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# INTERNATIONAL UNION FOR THE PROTECTION OF NEW VARIETIES OF PLANTS

GENEVA

**DRAFT**

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 Agricultural Crops at its thirty-sixth session,*
*to be held in Budapest, Hungary, from May 28 to June 1, 2007*

*Technical Working Party for Vegetables at its forty-first session,*
*to be held in Nairobi, Kenya, from June 11 to 15, 2007*

*Technical Working Party for Ornamental Plants and Forest Trees at its fortieth session,*
*to be held in Kunming, China, from July 2 to 6, 2007*

*Technical Working Party for Fruit Crops at its thirty-eighth session,*
*to be held in Jeju, Republic of Korea, from July 9 to 13, 2007*

*Technical Working Party on Automation and Computer Programs at its twenty-fifth session,*
*to be held in Sibiu, Romania, from September 3 to 6, 2007*

**TABLE OF CONTENTS**

## 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."

## 2. EXAMINATION OF STABILITY

### 2.1 Introduction

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'."

### 2.2 References to uniformity

2.2.1 The assessment of distinctness and uniformity is not possible without the assumption that the variety is stable in the expression of its characteristics.

2.2.2 The assumption is made that if a variety has shown to be sufficiently uniform in the technical examination, then it can also be considered to be stable.

2.2.3 The aforesaid implies that a certain number of off-type plants are still permissible when assessing stability, but their number is based upon the prescribed uniformity standards, which are dependent upon the method of propagation of the variety in question:

(a) vegetatively propagated and truly self-pollinated varieties;

(b) mainly self-pollinated varieties and inbred lines of hybrid varieties;

(c) cross-pollinated varieties (including synthetic varieties);

(d) hybrid varieties:

(i) single-cross hybrids resulting from inbred parent lines;

(ii) single-cross hybrids not resulting exclusively from inbred parent lines;

(iii) multiple-cross hybrids.

(Further explanation on the uniformity standards for the above can be found in document TGP/10 “Examining Uniformity”).

2.2.4 A candidate variety may demonstrate some problems in uniformity during the DUS examination which requires a further growing period to ascertain whether it is below the stipulated thresholds in the uniformity standards or not. Therefore one should also be mindful on how this problem correlates with the stability of the variety. The real reason as to why the variety is deemed being not uniform resulting from the higher than tolerable numbers of off-types may be due to its genetic make up: the variety is inherently not stable. An effective means of testing this hypothesis is, as mentioned above, an additional cycle of propagation and the uniformity assessment of this progeny. Although this works well for seed-propagated varieties, for vegetatively propagated varieties it has to be taken into account that it is often necessary to observe the development of the aberrant part of the plant at the prescribed time of observation of the characteristic in question.

## 2.3 General and particular aspects of testing stability

2.3.1 These additional (one or more) independent growing periods would not require the utilisation 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.

2.3.2 The stability issue can be of particular significance with mutation varieties. Mutations might have a high degree of instability, and this increases the more a variety is vegetatively propagated because of the absence of the enshrined meiotic division. This is particularly the case in varieties with a chimeric structure and with non-uniform phenotype, for instance

variegated plants. It might then be necessary to multiply the various parts of the plants showing a different phenotype, and to check that the patterns found in the original variety can be found again. Before this is done however, examiners must be clear as to what constitutes an off-type plants, based upon the aberrant plant parts.

2.3.3 In the case of hybrid varieties, when its 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.

## 2.4 Methods for the examination of stability

2.4.1 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.

2.4.2 The testing authority should then 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 characteristic 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.

## 2.5 Conclusion

2.5.1 The stability criterion can be tested directly or concluded on based upon an assumption on the uniformity.

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

2.5.3 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.

2.5.4 If there are suspicions that after a period of time the variety with plant variety rights is no longer stable, then the granting authority may choose to undertake a "verification" exercise in order to ascertain this.

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