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Associated Document
to the
General Introduction to the Examination
of Distinctness, Uniformity and Stability and the
Development of Harmonized Descriptions of New Varieties of Plants (document TG/1/3)

DOCUMENT TGP/11

“EXAMINING STABILITY”

Document prepared by an expert from the European Community

to be considered by the

*Technical Working Party for Fruit Crops
at its thirty-ninth session, to be held in Lisbon, Portugal, from June 2 to 6, 2008*

*Technical Working Party for Ornamental Plants and Forest Trees
at its forty-first session, to be held in Wageningen, Netherlands, from June 9 to 13, 2008*

*Technical Working Party for Vegetables
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*Technical Working Party for Agricultural Crops
at its thirty-seventh session, to be held in Nelspruit, South Africa, from July 14 to 18, 2008*

*Technical Working Party on Automation and Computer Programs
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*Administrative and Legal Committee
at its fifty-eighth session, to be held in Geneva, on October 27 and 28, 2008*

TABLE OF CONTENTS

1.	INTRODUCTION.....	3
2.	EXAMINATION OF STABILITY.....	3
2.1	Relationship between uniformity and stability.....	3
2.2	Practical aspects of the examination of stability	5
2.3	Conclusion.....	6

1. INTRODUCTION

The General Introduction (document TG/1/3) explains the following with regard to Stability:

“7.1 Requirements of the UPOV Convention

“Article 6 (1)(d) of the 1961/1972 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

“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.”

Thus it is clear that in the context of the UPOV Convention, references to Stability and its examination refer to the stability **of the variety itself**, after repeated propagation. It is important to be precise about this because in some crop sectors the word “stability” is used with other, slightly different meanings, most usually in the context of individual plants within a variety which are exhibiting significant mutations in some part of their structure during a single propagation cycle. Within the context of the UPOV Convention this would be treated as a uniformity problem, and the stability of the variety would not be examined further.

2. EXAMINATION OF STABILITY

2.1 Relationship between uniformity and stability

2.1.1 The General Introduction explains the following with regard to the examination of Stability:

“7.3.1.1 In practice, it is not usual to perform tests of stability that produce results as certain as those of the testing of distinctness and uniformity. However, experience has demonstrated that, for many types of variety, when a variety has been shown to be uniform, it can also be considered to be 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.

“7.3.1.2 Where appropriate, or in cases of doubt, stability may be tested, either by growing a further generation, or by testing a new seed or plant stock to ensure that it exhibits the same characteristics as those shown by the previous material supplied. Further guidance on the examination of stability is considered in document TGP/11, ‘Examining Stability’.”

2.1.2 In stating that “experience has demonstrated that, for many types of variety, when a variety has been shown to be uniform, it can also be considered to be stable”, it is recognized that uniformity and stability are closely related. However, unless the stability of the variety is tested, either by growing a further generation, or by testing a new seed or plant stock, only the uniformity of the variety is assessed and the stability is not examined. In that respect, it is also recognized that there is a safeguard with respect to stability because, if a 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.

2.1.3 Whereas one should always be mindful of how the two issues of uniformity and stability are interrelated, unless the stability of the variety is tested by further propagation, only the uniformity of the variety is assessed and the stability is not examined.

2.1.4 The following examples illustrate various possibilities which may be confronted by DUS examiners, as they relate to vegetatively propagated plants:

(a) if the number of off-types in a variety is already clearly outside the permitted tolerances during a single test, the variety will be judged not uniform, regardless of whether the off-types are whole plants, or part plants originating from a possible lack of stability in the genetic make-up of each individual plant. In this case the stability of the variety is not examined;

(b) alternatively, a variety may demonstrate some apparent problems in uniformity during the DUS examination which require further investigation to ascertain whether it is below the stipulated thresholds in the uniformity standards or not:

(i) if during the first test there is uncertainty over whether particular plants are off-types or not, the possibly atypical plants or parts of plants should be marked and observed over a longer period, for example an entire season or even two seasons. In some variegated woody plants for example, if the foliage on the young growth exhibits a different pattern to that on the older growth, there can be an appearance of lack of uniformity during some growth phases. If all the foliage on all the plants eventually goes through the same cycle, the variety is uniform; however if the difference between plants is shown to be persistent, and the number of off-types is outside the permitted tolerances, the variety is not uniform. Again, the stability is not examined;

(ii) another approach to this situation can be to systematically re-propagate the apparently off-type plants or plant-parts, and then to check for the persistence of the perceived differences. If the plants propagated from the possible off-types show the same difference from the plants propagated from the majority of the sample as was seen in the first test, the variety is proved to be non-uniform;

(c) finally, a sample may appear to be uniform, but there are indications that the variety may not be stable. Examples might be where the patterning of the flowers varies within plants, but each plant appears to show the same variation; where there are different types of variegation in the foliage within plants, but each plant exhibits the same variation; or where there are non-significant tiny late mutations (e.g. small flower stripes) but in higher than usual numbers for the species and plant type. In cases of doubt, in these situations the stability of the variety is truly tested by re-propagating the plants for a further test, and

checking that (a) the new sample repeats the same within-plant patterning as the original, and (b) that the variety has not moved in the expression of its overall characteristics.

2.1.5 In seed propagated crops the principles are the same but, generally, less complicated by issues of within-plant instability:

(a) as with vegetatively propagated crops, if the variety is clearly non-uniform during the DUS test, the variety will be refused and the stability will not be assessed;

(b) in cases of doubt, the stability of the variety can be assessed by requesting a further sample of seed and checking that the variety has not changed in the expression of its characteristics;

(c) in the particular case of hybrid varieties, when plant material does not conform to the variety description and consequently the stability criterion is questionable, then in addition to an examination of the hybrid variety itself, one can also try to draw a conclusion by assessing the stability of its parent lines if these are made available by the applicant during the DUS test.

2.1.6 As explained in the General Introduction and outlined above, where appropriate, or in cases of doubt, stability may be tested, either by growing a further generation, or by testing a new seed or plant stock to ensure that it exhibits the same characteristics as those shown by the previous material supplied. Section 2.2 considers the examination of stability for those cases where it is considered necessary.

2.2 Practical aspects of the examination of stability

2.2.1 In order to be certain whether the stability criterion has been met, the candidate variety would have to continue its DUS examination once its distinctness and uniformity had been provisionally established.

2.2.2 The additional (one or more) independent growing periods would not require the utilization of reference varieties, nor would it require as great an emphasis being placed on the observation of the expression of the relevant characteristics since this has already been established in the “D” and “U” part of the examination. The greater part of the work has in fact to be dedicated to the correct propagation of the candidate variety. This could be undertaken by the examination authority, but in doubtful cases, in order to respect a specific manner of the reproduction or propagation of the candidate variety, the examination authority should request the applicant to provide the sample which is obtained after the subsequent cycle of reproduction or propagation.

2.2.3 The testing authority should decide whether to continue testing for a further growing period once D and U are established based on the same sample (but after the propagation cycle) or by testing a new seed or plant stock to ensure that it exhibits the same characteristics as those shown by the previous plant material supplied. By this stage the testing authority should have already established a draft variety description of the candidate variety, so that in the judgement of stability there is a clear and fixed idea of what constitutes a representative plant of that variety.

2.3 Conclusion

2.3.1 The stability criterion can be tested directly, or concluded on by assumption, based on the uniformity of the variety.

2.3.2 Once the relevant authority is satisfied that the candidate variety fulfils the stability criterion subsequent to the finalizing of the DUS test, then on technical grounds it can be awarded plant breeders' rights.

2.3.3 If the plant material does not conform to the characteristics of the candidate variety after repeated reproduction of propagation, then it has to be considered that the variety is not stable and the breeders' rights shall not be granted.

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