieties.

5.4 Interpretation of Observations for the Assessment of Distinctness Without the Application of Statistical Methods

74. ~~In many species in which varieties are vegetatively propagated and consequently have very little variation within each variety, assessments on distinctness are usually made by visual observation rather than by statistical methods.~~In cases where there is very little variation within varieties, assessments on distinctness are usually made by visual assessment, rather than by statistical methods.

75. As explained in Chapter 5.3.3.2.1, "Qualitative Characteristics," for such characteristics the difference between two varieties may be considered clear if the characteristics show expressions that fall into two different states in the Test Guidelines.

76. For quantitative characteristics, a difference of two Notes often represents a clear difference, but that is not an absolute standard for assessment of distinctness. Depending on factors such as the testing place, the year, environmental variation or range of expression in the variety collection, a clear difference may be more or less than two Notes. Where there is significant variation it may be necessary to require more than two Notes for a characteristic, whereas, for example, in the case of a side-by-side comparison a single Note or less may be sufficient.

77. If the application of statistics is needed to assess distinctness, further guidance can be found in document TGP/9, "Examining Distinctness."

5.5 Interpretation of Observations for the Assessment of Distinctness with the Application of Statistical Methods

5.5.1 General

78. For measured characteristics as well as for visually assessed characteristics statistical methods can be applied. Appropriate methods have to be chosen for the interpretation of observations. The data structure and the type of scale from a statistical point of view (nominal, ordinal, interval or ratio) is decisive for the choice of appropriate methods. The data structure depends on the method of assessment (visual assessment or measurements, observation of plots or single plants) which is influenced by the type of characteristic, the features of propagation of the variety, the experimental design and other factors. DUS examiners should be aware of certain basic rules of statistics and especially the fact that their use is linked to mathematical assumptions and the use of experimental design practices such as randomization. Therefore, those assumptions should be verified before applying statistical methods. Some statistical methods are quite robust, however, and can be used, with some caution, even if some assumptions are not fully met.

79. Document TGP/8, "Good Statistical Practices for DUS Testing," provides guidance on good statistical practices for DUS assessment. Keys for the choice of methods in relation to the data structure are given in document TGP/9, "Examining Distinctness."

80. A combined characteristic should only be used for distinctness if the uniformity criteria for the combined characteristic itself, and not only its components, have been satisfied.

5.5.2 Visually Assessed Characteristics

81. Non-parametric statistics may be used when visually assessed characteristics have been recorded on a scale that does not fulfill the assumptions of the usual parametric statistics. The calculation of the mean value, for example, is only permitted if the Notes are taken on a graded scale which shows equal intervals throughout the scale. In the case of non-parametric procedures the use of a scale that has been established on the basis of example varieties representative of the different states of the characteristics is recommended. The same variety should then always receive about the same Note and thereby facilitate the interpretation of data. More details on the handling of visually assessed characteristics are given in document TGP/9, "Examining Distinctness."

5.5.2.1 Qualitative Characteristics

82. For visually assessed qualitative characteristics, different states of expression in direct comparisons are generally sufficient to assess distinctness. In most cases, therefore, no statistical methods are needed for the interpretation of the results.

5.5.2.2 Quantitative Characteristics

83. Quantitative characteristics are not necessarily assessed by measuring or counting and can be assessed visually. Where there is doubt regarding the use of a normally visually assessed quantitative characteristic as the distinguishing characteristic in relation to another variety, it should be measured, if that is possible with reasonable effort.

84. A direct comparison between two similar varieties is always recommended, since direct pairwise comparisons are the most reliable. In each comparison, a difference between two varieties is acceptable as soon as it can be assessed visually and could be measured, although such measurement might be impractical or require unreasonable effort.

85. A simple criterion for establishing distinctness is that of consistent differences where differences between varieties in pairwise comparisons are of the same sign (e.g. variety A is consistently and sufficiently greater than B), provided that they can be expected to recur in subsequent trials. The number of comparisons must be sufficient to ensure that the varieties are clearly distinguishable.

86. For more details on the handling of visually observed characteristics when assessing distinctness, see document TGP/9, "Examining Distinctness."

5.5.2.3 Pseudo-Qualitative Characteristics

87. The use of statistics for the assessment of pseudo-qualitative characteristics depends on the individual case, and no general recommendation can be made.

5.5.3 Measured Characteristics

88. The following paragraphs provide guidance on the typical methods for examining distinctness according to the particular features of propagation of the variety:

5.5.3.1 Self-Pollinated and Vegetatively Propagated Varieties

89. UPOV has endorsed several statistical methods for the handling of measured quantitative characteristics. One method established for vegetatively propagated and self-pollinated species is that varieties can be considered clearly distinguishable if the difference between two varieties exceeds the Least Significant Difference (LSD) at a specified probability level with the same sign over an appropriate period, even if they are described by the same state of expression. This is a relatively simple method but is considered appropriate for vegetatively propagated and self-pollinated species because the level of variation within varieties is relatively low, i.e. they are quite uniform. Further details are provided in document TGP/9, "Examining Distinctness."

5.5.3.2 Cross-Pollinated Varieties

90. ~~In particular for cross-pollinated, including synthetic varieties,~~ UPOV has developed a method known as the Combined Over Years Distinctness (COYD) analysis, which takes into account variations between years and is particularly useful for cross-pollinated, including synthetic varieties. This method requires the size of the differences to be consistent over the years and takes into account the variation between years. It is explained further in document TGP/9, "Examining Distinctness." A refinement to the COYD analysis is also provided which should be used to adjust the COYD analysis when environmental conditions cause a significant change in the spacing between variety means in a year, such as when a late spring causes the convergence of heading dates. It is supplemented by a further LSD method for cases where few varieties in the growing tests lead to less than about 20 degrees of freedom for the estimation of standard error. Its main use is for measurement in cross-pollinated and synthetic varieties, but if desired it can also be used for measurement in vegetatively propagated or self-fertilized varieties. Where COYD analysis cannot be used because the statistical criteria are not fulfilled, non-parametric procedures can be considered. For more details on the handling of measured quantitative characteristics see document TGP/9, "Examining Distinctness."

5.6 General Guidelines for Determining Distinctness

91. Individual Contracting Parties may develop their own systematic way of determining distinctness, based on the principles laid down in this document. However, because the Test Guidelines do not provide specific practical guidance on examining distinctness, general guidance on the practical application of the UPOV principles will be developed in document TGP/9, "Examining Distinctness."

6. EXAMINING UNIFORMITY

6.1 Requirements of the UPOV Convention

92. According to Article 6(1)(c) of the 1961/72 and 1978 Acts of the UPOV Convention, a variety is deemed uniform if it is "sufficiently homogeneous, having regard to the particular features of its sexual reproduction or vegetative propagation." Article 8 of the 1991 Act deems that a variety is uniform if, "subject to the variation that may be expected from the particular features of its propagation, it is sufficiently uniform in its relevant characteristics," thereby making it clear that characteristics are the basis for examination of uniformity.

6.2 Relevant Characteristics

93. At least for the purposes of the 1991 Act of the UPOV Convention it is necessary to clarify the meaning of relevant characteristics. Relevant characteristics of a variety include at least all characteristics used for the examination of DUS or included in the variety description established at the date of grant of protection of that variety. Therefore, any obvious characteristic may be considered relevant, irrespective of whether it appears in the Test Guidelines or not.

6.3 Particular Features of Propagation

94. The UPOV Convention links the uniformity requirement for a variety to the particular features of its propagation. This means that the absolute level of uniformity required for vegetatively propagated varieties, truly self-pollinated varieties, mainly self-pollinated varieties, inbred lines of hybrid varieties, cross-pollinated varieties, mainly cross-pollinated varieties, synthetic varieties and hybrid varieties will be different.

95. Where all the plants of a variety are very similar, and in particular for vegetatively propagated and self-pollinated varieties, it is possible to assess uniformity by the number of obviously dissimilar plants–"off-types"–that occur. However, where the range of variation within a variety is larger, because of the features of its propagation and in particular for cross-pollinated (including synthetic) varieties, the plants are not all very similar and it is not possible to visualize which plants should be considered as atypical or "off-types." In this case the uniformity can be assessed by considering the overall range of variation, taking in all the individual plants, to determine whether it is similar to comparable varieties. These two general approaches are explained below:

6.3.1 Self-Pollinated and Vegetatively Propagated Varieties

6.3.1.1 Determination of Off-Types by Visual Assessment

96. A plant is to be considered an off-type if it can be clearly distinguished from the variety in the expression of any characteristic of the whole or part of the plant that is used in the testing of distinctness, taking into consideration the particular features of its propagation.

This definition makes it clear that, in the assessment of uniformity, the standard –for distinctness between off-types and a candidate variety is the same as for distinctness between a candidate variety and other varieties (see Chapter 5.5.2).

~~Explanation~~

~~This wording makes it clearer that (e.g. in the case of a mutation on part of the whole plant) an off-type in some organs (e.g. in some of the fruits) and not necessarily in all of them could make the plant an off-type.~~

6.3.1.2 Determination of Off-Types Using Measurements

97. Most characteristics of self-pollinated and vegetatively propagated varieties are observed visually, or by making a single measurement in a group of plants However, where appropriate, methods of handling measurements from individual plants, in order to assess off-types in vegetatively propagated varieties and truly or mainly self-pollinated varieties, are set out in document TGP/10, "Examining Uniformity."

6.3.1.3 Statistical Basis for Setting Numbers of Off-Types

98. The acceptable number of off-types tolerated in samples of various sizes is often based on a fixed population standard and acceptance probability. The population standard can be expressed as the percentage of off-types to be accepted if all individuals of the variety could be examined. The probability of correctly accepting that a variety is uniform is called the acceptance probability. Based on statistical calculations for population standards and acceptance probabilities, the population standard and acceptance probability used is stated in the individual Test Guidelines. The Test Guidelines also state the maximum number of off-types tolerated for a given sample size. More detailed information can be found in document TGP/10, "Examining Uniformity."

6.3.1.3.1 Vegetatively Propagated and Truly Self-Pollinated Varieties

99. Document TGP/10, "Examining Uniformity," sets out the acceptable number of off-types tolerated in samples of various sizes based on a specified population standard and acceptance probability.

6.3.1.3.2 Mainly Self-Pollinated Varieties and Inbred Lines of Hybrid Varieties

100. For the purpose of DUS testing, mainly self-pollinated varieties are those that are not fully self-pollinated but are treated as self-pollinated for testing. For these, as well for as inbred lines of hybrid varieties, a higher tolerance of off-types is accepted, compared to self-pollinated and vegetatively propagated varieties. This is explained further in document TGP/10, "Examining Uniformity" ~~(see also Chapter 6.6.1)~~.

6.3.2 Cross-Pollinated Varieties

101. Cross-pollinated varieties, including mainly cross-pollinated and synthetic varieties, generally exhibit wider variations within the variety than vegetatively propagated or self-pollinated varieties and inbred lines of hybrid varieties, and it is more difficult to determine off-types. Relative tolerance limits, for the range of variation, are set by comparison with comparable varieties or types already known. This means that the candidate variety should not be significantly less uniform than the comparable varieties. For more detailed information and guidance on setting standards for new types and species, see documents TGP/10, "Examining Uniformity," and TGP/13, "Guidance for New Types and Species."

6.3.2.1 Visually Observed Characteristics

102. For characteristics that are recorded by visual observation of single plants, the acceptable level of variation for the variety should not significantly exceed the level of variation found in comparable varieties already known. For more details on the handling of uniformity of visually assessed characteristics see document TGP/10, "Examining Uniformity."

6.3.2.2 Measured Characteristics

103. For measured characteristics, the acceptable level of variation for the variety should not significantly exceed the level of variation found in comparable varieties already known. UPOV has proposed several statistical methods for dealing with uniformity in measured quantitative characteristics. One method, which takes into account variations between years, is the Combined Over Years Uniformity (COYU) method.

104. For more details on the handling of uniformity in measured quantitative characteristics see document TGP/10, "Examining Uniformity."

6.3.3 Assessment of Uniformity in Hybrid Varieties

6.3.3.1 General

105. The assessment of uniformity in hybrid varieties depends on the type of hybrid, i.e. whether it is a single-cross hybrid or another type, and whether it is a hybrid resulting from inbred parent lines or from cross-pollinated parents.

106. The uniformity and stability of a hybrid variety may be assessed by examining the uniformity and stability of the hybrid itself or, under certain conditions, that of the progenitor and the hybrid.

6.3.3.2 Single-Cross Hybrid Varieties Resulting from Inbred Parent Lines

107. Single-cross hybrid varieties resulting from inbred lines are treated as mainly self-pollinated varieties. However, an additional tolerance is allowed for the occurrence of self-pollinated inbred parent plants. It is not possible to fix a percentage, as decisions differ according to the species and the method of propagation. However, the percentage of such plants should not be so high as to interfere with the trials. Where appropriate, a maximum number will be set in the Test Guidelines.

6.3.3.3 Single-Cross Hybrid Varieties Not Resulting Exclusively From Inbred Parent Lines

108. For hybrid varieties resulting from at least one cross-pollinated parent, relative tolerance limits should be used, and they should be treated as cross-pollinated or synthetic varieties as long as no other proof is given.

6.3.3.4 Multiple-Cross Hybrid Varieties

109. For other than single-cross hybrids (e.g. three-way crosses or double crosses), a segregation of certain characteristics is acceptable if it is compatible with the method of propagation of the variety.

(a) If the heredity of a clear-cut segregating characteristic is known, it is required to behave in the predicted manner.

(b) If the heredity of the characteristic is not known, it is treated in the same way as other cross-pollinated varieties, i.e. the tolerance is set by existing comparable varieties (see Chapter 6.5).

(c) For setting a tolerance for the occurrence of inbred parent plants, the same considerations apply as for a single-cross hybrid variety (see Chapter 6.3.3.2).

6.4 Unrelated and Very Atypical Plants

110. The test material may contain plants that are very atypical or unrelated to those of the variety. These are not necessarily treated as off-types, or part of the variety, and may be disregarded, and the test may be continued, as long as ~~their number~~the removal of these very atypical or unrelated plants does not result in an insufficient number of suitable plants for the examination, or make the examination impractical. In choosing the term “may be disregarded” UPOV makes it clear that it will depend on the judgment of the crop expert. In practice, in tests conducted with a small number of plants, just one single plant could interfere with the test, and therefore should not be disregarded.

7. EXAMINING STABILITY

7.1 Requirements of the UPOV Convention

111. Article 6 (1)(d) of the 1961/72 and 1978 Acts of the UPOV Convention require that a variety "must be stable in its essential characteristics, that is to say, it must remain true to its description after repeated reproduction or propagation or, where the breeder has defined a particular cycle of reproduction or multiplication, at the end of each cycle." Similarly Article 9 of the 1991 Act of the UPOV Convention requires that a variety "shall be deemed to be stable if its relevant characteristics remain unchanged after repeated propagation or, in the case of a particular cycle of propagation, at the end of each such cycle."

7.2 Relevant / Essential Characteristics

112. The relevant or essential characteristics include at least all characteristics used for the examination of DUS or included in the variety description established at the date of grant of protection of that variety. Therefore, all obvious characteristics may be considered, irrespective of whether they appear in the Test Guidelines or not.

7.3 Examination of Stability

7.3.1 General

113. It is not usually possible to perform tests of stability that produce results as certain as those of the testing of distinctness and uniformity. However, experience has demonstrated that, in general, when a submitted sample has been shown to be uniform the material can also be considered stable. Furthermore, if the variety is not stable, material produced will not conform to the characteristics of the variety, and where the breeder is unable to provide material conforming to the characteristics of the variety the breeder's right may be cancelled.

114. Where appropriate, stability may be tested by growing a further generation from new seed stock to ensure that it exhibits the same characteristics as those shown by the previous material supplied. Further guidance on the examination of stability will be considered in document TGP/11, "Examining Stability."

7.3.2 Hybrid Varieties

115. The stability of a hybrid variety may also be assessed by examination of the uniformity and stability of its parent lines in addition to the hybrid variety itself.

8. COMPOSITION OF TEST GUIDELINES

8.1 Coverage of Individual Test Guidelines

116. In most cases, individual Test Guidelines are prepared for each species although, in some cases, it may be appropriate to prepare Test Guidelines covering a wider or narrower grouping of varieties. Different groups of varieties within a species can be dealt with in separate or subdivided Test Guidelines if the categories can be reliably separated on the basis of characteristics suitable for distinctness, or where an appropriate procedure has been developed to ensure that all varieties of common knowledge will be adequately considered for distinctness (see also Chapter 5.3.1). Where appropriate, such procedures are explained in document TGP/9, "Examining Distinctness."

8.2 Development of Test Guidelines

117. The individual Test Guidelines are prepared or, where appropriate, revised according to the procedures set out in document TGP/7, "Development of Test Guidelines." Once prepared by the appropriate Technical Working Party for the species concerned, a draft is sent for comments to the international professional organizations and to important institutions working in the field of the species concerned. On the basis of the comments received, the Draft Test Guidelines are finalized by the Technical Working Party concerned and presented to the UPOV Technical Committee for final adoption and publication.

118. Document TGP/2, "List of Test Guidelines Adopted by UPOV," contains a list of all Test Guidelines adopted by UPOV.

9. CONDUCT OF DUS TESTING IN THE ABSENCE OF TEST GUIDELINES

119. Test Guidelines have been developed for a number of species and there are continual additions to the list of species, an up-to-date list of which is provided in document TGP/2, "List of Test Guidelines Adopted by UPOV." However, UPOV recommends the following procedure to provide guidance on the testing of distinctness, uniformity and stability where there are no Test Guidelines for a given species.

9.1 DUS testing Experience of other Contracting Parties

120. The examining office is invited to consult document TGP/5, "Experience and Cooperation in DUS Testing," to ascertain whether other UPOV Contracting Parties have already conducted DUS testing on the required species or have national test guidelines.

121. Where such experience is available or national test guidelines exist, countries are invited to approach the Contracting Parties concerned and, in accordance with the principles in the General Introduction, seek to harmonize their testing procedures as far as possible. As a next step, the Contracting Parties concerned are invited to inform UPOV of the existence of the harmonized testing procedure, according to the measures provided in document TGP/5, "Experience and Cooperation in DUS testing," or if appropriate recommend that UPOV prepare Test Guidelines for the species concerned.

9.2 DUS testing Procedures for New Species or Variety Groupings

122. Where neither practical testing experience nor national test guidelines are available in other countries for the species or variety grouping concerned, Contracting Parties should develop their own testing procedures as set out below.

123. When developing such testing procedures, offices are encouraged to align them on the principles set forth in this General Introduction, by following this document and the guidance for the development of Test Guidelines contained in TGP/7 "Development of Test Guidelines." The easiest way of starting to develop a testing procedure would be to take the recent Test Guidelines document that is closest to the species concerned, or closest in terms of the nature of the varieties concerned (e.g. varieties that are also seed-propagated or vegetatively propagated, are also trees, are grafted, etc.) and to make whatever changes are necessary to adjust the Guidelines.

124. The testing procedure should be documented, in accordance with the requirements of Test Guidelines, to the extent that experience and information permit.

125. The Office should then inform UPOV of these developments according to the measures provided in document TGP/5, "Experience and Cooperation in DUS testing," so that the information can then be passed on to all Contracting Parties and consideration can be given to the development of Test Guidelines.

TABLE

ASSOCIATED DOCUMENTS

Planned document	Title
TG/00	List of TGP Documents and Latest Issue Dates
TGP/1	General Introduction With Explanations
TGP/2	List of Test Guidelines Adopted by UPOV
TGP/3	Varieties of Common Knowledge
TGP/4	Management of ~~Reference~~ Variety Collections
TGP/5	Experience and Cooperation in DUS testing
TGP/6	Arrangements for DUS testing
TGP/7	Development of Test Guidelines
TGP/8	Good Statistical Practices for DUS testing
TGP/9	Examining Distinctness
TGP/10	Examining Uniformity
TGP/11	Examining Stability
TGP/12	~~Non-Traditional~~Special Characteristics ~~and Methods for DUS testing~~
TGP/13	Guidance for New Types and Species
TGP/14	Glossary of Technical, Botanical and Statistical Terms Used in UPOV Documents
TGP/15	New Types of Characteristics

The Annex includes a list of other associated UPOV approved documents which provide guidance on particular aspects covered by these TGP documents.

[Annex follows]

ANNEX

UPOV Approved Documents Associated with TGP Documents

TGP document	Title	UPOV Ref	Associated UPOV Documents
TG/00	List of TGP Documents and Latest Issue Dates		
TGP/1	General Introduction With Explanations		
TGP/2	List of Test Guidelines Adopted by UPOV	www.upov.int	UPOV Web site
TGP/3	Varieties of Common Knowledge	[Draft: CAJ/43/2]	The Notion of Breeder and Common Knowledge
TGP/4	Management of Variety Collections		
TGP/5	Experience and Cooperation in DUS testing	C/34/5	Cooperation in Examination
		C/27/15, -Annex III	Model ~~Adminstrative~~Administrative Agreement for International Cooperation in the Testing of Varieties
		C/XVIII/9 Add. Annexes II and IV, Part I	UPOV Model Form for the Application for Plant Breeders' Rights
		TC/26/6, -Annex- II, pages 1-3	Technical Questionnaire to be Completed in Connection with an Application for Plant Breeders' Rights
		TC/XXV/12 Annex, page 6	UPOV Request for Examination Results
		TC/XXV/12 Annex, page 7	UPOV Answer to the Request for Examination Results
		TC/36/4	List of Species in Which Practical Technical Knowledge Has Been Acquired or For Which National Guidelines Have Been Established
TGP/6	Arrangements for DUS testing	C/27/15, -Annex III	Model Adminstrative Agreement for International Cooperation in the Testing of Varieties

TGP document	Title	UPOV Ref	Associated UPOV Documents
		[TC/37/7Rev]	Questionnaire on the Level of Involvement of the Applicant in the Growing Test
TGP/7	Development of Test Guidelines		
TGP/8	Good Statistical Practices for DUS testing		
TGP/9	Examining Distinctness	TC/33/7	Combined-Over-Years Distinctness and Uniformity Criterion
TGP/10	Examining Uniformity	TC/33/7	Combined-Over-Years Distinctness and Uniformity Criterion
		TC/34/5	Testing of Uniformity of Self-fertilized and Vegetatively Propagated Species using Off-types
TGP/11	Examining Stability		
TGP/12	Special Characteristics		
TGP/13	Guidance for New Types and Species		
TGP/14	Glossary of Technical, Botanical and Statistical Terms Used in UPOV Documents	TC/33/9	Harmonization of States of Expression and Notes of Characteristics Appearing in the UPOV Test Guidelines
TGP/15	New Types of Characteristics		

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