

# 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**

<b>I. Proposal summary page</b>
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**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.

## **Annex 1; project description**

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This definition phase should be carried out by CIOPORA per species.

The composition of these working groups should be organised by CIOPORA.

For apple the entrusted offices are: BSA (DE), COBORU (PO), GEVES (FR), NEHIB (HU) and UKZUZ (CZ)

For rose: Naktuinbouw (NL), BSA (DE) and NIAB (VK)

For Pelargonium only BSA, but experts from Naktuinbouw, and NIAB have sufficient knowledge of this type of plants and can contribute.

The document that will be prepared by CIOPORA on the basis of the existing CPVO protocols with proposals to disregard for the judgement on distinction certain characteristics and / or the deletion of certain states per characteristic a discussion will be organised for explanation and clarification of the CIOPORA proposals.

On the basis of the agreed proposed amended protocols prox. 50 recently protected varieties per mentioned species will be 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 will be 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 analysis will be given in draft reports per Examination office that will be discussed in a joint meeting with the participants, CIOPORA and CPVO. A final report will be made.

This report on the conclusions of this case study can be used in further discussions on this subject.

## **2. Detailed description of the project**

### **2. Relevance for the system**

Shrinking minimum distances is seen as a potential danger for the strength of Plant Breeders' Rights. There is a difference of opinion on the distinctness on fewer characteristics. This case study may help to demonstrate some (im) possibilities.

The results of this case study will give valuable information on the possibilities to have alternative approaches once the discussion on this subject will become relevant.

A great deal of information can be gained from the first step of the project; the definition of those characteristics that according to the relevant breeders can be used for distinctness in this approach and those that can be discarded.

The results of the second phase, the re-evaluation of recently tested varieties against the constructed list of characteristics will give information on the impact of the approach.

#### **Exclusions**

The results of the case study will have no effect on the rights granted. The definitions used for this case study will only be developed for this case study. This study does not mean a priori that the present system of testing applications will be changed.

### **2. Project structure**

**Phase 1 – Kick off meeting with the three working groups:**

To organise a joint meeting of the participants CPVO and CIOPORA to discuss the draft amended protocols by CIOPORA.

**Phase 2 – Re-evaluating DUS results:**

To apply the agreed definitions on an agreed list of 50 varieties with recently granted rights by the relevant Examination offices.

**Phase 3 – Presentation and Reporting**

To produce and report the report on conclusions. Content of the report: general introduction, results per species, conclusions. Discussion and presentation in a joint meeting with the participants, CPVO and CIOPORA

**Indicative Timetable & Milestones**

Milestone						
	4	6	6	8	10	12
(1) Kick-off meeting (	→					
(2) Re-evaluating DUS results		→	→	→		
(4) Reporting					→	→

**Major Deliverables**

- (i) Report on the effect of the alternative approach on recently DUS tested varieties.

**Project Budget per Partner (out of VAT)**

<b>Budget for the CASE STUDY ON MINIMUM DISTANCES BETWEEN VEGETATIVELY REPRODUCED ORNAMENTAL AND FRUIT VARIETIES</b>						
Participant	BSA	CIOPORA	GEVES	Naktuinbouw	NIAB	UKZUZ
Number of staff members involved	3	PM	1	2	1	1
Number of descriptions to re-evaluate	79		23	29	6	7
Preparatory work by CIOPORA		PM				
Kick-off meeting in Roelofarendsveen						
Travel costs	1.500	PM	500	0	500	500

Daily subsistence	600 PM	200	0	200	200
Time compensation	1.200 PM	400	800	400	400
Re evaluating DUS results					
45 minutes per description	5.400	1.600	2.000	450	500
90 Euro per hour					
Final meeting in Angers					
Travel costs	1.500 PM	0	1.000	500	500
Daily subsistence	600 PM	0	400	200	200
Time compensation	1.200 PM	400	800	400	400
Project management					
400 per day			2.000		
Subtotal	12.000 PM	3.100	7.000	2.650	2.700
7% overhead	840	217	490	186	189
Total	12.840	3.317	7.490	2.836	2.889
Grand total					29.372

	Total (€)
<b>TOTAL PROJECT</b>	<b>29.372 + PM</b>
<b>REQUEST to CPVO</b>	<b>29.372</b>

### 3. Project management and co-ordination

The project will be managed overall by Kees van Ettehoven (Naktuinbouw in Roelofarendsveen; c.v.ettekoven@naktuinbouw.nl). The coordination of the technical work will be done by Kees Grashoff (Naktuinbouw in Roelofarendsveen; c.grashoff@naktuinbouw.nl). The main contacts within the other partners will be:

- for Bundessortenamt: Beate Rücker
- for NIAB: Elizabeth Scott,
- for GEVES: Clarisse Maton
- for UKZUZ: Andrea Povolna
  
- for CIOPORA: Edgar Krieger

Regular contacts will be maintained by email and telephone.

An agreed final report will be produced at the end of each year. Naktuinbouw will manage all financial issues on behalf of the participants and reimburse the other participants. It will also act as a contact point for the CPVO.

#### **4. Availability of the results**

The project results will be firstly communicated to CPVO and published in a final report, which could be made available either by the CPVO or via the web-sites of the partners. A meeting will be arranged to present the results directly to CPVO and CIOPORA.

#### **5. Other issues**

As the results of the project have no effect on the actual varieties that are used in the project, the report will not mention variety denominations but use codes.

**Kick-off meeting of the project: CASE STUDY ON MINIMUM DISTANCES BETWEEN VEGETATIVELY REPRODUCED ORNAMENTAL AND FRUIT VARIETIES.**

Angers, at the premises of CPVO on Tuesday 1st December 2015.

Present (in alphabetical order): Kees van Ettehoven (Naktuinbouw), Carlos Godinho (CPVO), Lars Hendriksen (CLOPORA), Jean Maison (CPVO), Clarisse Maton (GEVES), Beate Ruecker (BSA), Radmilla Safarikova (UKZUZ), Elizabeth Scott (NIAB), Dominique Thévenon (CLOPORA)

Carlos welcomes the participants and hands the floor to Kees, who drafted the project and chairs the meeting.

1. Kees opens at 14.00 and the agenda that was distributed was agreed upon.

2. Discussion on the project

In the discussion on the project the following was decided:

In apple no rootstock varieties will be in the project

In rose only outdoor roses and cut roses are in the project (no pot roses)

In pelargonium only varieties of *Pelargonium zonale* will be in the project

The participants will themselves take from the last 50 granted CPVO titles the following number of varieties:

Apple: BSA 17, UKZUZ 7, GEVES 26

Pelargonium: BSA 50

Rose: BSA 15, Naktuinbouw 29, NIAB 6

All varieties will be coded by the abbreviation of the Examination office (BSA, GEVES, NIAB, UKZUZ, NT) followed by a number. During the whole project and reporting phase these codes will be used.

3. Mock protocols as designed by CLOPORA (annexed)

In going through the protocols as amended by CLOPORA it became evident that the breeders did not fully take the existing UPOV rules and principles into consideration while changing a number of characteristics. Fortunately during discussions this could be remedied by 'translating' the intentions of CLOPORA into principles that could be applied by the participating Examination offices.

4. Discussion on criteria to apply on the last 50 grants per species

In the amended protocols by CLOPORA three cases can be distinguished;

(i) characteristics completely deleted,

(ii) characteristics that are simplified which means that for those characteristics when studying the distinction not the normal 2 point difference rule is to be applied, but a 4 note difference

(iii) special cases.

In practice this means the following

Apple (i) Deleted are chars 5, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16, 17, 18, 20, 21, 22, 23, 27, 31, 32, 47, 49, 51 and 54.

(ii) a 4 note difference has to be applied for chars 40, 44, 45, 46, 48 and 50

(iii) special cases; none



**Annex 2; Report of the Kick off meeting Pg 17**

- Pelargonium (i) Deleted are chars 10, 17, 18, 23, 27, 28, 33, 36, 37, 38, 40, 44, 46, 54, 56 and 57  
(ii) a 4 note difference has to be applied for chars 11 and 16  
(iii) special cases 13 (Attention for the PQ character), 31 (keep original char. And apply 4 note rule), 35 (to be checked by CIOFORA), 48 (keep original char.), 55 (to delete the changes and keep the original char.), 57 (keep original char.), 58 (delete 'none' and state 1).
- Rose (i) Deleted are chars 4, 5, 7, 8, 9, 11, 12, 13, 14, 15, 16, 32, 34, 35, 39, 41, 44, 45, 46, 47, 49, 50,  
(ii) a 4 note difference has to be applied for chars 2, 3, 6, 18, 19, 22, 31, 36,  
(iii) special cases 17 (keep note 1 and apply 4 note rule), 26 (apply 4 note rule), 33 (keep all states as it original was), 37 (apply 4 note rule), 38 (apply 4 note rule), 48 (apply 4 note rule), 52 (apply 4 note rule).

**5. Working method**

It was decided to compare the descriptions of the selected varieties with the set of closest varieties that were included in the original DUS test to see if the variety in study is still sufficiently distinct when using the amended protocol on the variety in study as well on the set of closest varieties. . Other varieties which might be close according to the reduced table of characteristics will not be considered.

**6. Reporting format**

It was decided to report all data under code.

Per coded variety the number of close varieties that were considered during the original trial (and were by definition Distinct). As a result of the exercise the number of varieties from the original one that appeared on paper no longer to be clearly distinct together with a clarification on which characteristics they were distinct in the original description.

Comments on the effect of applying the modified protocol can be added.

Pictures can be added for clarification.

General observations on the effect of the amended protocol are to be reported (e.g. effect on grouping, trial organisation, costs etc)

**7. Other matters**

The preliminary results are to be send to the coordinator (Kees; [c.v.ettekoven@naktuinbouw.nl](mailto:c.v.ettekoven@naktuinbouw.nl)) before 15th of May 2016. With these results a preliminary report will be drafted that will be distributed among all participants. It is proposed to discuss the preliminary results during the FEM in Angers 21/22 June (date, time and place to be confirmed) for Apple.

Pelargonium and Rose preliminary results will be discussed during the OEM in Poland, week 26 date place and time to be confirmed)

**8. The meeting is closed at 16.30**

BUNDESSORTENAMT  
200-08.08.01

13.05.2016

## **CPVO Project "CASE STUDY ON MINIMUM DISTANCES BETWEEN VEGETATIVELY REPRODUCED ORNAMENTAL AND FRUIT VARIETIES**

### **Report of Bundessortenamt about the results for Apple, Pelargonium and Rose Varieties**

#### **1. Study on Apple varieties**

##### **1.1 Method of the Study**

For the study the most recent 22 apple varieties were used which were granted CPVO titles. The DUS-tests of these varieties (in the following named candidate varieties) were conducted between 2010 and 2015.

The variety descriptions of the candidate varieties were checked against the variety descriptions of those varieties which were in the same trial using the modified protocol (CPVO-TP/14/2 with changes as laid down in the protocol of the kick-off meeting on 1st December 2015).

For the DUS-test of apple a living reference collection is used. "Varieties in the same trial" means that only for a part of the whole living reference collection the characteristics of the varieties are assessed. These are varieties which are similar to the candidates of that year and the example varieties of the Technical Protocol.

In the modified protocol a total of 25 out of 56 characteristics were deleted, and for another 7 characteristics the minimum distance to be considered as a clear difference was increased to 4 notes. 24 characteristics remained unchanged.

##### **1.2 Results for Apple Varieties**

In the table in annex 1 the number of similar varieties in the trial, as well as the number of varieties no longer distinct when using the modified protocol, and the characteristics in which the varieties were distinct in the actual DUS test, are shown.

3 varieties out of the 22 used for the study would no longer be distinct.

The characteristics in which these 3 varieties were clearly distinct in the technical examination were:

- For candidate variety no. 6 characteristic 44: Fruit: number of lenticels (minimum distance 4 notes in the modified protocol).
- For candidate variety no. 13 characteristic 23: Young fruit: extent of anthocyanin over colour (deleted), characteristic 32: Fruit: length of sepal (deleted), and characteristic 48: Fruit: depth of stalk cavity (minimum distance 4 notes).

- For candidate variety no. 14 characteristic 38: Fruit: intensity of over colour (minimum distance 4 notes).

### 1.3 Remarks on the Results

When re-checking the 22 candidate varieties using the mock protocol, 3 varieties would no longer be distinct. With 25 characteristics deleted, and 7 characteristics with reduced scale, there was a remarkable effect on distinctness found within the varieties used in the study.

To illustrate the results with an example the underneath photos show two varieties which would no longer be distinct using the mock protocol.

Example: Candidate No. 14



Most similar variety



One can assume that in particular for mutant varieties it may lead to a lack of distinctness when using the mock protocol. In fact, 6 out of the 22 varieties in the study were indicated as originating from mutation. 2 out of these mutant varieties are no longer distinct according to the modified protocol. The remaining 16 varieties in the study were indicated as resulting from crossings. 1 out of these 16 turned out not being distinct any longer. It has become obvious with this study that the rigorous modification of the TP had not only an effect on distinctness of mutant varieties but also of seedling varieties even in the limited number of re-checked varieties.

If many characteristics are deleted, or the scale is reduced, more varieties have to be considered as similar and have to be included in the trial for a direct comparison. The present study does not allow a comparison to all relevant similar varieties, because the included similar varieties were selected on the basis of the current comprehensive TP.

The contribution of individual characteristics for distinctness in the whole collection cannot be evaluated on the basis of such a small number of cases in the study (22 candidates compared to a very limited number of similar varieties).

## **2. Study on Pelargonium Varieties**

### **2.1 Method of the Study**

For the study the most recent 50 varieties of *Pelargonium zonale* were used which were granted CPVO titles. The DUS tests of these varieties were conducted between 2012 and 2015.

The variety descriptions of the candidate varieties were checked against the variety descriptions of those varieties which were in the same trial using the mock protocol.

In the mock protocol 16 out of 60 characteristics were deleted and for 3 characteristics the minimum distance to be considered as a clear difference was increased to 4 notes. 41 characteristics remained the same.

The colour characteristics of Pelargonium flowers are described with the RHS Colour Chart. In the DUS-test the difference between colours is judged by direct comparison of the plants and not with the RHS Colour Chart number. For this study the colours could not be observed on the plants, therefore two varieties were declared distinct if the colours were different according to the table of similar colours internally used for finding similar varieties. This difference is bigger than the difference which can be seen on plants.

### **2.2 Results for Pelargonium Varieties**

In the table in annex 2 the number of similar varieties in the trial, the number of varieties no longer distinct when using the mock protocol and the characteristics in which the varieties were distinct according in the actual DUS test are listed.

2 varieties out of the 50 used for the study would no longer be distinct.

The characteristics in which these 2 varieties were clearly distinct in the technical examination were:

- For candidate variety no. 1 characteristic 16: Leaf blade: conspicuousness of zone (minimum distance 4 notes in the mock protocol) and characteristic 38: Upper petal: width (deleted).

- For candidate variety no. 4 characteristic 10: Leaf blade: undulation of margin (deleted) and characteristic 11: Leaf blade: base (minimum distance 4 notes).

### 2.3 Remarks on the Results

Although 16 characteristics were deleted there was only a limited effect on the distinctness of the varieties used in the study. This might lead to the assumption that these characteristics are not necessary to distinguish varieties. However, the protocol is not only used for *Pelargonium zonale*, it is also used for *Pelargonium peltatum* and hybrids between these species. Some of the deleted characteristics are of particular importance for the other two *Pelargonium* groups but not as much for Zonal *Pelargoniums*.

Furthermore there are characteristics in the Technical Protocol which are necessary for certain varieties only. The limited sample of 50 varieties in the study did not represent the whole variation among the varieties of common knowledge. To illustrate this, characteristic 46: Upper petal: size of largest spot is used as an example. This characteristic has been deleted in the mock protocol.

Example: Characteristic 46: Upper petal: size of largest spot



According to the mock protocol these two varieties would no longer be distinct.

Another aspect that needs to be taken into consideration when interpreting the results of the study is that only those varieties were looked at that were in the same trial. In *Pelargonium* there is no living reference collection. When planning the trial similar varieties are searched for in our internal database and on the market. If many characteristics are deleted or the scale is reduced, more varieties have to be included in the trial to check the distinctness. This might lead to more varieties which would no longer be distinct from the candidate.

Furthermore there is a big difference in the number of candidate varieties necessary depending on the colour group the variety belongs to. The trial is organized according to the following colour groups:



white                      orange,                      red                      purple                      pink,                      blue-                      with eye  
    orange-pink

The underneath table shows the number of similar varieties per candidate differentiated by its colour group:

Colour Group	Candidates	Number of	
		similar varieties	average of similar varieties per candidate
white	6	29	4,8
orange, orange-pink	8	15	1,9
red	10	52	5,2
purple	6	10	1,7
pink, blue-pink	2	3	1,5
with eye	18	14	0,8

In varieties with white or red flowers the number of similar varieties is far higher than in the other groups. For 16 white or red flowering candidates 81 similar varieties were in the trials. For the other 34 candidates only 28 similar varieties were necessary. This shows that the flower colour of the candidates used in the project has a big influence on the result.

### **3. Study on Rose Varieties**

#### **3.1 Method of the Study**

For the study 16 garden rose varieties were used which were granted CPVO titles in 2015. The DUS-tests of these varieties were conducted in 2014.

The variety descriptions of the candidate varieties were checked against the variety descriptions of similar varieties in the same growing trial.

In the mock protocol for garden roses 20 out of 51 characteristics were deleted and for 13 characteristics the minimum distance to be considered as a clear difference was increased to 4 notes. 18 characteristics remained the same.

#### **3.2 Results for Rose Varieties**

In the table in annex 3 the number of similar varieties in the trial, the number of varieties no longer distinct when using the mock protocol and the characteristics in which the varieties were distinct in the actual DUS test are listed.

2 varieties out of the 16 used for the study would no longer be distinct.

The characteristics in which these two varieties were clearly distinct in the technical examination are mentioned in annex 3.

### 3.3 Remarks on the Results

2 out of 16 varieties would no longer be distinct using the mock protocol. Especially the deletion of leaf characteristics 11 (Leaf: glossiness of upper side) and 12 (Leaflet: undulation of margin) and the 4 note rule for flower characteristics 22 (Flower: number of petals) and 26 (Flower: diameter) have reduced the distinctness.

To illustrate the results the underneath photos show the candidate variety no 3 and the variety of common knowledge from which it would be no longer distinct using the mock protocol.

Example: Candidate No 3



Candidate

Similar Variety

### 4. General Comments on the Effect of Applying the Mock Protocols

The number of varieties used in this study seems to be not big enough in order to be able to take a reliable conclusion on a specific protocol.

It is likely that a protocol with a reduced number of characteristics would lead to a higher number of similar varieties in the trial. This would increase the work load and the costs and it would lead to less distinct varieties.

**ANNEX 1 of the Report of BUNDESSORTENAMT**

## Results of the Case Study on Apple

Apple variety no.	No of similar varieties in the trial	No of varieties no longer clearly distinct	Characteristics of CPVO-TP/14/2 in which the varieties were distinct according to the variety description
1	4	0	
2	3	0	
3	4	0	
4	3	0	
5	2	0	
6	6	1	44: Fruit: number of lenticels
7	2	0	
8	3	0	
9	2	0	
10	4	0	
11	4	0	
12	4	0	
13	2	1	23: Young fruit: extent of anthocyanin over colour 32: Fruit: length of sepal 48: Fruit: depth of stalk cavity
14	3	1	38: Fruit: intensity of over colour
15	3	0	
16	2	0	
17	1	0	
18	4	0	
19	1	0	
20	3	0	
21	1	0	
22	2	0	



**ANNEX 2 of the Report of BUNDESSORTENAMT**

## Results of the Case Study on Pelargonium

Pelargonium Variety No.	No of similar varieties in the trial	No of varieties no longer clearly distinct	Characteristics of CPVO-TP/14/2 in which the varieties were distinct according to the variety description
1	11	1	16: Leaf blade: conspicuousness of zone 38: Upper petal: width
2	1	0	
3	7	0	
4	3	1	10: Leaf blade: undulation of margin 11: Leaf blade: base
5	1	0	
6	6	0	
7	8	0	
8	1	0	
9	0	0	
10	1	0	
11	0	0	
12	0	0	
13	1	0	
14	2	0	
15	5	0	
16	5	0	
17	5	0	
18	6	0	
19	18	0	
20	3	0	
21	6	0	
22	3	0	
23	1	0	
24	1	0	
25	2	0	
26	3	0	
27	2	0	
28	0	0	
29	1	0	
30	2	0	
31	2	0	
32	1	0	

33	1	0	
34	2	0	
35	0	0	
36	0	0	
37	1	0	
38	0	0	
39	0	0	
40	0	0	
41	0	0	
42	1	0	
43	1	0	
44	1	0	
45	0	0	
46	1	0	
47	0	0	
48	2	0	
49	3	0	
50	1	0	

### ANNEX 3 of the Report of BUNDESSORTENAMT

#### Results of the Case Study on Rose

Rose Variety No..	No of similar varieties in the trial	No of varieties no longer clearly distinct	Characteristics of CPVO-TP/14/2 in which the varieties were distinct according to the variety description
1	1	0	
2	2	0	
3	1	1	11, 17, 22, 26, 31, 35 *)
4	4	0	
5	1	0	
6	2	0	
7	2	0	
8	3	0	
9	0	0	
10	2	1	5, 9, 11, 12, 17, 22, 31, 36 *)
11	2	0	
12	2	0	
13	4	0	
14	2	0	
15	2	0	
16	3	0	

\*)

5 Young shoot: intensity of anthocyanin coloration (*deleted in mock protocol*)

9 Leaf: intensity of green colour (upper side) (*deleted in mock protocol*)

9

11 Leaf: glossiness of upper side (*deleted in mock protocol*)

12 Leaflet: undulation of margin (*deleted in mock protocol*)

17 Flowering shoot: number of flowering laterals (*4 note rule in mock protocol*)

22 Flower: number of petals (*4 note rule in mock protocol*)

26 Flower: diameter (*4 note rule in mock protocol*)

31 Sepal: extensions (*4 note rule in mock protocol*)

35 Petal: reflexing of margin (*deleted in mock protocol*)

36 Petal: undulation (*4 note rule mock in protocol*)

**Case Study on Minimum Distances between vegetatively reproduced  
Ornamental and Fruit varieties**

**Report from NIAB after looking at 7 varieties of garden roses – May 2016**

**Rose testing at NIAB**

In the testing of garden roses, the most similar varieties are pre-selected based on the applicants photograph and the TQ information provided. These varieties are then planted in the trial alongside the candidates.

During flowering the candidate varieties are visually compared with the reference varieties to ensure they are distinct. Once this has been done 3-5 characteristics are selected (whilst looking at the plants) that show clear differences between the candidate and the reference variety.

**Method**

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.

All the reference varieties grown (whether included in the description or not) and the differences between these and the candidates have been reviewed using the CIOPORA amended protocol.

**Results**

22 candidate/reference variety comparisons were reviewed using the amended CIOPORA protocol. Of these, 16 would have still been considered distinct and 5 would have been not distinct.

The table below summarizes the total number of reference varieties that were grown for each candidate, those that were distinct after applying the CIOPORA protocol and those that were not.

<b>Candidate</b>	<b>Number of reference varieties grown and found to be distinct during the trial</b>	<b>Number of reference varieties distinct after applying the CIOPORA protocol</b>	<b>Number of reference varieties not distinct after applying the CIOPORA protocol</b>
NIAB 1001	3	1	2
NIAB 1002	4	2	3
NIAB 1003	1	1	0
NIAB 1004	5	4	1
NIAB 1005	2	2	0
NIAB 1006	3	3	0
NIAB 1007	4	4	0

For the full details of which characters were used in trial for distinctness and how the CIOPORA protocol affected these - see separate spreadsheet.

**NIAB's comments on the results**

As mentioned earlier in this report, 3-5 characteristics in each candidate/reference variety comparison were used to prove distinctness. In the cases where the variety was still distinct after applying the CIOPORA amended protocol there was often only 1 characteristic left that still proved D. In some cases this was what we considered a more minor difference e.g. for NIAB 1001 there were 4 characteristics recorded to prove D – the 3 main ones used on the description would not of been distinct using the CIOPORA protocol, however the variety would have still been D on 'Hip: shape' - this was the most minor of all the differences recorded.

We feel that some of the deleted characters are clear breeding aims for garden roses – eg. glossiness of foliage. A plant with glossy foliage looks healthier, and it does appear in some cases that this may be linked to disease resistance. We therefore wonder how many garden rose breeders were involved in developing the CIOPORA protocol.

In addition to this there is a lot of variation in garden roses in some of characteristics where CIOPORA have reduced the number of states to 3 - e.g. number of petals – this character can vary from about 5 to around 150. The difference visible between 50 petals and 150 petals is huge, yet on the CIOPORA protocol these would only be 1 state apart and therefore not considered D.

Following these observations NIAB have made the following comments on some of the characteristics altered by CIOPORA:

**1) Characteristics that CIOPORA have crossed through as unimportant and NIAB considers very important for many garden roses:**

Character 5: Young shoot: intensity of anthocyanin colouration

Character 11: Leaf: glossiness of upper side

Character 35: Petal: reflexing of margin

Character 45: Only varieties with more than two colours on inner side of petal: Petal distribution of secondary colour on inner side

For character 45 – without this characteristic the difference between a white petal with a pink margin and a white petal with pink stripes could not be described or used for distinctness.

**2) Characteristics where CIOPORA have reduced to 3 states, but NIAB think that all 9 states are required as there is a large amount of variation in garden roses:**

Character 22: Flower: number of petals

Character 26: Flower: diameter

**3) Characteristics that CIOPORA have crossed through as unimportant and NIAB considers important for some garden roses:**

Character 8: Leaf size

Character 44: Only varieties with more than two colours on inner side of petal: Petal tertiary colour

Character 49: Petal: colour of basal spot on inner side

Character 50: Petal: main colour on the outer side (only if clearly different from inner side)

For character 50 - without this character a red variety with a yellow reverse (eg. Ketchup and Mustard) could be difficult to distinguish from a plain red variety, although they look very different.

**4) Characteristics where CIOPORA have reduced to 3 states, but NIAB think that a minimum of 5 states are required as there is a quite a large amount of variation in garden roses:**

Character 2: Excluding varieties with growth type climber: Plant: growth habit

Character 6: Stem: number of prickles (excluding very small and hair-like prickles)

Character 36: Petal undulation

Character 37: Petal size

Character 48: Petal: size of basal spot on inner side

In some characteristics we agree that the current protocol is somewhat out of date and could be revised - e.g. we agree with CIOPORA that 9 states is too many for 'Seed vessel: size' and 'Sepal: extensions'.

In addition to this we also feel there are big differences between varieties as a result of clear breeding aims that are not captured by the protocol - e.g. some flower heads are held looking straight up whereas others bend over and face toward the ground.

### **Summary/Conclusions**

The project seems to have highlighted that CIOPORA have some misunderstandings about the way the protocols are used. The characteristics used for distinctness are the result of looking at visible differences between the varieties. In addition to this unless the new candidate is a sport in only one characteristic, several characteristics in which the varieties differ are listed and these differences must be clearly visible.

We think that some of the characteristics deleted by CIOPORA are very important to garden roses, and wonder if they have been deleted after mainly considering cut flower roses.

We do agree with CIOPORA that some of the characteristics in the guideline do not now need to have 9 states; however we think in general they should be reduced to 5 and not 3 states.

Peter Baker  
NIAB  
13/05/2016

**Study of 7 Rose varieties to see if they would still be distinct under the adapted CIOPORA protocol**

Summary:

<b>Candidate variety code</b>	<b>No of reference varieties checked against CIOPORA protocol</b>
NIAB 1001	3
NIAB 1002	4
NIAB 1003	1
NIAB 1004	5
NIAB 1005	2
NIAB 1006	3
NIAB 1007	4

Peter Baker  
NIAB  
13-5-2016

**CASE STUDY ON MINIMUM DISTANCES BETWEEN VEGETATIVELY REPRODUCED  
ORNAMENTAL AND FRUIT VARIETIES**

**Draft report from France  
May 15<sup>th</sup> 2016**

GEVES (Angers, France)

Name of the contact person: Clarisse Maton (GEVES)

**d) Material and methods:**

On the basis of the agreed amended protocol on apple, 26 recently protected varieties were re-examined by GEVES on paper to see the possible effect of the defined modified protocol on the distinctness between these varieties and other already existing varieties. The varieties are coded GEVES\_01 to GEVES\_26.

In the amended protocol by CIOFORA for apple, two cases can be distinguished;

- (i) characteristics completely deleted,
- (ii) characteristics that are simplified which means that for those characteristics when studying the distinction not the normal 2 point difference rule is to be applied, but a 4 note difference

In practice this means the following

(i) Deleted are characteristics 5, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16, 17, 18, 20, 21, 22, 23, 27, 31, 32, 47, 49, 51, 54 and 57.

(ii) a 4 note difference has to be applied for characteristics 38,40, 44, 45, 46, 48 and

50

Information on paper and in databases was used to re-evaluate the Distinctness criteria. No assessment on the plant material was performed during this case study.

**e) Results:**

In the table below, per coded variety, we give the number of close varieties that were considered during the original trial (and were by definition Distinct), and, as a result of the exercise, the number of varieties from the original one that appeared on paper no longer to be clearly distinct together with a clarification on which characteristics they were distinct in the original description.



Other varieties which might be close according to the reduced table of characteristics were not considered.

Variety code	Number of close var. according to current TP at the time of granting	Number of non-distinct var. according to "project TP" at the time of granting	Comments
GEVES_01	3	1	Distinctness was based on characteristics 36 (unchanged), 38 (scale changed) and 40 (scale changed). On paper, char.36 is not clearly D (one note difference). Pictures are enclosed.
GEVES_02	2	0	Still clearly Distinct.
GEVES_03	2	0	Still clearly Distinct.
GEVES_04	0	0	Still clearly Distinct.
GEVES_05	1	0	Still clearly Distinct.
GEVES_06	2	0	Still clearly Distinct.
GEVES_07	2	1	Distinctness was based on characteristics 10 (deleted), 13 (deleted), 44 (scale changed), 51 (scale changed) and 56 (unchanged). On paper, char.56 is not clearly D. Pictures are enclosed
GEVES_08	1	0	Still clearly Distinct.
GEVES_09	2	0	Still clearly Distinct.
GEVES_10	2	1	Distinctness was based on characteristics 36 (unchanged), 38 (scale changed), and 57 (deleted). On paper, char.36 is not clearly D. Pictures are enclosed
GEVES_11	1	0	Still clearly Distinct.
GEVES_12	2	0	Still clearly Distinct.
GEVES_13	2	0	Still clearly Distinct.

GEVES_14	1	0	Still clearly Distinct.
GEVES_15	1	0	Still clearly Distinct.
GEVES_16	1	0	Still clearly Distinct.
GEVES_17	1	0	Still clearly Distinct.
GEVES_18	1	0	Distinctness was based on characteristics 27 (deleted), 28 (unchanged), 42 (unchanged – but only one note difference), 47 (deleted) and 46 (scale changed). So the D is now only based on char.28 (PQ characteristics, only one note difference)
GEVES_19	2	0	Still clearly Distinct.
GEVES_20	1	0	Still clearly Distinct.
GEVES_21	1	0	Still clearly Distinct.
GEVES_22	2	0	Still clearly Distinct.
GEVES_23	1	0	Still clearly Distinct.
GEVES_24	1	0	Still clearly Distinct.
GEVES_25	1	0	Still clearly Distinct.
GEVES_26	2	0	Still clearly Distinct.

Out of the 26 studied varieties, the change on the protocol had an effect on 3 varieties that we can now consider not distinct on paper, due to the deletion of characteristics or due to the change of scale in the characteristics.

On the following pages, we enclosed pictures of the 3 varieties pair.

Pictures of GEVES\_01 (top) and close variety (below)



Pictures of GEVES\_07 (top) and close variety (below)



Pictures of GEVES\_10 (top) and close variety (below)



Out of these 3 cases, 2 are mutant varieties, 1 is not mutant varieties.

Special emphasis on mutant varieties:

Mutant varieties were included in the set of varieties to observe. Codes are the following: GEVES\_01, GEVES\_02, GEVES\_03, GEVES\_10, GEVES\_11 and GEVES\_14.

GEVES\_02 is still clearly distinct on characteristics 41,42 and 43 (unchanged char).

GEVES\_03 is still clearly distinct on characteristics 39 (unchanged char).

GEVES\_11 is still clearly distinct on characteristics 39 (unchanged char).

GEVES\_14 is still clearly distinct on characteristics 1,4,6 (unchanged char).

GEVES\_10 is now not distinct from the parent.

GEVES\_01 is still clearly distinct from the parent on characteristics 36 (unchanged char). But GEVES\_01 is now not distinct from another mutant.

#### **f) Discussion and conclusions:**

We analysed the Distinctness criteria on paper.

GEVES wants to remind that Distinctness is to be looked at on plant material in the field. The closest varieties are always assessed in a trial with side by side comparison. This case study is therefore only a virtual implementation of the protocol.

We were confronted to the comparison of descriptions not made in the same environmental conditions.(they were not performed during the same year). Indeed, the whole description is not systematically re-done in the comparison trial. Only characteristics helping for Distinctness are re-described. We mostly used these descriptions.

According to the project definition, other varieties which might be close according to the reduced table of characteristics were not considered.

However, one grouping characteristics was deleted from the reduced table of characteristics. Such an effect was not taken into account in our case study. It would have been interesting to look at the effect of this deletion. It is highly probable that if we considered the close varieties according to the reduced table of characteristics, we would have grouped more varieties. This would imply a bigger trial and higher costs for the DUS examination.

We worked on granted varieties. However, on the same period, candidate varieties were rejected or withdrawn. Some of them because the minimum distance criteria were not met. It could be

interesting to get statistics from the CPVO. This could show that the examination Offices are already taking good care when issuing a positive report.

**Annex 3d Examination Office report; UKZUZ pg 39**

Variety	Number of close var. according to current TP at the time of granting	Number of close var. according to „project TP“ at the time of granting	Number of non-distinct var. according to „project TP“ at the time of granting
UKZUZ 1	<b>1</b>	<b>3</b>	<b>0</b>
UKZUZ 2	<b>1</b>	<b>2</b>	<b>0</b>
UKZUZ 3	<b>2</b>	<b>7</b>	<b>0</b>
UKZUZ 4	<b>1</b>	<b>7</b>	<b>0</b>
UKZUZ 5	<b>1</b>	<b>4</b>	<b>0</b>
UKZUZ 6	<b>1</b>	<b>5</b>	<b>0</b>
UKZUZ 7	<b>2</b>	<b>7</b>	<b>0</b>
UKZUZ 8	<b>1</b>	<b>4</b>	<b>0</b>

## Naktuinbouw report Case Study on Minimum Distances between vegetatively reproduced Ornamental and Fruit varieties

### The result of checking 29 cutting roses concerning the proposed Ciopora protocol

#### DUS testing cutting roses at Naktuinbouw

In the DUS testing process of cutting roses, we select comparison varieties based on the information in the technical questionnaire and photographs provided by the applicant. We include the selected varieties in our trial alongside the candidates.

We compare the candidate varieties with the selected comparison varieties. In this way we can establish the degree of distinctness. The characteristics that shows clear differences between the candidate and comparison varieties in the side by side comparison are noted and eventually used in the variety description. We also work with a group of rose experts. Our “walking reference comity” as we call them, gives us advice about possible comparison varieties. Due to the fact that many varieties in our database cannot be excluded as potential comparison variety based on the information in the technical questionnaire, we also do a post-search based on the variety description made in the trial. In our database we search if there are any varieties with similar variety descriptions.

#### Method of the study

For this study Naktuinbouw checked 29 rose applications that have been granted Community Plant Variety Rights (PBR) in 2015. The varieties were examined our 2014 trial. It is a selection with different colour groups and companies.

Each of the applications had between 0 and 4 comparison varieties (pre and post selected). Our database contains approximately 1800 cutting rose varieties. We kept the same working method as we normally do in our DUS test. Each application (read variety description) was checked in our database (post search). In our database the varieties can roughly be divided in the following colour groups.

Colour groups	Number of varieties
Red coloured varieties	321
Pink coloured varieties	314
White coloured varieties	217
Yellow coloured varieties	196
Orange coloured varieties	141
Purple coloured varieties	71
Other coloured/more coloured varieties	494

#### Results

29 candidate and comparison variety descriptions were analysed using the amended CIOPORA protocol. 3 out of the 29 applications were classified as distinct after the post search using the amended CIOPORA protocol. The other 26 applications had 4 to 101 varieties that could not be classified as distinct based on the amended CIOPORA protocol. The table below summarizes the total



number of comparison varieties after the post search for the present protocol as well as the amended CIOPORA protocol. In the last column the colour group is stated

<i>Selected candidate variety</i>	<i>Number of varieties that are NOT considered to be distinct applying PRESENT protocol</i>	<i>Number of varieties that are NOT considered to be distinct applying CIOPORA protocol</i>	<i>Colour group</i>
Nakt01	0	13	Yellow
Nakt02	1	46	Yellow
Nakt03	1	15	Yellow blend
Nakt04	0	0	Yellow blend
Nakt05	0	31	Orange blend
Nakt06	0	5	Red blend
Nakt07	0	9	Pink blend
Nakt08	0	26	Orange
Nakt09	0	13	Orange
Nakt10	0	24	Orange
Nakt11	0	12	Orange
Nakt12	0	22	Red
Nakt13	4	87	Red
Nakt14	1	101	Red
Nakt15	0	91	Red
Nakt16	0	22	Red
Nakt17	0	16	Red
Nakt18	0	0	Purple
Nakt19	0	0	Purple
Nakt20	0	4	Purple
Nakt21	0	4	Pink
Nakt22	0	10	Pink
Nakt23	0	23	Pink
Nakt24	0	53	Pink
Nakt25	2	37	Pink
Nakt26	1	37	Pink
Nakt27	1	85	White
Nakt28	0	31	White
Nakt29	1	95	White

As the table above shows, some candidate varieties (8 out of 29) still have few comparison varieties that are not considered to be distinct applying the PRESENT protocol. When this is the case we compare the photographs of the candidate with the photographs of the comparison varieties in our photo database. We also consult our "walking reference comity". If it is still not possible to classify the candidate variety a sufficiently distinct than a second year of testing is necessary. The comparison variety/varieties that are still left will also be included in the trial for a side by side comparison.

In case of applying the amended CIOPORA protocol there are 26 candidate varieties left that still have 4 to 101 comparison varieties that are not considered to be distinct. Considering the ideas of

Ciopora in the amended protocol, it is not possible to consult the photo database as well as the “walking reference comity” because a 4 point difference (read sufficiently distinct) cannot be established.

Analysing the results it became clear that in the colour groups red, white and pink a larger number of varieties cannot be classified as distinct applying CIOFORA protocol. This is due to the fact that these groups have many varieties in our database. The colour group purple and the varieties in the mixed colour group has the smallest number of varieties that cannot be classified as distinct. The purple varieties has the smallest number of varieties left. This is due to the fact that there are not that many purple varieties in the database. As for the mixed colour group, this is a rather large group but there is more variation and combinations in flower colour that makes that the distinctness is easier to establish. Yellow and orange are in the middle of the mentioned groups.

### **Characteristics**

CIOFORA has deleted some characteristics while Naktuinbouw considers those characteristics to be important for cutting roses. The most important deleted characteristics are:

- Stem: number of prickles (characteristic 6)
- Flower: number of petals (characteristic 22)
- Flower: diameter (characteristic 26)
- Sepal: extensions (characteristic 31)
- Petal: size of basal spot (characteristic 48)

### **Expressions**

CIOFORA has deleted expressions in some characteristics while Naktuinbouw considers those expressions to be important for cutting roses. The most important characteristics (from which the expressions were deleted) are:

- Young shoot: (intensity of) anthocyanin colouration (characteristic 4 and 5)
- Prickles: predominant colour (characteristic 7)
- Leaf: size (characteristic 8)
- Leaf: intensity of green colour (characteristic 9)
- Leaf: undulation of margin (characteristic 12)

The deleted characteristics and expressions are the reason why many varieties could not be classified as distinct.

### **Conclusion**

If the amended protocol would be in force only 3 out of the 29 applications could be considered distinct after the post search. The other 26 applications would not be granted PBR. The consequence of the CIOFORA protocol is that varieties from one company are preventing the granting of PBR for other varieties from the same and other companies. Below there are some examples that makes clear which varieties would not be granted PBR.

**Nakt14**

This application has 101 varieties that could not be classified a distinct applying the CIOPORA protocol after the post search. On the photographs beneath; 3 different varieties from 3 different companies.



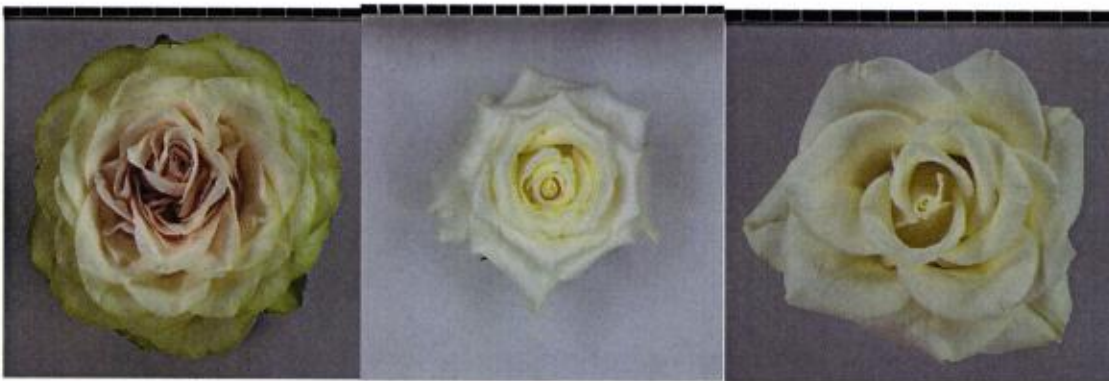
Candidate

Variety 1 not distinct

Variety 2 not distinct

**Nakt29**

This application has 95 varieties that could not be classified a distinct applying the CIOPORA protocol after the post search. 13 of the 95 varieties are varieties from the company that applied. On the photographs beneath; 3 different varieties from one company.



Candidate

Variety 1 not distinct

Variety 2 not distinct

Based on the analyses we made, we do not think that it is a good idea to adopt a certain amended protocol proposed by CIOPORA. First of all the DUS test would take in most cases more than one year of testing. Due to the fact that we need to compare with more varieties also more greenhouse space is necessary. Still it will be inevitable that more applications will be rejected. At the bottom line the costs for the DUS test will raise and less varieties are granted PBR. This means that getting a reasonable return on investment for the companies will be (much) more difficult. Not only will less varieties be protected, but also the "space" a protected variety uses, can no longer be used for new varieties, also after the PBR has elapsed.

Of course one can discuss if the present protocol is still up to date or good enough. If examination offices and/or companies feel that changes are necessary and that a revision of the protocol could be a good solution that this needs to be discussed, but in our opinion always based on the ideas of UPOV.

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

Report of the meeting on fruit species (Apple) on 20 June 2016 at CPVO, Angers.

Present in the meeting: Andrea Povolna (UKZUZ, CZ), Erik Schulte (BSA, DE), Clarisse Maton, Carole Dirwimmer (GEVES, FR), Dominique Thevenon (CIOPORA), Jean Maison (CPVO), Kees van Ettehoven (Naktuinbouw, NL).

**1. Opening**

Kees opens the meeting at 15.00 and welcomes the participants.

**2. Introduction**

In the introduction round Carole mentions she joined the fruit team of GEVES in September 2015, Clarisse explains that in France the DUS test of fruit varieties is carried out by INRA as Qualified Technical Body of GEVES. The work for this project however was carried out by team GEVES. Erik mentions that from his 4 experts in Wurzen, the apple expert Stephan Heske did the observations. Bundessortenamt produced a combined report on Apple, Rose and Pelargonium. Andrea heads the DUS work in UKZUZ and was involved in this project on apples, Jean indicates that he is still case holder for apple so not only as CPVO project funder interested, but also technically interested. Kees explains the situation on fruit testing in the Netherlands; no DUS testing, but active in the inspection and certification of fruit in the Netherlands. He is here as project leader and will prepare the report of this meeting.

**3. Report of the kick off meeting.**

In the report of the Kick off meeting the details of the mock protocols are given and agreements noted on the approach for the project. The participants indicate that from the report of the Kick-off meeting it was very well possible to learn how to tackle the project. It is clear that not all countries used the exact same method. In some cases the closest varieties used as a reference for a candidate are fully re-described in the trial year where in other countries only the relevant characteristics enabling to establish distinctness are re-described. The experts are of the opinion that these small differences will have no effect on the overall result of the project.

Asked for an opinion on the quality of the mock protocol as drafted by CIOPORA the experts voiced the opinion that it is clear that the detailed UPOV approach is not always clear enough for the breeders who worked on the protocol. Also characteristics that maybe less important in the DUS procedure but indispensable in variety identification at the nursery level (e.g. leaf characteristics) are largely deleted.

it seems clear that the changes in the scales of fruit characteristics are aimed at reducing the chances for colour mutants. This is acknowledged by Dominique; for this project the focus was on fruit characteristics.

**4. Reports by the participating Examination Offices**

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.

#### 5. Discussion on the results and possible conclusions

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

This number is not extremely high and the experts wondered (1) if a major operation to change the UPOV protocols in this way was justified by this number of changes. (1a) experts noted that the discussion on minimum distance has been going on for years already and had for consequence more proposals for reduced scales in the discussion of UPOV guidelines, from 1 to 3 or 1 to 5 instead of the previous usual 1 to 9 scale.

At the same time it was noted (2) that the number of applications re-tested for the purpose of this project was relatively low and conclusions were to be treated with caution.

(3) It was noted that already during the 'normal' DUS procedure a number of mutants and other applications was rejected. This figure should be put in perspective and will be provided by CPVO.

(4) 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

(5) 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. In cases where distinctness can clearly be established on a visual basis by the expert and the applicant, it would be difficult to reject nevertheless the variety as the characteristic or note was no longer in the protocol in order to illustrate the visual situation. Already today, the CPVO sometimes reject applications although examination offices observe a visual difference and recommend that the variety is distinct. This situation is perceived as undesirable by the experts.

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

It was also mentioned that as the CIOPORA approach will lead to the occupation by one variety of more 'space', this space can no longer be used by other breeders, even after the right has elapsed. (6a) experts noted that CIOPORA did not exclude proposing other characteristics that would be more in conformity with breeding aims. They also note that current characteristics based on visual observations are cheap to observe compared to other characteristics like disease resistance.

6. It was also mentioned that the results of the project show that (7) there is room for improvement of the pending apple protocol.

**7. Follow-up needed?**

It was mentioned that as follow up a revision of the apple protocol should be scheduled.

**8. Form of the report of the project**

It was decided to add the country results as well as the pending and mock protocols as annexes to a short concluding report.

**9. Any other business**

CIOPORA asked for a possibility to comment on the results.

The experts were of the opinion that each participant could add remarks so also remarks from CIOPORA were welcome before drafting final conclusion.

Jean asked how to communicate the results is e.g. the FEM. It was concluded that a factual report of the result and the meeting is possible.

**10. Closing**

At 17.00 Kees closed the meeting, thanking all participants for their contributions.

# CIOPORA

UNITING BREEDERS, PROTECTING INNOVATION

## Minimum Distance Apple

Comments to the documents from the meeting dd 20/06/2016

### Background

25 of the 56 characteristics were deleted, for another 7 the min distance to be considered was increased to 4 notes, 24 remained unchanged.

**Correction:** CIOPORA does not suggest *deleting* 25 characteristics as such, we do deem them as unimportant and are of the opinion that a difference in these characteristics alone should not lead to a distinct variety.

### Initial Comments:

Some of the DUS examiners involved seem to be under the impression that we as breeders feel they are not doing a good job and are admitting too much varieties. The report also quoted the following remark: "it seems clear that the changes in the scales of fruit characteristics are aimed at reducing the chances for colour mutants." This is definitely not the case. We are however concerned about varieties being registered based on unimportant characteristics and being refused despite their distinctness in economically important characteristics. This is especially worrying for mutants.

Please note that we as breeders do not have your dataset and therefore have a limited idea about the actual differences between varieties, hybrid and mutant. The point of the current research project was to examine the distances between varieties under the current TG. When drafting the mock protocol we therefore, very deliberately, went for an extremely high number of unimportant characteristics (45%) to see what would happen.

## Summary of the Results:

number of varieties

		DE	UKZUZ	GEVES	Total
<b>total varieties</b>		<b>22</b>	<b>8</b>	<b>26</b>	<b>56</b>
still distinct		19	8	23	50
no longer distinct	scale				
	1 char reduced	2			2
	2 char reduced			1	1
	scale				
	1 unimportant char + 1 char reduced scale			1	1
	2 unimportant char + 1 char reduced scale	1			1
	2 unimportant char + 2 char reduced scale			1	1

## Discussion of the Results

### Deleted Unimportant Characteristics

One of the 'key statements' in the CIOPORA Position on Minimum distance is:

*"Differences in unimportant characteristics only should not lead to a clearly distinguishable variety."*

The table above shows that none of the varieties were listed as no longer distinct based on unimportant characteristics alone; but the results do seem to imply that this is definitely possible, Especially for mutants. We therefore invite the examiners to look for ways to prevent this.

One option would of course be to eliminate the unimportant characteristics from the protocol, but we agree with the concerns raised by the examiners in this regard. F.i. we acknowledge that shoot and leaf characteristics have a value in the nursery, and they should not all be eliminated. Furthermore a reduction of the TG should not result in a larger (and more expensive) DUS trial.

The CIOPORA proposed option is to make a distinction between important and unimportant characteristics and to include the CIOPORA 'key statement' above as a rule to determine distinctness.

*Side comment: reduction in number of grouping characteristics resulting in a larger trial*



## Annex 4b; CIOFORA comment on the report of the meetings of fruit experts Pg 49

Char 57: time of eating maturity; we only eliminated this characteristic because in its current form it only adds very little extra info. We are however in favour of reworking this characteristic and then keeping it in.

Alternatively other grouping characteristics can be added to avoid increasing the number of varieties in test. A further increase of the costs should be avoided.

### # Notes

The current report seems to imply that DUS offices apply the 2-note difference rule to quantitative characteristics. This was not clear from the guidelines:

*TGP/1: "5.4.3 For quantitative characteristics, a difference of two Notes often represents a clear difference, but that is not an absolute standard for assessment of distinctness."*

*TGP/9/2: "5.2.3.2.3.3 A difference of two Notes is appropriate if the comparison between two varieties is performed at the level of Notes (VG, mean of VS). If the difference is only one Note, both varieties could be very close to the same border line (e.g. high end of Note 6 and low end of Note 7) and the difference might not be clear. When the comparison is performed at the level of measured values (MG, mean of MS) (see Section 5.2.3.3) a difference smaller than two Notes might represent a clear difference."*

CIOFORA is concerned about the possibility that is left open in the guidelines to determine clear distinctness based on a 1 Note difference for QN. This has been addressed in the CIOFORA Position on Minimum distance:

*"In order to be clearly distinguishable, the distance between two varieties in regard to their important characteristics must be sufficiently broad. Particularly in regard to pseudoqualitative characteristics and quantitative characteristics a difference of only one note in general should not be considered as a sufficiently broad distance. The decision should be made on a crop by crop basis."*

Since we had no idea how prevalent this would be in the current practice we reduced the # of notes in only 7 characteristics. The reports from all the test stations indicate that this has a big impact on the determination of distinctness, especially for mutants. So clearly it is not an exception for varieties to only differ in 1 or 2 characteristics.

In conclusion, we are open to agree with the original scale, under the assumption that the 2 Notes rule is applied without exception. It is the current "exception" that concerns us, and these reports show that that concern is justified.

## Conclusions

### Mutant Varieties

Mutants usually only differ in one characteristic. When that characteristic happens to be missing in the TG, the mutant is not deemed different even though this characteristic can be of great economic importance (f.i. the apples colour easier, resulting in less picking times). When you submit such a mutant for a DUS examination you have to hope that it happens to differ in some random unimportant characteristic. As a consequence, for varieties with already long lists of mutants, breeders no longer bother to submit a PVR application; a DUS test is in the end very expensive, especially when the outcome is very unpredictable.

On the other hand admitting mutant after mutant based on differences in 1 or 2 unimportant characteristics alone, does not benefit anyone – breeders, tree nurseries, growers, retail nor the consumer. The major apple varieties in the world all have long lists of mutants, PVR registered and not. The grower often does not know which mutant to choose. Tree nurseries are pushing those that they happen to have licenses on. Retailers tend to sell most of the apples as the original variety, thus exposing the consumer to a very variable product.

Mutants therefore need to have a sufficient minimal distance and should only be protected based on differences in important characteristics.

### Hybrid Varieties

The effect on hybrid varieties was more limited as that on mutant varieties, but there was an effect. This is hard to judge without actually knowing the actual varieties, but it does demonstrate how relevant it is to have a TG that comprises (all) economically important characteristics. Only then does the PVR system correspond with the needs of the industry and support all players in the market, from breeder to consumer.

### Reviewing the TG

Please keep in mind that the mock protocol is not a review of the TG. When actually reviewing this TG we would not only eliminate characteristics or classify them as unimportant, we would of course also like to add new characteristics of economic importance. For instance: disease resistance, timing of over colour development, variation of colour development on the tree/number of picking times, storability, biennial bearing, ...

As already mentioned, the table above shows that none of the varieties were listed as no longer distinct based on unimportant characteristics alone. This implies that it is possible to delete a substantial number of characteristics from the current TG, which would create room to add economically important characteristics, without an increase in the already high DUS fees.

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

Report of the meeting on ornamental species (Rose and pelargonium) on 27 June 2016 in Hotel Almarco, Sroda Wilkopolska, Poland.

Present in the meeting: Andrea Menne, Burkhard Spellerberg (Bundessortenamt, DE), Elizabeth Scott, Hilary Papworth, (NIAB, UK), Marcel Rijsbergen, Kees van Ettehoven (Naktuinbouw, NL), Jean Maison (CPVO). Observers: Nellie Hoek (RAI). Kees Grasshof and Henk de Greef (Naktuinbouw, NL) Unable to attend; Lars Henriksen (CIOPORA)

**11. Opening**

Kees opens the meeting at 14.00 and welcomes the participants. He mentions that unfortunately the CIOPORA representative Lars Hendriksen had to excuse himself and could not attend the meeting.

**12. Introduction**

In a short round of introduction all participants introduce themselves. It is mentioned that it is very unfortunate that CIOPORA is not represented in the meeting.

**13. Report of the kick off meeting.**

In the report of the Kick off meeting the details of the mock protocols are given and agreements noted on the approach for the project. The participants indicate that from the report of the Kick-off meeting it was very well possible to learn how to tackle the project. It is clear that not all countries used the exact same method. In most cases the comparison was made with those varieties included in the same growing trial. In another case the description of the candidate according to the mock protocol were compared with the descriptions from the variety collection.

Asked for an opinion on the quality of the mock protocol as drafted by CIOPORA the experts voiced the opinion that they could not imagine that the mock protocol was prepared by breeders. It was also clear that the detailed UPOV approach is not always clear enough for the people who worked on the protocol.

**14. Reports on Rose by the participating Examination Offices and discussion of the results**  
**Garden rose**

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. Bundessortenamt has a living reference collection of 1.800 garden rose varieties that they used for this exercise. Of these 16 varieties two would not have been distinct when the mock protocol should have been used.

The expert mentioned that the deletion of some characteristics and some states of expression in other characteristics were difficult to justify taking into account development in the crop. It was clear that 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. In general in garden roses there are less problems with small differences between varieties than e.g. in glasshouse roses.

The expert mentioned it would be difficult in species where the decision now 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: NIAB retested 7 varieties of garden roses against those varieties that were used as comparing varieties in the original trials. 3 out of these 7 varieties would not have been distinct using the mock protocol.

The experts mentioned that from the changes in the protocol it was hard to imagine that breeders had been involved in the process of adjusting the protocol. In the contacts with the applicants/breeders the present decisions were in general accepted.

The experts were of the opinion that the proposed changes would slow down progress in breeding.

In the discussion it was mentioned that there is a lack of engagement of the breeders in the process of creating the guidelines in UPOV and protocols in CPVO. Maybe attempts should be made to approach the CPVO applicants directly and ask for contributions in this process. Also the option was voiced to organize training for breeders in the process of DUS. This could lead to a better understanding of the system.

#### **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 tested varieties were treated like that using the original descriptions, 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, further study was expected to lead to 26 rejections out of 29 applications. Especially in the red and white flowered group the number of existing varieties that would give distinctness problems was huge.

In the discussion it was mentioned that the CIOPORA approach seems to surpass two established UPOV approaches in the DUS test:

- The results of a visual side by side comparison with an expert opinion on the notion clear distinction should apparently no longer be used.
- From the deletion of the number of notes with the characteristic number of petals it is clear that another UPOV approach for measured characteristics; the application of statistics that at the moment is not used in the testing of ornamentals becomes impossible to be used if ever desired.

The experts were of the opinion that by this approach the space for small improvements which could be visually observed would be decreased.

Asked for the cost effect of the deletion of a number of characteristics and notes, the experts agreed that the time spend to describe an application would be decreasing, but the extra costs related to the growing of a much larger reference collection would increase resulting in a total effect that the trials would be more expensive.

Speaking of other effect that the CIOPORA approach would have 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. The experts also could imagine that in infringement cases for judges it would be very difficult to consider cases of material that was clearly different from the protected variety to be infringing on the Right of the initial variety as the characteristics that caused the difference were no longer present in the protocol.

**15. Report on *Pelargonium* by the participating Examination Office and discussion of the results**

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.

The expert noted that the decreasing of the number of notes and the deletion of characteristics related to the leaf zone was contrary to the fact that for many breeders here are clear breeding goals.

The expert noted that 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.).

The expert mentioned that when the mock protocol would be used, 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.

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.

**16. Possible follow up**

As far as the project itself is concerned the experts are of the opinion that all elements necessary for a good discussion have been collected.

No further trials are needed.

CIOPORA will have the possibility to give factual comment on the report of the meeting. Discussion will have to take place at CPVO/UPOV level on possible consequences.

In all cases the experts were in agreement to critically look at the existing protocols and guidelines when these are revised and to change where needed scale of notes from existing 1-9 scales into e.g. 1-5 scales.

**17. Form of the report of the project**

It was decided to add the country results as well as the pending and mock protocols as annexes to a short concluding report.

**18. Any other business**

All participants to the meeting will receive the draft report for comments.

Jean asked how to communicate the results is e.g. the OEM. It was concluded that a factual report of the result and the meeting is possible.

**Closing**

At 17.30 Kees closed the meeting, thanking all participants for their contributions.

# CIOPORA

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## Minimum Distance Rose

Comments to the documents from the meeting of 27/06/2016.

### Short comments on the different EO reports

#### □ NIAB report for Garden Roses

- 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.
- 22 reference varieties grown and the differences between these and the candidates have been reviewed using the CIOPORA amended protocol. [Naktuinbouw compared with all varieties in its data-base]
- Of these, 16 would have still been considered distinct and 5 would have been not distinct. [This does not match with the details for NIAB 1002 in the table below]. ○ The table below summarizes the total number of reference varieties that were grown for each candidate, those that were distinct after applying the CIOPORA protocol and those that were not.

Candidate	Number of reference varieties grown and found to be distinct during the trial	Number of reference varieties applying the protocol	Number of reference varieties distinct after the CIOPORA	Number of reference varieties not distinct after applying the CIOPORA protocol
NIAB 1001	3	1		2
NIAB 1002	4	2		3
NIAB 1003	1	1		0
NIAB 1004	5	4		1
NIAB 1005	2	2		0
NIAB 1006	3	3		0
NIAB 1007	4	4		0

We note that 3 out of 7 varieties (NIAB 1001, 1002, 1004) (= 42%) used for the study would no longer be distinct when using the Mock Protocol.

- Reason might be that the study has been conducted being “cut-flower minded” ○ Because we do not have more detailed information about the different characteristics as regards the varieties NIAB 1001, 1002 and 1004 (spreadsheet was not available) we are not able to comment further.

#### □ Bundessortenamt for Garden Roses

- In the mock protocol for garden roses 20 out of 51 characteristics were declared unimportant and for 13 characteristics the minimum distance to be considered as a clear difference was increased to 4 notes. 18 characteristics remained the same.
- The 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. [Naktuinbouw compared with all varieties in its data-base]

Applying the mock protocol out of the 16 varieties retested only two (= 12.5%) would not have been distinct. The reasons are:

Character declared unimportant in the mock protocol

5 Young shoot: intensity of anthocyanin coloration

9 Leaf: intensity of green colour (upper side)

11 Leaf: glossiness of upper side

12 Leaflet: undulation of margin

35 Petal: reflexing of margin

Notes increased in mock protocol

17 Flowering shoot: number of flowering laterals

22 Flower: number of petals

26 Flower:  
diameter 31

Sepal: extensions

36 Petal:  
undulation.





- It is obvious that Candidate variety 3 and the reference variety should be declared clearly distinguishable.
- The results demonstrate that on the one hand the declaration of economically unimportant characters (No 5, 9, 11, 12, 35) had no influence on variety protection. On the other hand, the increasing of notes within characters (here No 17, 22, 26, 31) results in an increase of distance between varieties.
- CIOPORA agrees to the general comments of the Bundessortenamt that the number of retested candidates is relatively low to generalize the results obtained.

#### □ Naktuinbouw for Cut roses

- We understand that NakTuinbouw made a comparison of the descriptions of 29 candidate varieties with the descriptions of its 1800 reference varieties in its database (= database comparison). [Bundessortenamt only compared with varieties used in the original trial]
- We note that after the database comparison 26 varieties out of the 29 (= 90%) would no longer be considered "distinct" when using the MOCK Protocol
- We also note that after the database comparison 8 of the candidate varieties would not be considered "distinct" when using the present Technical Protocol, so they would need further visual examination, based on photos.
- We note that for the 26 varieties a visual examination, based on photos, did not take place. As reason it was said that it is not possible to consult the photo database as well as the "walking reference comity" because a 4 point difference (read sufficiently distinct) cannot be established.
- Two candidate varieties (Nakt14 and Nakt29) have been selected to illustrate the effects of the application of the Mock protocol.
  - It is obvious that Nakt14 and the two reference varieties should be declared clearly distinguishable. A simple visual examination would have brought clarity based probably on characteristics such as Shape of flower, Petals, Sepal (see below).
  - An applicant would have noted the following characteristics in between Nakt14 and the two below comparison varieties:

▪



Candidate NAKT 14



Variety 1 distinct



Variety 2 distinct

FLOWER	CANDIDATE	Variety 1	Variety 2
27. Flower shape	27.3	27.2	27.1
28. Profile of upper part	28.3	28.2	28.1
31. Sepal : extensions	31.7		

PETALS			
25. Density of petals	25.5	25.5	25.7
32. Reflexing of petals	32.9	32.1	32.9
33. Shape	33.3	33.7	33.1
37. Size	37.7	37.7	37.3

- It is also obvious that Nakt29 and the two reference varieties should be declared clearly distinguishable. A simple visual examination would have brought clarity using probably on characteristics such as Colour, Flower, Petals (see below)
- In this case an applicant would have noted the following characteristics in between Nakt29 and the two below comparison varieties :



Candidate NAKT29



Variety 1 distinct



Variety 2 distinct

FLOWER	CANDIDATE	Variety 1	Variety 2
27. Flower shape	27.1	27.3	27.2
28. Profile of upper part	28.1	28.3	28.3
31. Sepal : extensions			
PETALS			
25. Density of petals	25.7	25.5	25.5

32. Reflexing of petals	32.1	32.9	32.9
33. Shape	33.5	33.3	33.5
37. Size	37.3	37.7	37.9

- The examples suggest that a simple database comparison of candidate and reference varieties does not work to show the effect of a Mock protocol.
- It would have been interesting to elaborate more on which characteristic(s) has / have been declared unimportant or which characteristics have been modified in the Mock protocol so that these clearly distinguishable varieties are not declared distinct anymore.

## Minimum Distance Pelargonium

Comments to the documents from the meeting of 27/06/2016.

### Short Comments on the EO Report

○ In the mock protocol for *Pelargonium zonale* varieties 16 out of 60 (26%) characteristics were declared unimportant for Distinctness and for 3 characteristics the minimum distance considered to be clear was increased to 4 notes. 41 characteristics remained unchanged.

○ The colour characteristics of Pelargonium flowers are described with the RHS Colour Chart. In the DUS-test the difference between colours is judged by direct comparison of the plants and not with the RHS Colour Chart number. For this study the colours could not be observed on the plants, therefore two varieties were declared distinct if the colours were

different according to the table of similar colours internally used for finding similar varieties. This difference is bigger than the difference which can be seen on plants.

○ For the study the most recent 50 varieties of *Pelargonium zonale* were used which were granted CPVO titles. The DUS tests of these varieties were conducted between 2012 and 2015.

○ Applying the mock protocol only 2 out of 50 retested *Pelargonium zonale* varieties were no longer distinct. The reasons are:

#### Characteristics declared unimportant in mock protocol

38 Upper petal: width

10 Leaf blade: undulation of margin

Minimum distance increased in mock protocol

16 Leaf blade: conspicuousness of zone

11 Leaf blade: base

- The results show that unimportant characteristics (i.e. No 10 and 38) have been the key to get variety protection, and that the increasing of notes within characteristics results in a loss of distinctness.
- CIOPORA pays attention to the remarks on the results of the Bundessortenamt, that the protocol applied is not only used for *P. zonale* hybrids but also for *P. peltatum* and hybrids between both. Retesting of variety candidates of this species and hybrids with a mock protocol can give sufficient practical information.
- Compared to the mock protocol for apple and rose, in pelargonium a higher number of characteristics (41) remained unchanged, which might be the reason for the relative low number of non-distinct varieties when using the mock protocol.

CIOPORA, the International Community of Breeders of Asexually Reproduced Ornamental and Fruit Varieties, issued a position paper on PBR with a number of key statements regarding the minimum distance between varieties:

Key Statements:

CIOPORA demands a sufficient minimum distance between varieties for an effective Plant Variety Right.

Since new varieties are bred, selected and introduced mainly for commercial targets, the requirement “clearly” should be seen as a judgmental and evaluative requirement, and should not end in a simple search of a botanical difference.

The requirement “clearly distinguishable” should be assessed on characteristics important for the crop concerned; in this regard new important characteristics may be taken into consideration. Accordingly, a new type of characteristics (“relevant for the determination of clearly distinguishable”) should be included into chapter 4.8 of TG/1/3 and the test-guidelines should determine for each characteristic whether it is considered relevant for the determination of “clearly distinguishable”.

The relevant authorities should have the continuing obligation to take into consideration additional characteristics proposed by applicants, if such additional characteristics are important for the determination of “clearly distinguishable”.

Differences in unimportant characteristics only should not lead to a clearly distinguishable variety.

In order to be clearly distinguishable, the distance between two varieties in regard to their important characteristics must be sufficiently broad.

Particularly in regard to pseudo-qualitative characteristics and quantitative characteristics a difference of only one note in general should not be considered as a sufficiently broad distance. The decision should be made on a crop by crop basis.

Varieties with the same note in the UPOV test-guideline for a given characteristic should not be considered to be clearly distinguishable with respect to that characteristic. The possibility to search for a difference in a subsequent growing trial if such difference was not clear in the first properly performed examination should be eliminated.

The possibility of randomized “blind” testing in case of doubts over the distinctness of a candidate variety should also be eliminated. In case of a doubt over distinctness, the candidate variety cannot be considered to be clearly distinguishable from the reference variety.

The decision on which characteristics are relevant for the determination of “clearly distinguishable”, on how many of such characteristics must differ from each other and on the distance between such characteristics should be made on a crop-by-crop basis by a panel of experts, including representatives of the breeders of the crop concerned.

Based on these statements a project was designed (annex 1) to study the possible effect on distinctness between varieties if the guidelines that are used to establish distinctness and describe the variety would be changed so that certain ‘less relevant’ characteristics or states of expression were not taken into account in the process to test a variety on distinctness.

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Completely crossed out characteristics are "unimportant characteristics" in accordance with the CIOPORA Position Paper on Minimum Distances (2014). "Unimportant characteristic" in this regard means that if a new variety differs from an existing variety in only these unimportant characteristics, it shall not be deemed clearly distinguishable.

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### TABLE OF CHARACTERISTICS TO BE USED IN DUS-TEST AND PREPARATION OF DESCRIPTIONS

CPVO N°	UPOV N°	Characteristics	Examples	Note	
1.	1.	<b>Tree: vigour</b>	very weak	Nield's Drooper	1
(+)	(+)		weak	Akane	3
QN	QN		medium	Golden Delicious	5
			strong	Bramley's Seedling	7
2.	2. (*)	<b>Tree: type</b>	columnar	MacExcel, Wijcik	1
(+)	(+)		ramified	Elstar, Golden Delicious	2
3.	3. (*)	<u>Only varieties with ramified tree type:</u> <b>Tree: habit</b>	upright	Benoni, Gloster	1
(+)	(+)		spreading	Bramley's Seedling, Jonagold	2
QN	QN		drooping	Jonathan	3
			weeping	Neild's Drooper, Rome Beauty	4
4. (+)	4. (+)	<b>Tree: type of bearing</b>	on spurs only	Starkrimson Delicious	1
QN	QN		on spurs and long shoots	Jonagold	2
			on long shoots only	Cortland, Rome Beauty	3
<del>5.</del>	<del>5.</del>	<del><b>One-year-old shoot: thickness</b></del>	<del>thin</del>	<del>Laxton's Fortune, Rome</del>	<del>3</del>
<del>(+)</del>	<del>(+)</del>		<del>medium</del>	<del>Jonagold</del>	<del>5</del>
<del>QN</del>	<del>QN</del>		<del>thick</del>	<del>Bramley's Seedling</del>	<del>7</del>
			<del>very thick</del>	<del>Charlotte, Wijcik</del>	<del>9</del>

CPVO N°	UPOV N°	Characteristics	Examples	Note	
6.	6. (*)	One-year-old shoot: length of internode	very short	MacExcel, Wijcik	1
(+)	(+)		short	Alkmene, Florina	3
QN	QN		medium	Jonagold, Redaphough	5
			long	Auralia	7
<del>7.</del>	<del>7.</del>	<del>One-year-old shoot: colour on sunny side</del>	<del>greenish brown</del>	<del>Granny Smith</del>	<del>1</del>
<del>PQ</del>	<del>PQ</del>		<del>reddish brown</del>	<del>Vieking</del>	<del>2</del>
			<del>light brown</del>	<del>Arkeharm</del>	<del>3</del>
			<del>medium brown</del>	<del>Golden Delicious</del>	<del>4</del>
			<del>dark brown</del>	<del>Ingrid Marie</del>	<del>5</del>
<del>8.</del>	<del>8.</del>	<del>One-year-old shoot: pubescence (on distal half of shoot)</del>	<del>absent or very weak</del>	<del>Laxton's Fortune, Rewena</del>	<del>1</del>
<del>QN</del>	<del>QN</del>		<del>weak</del>	<del>Golden Delicious</del>	<del>3</del>
			<del>medium</del>	<del>Cox's Orange Pippin</del>	<del>5</del>
			<del>strong</del>	<del>Bramley's Seedling</del>	<del>7</del>
			<del>very strong</del>	<del>Rambour d'Hiver</del>	<del>9</del>
9.	9. (*)	One-year-old shoot: number of lenticels	few	Alkmene, Bramley's Seedling	3
QN	QN		medium	Cox's Orange Pippin	5
			many	Mutsu	7
10.	10. (*)	Leaf blade: attitude in relation to shoot	upwards	Katja, Redsleeves	1
(+)	(+)		outwards	Bramley's Seedling	2
QN	QN		downwards	Granny Smith, Schone van Boskoop	3
11.	11. (*)	Leaf blade: length	very short	Reanda	1
			short	Court Pendu Plat	3
QN	QN		medium	Florina	5
			long	Bramley's Seedling	7

CPVO N°	UPOV N°	Characteristics		Examples	Note
<del>12.</del>	<del>12.</del>	<del>Leaf blade: width</del>	<del>narrow</del>	<del>Cox's Orange Pippin</del>	<del>3</del>
	(*)		medium	Jonagold	5
<del>QN</del>	<del>QN</del>		broad	Bramley's Seedling	7
<del>13.</del>	<del>13.</del>	<del>Leaf blade: ratio length/width</del>	<del>small</del>	<del>Bramley's Seedling</del>	<del>3</del>
	(*)		medium	Jonagold	5
<del>QN</del>	<del>QN</del>		large	Granny Smith	7
<del>14.</del>	<del>14.</del>	<del>Leaf blade: intensity of green colour</del>	<del>light</del>	<del>Golden Delicious, Sansa</del>	<del>3</del>
<del>QN</del>	<del>QN</del>		medium	James Grieve	5
			dark	Mutsu	7
<del>15.</del>	<del>15.</del>	<del>Leaf blade: incisions of margin (upper half)</del>	<del>erenate</del>	<del>Summerred</del>	<del>1</del>
(+)	(+)		bierenate	Alkmene, Jim Brian	2
<del>PQ</del>	<del>PQ</del>		serrate type 1	Elstar, Gala	3
			serrate type 2	Sirprize	4
			biserrate	Freedom, Mutsu, Schone van Boskoop	5
<del>16.</del>	<del>16.</del>	<del>Leaf blade: pubescence on lower side</del>	<del>absent or weak</del>	<del>Golden Delicious</del>	<del>1</del>
<del>QN</del>	<del>QN</del>		medium	Cox's Orange Pippin, Elstar	2
			strong	James Grieve, Jonathan	3
<del>17.</del>	<del>17.</del>	<del>Petiole: length</del>	<del>short</del>	<del>Jonagold</del>	<del>3</del>
	(*)		medium	Granny Smith	5
<del>QN</del>	<del>QN</del>		long	Falstaff	7
<del>18.</del>	<del>18.</del>	<del>Petiole: extent of anthocyanin coloration from base</del>	<del>small</del>	<del>Golden Delicious, Jonagold</del>	<del>3</del>
<del>QN</del>	<del>QN</del>		medium	Cox's Orange Pippin, Gala	5
			large	Discovery, Richard Delicious	7



CPVO N°	UPOV N°	Characteristics	Examples	Note	
19.	19. (* (+)	<b>Flower: predominant colour at balloon stage</b>	white	Norhey	1
(+)	(+)		yellowish pink	Schöner aus Herrenhut, Worcester Pearmain	2
PQ	PQ		light pink	Gravensteiner, Jonathan	3
			dark pink	Elstar, Sylvia	4
			medium red	Kidd's Orange Red	5
			dark red	Weirouge	6
			purple	Rafzubin	7
20.	20. (* (+)	<b>Flower: diameter with petals pressed into horizontal position</b>	very small	<del>Freedom, Spätblühender Taffetapfel</del>	1
<del>QN</del>	<del>QN</del>		small	<del>Jonafree</del>	3
			medium	<del>Cox's Orange Pippin</del>	5
			large	<del>Schöne van Boskoop</del>	7
21.	21. (* (+)	<b>Flower: arrangement of petals</b>	free	<del>Worcester Pearmain</del>	1
(+)	(+)		intermediate	<del>Golden Delicious, Jonagold, Topaz</del>	2
<del>QN</del>	<del>QN</del>		overlapping	<del>Schöne van Boskoop</del>	3
22.	22. (+)	<b>Flower: position of stigmas relative to anthers</b>	below	<del>Alkmene</del>	1
(+)	(+)		same level	<del>Cox's Orange Pippin</del>	2
<del>QN</del>	<del>QN</del>		above	<del>Golden Delicious</del>	3
23.	23.	<b>Young fruit: extent of anthocyanin overcolour</b>	absent or very small	<del>Grenadier, Norhey</del>	1
<del>QN</del>	<del>QN</del>		small	<del>Fuji</del>	3
			medium	<del>Idared</del>	5
			large	<del>Elise</del>	7
			very large	<del>Weirouge</del>	9

CPVO N°	UPOV N°	Characteristics	Examples	Note	
24.  QN	24. (* )	Fruit: size	very small	Api Noir	1
			very small to small	Golden Harvey	2
	small		Akane, Miller's Seedling	3	
	small to medium		Alkmene	4	
	medium		Cox's Orange Pippin	5	
	medium to large		Gravensteiner	6	
	large		Mutsu	7	
	large to very large		Bramley's Seedling	8	
	very large		Howgate Wonder	9	
25.  QN	25. (* ) (+)	Fruit: height	short	Auralia	3
			medium	James Grieve	5
	tall		Čadel, Iduna	7	
26.  QN	26. (* ) (+)	Fruit: diameter	small	Orei	3
			medium	Golden Delicious	5
			large	Melrose	7
<del>27.</del>  QN	<del>27.</del> (* ) (+)	<del>Fruit: ratio height/diameter</del>	<del>very small</del>	<del>Court Pendu Plat, Ingel</del>	<del>4</del>
			<del>small</del>	<del>Idared, Ontario</del>	<del>3</del>
			<del>medium</del>	<del>Jonagold</del>	<del>5</del>
			<del>large</del>	<del>Golden Delicious</del>	<del>7</del>
			<del>very large</del>	<del>Iduna, Priam</del>	<del>9</del>
28.  PQ	28. (* ) (+)	Fruit: general shape	cylindrical waisted	Starkrimson Delicious	1
			conic	Jonagold	2
	ovoid		Summerred	3	
	PQ		cylindrical	Gravensteiner, Mutsu	4
			ellipsoid	Spencer	5
			globose	Gloden Noble, Resi	6
			obloid	Bramley's Seddling, Idared	7

CPVO N°	UPOV N°	Characteristics		Examples	Note
29.	29.	<b>Fruit: ribbing</b>	absent or weak	Charles Ross, Discovery	1
QN	QN		moderate	Golden Delicious	2
			strong	Red Delicious, Reinette Russet	3
30.	30.	<b>Fruit: crowning at calyx end</b>	absent or weak	Charles Ross, Discovery, Granny Smith	1
QN	QN		moderate	Cox's Orange Pippin, Jonagold	2
			strong	Red Delicious	3
<del>31.</del>	<del>31.</del>	<del>Fruit: size of eye</del>	<del>small</del>	<del>McIntosh</del>	<del>3</del>
	(*)		<del>medium</del>	<del>Cox's Orange Pippin</del>	<del>5</del>
QN	QN		<del>large</del>	<del>Ingot, Monarch</del>	<del>7</del>
<del>32.</del>	<del>32.</del>	<del>Fruit: length of sepal</del>	<del>short</del>	<del>McIntosh</del>	<del>3</del>
QN	QN		<del>medium</del>	<del>Allamene</del>	<del>5</del>
			<del>long</del>	<del>Gala</del>	<del>7</del>
33.	33.	<b>Fruit: bloom of skin</b>	absent or weak	Golden Delicious	1
	(*)		moderate	James Grieve, Jonathan	2
QN	QN		strong	Vicking, Vista Bella	3
34.	34.	<b>Fruit: greasiness of skin</b>	absent or weak	Schone van Boskoop	1
QN	QN		moderate	James Grieve	2
			strong	Arlet, Jonagold	3
35.	35.	<b>Fruit: ground colour</b>	not visible	Red Jonaprince	1
	(*)		whitish yellow	Silken	2
PQ	PQ		yellow	Delorgue, Gala, Transparente de Croncels	3
			whitish green	Angold, Lodi, Lena, White Transparent	4
			yellow green	Cox's Orange Pippin	5
			green	Granny Smith	6

CPVO N°	UPOV N°	Characteristics	Examples	Note		
36.	36.	<b>Fruit: relative area of over colour</b>	absent or very small	Granny Smith	1	
	(*)		small	Auralia, Cox's Orange Pippin	3	
	QN		QN	medium	Gala	5
			large	Spartan	7	
			very large	Red Jonaprince	9	
37.	37.	<b>Fruit: hue of over colour – with bloom removed</b>	orange red	Cox's Orange Pippin, Egremont Russet	1	
	(*)		pink red	Cripps Pink, Delorgue	2	
	PQ		PQ	red	Akane, Galaxy, Red Elstar, Regal Prince	3
				purple red	Red Jonaprince, Spartan	4
				brown red	Fiesta, Joburn, Lord Burghley	5
38.	38.	<b>Fruit: intensity of over colour</b>	light		<del>3</del> 1	
	(*)		medium	<i>see explanation</i>	<del>5</del> 2	
	(+)		(+)	dark		<del>3</del> 3
	QN	QN				
39.	39.	<b>Fruit: pattern of over colour</b>	only solid flush	Red Jonaprince, Richared Delicious	1	
	(*)		solid flush with weakly defined stripes	Obrogala	2	
	PQ		PQ	solid flush with strongly defined stripes	Jonagored	3
				weakly defined flush with strongly defined stripes	Gravensteiner	4
				only stripes (no flush)	Helios	5
				flushed and mottled	Elstar	6
				flushed, striped and mottled	Jonagold	7

CPVO N°	UPOV N°	Characteristics		Examples	Note		
40.	40. (*)	Fruit: width of stripes	narrow	Eden, Pinova, Pirella	3 <sup>1</sup>		
			medium	Rubinola, Tenroy	5 <sup>2</sup>		
			QN	QN	broad	Baigent, Caudle	7 <sup>3</sup>
41.	41. (*)	Fruit: area of russet around stalk attachment	absent or small	Elstar, Granny Smith, Piros	1		
			QN	QN	medium	Alkmene	2
					large	Egremont Russet, Kaiser Wilhelm	3
42.	42.	Fruit: area of russet on cheeks	absent or small	Golden Noble	1		
			QN	QN	medium	Karmijn de Sonnaville	2
					large	Egremont Russet, Zabergäu Reinette	3
43.	43. (*)	Fruit: area of russet around eye basin	absent or small	Golden Noble	1		
			QN	QN	medium	Cox's Orange Pippin	2
					large	Arlet	3
44.	44.	Fruit: number of lenticels	few	James Grieve	3 <sup>1</sup>		
			QN	QN	medium	Golden Delicious	5 <sup>2</sup>
					many	Granny Smith	7 <sup>3</sup>
45.	45.	Fruit: size of lenticels	small	Idared, Jonathan	3 <sup>1</sup>		
			QN	QN	medium	Elstar	5 <sup>2</sup>
					large	Florina, Reine des Reinettes	7 <sup>3</sup>
46.	46. (*)	Fruit: length of stalk	very short	Egremont Russet	1 <sup>1</sup>		
			QN	QN	short	Cox's Orange Pippin	3 <sup>2</sup>
					medium	Worcester Pearmain	5 <sup>3</sup>
					long	Richard Delicious	7 <sup>4</sup>
					very long	Pinova, Rewena, Sirprize	9 <sup>5</sup>
<del>47.</del>	<del>47.</del> (*)	<del>Fruit: thickness of stalk</del>	<del>thin</del>	<del>Golden Delicious</del>	<del>3</del>		
			<del>medium</del>	<del>Cox's Orange Pippin</del>	<del>5</del>		
			<del>QN</del>	<del>QN</del>	<del>thick</del>	<del>Schone van Boskoop</del>	<del>7</del>

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CPVO N°	UPOV N°	Characteristics		Examples	Note
48.	48. (*)	Fruit: depth of stalk cavity	shallow	Edward VII	3 1
(+)	(+)		medium	Golden Delicious	5 2
QN	QN		deep	Jonagold, Schone van Boskoop	7 3
<del>49.</del>	<del>49. (*)</del>	<del>Fruit: width of stalk cavity</del>	<del>narrow</del>	<del>Beauty of Bath, Gala</del>	<del>3</del>
<del>(+)</del>	<del>(+)</del>		<del>medium</del>	<del>Golden Delicious</del>	<del>5</del>
<del>QN</del>	<del>QN</del>		<del>broad</del>	<del>Jonagold</del>	<del>7</del>
50.	50. (*)	Fruit: depth of eye basin	shallow	Worcester Pearmain	3 1
(+)	(+)		medium	Golden Delicious	5 2
QN	QN		deep	Bramley's Seedling, Delcorf	7 3
<del>51.</del>	<del>51. (*)</del>	<del>Fruit: width of eye basin</del>	<del>narrow</del>	<del>Pinova, Worcester Pearmain</del>	<del>3</del>
<del>(+)</del>	<del>(+)</del>		<del>medium</del>	<del>Golden Delicious</del>	<del>5</del>
<del>QN</del>	<del>QN</del>		<del>broad</del>	<del>Bramley's Seedling</del>	<del>7</del>
52.	52.	Fruit: firmness of flesh	very soft	Astrachan	1
	(*)		soft	Jonagold	3
(+)	(+)		medium	Cox's Orange Pippin	5
QN	QN		firm	Kent	7
			very firm	Pilot, Scifresh	9
53.	53.	Fruit: colour of flesh	white	Akane, Spartan	1
	(*)		cream	Jonagold	2
PQ	PQ		yellowish	Delorina, Topaz	3
			greenish	Gloster, Granny Smith	4
			pinkish	Pomfit	5
			reddish	Weirouge	6

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CPVO N°	UPOV N°	Characteristics	Examples	Note	
<del>54.</del>	<del>54.</del> <del>(*)</del>	<del>Fruit: aperture of locules (in transverse section)</del>	<del>closed or slightly open</del> Idared, Worcester Pearmain	<del>1</del>	
<del>(+)</del>	<del>(+)</del>		<del>moderately open</del> Reine de Reinettes, Sampion	<del>2</del>	
<del>QN</del>	<del>QN</del>		<del>fully open</del> McIntosh	<del>3</del>	
55.	55. (*)	Time of beginning of flowering	very early	Anna, Ein-Shemer	1
(+)	(+)		early	Idared, Schone van Booskoop	3
QN	QN		medium	Cox's Orange Pippin, Jonagold	5
			late	Court Pendu Plat, Rall's Janet	7
			very late	Feuilmorte, Spätblühender Taffetapfel	9
56.	56.	Time for harvest	very early	Vista Bella	1
(+)	(+)		early	Discovery, Jersey mac, Sunrise	3
QN	QN		medium	Cox's Orange Pippin, Elstar, Gala	5
			late	Jonagold	7
			very late	Granny Smith, Cripps Pink, Fuji	9

CPVO N°	UPOV N°	Characteristics	Examples	Note	
<del>57.</del>	<del>57.</del> (*)	<del>Time of eating maturity</del>	<del>very early</del>	<del>Vista Bella</del>	1
(+)	(+)		<del>very early to early</del>	White Transparent	2
QN	QN		early	<del>Discovery, Jerseymac, Mountain Cove, Sunrise</del>	3
			<del>early to medium</del>	<del>Akane, James Grieve, Summerred</del>	4
			medium	<del>Elstar, Gala, Honeycrisp</del>	5
			<del>medium to late</del>	<del>Ambrosia, Spartan, Sampion</del>	6
			late	<del>Golden Delicious</del>	7
			late to very late	Fuji	8
			very late	Cripps Pink, Granny Smith	9



## ANNEX I

### TABLE OF CHARACTERISTICS

CPVO N°	UPOV N°	Characteristics	Examples	Note	
1.	1.  PQ	[G] [P]  <b>Plant: growth type</b>	miniature		1
			dwarf	Korverlandus (G)	2
			bed	Taneidol (G)	3
			shrub	Kolmag (G)	4
			climber	Noasafa (G)	5
			ground cover	Meifafio (G)	6
2.	2. (+)  QN	[G] [P]  <u>Excluding varieties with growth type climber:</u> Plant: growth habit	upright	Poulhi008 (P)	1
			<del>semi upright</del>	<del>Tantasch (G); Korkallet (P)</del>	<del>3</del>
			intermediate	Poulkrid (G); Evera107 (P)	5
			<del>moderately spreading</del>	<del>Meibonrib (G)</del>	<del>7</del>
			strongly spreading	Korkilgwen (G)	9
3.	3.  QN	[C] [G]  <b>Plant: height (during second flush)</b>	very short	Lenwiga (G)	1
			<del>short</del>	<del>Noason (G)</del>	<del>3</del>
			medium	Macrexy (G); Ruiy5451 (C)	5
			<del>tall</del>	<del>Seliron (C); Tanakinom (G)</del>	<del>7</del>
			very tall	Macyefre (G)	9
<del>4.</del>	<del>4.</del> (+)  <del>QL</del>	<b>Young shoot: anthocyanin coloration</b>	absent	Poulans (G); Poulra019 (P)	<del>4</del>
			present	Ruirovingt (C); Taneidol (G); Ruiy1549 (P)	9

CPVO N°	UPOV N°	Characteristics	Examples	Note	
<del>5.</del>	<del>5.</del> (+)	Young shoot: intensity of anthocyanin coloration			
	QN		very weak	Presur (C); Poulen003 (G); Poulpolle (P)	1
			weak	Ruirovingt (C); Baipace (G); Ruitrot (P)	3
			medium	Sehetroje (C); Noala (G); Delpajor (P)	5
			strong	Selaurum (C); Korozon (G); Korbigman (P)	7
		very strong	Pekeoujeny (C); TAN96051 (G)	9	
6.	6.	Stem: number of prickles (excluding very small and hair-like prickles )			
	QN		absent or very few	Ruiorg (G); Meibegil (P)	1
			few	Schremna (C); Kortionza (G); Pouleolop (P)	3
			medium	Selaurum (C); Bokramar (G); Kormisso (P)	5
			many	Meineble (G); Evera105 (P)	7
		very many	Deljam (G)	9	
<del>7.</del>	<del>7.</del>	Prickles: predominant colour (as for 6)			
	PQ (a)		greenish	Presur (C); Kolmag (G); Poulear (P)	1
			yellowish	Ruiy0775 (P)	2
			reddish	Bokrarug (G); Delpajor (P)	3
		purplish	Kornairol (G); Evera102 (P)	4	

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CPVO N°	UPOV N°	Characteristics	Examples	Note
<del>8.</del>	<del>8.</del>	<b>Leaf: size</b>		
	<del>QN</del>	<del>(a)</del>	small Predesplen (C); Kordenzen (G); Ruibrei (P)	<del>3</del>
			medium Pekeoujenny (C); Tantasch (G); Korreccalam (P)	<del>5</del>
			large Poultime (G); Poulhi018 (P)	<del>7</del>
<del>9.</del>	<del>9.</del>	<b>Leaf: intensity of green colour (upper side)</b>		
	<del>QN</del>	<del>(a)</del>	light Interlis (C); Tanjuwe (G); Evergreen (P)	<del>3</del>
			medium Korplapei (C); Poulrus (G); Korreccalam (P)	<del>5</del>
			dark Korparezni (G); Poulflag (P)	<del>7</del>
10.	10.	[G] [P] <b>Leaf: anthocyanin coloration</b>		
	QL	(a)	absent Poulac005 (G); Meikilaylo (P)	1
			present Kornairol (G); Evera102 (P)	9
<del>11.</del>	<del>11.</del>	<b>Leaf: glossiness of upper side</b>		
	<del>QN</del>	<del>(a)</del>	absent or very weak Somnip (G); Evera105 (P)	<del>1</del>
			weak Koreilmo (C); Meilauron (G); Korscherki (P)	<del>3</del>
			medium Interlis (C); Diemoust (G); Ruiy0775 (P)	<del>5</del>
			strong Pekeoujenny (C); Wekpaltlez (G); Poulhi008 (P)	<del>7</del>
			very strong	<del>9</del>

CPVO N°	UPOV N°	Characteristics	Examples	Note
<del>12.</del>	<del>12.</del>	<b>Leaflet: undulation of margin</b>		
	<del>QN</del>	(a)	absent or very weak	<del>Poulaksel (G); Poulyn (P)</del> 1
			weak	<del>Koreilmo (C); Meihecluz (G); Delpajor (P)</del> 3
			medium	<del>Ruirovingt (C); Korkilgwen (G); Korbigrman (P)</del> 5
			strong	<del>Predepass (C); Noatraum (G); Ruiz0123 (P)</del> 7
			very strong	9
<del>13.</del>	<del>13.</del>	<b>Terminal leaflet: shape of blade</b>		
	<del>PQ</del>	(a)	narrow elliptic	<del>Korverlandus (G); Ruiz29924 (P)</del> 1
			medium elliptic	<del>Korflapei (C); Meihuterb (G); Ruiz14914 (P)</del> 2
			ovate	<del>Interlis (C); Noahan (G); Evera102 (P)</del> 3
			circular	<del>Poulna (G)</del> 4
<del>14.</del>	<del>14.</del>	<b>Terminal leaflet: shape of base of blade</b>		
	<del>(+)</del>			
	<del>PQ</del>	(a)	acute	<del>Tanotika (C)</del> 1
			obtuse	<del>Sehetroje (C)</del> 2
			rounded	<del>Koreilmo (C)</del> 3
			cordate	4

CPVO N°	UPOV N°	Characteristics	Examples	Note			
<del>15.</del>	<del>15.</del> (+)	Terminal leaflet: shape of apex of blade					
			<del>PQ</del>	( <del>a</del> )	acuminate	<del>Meihuterb (G); Poulberty (P)</del>	1
					acute	<del>Interlis (C); Heleva (G); Kormutrie (P)</del>	2
					obtuse	<del>Pekeourofendu (G)</del>	3
			rounded	<del>Ruirovingt (C); Tantumleh (G)</del>	4		
<del>16.</del>	<del>16.</del> (+)	[G] Flowering shoot: [P] flowering laterals					
			<del>QL</del>		absent	1	
			present	9			
17.	17. (+)	[G] Flowering shoot: [P] number of flowering laterals					
			QN	very few	1		
				few	<del>Tanidrak (G); Poultra022 (P)</del>	3	
				medium	Dicentice (G); Poulhi019 (P)	5	
				many	<del>Korgazell (G); Ruiy0775 (P)</del>	7	
		very many	Korglolev (P)	9			
18.	18. (+)	[G] <u>Only varieties with no</u> [P] <u>flowering laterals:</u> Flowering shoot: number of flowers					
				very few	1		
				few	3		
				medium	5		
				many	7		
		very many	9				

CPVO N°	UPOV N°	Characteristics	Examples	Note			
19.	19. (+)	[G] [P] <b>Only varieties with flowering laterals: Flowering shoot: number of flowers per lateral</b>					
			QN	very few	Somnip (G); Ruiklinko (P)	1	
				<del>few</del>	<del>Noaley (G); Korselug (P)</del>	<del>3</del>	
				medium	Poulanlis (G); Poulbao (P)	5	
				<del>many</del>	<del>TAN97274 (G); Ruitween (P)</del>	<del>7</del>	
		very many	Noamet (G); Poulra017 (P)	9			
20.	20. (+)	[G] [P] <b>Flower bud: shape in longitudinal section</b>					
			PQ	elliptic	Ruivierneg (G); Poulra021 (P)	1	
				medium ovate	Noasafa (G); Evergreen (P)	2	
		broad ovate	Meisardan (G); Korstrunek (P)	3			
21.	21. (+)	[G] [P] <b>Flower: type</b>					
			QN	(b)	single	Noastrauss (G)	1
					semi-double	Poulfiry (G); Poulnil (P)	2
			double	TAN97103 (G); Korlobea (P)	3		
22.	22.	<b>Flower: number of petals</b>					
			QN	(b)	very few	Noala (G); Delmitaf (P)	1
					<del>few</del>	<del>Predesplen (C); Tananilov (G); Korbersoma (P)</del>	<del>3</del>
					medium	Ruiy5451 (C); Poulscots (G); Ruiklinko (P)	5
					<del>many</del>	<del>Lexani (C); Ruiharl (G); Meiraktas (P)</del>	<del>7</del>
		very many	Meiroupis (G); Poulwen (P)	9			

CPVO N°	UPOV N°	Characteristics	Examples	Note
23.	23. (+)	<b>Flower: colour group</b>		
	PQ	(b)		
		white or near white	Korcilmo (C); Meilontig (G); Poulra022 (P)	1
		white blend	Specdown (C); TAN98505 (C); TAN97123 (G); Rush (G)	2
		green	Nirpgreenl (C); Korewala (P)	3
		yellow	Korflapei (C); Poulyc004 (G); Delmitaf (P)	4
		yellow blend	TAN00125 (C); Rumba (G); Ruiabri (P)	5
		orange	Alsever (P); Tanoranbon(G)	6
		orange blend	Presur (C); Meishulo (P)	7
		pink	Schreemeen3001 (C); Noasia (G); Korfonsova (P)	8
		pink blend	Schremna (C); Korfeining (G); Poulmeno (P)	9
		red	Predepass (C); Noafeuer (G); Ruikenre (P)	10
		red blend	Meilambra (C) ; Interuspa (G); Delmigre (P)	11
		red purple	Nirpillpro (C); Poulac016 (P)	12
		purple	Olyung (C); Stebigpu (G)	13
		violet blend	Scholtec (C); Korflieder (P)	14
		brown blend	Simcho (G)	15
		multicoloured	Delmitaf (P)	16

CPVO N°	UPOV N°	Characteristics	Examples	Note			
24.	24. (+)	[G] <u>Varieties with double flowers only: Flower: colour of the centre</u>					
			PQ	(b)	green	1	
					yellow	2	
					orange	3	
					pink	4	
					red	5	
					purple	6	
25.	25.	[G] <u>Varieties with double flowers only: Flower: density of petals</u> [P]					
			QN	(b)	very loose	1	
					loose	Interladru (G)	3
					medium	Meitrainaz (G);	5
					dense	Ausencart (G); Poulhi017 (P)	7
26.	26.	Flower: diameter					
			QN	(b)	<del>very small</del>	<del>Noastrauss (G); Poulset (P)</del>	<del>1</del>
					small	Interlis (C); Climbing Canibo (G); Meiraktas (P)	3
					medium	Schremna (C); Poulberg (G); Ruiz1491 (P)	5
					large	Selaurum (C); Adesmanod (G); Korewala (P)	7
					<del>very large</del>	<del>Koranderer (G); Evera116 (P)</del>	<del>9</del>



CPVO N°	UPOV N°		Characteristics	Examples	Note	
27.	27. (+)	PQ	(b)	<b>Flower: shape</b>		
				round	Ruirovingt (C); Meiousecki (G); Evera101 (P)	1
				irregularly rounded	Ruyi5451 (C); Kormarec (G); Korkallet (P)	2
			star-shaped	Predesplen (C); Anakissi (G); Poulra023 (P)	3	
28.	28. (+)	PQ	(b)	[C]	<b>Flower: profile of upper part</b>	
				[G]		
			flat	Ausmol (G); Interlis (C)	1	
			flattened convex	Pekcoujenny (G); Ruyi5451 (C)	2	
			convex	Jacakor (G)	3	
29.	29. (+)	PQ	(b)	[C]	<b>Flower: profile of lower part</b>	
				[G]		
			concave	Aushunter (G); Selaurum (C)	1	
			flat	Meitonje (G); Predesplen (C)	2	
			flattened convex	Korflapei (C); Meironsse (G)	3	
			convex	Jacare (G)	4	
30.	30.	QN	(b)	<b>Flower: fragrance</b>		
				absent or weak	Predesplen (C); Ruimats (G); Evera107 (P)	1
				medium	Poulsolo (G); Korduftoro (P)	2
			strong	Tananilov (G)	3	

CPVO N°	UPOV N°	Characteristics	Examples	Note		
31.	31. (+)  QN	<b>Sepal: extensions</b>  (b)	absent or very weak	Pouldron (G); Ruirowho (P)	1	
			<del>weak</del>	<del>Interlis (C); Ruiharl (G); Everos (P)</del>	<del>3</del>	
			medium	Predesplen (C); Tankissi (G); Ruiklinko (P)	5	
			<del>strong</del>	<del>Spekes, Pekeoujenny (C); Meipeluj (G); Koranalafi (P)</del>	<del>7</del>	
			very strong		9	
<del>32.</del>	<del>32. (+)</del>  <del>QL</del>	<b>Petals: reflexing of petals one-by-one</b>  (b)	<del>absent</del>	<del>Meidonets (G); Poulberty (P)</del>	<del>1</del>	
			<del>present</del>	<del>Baipeace (G); Korpilanz (P)</del>	<del>9</del>	
33.	33.  PQ	<b>Petal: shape</b>  (b)	elliptic		1	
			(c)	transverse elliptic	Selaurum (C)	2
			obovate	Korcilmo (C)	3	
			<del>obcordate</del>		<del>4</del>	
			rounded	Schremna (C); Meihecluz (G); Poulac002 (P)	5	
<del>34.</del>	<del>34.  QN</del>	<b>Petal: incisions</b>  (b)	<del>absent or very weak</del>	<del>TAN98130 (G)</del>	<del>1</del>	
			<del>weak</del>	<del>Selaurum (C); Poulac008 (G); Poulneto (P)</del>	<del>3</del>	
			<del>medium</del>	<del>Ruirovingt (C); Reubis (G)</del>	<del>5</del>	
			<del>strong</del>	<del>Interladru (G)</del>	<del>7</del>	
			<del>very strong</del>		<del>9</del>	

CPVO N°	UPOV N°	Characteristics	Examples	Note	
<del>35.</del>	<del>35.</del>	<b>Petal: reflexing of margin</b>			
	<del>QN</del>	(b)	absent or very weak	Ausjame (C); Noaheim (G); Asia (P)	1
		(e)	weak	Koretyal (C); Kortwente (G); Delpajor (P)	3
			medium	Schremna (C); Poulduce (G); Ruiklinko (P)	5
			strong	Predesplen (C); Ruivierneg (G); Poutra023 (P)	7
			<del>very strong</del>	Selaurum (C); Tanziewsim (G); Korduftoro (P)	9
36.	36.	<b>Petal: undulation</b>			
	QN	(b)	absent or very weak	Ausjame (C); Ruisjkol (G); Poulbao (P)	1
		(c)	weak	Ruiy5451 (C); Meilauron (G); Ruirowho (P)	3
			medium	Schremna (C); Poulgelb (G); Evera101 (P)	5
			strong	Koretyal (C); Delpabra (G); Poutra023 (P)	7
			very strong	Korbraufo (G)	9
37.	37.	<b>Petal: size</b>			
	[G] [P]				
	QN		very small	Poulembe (G)	1
		(b)	small	Rubleu (G); Meishulo (P)	3
		(c)	medium	Tanweisa (G); Korbigman (P)	5
			large	Meimucas (G); Evera116 (P)	7
			<del>very large</del>	Pekeoufeudor (G)	9

CPVO N°	UPOV N°	Characteristics	Examples	Note	
38.	38.	[C] Petal: length			
		QN	(b) <del>very short</del>	1	
			(c) short	Interlis (C)	3
			medium	Predesplen (C)	5
			long	Selaurum (C)	7
		<del>very long</del>	9		
<del>39.</del>	<del>39.</del>	[C] Petal: width			
		QN	(b) <del>very narrow</del>	1	
			(c) narrow	<del>Interlis (C)</del>	3
			medium	<del>Predesplen (C)</del>	5
			broad	<del>Selaurum (C)</del>	7
		<del>very broad</del>	9		
40.	40.	Petal: number of colours on inner side (basal spot excluded)			
		QL	(b) one	Selaurum (C); TAN98130 (G); Ruibrei (P)	1
			(c) two	Baipeace (G); Delki (P)	2
		more than two	Delstrisang (G)	3	
<del>41.</del>	<del>41.</del>	<u>Only varieties with one colour on inner side of petal: Petal: intensity of colour (basal spot excluded)</u>			
		QN	(b) lighter towards the base	<del>Interlis (C); Poulen012 (G); Ruiz29924 (P)</del>	1
			(c) even	<del>Selaurum (C); TAN98130 (G); Poutra017 (P)</del>	2
		lighter towards the top	Predesplen (C); Orasoglo (G); Poulhi002 (P)	3	

CPVO N°	UPOV N°	Characteristics	Examples	Note
42.	42.	<b>Petal: main colour on the inner side (main colour is that with largest surface area)</b>		
	PQ	(b) (c)	RHS Colour Chart (indicate reference number)	
43.	43.	<b><u>Only varieties with two or more colours on inner side of petal:</u> Petal: secondary colour (basal spot excluded)</b>		
	PQ	(b) (c)	RHS Colour Chart (indicate reference number)	
44.	44.	<b><u>Only varieties with more than two colours on inner side of petal:</u> Petal: tertiary colour (basal spot excluded)</b>		
	PQ	(b)	white	1
		(c)	green	2
			light yellow	3
			medium yellow	4
			orange	5
			pink	6
			red	7
			purple-red	8
			brown-red	9
			purple	10
			Delstrisang (G)	

CPVO N°	UPOV N°	Characteristics	Examples	Note		
45.	45. (+)	<u>Only varieties with two or more colours on inner side of petal:</u> Petal: distribution of secondary colour on inner side (basal spot excluded)				
			PQ (b)	at base	1	
			(e)	at apex	2	
				at marginal zone	Panhurem (G); Korbuntea (P)	3
				as a flush	Wekquaneze (G)	4
				as segments or stripes	Delstrisang (G); Delmigre (P)	5
		as speckles	6			
46.	46. (+)	<u>Only varieties with more than two colours on inner side of petal:</u> Petal: distribution of tertiary colour on inner side (basal spot excluded)				
			PQ (b)	at base	1	
			(e)	at apex	2	
				at marginal zone		3
				as a flush		4
				as segments or stripes	Delstrisang (G)	5
		as speckles	6			
47.	47.	Petal: basal spot on the inner side				
			QL (b)	absent	Korflapei (C); Pouldom (G); Korewala (P)	1
	(e)	present	Ruirovingt (C); Meipeluj (G); Poulper029 (P)	9		

CPVO N°	UPOV N°	Characteristics	Examples	Note			
48.	48. (+)	Petal: size of basal spot on inner side					
			QN	(b)	<del>very small</del>	<del>Seliron (C); Evera104 (P)</del>	1
				(c)	small	Ruiy5451 (C); Noawel (G); Korrovino (P)	3
					medium	Presur (C); Kordenzen (G); Poulhi008 (P)	5
					large	Poulmanti (G); Koranalafii (P)	7
		<del>very large</del>	<del>Tanispil (G)</del>	9			
49.	49.	Petal: colour of basal spot on inner side					
			PQ	(b)	<del>white</del>	<del>Seliron (C); Speruge (G); Ruiz0206 (P)</del>	1
				(e)	<del>greenish</del>	<del>Interlis (C); Korkopap (G); Poulra002 (P)</del>	2
					<del>light yellow</del>	<del>Schremna (C); Poulerry (G); Korpidadz (P)</del>	3
					<del>medium yellow</del>	<del>Ruiy5451 (C); Stebigpu (G); Korbever (P)</del>	4
					<del>orange yellow</del>	<del>Selaurum (C); Korsetag (G); Poulnil (P)</del>	5
		<del>orange</del>	<del>Tanziewsim (G); Poulfio (P)</del>	6			
50.	50.	Petal: main colour on the outer side (only if clearly different from inner side)					
			PQ	(b) (e)	<del>RHS Colour Chart (indicate reference number)</del>		

CPVO N°	UPOV N°	Characteristics	Examples	Note	
51.	51.  PQ	<b>Outer stamen: predominant colour of filament</b>  (b)	white	Helklewi (G); Koralbavan (P)	1
			green	Interlis (C); Kornemuta (G); Kornemut (P)	2
			light yellow	Pouljill (G)	3
			medium yellow	Korplapei (C); Meikrotal (G); Meirosfon (P)	4
			orange	Ruiy5451 (C); Ruiskopoul (G); Everrom (P)	5
			pink	Korfasso (G); Ruiowko (P)	6
			red	Predesplen (C); Pekoucan (G); Espever (P)	7
			brown red	Schweizer Woche (G)	8
			purple	Heltscher (G); Ruiovat (P)	9
52.	52.  QN	[G] <b>Seed vessel: size (at petal fall)</b>	<del>very small</del>		<del>1</del>
			small	Poulemb (G)	3
			medium	Kolmag (G)	5
			large	Super Dagmar (G)	7
			<del>very large</del>		<del>9</del>
53.	53. (+) PQ	[G] <b>Hip: shape in longitudinal section</b>	funnel-shaped	Meidrason (G)	1
			pitcher-shaped	Korparezni (G)	2
			pear-shaped	Tanzahde (G)	3



## 89 Rose

CPVO-TP/011/2 Rev.  
English  
Date: 01/04/2009

CPVO N°	UPOV N°	Characteristics	Examples	Note
54.	54. (+) PQ	[G] Hip: colour (at mature stage)	yellow orange red brown black	1 2 3 4 5

## 90 Pelargonium

CPVO-TP/028/2

English

Date: 07/10/2009

Completely crossed out characteristics are "unimportant characteristics" in accordance with the CIOPORA Position Paper on Minimum Distances (2014).

"Unimportant characteristic" in this regard means that if a new variety differs from an existing variety in only these unimportant characteristics, it shall not be deemed clearly distinguishable.

CPVO N°	UPOV N°	Characteristics	Examples	Note	
1.	1. (+)  PQ	<b>Plant: growth type</b>	upright	Sil Merle	1
			semi-upright	Cante Laver	2
			trailing	KLEP04112	3
2.	2.   QN	<b><u>Only varieties with growth type: upright or semi-upright:</u></b> <b>Plant: height of foliage</b>	short	Sil Merle	3
			medium	Fisum Pink	5
			tall	Zowitre	7
3.	3.   QN	<b><u>Only varieties with growth type: trailing:</u></b> <b>Plant: shoot length</b>	short	Free Rured	3
			medium	Pacameli	5
			long	KLEP04112	7
4.	4.   QN	<b><u>Only varieties with growth type: upright or semi-upright:</u></b> <b>Plant: width</b>	narrow	Zolcaros	3
			medium	Zolarlet	5
			broad	Pacsalpri	7

## 91 Pelargonium

CPVO-TP/028/2

English

Date: 07/10/2009

CPVO N°	UPOV N°	Characteristics	Examples	Note		
5.	5.	<b>Stem: colour (excluding anthocyanin)</b>				
			QL (a)	whitish green	1 2	
6.	6.	<b>Stem: anthocyanin coloration</b>				
			QN (a)	absent or very weak medium strong	KLEP03012 Fisrocky Dark Red Balgaldepro	1 3 5
7.	7. (+)	<b>Leaf blade: length</b>				
			QN (a)	short medium long	KLEP03012 Zolirsca Pacvica	3 5 7
8.	8. (+)	<b>Leaf blade: width</b>				
			QN (a)	narrow medium broad	KLEP03012 Zolirsca Pacvica	3 5 7
9.	9. (+)	<b>Leaf blade: depth of sinus</b>				
			QN (a)	absent or very shallow shallow medium deep		1 3 5 7
					Zolcaros	
					KLEP01052 Cante Laver	

CPVO N°	UPOV N°	Characteristics	Examples	Note
<del>10.</del>	<del>10.</del>	<b>Leaf blade: undulation of margin</b>		
	<del>QN</del>	<del>(a)</del>	<del>weak</del>	<del>Zolirsea</del> 3
			<del>medium</del>	<del>Zolarlet</del> 5
			<del>strong</del>	<del>Wesvilsu</del> 7
11.	11. (+)	<b>Leaf blade: base</b>		
	QN	(a)	wide open	1
			<del>slightly open</del>	<del>3</del>
			closed	5 2
			<del>partly overlapping</del>	<del>7</del>
			strongly overlapping	9 3
12.	12.	<b>Leaf blade: variegation</b>		
	QL	(a)	absent	Sil Merle 1
			present	Penevro 9
13.	13. (+)	<b>Leaf blade: main colour (zone excluded)</b>		
	PQ	(a)	yellow	1
			light green	2
			<del>light green to</del> medium green	Zowit 3
			<del>medium green</del>	<del>Sil Merle</del> 4
			<del>medium green to</del> dark green	KLEP03106 5 4
			<del>dark green</del>	<del>Zolirsea</del> 6
			dark red /purple	Vancouver Centennial 7 5
			<del>brown purple</del>	<del>Black Magic</del> 8

CPVO N°	UPOV N°	Characteristics	Examples	Note		
14.	14. (+)	<b>Leaf blade: secondary colour (zone excluded)</b>				
			PQ (a)	white	Evka, Penevro	1
				yellow	Raimu Kissu	2
				light green	Vancouver Centennial	3
		medium green	Black Magic	4		
15.	15.	<b><u>Only varieties with growth type: trailing:</u> Leaf blade: glossiness</b>				
			QN (a)	weak	Free Rured	3
				medium	Zopihosd	5
		strong	KLEP04112	7		
16.	16. (+)	<b>Leaf blade: conspicuousness of zone</b>				
			QN (a)	absent or very weak	Zowit	1
				<del>weak</del>	<del>Zolirsea</del>	<del>3</del>
				medium	Zolarlet	5 2
				<del>strong</del>	<del>Pascalpri</del>	<del>7</del>
		very strong	Baldescarim	9 3		
<del>17.</del>	<del>17. (+)</del>	<b>Leaf blade: position of zone</b>				
			<del>QN (a)</del>	<del>towards base</del>	<del>1</del>	
				<del>in middle</del>	<del>2</del>	
		<del>towards margin</del>	<del>3</del>			

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CPVO-TP/028/2

English

Date: 07/10/2009

CPVO N°	UPOV N°	Characteristics	Examples	Note
<del>18.</del>	<del>18.</del> (+)	<b>Leaf blade: relative size of zone</b>		
	QN	(a)	small	<del>1</del>
			medium	<del>3</del>
			large	<del>5</del>
19.	19.	<b>Peduncle: length</b>		
	QN	(b)	short	Duefuerto 3
			medium	Sil Merle 5
			long	Fisroweiss 7
20.	20. (+)	<b>Peduncle: anthocyanin coloration of middle third</b>		
	QN	(b)	absent or very weak	Zowit 1
			weak	Realcastor 3
			medium	Gentreo 5
			strong	Clips Scarl 7
21.	21. (+)	<b>Inflorescence: height</b>		
	QN	(b)	short	Pacbla 3
			medium	Fisrowi 5
			tall	Fisrocky Dark Red 7
22.	22. (+)	<b>Inflorescence: width</b>		
	QN	(b)	narrow	KLEP01052 3
			medium	KLEP03106 5
			broad	Zolirsca 7

## 95 Pelargonium

CPVO-TP/028/2

English

Date: 07/10/2009

CPVO N°	UPOV N°	Characteristics	Examples	Note
<del>23.</del>	<del>23.</del> (+)	<b>Inflorescence: number of open flowers</b>		
	QN	(b)	few	Tikvio 3
			medium	<del>KLEP01052</del> 5
			many	<del>KLEP03106</del> 7
24.	24. (+)	<b>Inflorescence: length of largest flower</b>		
	QN	(b)	short	Genvired 3
			medium	Genam 5
			long	Fislunova 7
25.	25. (+)	<b>Inflorescence: width of largest flower</b>		
	QN	(b)	narrow	3
			medium	Fisum Pink 5
			broad	Fisroweiss 7
26.	26.	<b>Inflorescence: length of longest pedicel</b>		
	QN	(b)	short	Cante Dereds 3
			medium	Fisum Pink 5
			long	Zoldarobo 7

## 96 Pelargonium

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English

Date: 07/10/2009

CPVO N°	UPOV N°	Characteristics	Examples	Note
<del>27.</del>	<del>27.</del>	<b>Pedicel: anthocyanin coloration of upper third</b>		
	<del>QN</del>	<del>(b)</del>	<del>absent or very weak</del>	<del>4</del>
			weak	3
			medium	5
			strong	7
			very strong	9
<del>28.</del>	<del>28.</del>	<b>Pedicel: swelling</b>		
	<del>(+)</del>			
	<del>QL</del>	<del>(b)</del>	<del>absent</del>	<del>4</del>
			present	9
29.	29.	<b>Flower: type</b>		
	(+)			
	QL		single	1
			double	2
30.	30.	<b><u>Only varieties with flower type: single:</u></b>		
	(+)	<b>Flower: arrangement of upper petals in relation to lower petals</b>		
	QN	(b)	free	1
			touching	3
			moderately overlapping	5



CPVO N°	UPOV N°	Characteristics	Examples	Note			
31.	31.  QN	<b>Only varieties with flower type: double: Flower: number of petals</b>					
				(b)	<del>few</del> 1 -3	KLEP01052	3
					<del>medium</del> 4 -7	Fisum Pink	5
			<del>many</del> 8 and more	Pacsalkom	7		
32.	32. (+)  QN	<b>Flower: cross section in lateral view</b>					
				(b)	concave		1
					flat		2
			convex		3		
<del>33.</del>	<del>33.</del> (+)  <del>QL</del>	<b>Flower: presence of irregularly distributed stripes or blotches</b>					
				( <del>b</del> )	absent	<del>Sil Merle</del>	<del>4</del>
			present	<del>Gradowi</del>	9		
34.	34. (+)  PQ	<b>Only varieties with flowers with irregularly distributed stripes or blotches: Flower: main colour</b>					
				(b)	white	Gradowi	1
					pink		2
			red		3		

## 98 Pelargonium

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English

Date: 07/10/2009

CPVO N°	UPOV N°	Characteristics	Examples	Note		
35.	35.	<u>Only varieties with flowers with irregularly distributed stripes or blotches: Flower: colour of stripes or blotches</u>		1		
			PQ (b)	white and red		
				only red	Gradowi	2
			purple	3		
<del>36.</del>	<del>36.</del> (+)	Sepal: reflexing		1		
			<del>QN</del> (b)	absent or weak		
				moderate		2
			strong	3		
<del>37.</del>	<del>37.</del>	Sepal: anthocyanin coloration in middle of broadest sepal		1		
			<del>QN</del> (b)	absent or very weak	Fisroweiss	
				weak	Fisrocky Dark Red	3
				medium	Genbelsea	5
				strong	Sil Tedo	7
		very strong	9			
38.	38.	Upper petal: width		3		
			<del>QN</del> (b)	narrow	KLEP04133	
				medium	Zolirsea	5
			broad	KLEP03106	7	

CPVO N°	UPOV N°	Characteristics	Examples	Note		
39.	39. (+)	<b>Upper petal: shape</b>				
			PQ	(b)	rhombic	1
					round	2
					obtriangular	3
					spatulate	4
40.	40. (+)	<b>Upper petal: margin at apex</b>				
			PQ	(b)	entire	1
					emarginate	2
					lacinate	3
41.	41. (+)	<b>Upper petal: colour of margin of <u>upper side</u></b>				
			PQ	(b) (c)	RHS Colour Chart (indicate reference number)	
42.	42. (+)	<b>Upper petal: colour of middle of <u>upper side</u></b>				
			PQ	(b) (c)	RHS Colour Chart (indicate reference number)	
43.	43.	<b>Upper petal: colour of <u>lower side</u></b>				
			PQ	(b) (c)	RHS Colour Chart (indicate reference number)	

CPVO N°	UPOV N°	Characteristics	Examples	Note	
44.	<del>44.</del> (+)	<u>Upper</u> petal: conspicuousness of marking	<del>absent or very weak</del>	<del>Fisum Pink</del>	<del>1</del>
			<del>weak</del>	<del>Zoldarobo</del>	<del>3</del>
			<del>medium</del>	<del>Zonadarolo</del>	<del>5</del>
			<del>strong</del>	<del>Genda</del>	<del>7</del>
45.	45. (+)	<u>Upper</u> petal: type of marking	stripes only		1
			stripes and dots		2
			stripes and spot/spots		3
			single spot only		4
46.	<del>46.</del> (+)	<u>Upper</u> petal: size of largest spot	<del>small</del>	<del></del>	<del>3</del>
			<del>medium</del>	<del></del>	<del>5</del>
			<del>large</del>	<del></del>	<del>7</del>
47.	47. (+)	<u>Upper</u> petal: colour of spot	RHS Colour Chart (indicate reference number)		
48.	<del>48.</del> (+)	<u>Upper</u> petal: zone at base	<del>absent</del>	<del>KLEP03106</del>	<del>1</del>
			<del>present</del>	<del>Sil Merle</del>	<del>9</del>

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English

Date: 07/10/2009

CPVO N°	UPOV N°	Characteristics	Examples	Note	
49.	49.	<b><u>Upper</u> petal: size of zone at base</b>		1	
	QN	(b)	none small	Swero	3
		(c)	medium	Sil Merle	5
			large		7
50.	50.	<b><u>Upper</u> petal: colour of zone at base</b>			
	PQ	(b)	white	Sil Merle	1
		(c)	red pink	Pacsalpri	2
			orange red	Ballurvio	3
		light violet	Clip Velred	4	
51.	51. (+)	<b><u>Lower</u> petal: colour of margin of <u>upper side</u></b>			
	PQ	(b) (c)	RHS Colour Chart (indicate reference number)		
52.	52. (+)	<b><u>Lower</u> petal: colour of middle of <u>upper side</u></b>			
	PQ	(b) (c)	RHS Colour Chart (indicate reference number)		
53.	53.	<b><u>Lower</u> petal: colour of <u>lower side</u></b>			
	PQ	(b) (c)	RHS Colour Chart (indicate reference number)		

CPVO N°	UPOV N°	Characteristics	Examples	Note
<del>54.</del>	<del>54.</del>	<u>Lower petal:</u> conspicuousness of marking		
	(+)			
	<del>QN</del>	(b)	absent or very weak	Sil Merle 1
		(e)	weak	Zomele 3
			medium	Zonadarole 5
			strong	Swere 7
55.	55.	<u>Lower petal:</u> type of marking		
	(+)		no marking	1
	PQ	(b)	stripes only	1 2
		(c)	stripes and dots	2 3
			stripes and spot/spots	3 4
			single spot only	4 5
<del>56.</del>	<del>56.</del>	<u>Lower petal:</u> size of largest spot		
	(+)			
	<del>QN</del>	(b)	small	3
		(e)	medium	5
			large	7
<del>57.</del>	<del>57.</del>	<u>Lower petal:</u> zone at base		
	(+)			
	<del>QN</del>	(b)	absent	Fisum Pink 1
		(e)	present	Sil Linus 9
58.	58.	<u>Lower petal:</u> size of zone at base		
			none	1
	QN	(b)	small	Duevipifiz 3
		(c)	medium	Sil Linus 5
			large	7

CPVO N°	UPOV N°	Characteristics	Examples	Note
59.	59.	<u>Lower petal: colour of zone at base</u>		
	PQ	(b)	white	1
		(c)	orange red	2
			blue pink	3
			violet	4
60.	60.	<u>Only varieties with flower type: double:</u> <u>Inner petal: colour of middle of upper side</u>		
	PQ	(b)	RHS Colour Chart (indicate reference number)	
		(c)		