

# Case study on minimum distances between vegetatively reproduced ornamental and fruit varieties

A project funded by the CPVO R&D project system

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## Conclusions

In order to have a good discussion on the position of CIOPORA that the 'distance' between varieties is growing too small and thus the Plant Breeders' Right is becoming weaker, a project was designed to study the possible effects of a different test protocol with less characteristics or less states of expression in certain characteristics to be considered in the DUS procedure (Annex 1).

CIOPORA proposed amended ('mock') protocols and per species (apple, rose and pelargonium, see annex 5) the last 50 granted rights at CPVO were re-examined by the examination offices that originally tested these applications (Bundessortenamt, GEVES, NIAB, UKZUZ and Naktuinbouw) to study the possible effect of these mock protocols.

From the results of this work the following conclusions were drawn:

- Less applications would be declared distinct on the basis of standard TP characteristics when reducing the number of characteristics in the TP that are considered for Distinctness.
- The application of the 'mock' protocols that were drafted only for this project makes it more difficult to exclude varieties of common knowledge from the growing trial on the basis of the data from the TQ and the supplied photograph. This would result in more varieties in the trials and thus make the test system more expensive.

Although the experts took into account that the project was only carried out on a limited number of varieties and there is a chance that with another or larger set additional results can be achieved, they felt convinced that these conclusions stand.

The 'mock' protocols as drafted for this case study did not actually have the effect on the establishment of distinctness that CIOPORA anticipated.

## Introduction

The breeders of vegetatively reproduced ornamental and fruit varieties, represented by CIOPORA are concerned on the difference between varieties to the point that in trade some varieties cannot be distinguished from each other by the consumer. In the view of CIOPORA this can undermine the strength of Plant Breeders' Rights. CIOPORA proposes that where for the description and the establishment of Uniformity and Stability of a variety all characteristics of a TP should be observed, in the decision on Distinctness not all characteristics from the test protocols should be used, but a specific set of characteristics that represent a certain commercial importance for the crop concerned. The possible consequences of this separation of the use of Characteristics between the establishment of Distinctness and that of Uniformity, Stability and variety description was not analyzed during the project.

In the DUS system based on the UPOV convention there are four important principles that relate to this subject:

1. The definition of Distinctness as in the UPOV '91 convention;;

### *Article 7 Distinctness*

*The variety shall be deemed to be distinct if it is clearly distinguishable from any other variety whose existence is a matter of common knowledge at the time of the filing of the application. In particular, the filing of an application for the granting of a breeder's right or for the entering of another variety in an official register of varieties, in any country, shall be deemed to render that other variety a matter of common knowledge from the date of the application, provided that the application leads to the granting of a breeder's right or to the entering of the said other variety in the official register of varieties, as the case may be.*

UPOV clarifies that a variety is defined by its characteristics and that those characteristics are the basis on which a variety is tested for DUS. It is not completely elaborated what "clearly distinguishable" means in practice.

2. The UPOV system is an open system with regard to the number of characteristics that can be used to distinguish varieties. Not only the characteristics in the relevant guidelines can be used, but also other additional characteristics as long as these fulfil the UPOV requirements of a DUS characteristic.
3. In UPOV in all species the same principles are applied.
4. In the TGP documents further guidance is provided to the way distinctness can be observed:

### *TGP 9 "EXAMINING DISTINCTNESS", SECTION 5: ASSESSING DISTINCTNESS BASED ON THE GROWING TRIAL*

*Describes three methods:*

*5.2.2 Side-by-side visual comparison ("Side-by-side")*

*5.2.3 Assessment by Notes / Single variety records ("Notes")*

*5.2.4 Statistical analysis*

Per method guidance is given how to establish if a candidate is clearly distinct. The study is purely based on the "Notes" method. This method is less precise than a comparison using measurements and therefore it requires larger differences for distinctness. In real DUS testing, in particular in fruit and ornamental species, a side-by-side visual comparison is done. Due to higher precision in the comparison, smaller differences can be considered to be clear.

## Report on conclusions

The CIOPORA position paper on Minimum Distances (see annex 6) introduces the proposal to introduce the change from the present botanical driven definition of the requirement of a variety to be clearly distinguishable into a system that takes into account only those characteristics that represent a certain agreed commercial importance for the species concerned. With that proposal in mind this project was designed to address the following objectives:

To define for the species apple, rose and pelargonium the lists of characteristics that could lead to clearly distinguishable varieties according to the CIOPORA criteria, based on the CPVO technical protocols and the desired levels of difference within and between these characteristics.

CIOPORA prepared documents ('mock protocols') on the basis of the existing CPVO protocols CPVO-TP 011/2 Rose, CPVO-TP 109/1 regal Pelargonium and CPVO-TP 014/2 Apple (see CPVO website). In these mock protocols certain characteristics or states of expression were indicated as not to be used for the establishment of distinctness. A discussion was organized for explanation and clarification of the CIOPORA proposals (Annex 2).

On the basis of the agreed proposed amended protocols prox. 50 recently protected varieties per mentioned species were re-examined on paper to see the possible effect of the defined modified protocol on the distinctness between these varieties and other already existing varieties (to re-do the analysis on distinctness). This work was done by

Bundessortenamt (14 apple varieties, 50 Pelargonium varieties and 15 Rose varieties)

NIAB (6 Rose varieties)

UKZUZ (7 apple varieties)

GEVES (23 apple varieties)

Naktuinbouw (29 rose varieties)

The results of the analysis were given in draft reports per Examination office (Annex 7 -11) that were discussed in two meetings (one for apple and one for rose and pelargonium) with the participants, CIOPORA and CPVO (Annex 3a, 3b). On the basis of these meetings this final report was made.

## Reports by the participating Examination Offices on apple

	No of varieties checked	No longer distinct	No of char. in TG	No of char. deleted	No of char. with less notes	No of char. unchanged
DE	22	3				
CZ	8	0				
FR	26	3				
total	56	6	56	25	7	24

**DE:** instead of the 17 varieties indicated in the project, Bundessortenamt decided to use all 22 applications that were in test in the period indicated in the project. Of these 22 varieties three would not have been distinct when the mock protocol should have been used. It concerned two mutant applications and one non mutant variety. In total 6 mutants were in test of which two were not distinct using the mock protocol. Of the other 16 non mutant varieties one was not distinct.

**CZ:** in UKZUZ only crossings are in DUS test (not mutants). The 8 tested applications would all also be distinct using the mock protocol. It was observed that when using the classic protocol for designing the trial for 8 applications 10 comparing similar varieties would be needed. When using the mock protocol the number of similar varieties raised for 8 applications to 39 similar varieties. This would mean an increase of work and costs.

It was noted that a number of 8 applications was too low to give a definitive judgement.

**FR:** In France 26 applications were re-examined and two mutants and one non mutant variety would not be distinct under the mock protocol.

#### **Discussion on the results and possible conclusions on apple**

Out of 56 applications re-tested 6 (4 mutants and 2 non mutants) applications would have been rejected under the mock protocol.

It was noted that

(1) the number of applications re-tested for the purpose of this project was relatively low and conclusions were to be treated with caution.

(2) It was noted that already during the 'normal' DUS procedure a number of mutants and other applications was rejected.

(3) For the experts it was clear that reduction of the number of (grouping) characteristics and notes, automatically would mean that the set of similar varieties in trial would be (much) larger, making the test more complicated and expensive. The reduction of the number of characteristics to be observed, deleted in the mock protocol, would not balance this since such characteristics are easy to observe

(4) It was mentioned that this whole approach was aimed at the administrative judgement of Distinctness based on the variety descriptions where in reality many of the decisions were taken in the field based on pairwise visual comparison.

(5) The experts are concerned that the CIOPORA approach will also lead to a less objective test. Some varieties with clear differences will be granted rights while other varieties with clear differences will be rejected as the characteristic or note is no longer in the protocol.

(6) It was also mentioned that the results of the project show that there is room for improvement of the pending apple protocol. The full report of the meeting on apple is given in annex 4a

**Reports on Rose by the participating Examination Offices and discussion of the results**

Rose (DE and UK Garden Roses, NL Cut Roses)

	No of varieties checked	No longer distinct	Number of char. in TG	No of char. Unimportant for Distinctness	No of char. with fewer notes	No of char. unchanged
DE	16	2				
UK	7	3*				
total	23	5	51	20	13	18
NL	29	26*				

\* no longer distinct after first year of test, further study would be needed

**DE:** Bundessortenamt retested 16 applications using the mock protocol and re-compared those on paper with the varieties that were used as comparing varieties in the original trials. Of these 16 varieties two would not have been distinct when the mock protocol should have been used. It was noted that:

(1) Depending on the group more or less varieties which would no longer be distinct would be encountered using the mock protocol. E.g. in the red flowered group much more non distinct varieties would occur than in some other groups. Therefore it was mentioned that the re-tested group was in fact too small for definitive conclusions.

(2) It was considered difficult in species where the decision was usually based on visually observed characteristics in a side by side comparison, to reject a variety as not clearly distinct when in the comparison the difference between the varieties was visually obvious.

**UK:** For this study NIAB has looked at 7 rose applications that have recently been granted Community Plant Variety Rights. Each of these applications had between 1 and 5 reference varieties grown in the trial. Of these, the closest were included in the official variety description.

The comparisons with these closest varieties were reviewed using the CIOPORA mock protocol, with the result that three of the seven varieties could no longer be declared distinct on the basis given in the report. However, the paper process agreed for the project only allowed review of the final conclusions. Furthermore, it was noted that some characters reduced or not included in the mock protocol were those that related to apparently commercially important breeding aims for garden roses, which will have had an impact. Further study would be needful to clarify this.

**Glasshouse cut roses**

**NL;** Naktuinbouw followed the usual procedure they apply in the testing of cut roses; after the field trial the description that is made by the experts is compared with the descriptions in the Database of the variety collection. If matches are found these are further studied using the photographs and in some cases the expert committee is asked for advice. If this is still inconclusive the trial is repeated for a side by side comparison in an extra year. When the 29 varieties tested according to the current DUS procedure, in 8 cases further study was needed



resulting in all cases that the variety was declared Distinct. When applying the mock protocol 26 applications/varieties would have to be further studied with sometime a large number of varieties (from 4 to 101). As the number of characteristics was smaller and a number of notes was deleted it cannot be excluded that a number of these 26 applications cannot be declared clearly distinct after further studies and would be rejected. Especially in the red and white flowered group the number of existing varieties that would cause further studies was huge. It was noted that:

(4) The cost effect of the deletion of a number of characteristics and notes was considered negative as the time spent to describe an application would be decreasing, but the extra costs related to further studies including the growing of a much larger reference collection would result in more expensive trials in total.

(5) The effect on uniformity was mentioned. Usually uniformity is established on the same characteristics that are used in the variety description. Deletion of characteristics and notes would result in lower uniformity criteria.

#### Report on Pelargonium by the participating Examination Office and discussion of the results

	No of varieties checked	No longer distinct	No of char. in TG	No of char. deleted	No of char. with fewer notes	No of char. unchanged
DE	50	2	60	16	3	41

DE: the expert of the Bundessortenamt mentioned that as decided in the kick off meeting only varieties of the *Pelargonium* Zonale Group were included in the project. 50 recently tested varieties were re-examined using the mock-protocol against those varieties that were originally also in the trials at the time of testing. 2 varieties would not be considered distinct. It concerned white flowered varieties. The expert mentioned that if the comparison would not have been limited to the varieties in trial, more distinctness problems could have been found in other varieties from the variety collection.

It was noted that:

(1) The effect of the changes in the protocol was not tested on other, non zonale *Pelargonium* varieties (The protocol covers the *Pelargonium* Zonale Group, *Pelargonium peltatum* (L.) Hér. and hybrids between those species and other species of *Pelargonium* L'Hér. ex Ait.).

(2) The reference collection in the growing trials would have to be increased leading to higher costs that were not compensated by possible shorter time to describe the applications.

(3) It was noted that the effect of the mock protocol was expected to be much larger in e.g. the red and white flowered groups than in other groups. To establish the full effect 50 re-tested varieties was considered not enough.

The full report of the meeting on rose and pelargonium is given in annex 4b.

**Proposed follow-up**

1. The results of this case study will be presented by CPVO in the Ornamental (OEM) and Fruit Expert Meetings (FEM).
2. The results of this case study will be presented by resp. CPVO and the project leader in the UPOV Technical Working Party for Ornamental plants and Forest Trees (TWO) and for Fruit Crops (TWF).
3. Further discussion between CIOPORA, the relevant Examination offices and CPVO on the basis of living plants in order to improve mutual understanding. CIOPORA is invited to supply actual cases of varieties they consider not clearly distinct in order to clarify their position.
4. CIOPORA is invited to ensure stronger involvement by breeders in the discussions on the revision and drafting of Test Protocols and Guidelines.
5. Attention is needed for the (legal) model that characteristics used for the establishment of Uniformity (and Stability) can differ from those used for the establishment of Distinctness.

**APPLICATION FOR A RESEARCH & DEVELOPMENT PROJECT RELEVANT  
TO THE COMMUNITY PLANT VARIETY PROTECTION SYSTEM****I. Proposal summary page****Proposal full title: CASE STUDY ON MINIMUM DISTANCES BETWEEN VEGETATIVELY  
REPRODUCED ORNAMENTAL AND FRUIT VARIETIES****a) Partners of the project:**

Institution responsible for the project: Naktuinbouw (Roelofarendsveen, The Netherlands)

Other institutes involved: Bundessortenamt (Hannover, Germany),  
NIAB (Cambridge, United Kingdom),  
UKZUZ (Brno, Czech Republic)  
GEVES (Angers, France)  
CIOPORA (Hamburg, Germany)

Name of the contact person: Kees van Ettehoven (Naktuinbouw)

Name of the co-ordinator (if applicable): Kees Grashoff (Naktuinbouw)

**b) Summary of the project:**

The breeders of vegetatively reproduced ornamental and fruit varieties, represented by CIOPORA are concerned on the distances between varieties to the point that in trade some varieties no longer can be distinguished from each other. For some time CIOPORA is claiming that in the decision on Distinctness not all characteristics from the guidelines and protocols should be used, but a specific set of characteristics that represent a certain commercial importance for the crop concerned. In this case study an attempt will be made to mimicry such approach. The results of this case study may help in further discussions on UPOV, CPVO and national level on this subject.

The case study will be on the possible effects of the introduction of minimum distances according to the CIOPORA position on Minimum Distance for 3 vegetative reproduced species apple ( fruit), rose (cut flower and outdoor roses) and Pelargonium (pot plant).

The CIOPORA position paper on Minimum DistanceI introduces the wish to introduce the change from the present botanical driven definition of the requirement of a variety to be clearly distinguishable into a system that takes into account only those characteristics that represent a certain agreed commercial importance for the species concerned.

This possible project aims to test if it is feasible to apply this approach and identify possible problems in doing so.

**c) Objectives addressed:**

In order to produce some concrete data and examples, as a basis for further discussion of the opinions and proposals expressed in the CIOPORA Position paper on minimum distances the following approach is foreseen:

To define for the mentioned species apple, rose and pelargonium the lists of characteristics that could lead to clearly distinguishable varieties according to the CIOPORA criteria, based on the CPVO technical protocols and the desired levels of difference within and between these characteristics.