

## TECHNICAL WORKING PARTY FOR VEGETABLES

Forty-Seventh Session

### PREPARATORY WORKSHOP

Nagasaki, Japan  
May 19, 2013

#### PROGRAM

1. Introduction to UPOV and the role of UPOV Technical Working Parties (TWPs)
2. Overview of the General Introduction (document TG/1/3 and TGP documents)
  - Characteristics as the Basis for DUS Examination and Selection of Characteristics
3. Guidance on drafting Test Guidelines (document TGP/7)
  - a) Subject of the Test Guidelines, Material Required and Method of Examination;
  - b) Method of Observation (MS, MG, VS, VG);
  - c) Types of Expression (QL, PQ, QN), notes and distinctness;
  - d) Shape and Color Characteristics;
  - e) Example Varieties;
  - f) The process for developing UPOV Test Guidelines, including: TG Template; Additional Standard Wording; and Guidance Notes;
4. Agenda for the TWP Session
5. Feedback from participants

## 1. INTRODUCTION TO UPOV AND THE ROLE OF UPOV TECHNICAL WORKING PARTIES (TWPs)

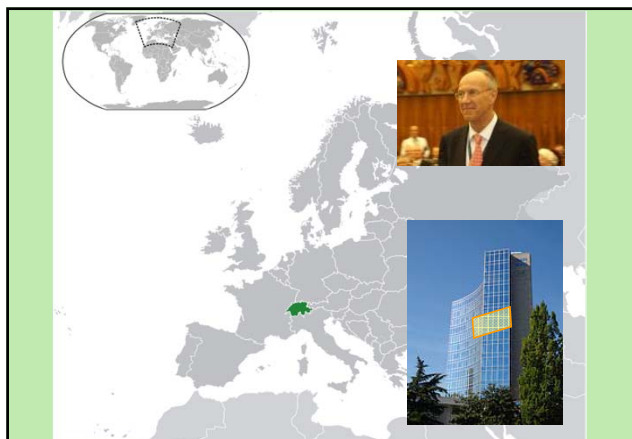
### UPOV: INDEPENDENT INTERGOVERNMENTAL ORGANIZATION

#### The International Convention for the Protection of New Varieties of Plants

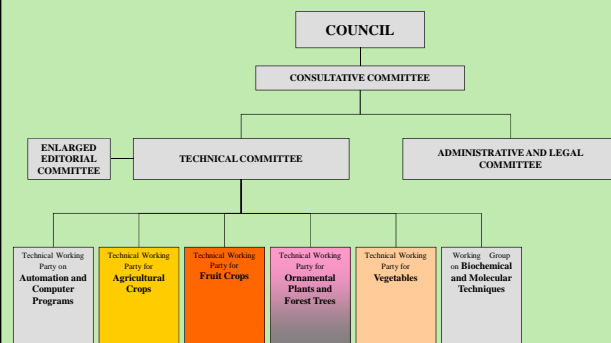
established in 1961

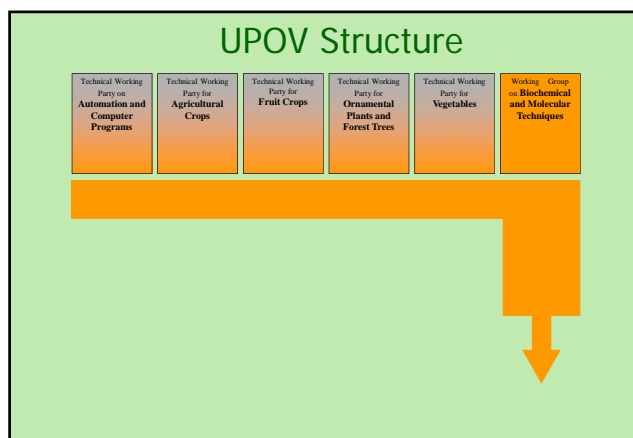
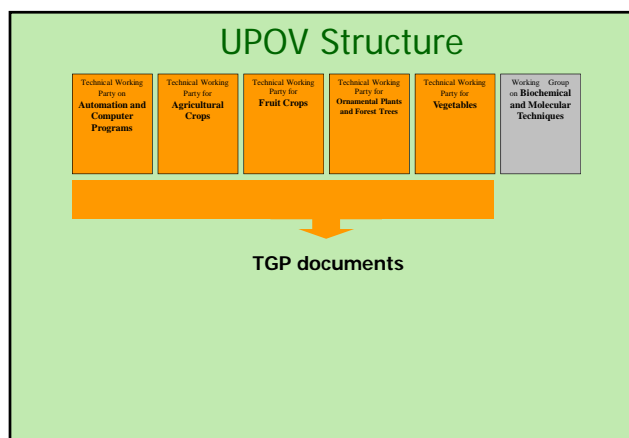
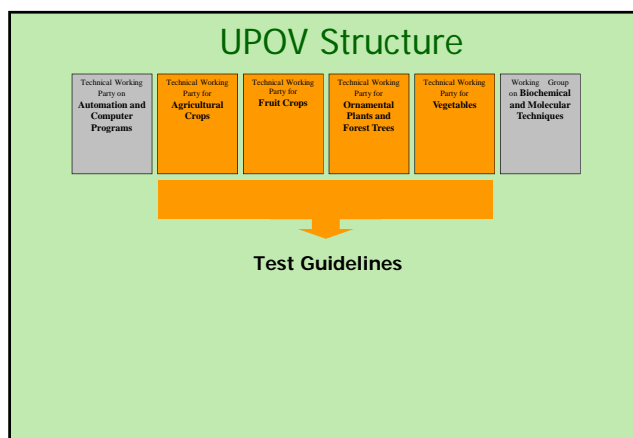
#### The International Union for the Protection of New Varieties of Plants

Union internationale pour la  
protection des obtentions végétales



### UPOV Structure





### Role of the BMT

The BMT is a group open to DUS experts, biochemical and molecular specialists and plant breeders, whose role is to:

- (i) Review general developments in biochemical and molecular techniques;
- (ii) Maintain an awareness of relevant applications of biochemical and molecular techniques in plant breeding;
- (iii) Consider the possible application of biochemical and molecular techniques in DUS testing and report its considerations to the TC;
- (iv) If appropriate, establish guidelines for biochemical and molecular methodologies and their harmonization [...];
- (v) Consider initiatives from TWPs, for the establishment of crop specific subgroups [...];
- (vi) Develop guidelines regarding the management and harmonization of databases of biochemical and molecular information, in conjunction with the TWC;
- (vii) Receive reports from Crop Subgroups and the BMT Review Group;
- (viii) Provide a forum for discussion on the use of biochemical and molecular techniques in the consideration of essential derivation and variety identification.

## 2. OVERVIEW OF THE GENERAL INTRODUCTION (document TG/1/3 and TGP documents)

**a) Characteristics as the Basis for DUS Examination**

**b) Selection of Characteristics**

## 2. OVERVIEW OF THE GENERAL INTRODUCTION (document TG/1/3 and TGP documents)

**a) Characteristics as the Basis for DUS Examination**

**b) Selection of Characteristics**

## THE CONDITIONS FOR GRANTING A BREEDER'S RIGHT

### Criteria to be satisfied

- NOVELTY
- **DISTINCTNESS**
- **UNIFORMITY**
- **STABILITY**



**"DUS"**

## THE CONDITIONS FOR GRANTING A BREEDER'S RIGHT

### Other conditions

- VARIETY DENOMINATION
- FORMALITIES
- PAYMENT OF FEES

**NO OTHER CONDITIONS!**

## Guidance for DUS Examination

### facilitates:

#### **BEST PRACTICE** (based on experience)

- => good decisions
- => good definition of the object of protection (strong protection)
- => efficiency in method of examination (learn from the best)

#### **HARMONIZATION**

- => efficiency
  - mutual acceptance of DUS reports (minimize cost of examination for individual authorities)
  - mutual recognition of variety descriptions (all parties speak the same "language")
  - simple and cheap system for applicants (minimize cost for breeders)

## UPOV provides guidance by:

- The "General Introduction" (TG/1/3)
  - General technical principles
  - Organization of DUS Testing
  - Associated "TGP" Documents (e.g. statistical methods)

= version 3

### TG/1/3 General Introduction

#### "Associated" TGP Documents

Ref.	Title
TG/00	List of TGP Documents and Latest Issue Dates
TGP/1	General Introduction With Explanations
TGP/2	List of Test Guidelines Adopted by UPOV
TGP/3	Varieties of Common Knowledge
TGP/4	Constitution and Maintenance of Variety Collections
TGP/5	Experience and Cooperation in DUS testing
TGP/6	Arrangements for DUS testing
TGP/7	Development of Test Guidelines
TGP/8	Trial Design and Techniques Used in the Examination of DUS
TGP/9	Examining Distinctness
TGP/10	Examining Uniformity
TGP/11	Examining Stability
TGP/12	Special Characteristics
TGP/13	Guidance for New Types and Species
TGP/14	Glossary of Technical, Botanical and Statistical Terms Used in UPOV Documents
TGP/15	Guidance on the Use of Biochemical and Molecular Markers in the Examination of Distinctness, Uniformity and Stability (DUS)

## 2. OVERVIEW OF THE GENERAL INTRODUCTION (document TG/1/3 and TGP documents)

### a) Characteristics as the Basis for DUS Examination

### b) Selection of Characteristics

## "CHARACTERISTICS"

- may have direct commercial relevance
  - Flower color (ornamental)
  - Fruit color
- but commercial relevance NOT required
  - Leaf shape

## Selection of Characteristics

The basic requirements that a characteristic should fulfill before it is used for DUS testing or producing a variety description are that its expression (TG/1/3: Section 4.2.1) :

- (a) results from a given **genotype** or combination of genotypes;
- (b) is sufficiently **consistent and repeatable** in a **particular environment**;
- (c) exhibits sufficient **variation between varieties** to be able to establish distinctness;
- (d) is capable of **precise definition and recognition**;
- (e) allows **uniformity requirements** to be fulfilled;
- (f) allows **stability requirements** to be fulfilled, meaning that it produces consistent and repeatable results after repeated propagation or, where appropriate, at the end of each cycle of propagation.

## Selection of Characteristics

- Yield ???
  - Straw strength ???
- Etc.

## Selection of Characteristics

Criteria	Fruit: color	Leaf: shape	Yield
(a) results from a given genotype or combination of genotypes	Yes	Yes	
(b) sufficiently consistent and repeatable in a particular environment	Yes	Yes	
(c) exhibits sufficient variation between varieties to be able to establish distinctness	Yes	Yes	
(d) is capable of precise definition and recognition	Yes	Yes	
(e) allows uniformity requirements to be fulfilled	Yes	Yes	
(f) allows stability requirements to be fulfilled	Yes	Yes	
Commercial value	Yes	No	
ACCEPTABILITY	Yes	Yes	

## Selection of Characteristics

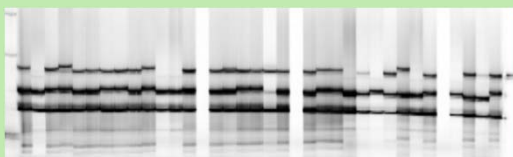
Criteria	Fruit: color	Leaf: shape	Yield
(a) results from a given genotype or combination of genotypes	Yes	Yes	Yes
(b) sufficiently consistent and repeatable in a particular environment	Yes	Yes	(No)
(c) exhibits sufficient variation between varieties to be able to establish distinctness	Yes	Yes	???
(d) is capable of precise definition and recognition	Yes	Yes	(No)
(e) allows uniformity requirements to be fulfilled	Yes	Yes	???
(f) allows stability requirements to be fulfilled	Yes	Yes	???
Commercial value	Yes	No	Yes
ACCEPTABILITY	Yes	Yes	No

## Special Characteristics: Disease Resistance

Criteria	Disease Resistance
(a) results from a given genotype or combination of genotypes	*Knowledge of nature of genetic control of resistance is important
(b) sufficiently consistent and repeatable in a particular environment	*Standardize conditions (greenhouse / laboratory) & methodology *Standardize inoculum *Ring-test
(c) exhibits sufficient variation between varieties to be able to establish distinctness	*Susceptible / Resistant OR varying degrees of resistance?
(d) is capable of precise definition and recognition	*Define and recognize races and strains
(e) allows uniformity requirements to be fulfilled	see above
(f) allows stability requirements to be fulfilled	see above
	<b>Difficult and expensive</b>



## Molecular Techniques?



## TGP/7 :“Development of Test Guidelines”

### *Additional Information and guidance on Asterisked, grouping and TQ characteristics*

## Standard Test Guidelines Characteristic

Function	Criteria
1.Characteristics that are <b>accepted by UPOV for examination of DUS</b> and from which members of the Union can select those suitable for their particular circumstances.	<p>1.Must satisfy the criteria for use of any characteristic for DUS as set out in <b>Chapter 4, section 4.2.</b></p> <p>2.Must have been <b>used</b> to develop a variety description <b>by at least one member of the Union.</b></p> <p>3.Where there is a long list of such characteristics and, where considered appropriate, there may be an indication of the extent of use of each characteristic.</p>

## Asterisked Characteristic

7. Table of Characteristics/Tableau des caractères/Merkmalstabelle/Tabla de caracteres						
Char. No.	English	français	Deutsch	español	Example Varieties Exemples Beispielsorten Variedades ejemplo	Note/ Nota
(*)	Plant: growth habit	Plante : port	Pflanze: Wuchsform	Planta: porte		
QN	upright	dressé	aufrecht	erecto	Impatiens	1
	semi-upright	semi dressé	halbhochrecht	semierecto	D015S-1	2
	spreading	étalé	breitstielig	abierto	Sonnen 03	3
	semi-trailing	semi-étalé	halbliegend	semirastroso	Impatiens	4
	trailing	courant	hängend	rastroso	Organza	5

## Asterisked Characteristic

Function	Criteria
1.Characteristics that are important <b>for the international harmonization of variety descriptions.</b>	<p>1.Must be a characteristic included in the Test Guidelines.</p> <p>2.<b>Should always be examined</b> for DUS and included in the variety description <b>by all members of the Union</b></p> <p><b>EXCEPT</b> when the state of expression of a preceding characteristic or regional environmental conditions render this inappropriate.</p> <p>3.Must be useful for function 1.</p> <p>4.Particular care should be taken before selection of disease resistance characteristics.</p>

## Grouping Characteristic

5. Grouping of Varieties and Organization of the Growing Trial
- 5.1 The selection of varieties of common knowledge to be grown in the trial with the candidate varieties and the way in which these varieties are divided into groups to facilitate the assessment of distinctness are aided by the use of grouping characteristics.
- 5.2 Grouping characteristics are those in which the documented states of expression, even where produced at different locations, can be used, either individually or in combination with other such characteristics: (a) to select varieties of common knowledge that can be excluded from the growing trial used for examination of distinctness; and (b) to organize the growing trial so that similar varieties are grouped together.
- 5.3 The following have been agreed as useful grouping characteristics:
- (a) Plant: growth habit (characteristic 1)
  - (b) Leaf blade: variegation (characteristic 11)
  - (c) Upper lobes of corolla: main color (characteristic 24), with the following groups:
    - Gr. 1: white
    - Gr. 2: yellow
    - Gr. 3: orange
    - Gr. 4: pink
    - Gr. 5: red
    - Gr. 6: red purple
    - Gr. 7: violet
    - Gr. 8: blue

### Apple: Fruit color



### Apple: Fruit color



10. Technical Questionnaire

TECHNICAL QUESTIONNAIRE	Page [x] of [y]	Reference Number:
		Application date: (not to be filled in by the applicant)
<p>TECHNICAL QUESTIONNAIRE to be completed in connection with an application for plant breeders' rights</p>		
1. Subject of the Technical Questionnaire		
1.1 Botanical name	<input type="text" value="Malus domestica Borkh."/>	
1.2 Common name	<input type="text" value="Apple"/>	
2. Applicant		
Name	<input type="text"/>	
Address	<input type="text"/>	
Telephone No.	<input type="text"/>	

TECHNICAL QUESTIONNAIRE	Page [x] of [y]	Reference Number:
5. Characteristics of the variety to be indicated (the number in brackets refers to the corresponding characteristic in Test Guidelines; please mark the note which best corresponds).		
Characteristics	Example Varieties	Note
<b>5.5 Fruit: hue of over color – with bloom removed (37)</b>		
orange red	Cox's Orange Pippin, Egremont Russet	1 [ ]
pink red	Cripps Pink, Delicious	2 [ ]
red	Akane, Galaxy, Red Elstar, Regal Prince	3 [ ]
purple red	Red Jounprince, Spartan	4 [ ]
brown red	Flora, John, Lord Burglady	5 [ ]
<b>5.6 Fruit: pattern of over color (39)</b>		
only solid flush	Red Jounprince, Richard Delicious	1 [ ]
solid flush with weakly defined stripes	Galaxy	2 [ ]
solid flush with strongly defined stripes	Jouagred	3 [ ]
weakly defined flush with strongly defined stripes	Gravenstein	4 [ ]
only stripes (no flush)	Helios	5 [ ]
flushed and mottled	Elstar	6 [ ]
flushed, striped and mottled	Jouagold	7 [ ]

### Grouping Characteristic

Function	Criteria
characteristics in which the <b>documented states of expression, even where recorded at different locations</b> , can be used either individually or in combination with other such characteristics:	1. (a) Qualitative characteristics or (b) Quantitative or pseudo-quantitative characteristics which provide useful discrimination between the varieties of common knowledge from documented states of expression recorded at different locations.
1. <b>to select varieties of common knowledge that can be excluded from the growing trial</b> used for examination of distinctness, and/or	2. Must be useful for functions 1 and 2.
2. <b>to organize the growing trial so that similar varieties are grouped together</b>	3. Should be an <b>asterisked characteristic</b> and/or included in the <b>Technical Questionnaire</b> or application form.

### Relationship between functions

- GROUPING CHARACTERISTICS** selected from the Table of Characteristics should, in general, **receive an asterisk** in the Table of Characteristics and be **included in the Technical Questionnaire**.
- TQ CHARACTERISTICS** selected from the Table of Characteristics should, in general, **receive an asterisk** in the Table of Characteristics and be **used as grouping characteristics**. TQ characteristics are **not restricted** to those characteristics used as **grouping characteristics**.
- ASTERISKED CHARACTERISTICS** are **not restricted** to those characteristics selected as **grouping or TQ characteristics**.



# TGP/7 : "Development of Test Guidelines"

## Section 2. Procedure for the Introduction and Revision of UPOV Test Guidelines

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# TGP/7 :“Development of Test Guidelines”

## Section 3. Guidance for Drafting Test Guidelines

- The **TG Template**
- Additional Standard Wording** for the TG Template
- Guidance Notes** for the TG Template



The screenshot displays a draft test guideline for a plant, titled "DRAFT". The document is structured as follows:

- Header:** INTERNATIONAL STANDARD FOR THE DRAFTING OF TEST GUIDELINES FOR PLANTS (EN 12511)
- Section 1:** Purpose, Scope, and Objectives (1.1 Purpose, 1.2 Scope, 1.3 Objectives)
- Section 2:** Test Method (2.1 Test Method, 2.2 Test Equipment, 2.3 Test Environment)
- Section 3:** Test Results (3.1 Test Results, 3.2 Test Results, 3.3 Test Results)
- Section 4:** Test Results (4.1 Test Results, 4.2 Test Results, 4.3 Test Results)
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- Section 100:** Test Results (100.1 Test Results, 100.2 Test Results, 100.3 Test Results)

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# 10 Chapters of UPOV Test Guidelines

1. Subject of the Test Guidelines
2. Material Required
3. Methods of Examination
4. Assessment of Distinctness, Uniformity and Stability
5. Grouping of Varieties and Organization of the Growing Trial
6. Introduction to the Table of Characteristics
- 7. Table of Characteristics**
8. Explanation on the Table of Characteristics
9. Literature
10. Technical Questionnaire

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6. Introduction to the Table of Characteristics
7. **Table of Characteristics**
8. Explanation on the Table of Characteristics
9. Literature
10. Technical Questionnaire

1. Subject of the Test Guidelines
2. Material Required
3. Methods of Examination
4. Assessment of Distinctness, Uniformity and Stability
5. Grouping of Varieties and Organization of the Growing Trial
6. Introduction to the Table of Characteristics
7. **Table of Characteristics**
8. Explanation on the Table of Characteristics
9. Literature
10. Technical Questionnaire

# 10 Chapters of UPO Test Guidelines

UPO – 2.0, Annex 1, 10 Chapters  
page 11

**1. Subject of these Test Guidelines**

These Test Guidelines apply to all varieties of

- Q12.1** Chapter 1.1) – Subject of the Test Guidelines: More than one species
- Q12.1** Chapter 1.1) – Subject of the Test Guidelines: Different types or groups within a species or genus
- Q12.1** Chapter 1.1) – Subject of the Test Guidelines: Family name
- Q12.1** Chapter 1.1) – Guidance for New Types and Species

**2. Material Required**

2.1 The competent authorities decide on the quantity and quality of the plant material required for testing the variety and when it is to be delivered. Applicable national legislation from a later date than that in which the testing takes place must ensure that all national formalities and phytosanitary requirements are complied with.

2.2 The material is to be supplied in the form of [ps].

2.3 The minimum quantity of plant material, to be supplied by the applicant, shall be:

- Q12.1** Chapter 2.1) – quantity of plant material required.]
- ANNEX 1** (Chapter 2.1) – seed quality requirements)

2.4 The plant material supplied should be readily healthy, not lacking in vigor, not affected by any important pest or disease.

2.5 The plant material should neither undergo any treatment which would affect the expression of the characteristics of the variety, neither the competent authorities allow or require such treatment. If it has been found, full details of the treatment must be given.

**3. Method of Examination**

3.1 **Method of Drawing Cycles**

The minimum duration of tests should normally be

- Q12.1** Chapter 3.1.1) – number of growing cycles.]
- Q12.1** Chapter 3.1.2) – explanation of the growing cycle.]
- ANNEX 1** (Chapter 3.1.2) – explanation of the growing cycle.]]

Page 10 of 10    Avenue 10    The Trustees  
June 2017

**2. Subject of the New Tax Guidelines**

These Tax Guidelines apply to all variations of:

- (a) **§ 1001 (2)** (Chapter 1.1) – Subject of the Tax Guidelines. More than one species
- (b) **§ 1001 (3)** (Chapter 1.1) – Subject of the Tax Guidelines. Different types or groups within a species or genus
- (c) **§ 1001 (4)** (Chapter 1.1) – Subject of the Tax Guidelines. Family name
- (d) **§ 1001 (5)** (Chapter 1.1) – Guidelines for New Types and Species)

**3. Material Required**

2.1 The competent authorities decide on the quantity and quality of the plant material required for testing the variety and when and where it is to be delivered. Applicants must submit a written declaration that they have agreed to the conditions of the contract that all necessary formalities and phyto-sanitary requirements are complied with.

2.2 The material is to be supplied in the form of (a) (i)

2.3 The minimum quantity of plant material, to be supplied by the applicant, should be:

- (a) **§ 1001 (7)** (Chapter 2.3) – quantity of plant material required
- (b) **§ 1001 (8)** (Chapter 2.3) – seed quality requirements

2.4 The plant material required should be viable locally, not lacking in vigor, not affected by any seed-borne pest or disease.

2.5 The plant material submitted for variety analysis or treatment which would affect the expression of the characteristics of the variety, under the competent authorities allow or reject such treatment. If it has been treated, full details of the treatment must be given.

**4. Method of Examination**

4.1 Number of Drawing Circles

The minimum duration of tests should normally be

- (a) **§ 1001 (2)** (Chapter 3.1) – number of growing circles
- (b) **§ 1001 (3)** (Chapter 3.1) – explanation of the growing circle
- (c) **§ 1001 (4)** (Chapter 3.1.2) – explanation of the growing circle

### 3. GUIDANCE ON DRAFTING TEST GUIDELINES

*b) Method of observation (MS, MG, VS, VG)*

*b) Method of observation (MS, MG, VS, VG)*



TGP/250/1  
Yam/Ignace/Yamswazel/Same, 2009-04-01  
- 7 -

7. Table of Characteristics/ Tableau des caractères/ Merkmalstabelle/ Tabla de caracteres

	English	français	deutsch	español	Example Varieties/ Exemples/ Beispielsorten/ Variedades ejemplo	Note/ Nota
1. VG	Plant: density of foliage	Plante : densité du feuillage	Pflanze: Dichte des Laubes	Planta: densidad del follaje		
QN (a)	sparse	faible	locker	escasa	Ise-uno	3
	medium	moyenne	mittel	media	Morimoto-uno	5
	dense	dense	dicht	densa	Gankumijika-tsusho	7
2. VG	Plant: number of branches	Plante : nombre de ramifications	Pflanze: Anzahl Triebe	Planta: número de ramas		
QN (a)	few	petit	gering	bajo	Ise-uno	3
	medium	moyen	mittel	medio	Fusaouga	5
	many	grand	groß	alto	Segoda-2	7

#### Method of Observation

##### **M: Measurement:**

an objective observation against a calibrated, linear scale e.g. using a ruler, weighing scales, colorimeter, dates, counts, etc.);

##### **V: Visual observation:**

includes observations where the expert uses reference points (e.g. diagrams, example varieties, side-by-side comparison) or non-linear charts (e.g. color charts).

“Visual” observation refers to the sensory observations of the expert and, therefore, also includes smell, taste and touch.

#### TGP/9/1 “Examining Distinctness”

	Type of expression of characteristic		
Method of propagation of the variety	QL (QUAL itative)	PQ (PSEUDO qualitative)	QN (QUANT itative)
Vegetatively propagated, self-pollinated	Notes (VG)	Notes (VG) Side-by-side (VG)	Notes (VG/MG/MS) Side-by-side (VG) Statistics (MG/MS)
Cross-pollinated	Notes (VG) Statistics (VS*)	Notes (VG) Side-by-side (VG) Statistics (VS*)	Statistics (IMG)/MS/VS Side-by-side (VG) Notes (VG/MG/MS)
Hybrids	Notes (VG) Statistics (VS*)	Notes (VG) Side-by-side (VG) Statistics (VS*)	**

#### TGP/9/1 “Examining Distinctness”

	Type of expression of characteristic		
Method of propagation of the variety	QL (QUAL itative)	PQ (PSEUDO qualitative)	QN (QUANT itative)
Vegetatively propagated, Self-pollinated	Notes (VG)	Notes (VG) Side-by-side (VG)	Notes (VG/MG/MS) Side-by-side (VG) Statistics (MG/MS)
Cross-pollinated	Notes (VG) Statistics (VS*)	Notes (VG) Side-by-side (VG) Statistics (VS*)	Statistics (IMG)/MS/VS Side-by-side (VG) Notes (VG/MG/MS)
Hybrids	Notes (VG) Statistics (VS*)	Notes (VG) Side-by-side (VG) Statistics (VS*)	**

#### TGP/9/1 “Examining Distinctness”

**V= Visual observation or  
M= Measurement**

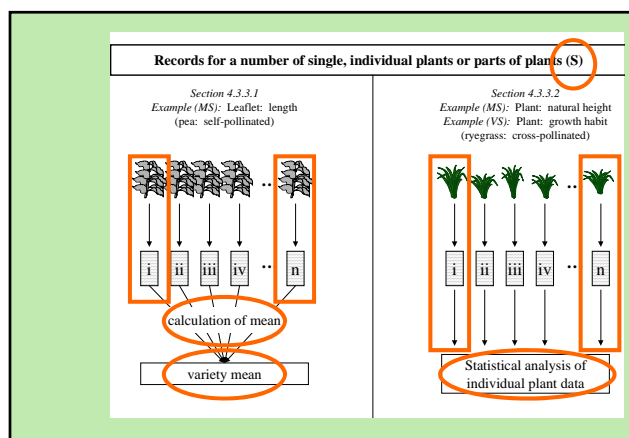
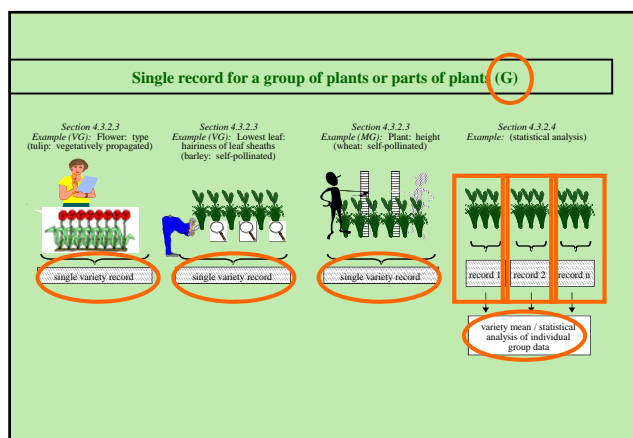
	Type of expression of characteristic		
Method of propagation of the variety	QL (QUAL itative)	PQ (PSEUDO qualitative)	QN (QUANT itative)
Vegetatively propagated, self-pollinated	Notes (VG)	Notes (VG) Side-by-side (VG)	Notes (VG/MG/MS) Side-by-side (VG) Statistics (MG/MS)
Cross-pollinated	Notes (VG) Statistics (VS*)	Notes (VG) Side-by-side (VG) Statistics (VS*)	Statistics (IMG)/MS/VS Side-by-side (VG) Notes (VG/MG/MS)
Hybrids	Notes (VG) Statistics (VS*)	Notes (VG) Side-by-side (VG) Statistics (VS*)	**

#### Type of Record (for the purposes of distinctness)

**G:** single record for a variety, or a **GROUP** of plants or parts of plants;

In most cases, “G” provides a single record per variety and it is not possible or necessary to apply statistical methods in a plant-by-plant analysis for the assessment of distinctness.

**S:** records for a number of **SINGLE**, individual plants or parts of plants ...



## EXERCISE

## 3. GUIDANCE ON DRAFTING TEST GUIDELINES

*c) Types of Expression (QL, PQ, QN), notes and distinctness;*

TYPE OF EXPRESSION OF CHARACTERISTICS  
(QL, QN, PQ)

## Types of Expression

QL: QUALITATIVE

QN: QUANTITATIVE

PQ: PSEUDO-QUALITATIVE

7. Table of Characteristics/ Tableau des caractères/ Merkmalstabelle/ Tabla de caracteres

Char. No.	English	français	Deutsch	español	Example Varieties Exemples Beispielsoorten Variedades ejemplo	Note/ Nota
1. (*) <b>QN</b>	<b>Plant: growth habit</b>	<b>Plante : port</b>	<b>Pflanze: Wuchsförm</b>	<b>Planta: porte</b>		
	upright	dressé	aufrecht	erecto	Imppuik	1
	semi-upright	semi dressé	halbaufrecht	semierecto	D0158-1	2
	spreading	étalé	breitwüchsig	abierto	Suzanna 03	3
	semi-trailing	semi-étalé	halbhängend	semirastroso	Imppuf	4
	trailing	couroux	hängend	rastroso	Organza	5
2. (*) <b>QN</b>	<b>Plant: height</b>	<b>Plante : hauteur</b>	<b>Pflanze: Höhe</b>	<b>Planta: altura</b>		
	short	basse	niedrig	baja	Yateye	3
	medium	moyenne	mittel	media	D0158-1	5
	tall	haute	hoch	alta	Imppuik	7

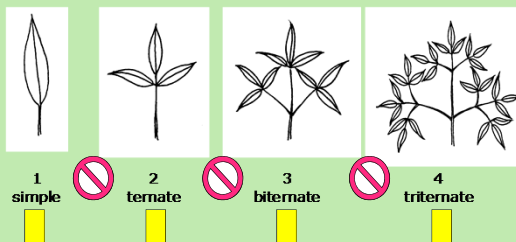
## QUALITATIVE Characteristics

“Qualitative characteristics” are those that are **expressed in discontinuous states** (e.g. sex of plant: dioecious female (1), dioecious male (2), monoecious unisexual (3), monoecious hermaphrodite (4)).

These states are self-explanatory and independently meaningful. All states are necessary to describe the full range of the characteristic, and every form of expression can be described by a single state. The order of states is not important. As a rule, the **characteristics are not influenced by environment**.

### Qualitative characteristic

Clematis: Leaf: type



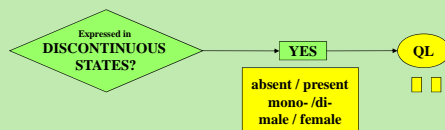
### Qualitative (QL) characteristic?

Anthocyanin coloration: QL (=absent / present)?

**NO!**

	Variety A	Variety B	Variety C
Environment A	absent	present	absent
Environment B	absent	present	present

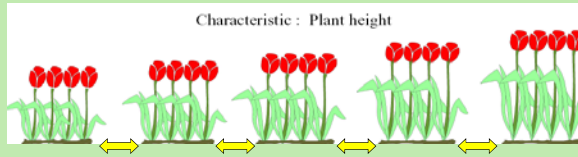
### QL, QN or PQ?



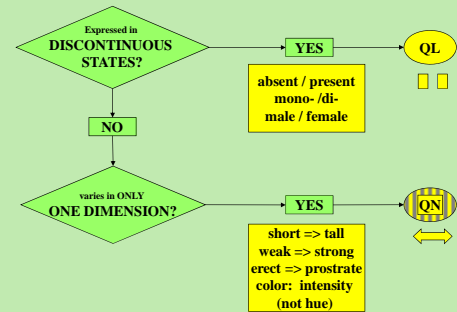
## QUANTITATIVE Characteristics

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

## Quantitative Characteristic



## QL, QN or PQ?

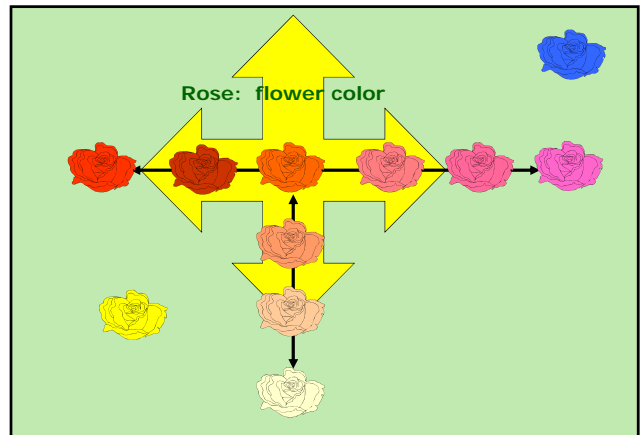
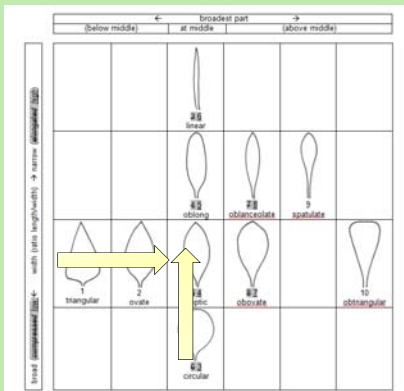
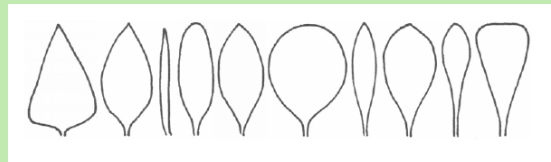


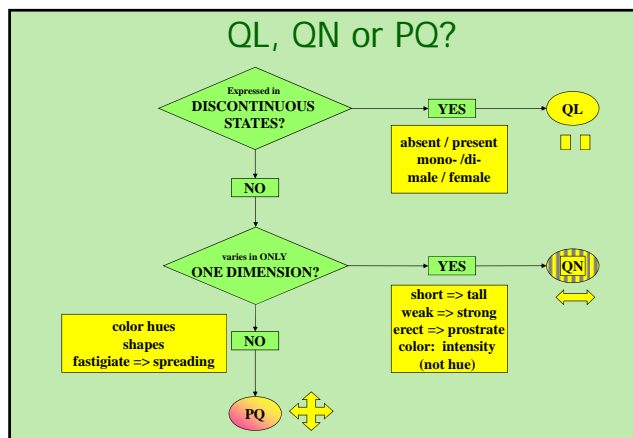
## PSEUDO-QUALITATIVE Characteristics



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

## Example





## EXERCISE

## NOTES and DISTINCTNESS according to TYPE OF EXPRESSION (QL, PQ, QN)

## Types of Expression

**QL: QUALITATIVE**

**QN: QUANTITATIVE**

**PQ: PSEUDO-QUALITATIVE**

### Qualitative characteristic

Clematis: Leaf: type

1 simple 2 ternate 3 biternate 4 triternate

### Qualitative Characteristics (special cases)

Char No.	Method of Determination	English	français	deutsch	español	Example Varieties/ Exemples/ Beispielsorten/ Variedades ejemplo	Note/ Nota
1.	MS Plant: ploidy						
(*)	C						
QL	diploid						2
	tetraploid						4
3.	VG Stem: anthocyanin coloration						
(*)							
QL	absent					Gumpoong	1
	present					Chunpoong, Gopoong	9

### Qualitative Characteristics: distinctness

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

(e.g. sex of plant: dioecious female (1), dioecious male (2), monoecious unisexual (3), monoecious hermaphrodite (4)).

## Types of Expression

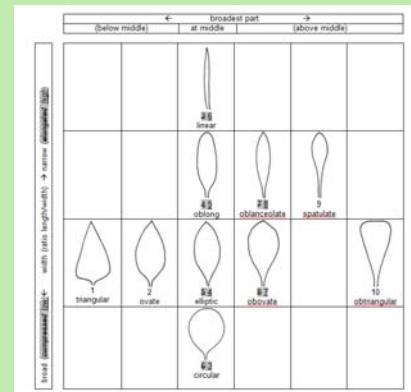
QL: QUALITATIVE

QN: QUANTITATIVE

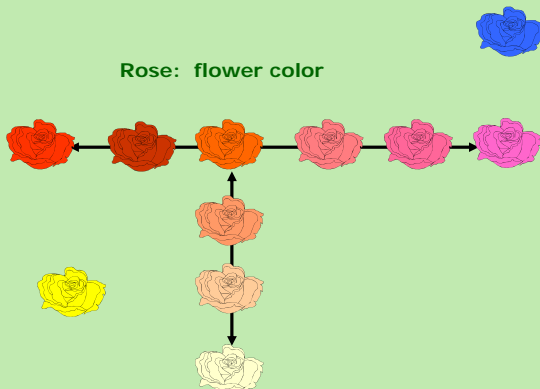
PQ: PSEUDO-QUALITATIVE

### PSEUDO-QUALITATIVE Characteristics

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



### Rose: flower color

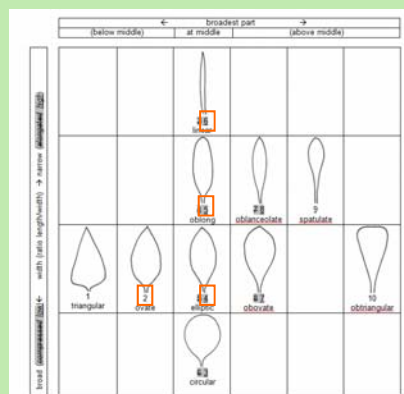


### PSEUDO-QUALITATIVE Characteristics (typical examples)

24. Flower: color of the center (+)	Fleur: couleur du centre	Farbe der Mitte	Flor: color del centro	
PQ green	vert	grün	verde	1
yellow	jaune	gelb	amarillo	2
orange	orange	orange	naranja	3
pink	rose	rosa	rosa	4
red	rouge	rot	rojo	5
purple	pourpre	purpur	purpura	6

### Pseudo-Qualitative Characteristics: distinctness

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



### Types of Expression

QL: QUALITATIVE

QN: QUANTITATIVE

PQ: PSEUDO-QUALITATIVE

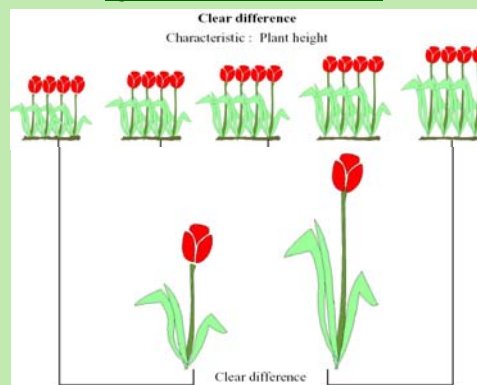
### QUANTITATIVE Characteristics

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

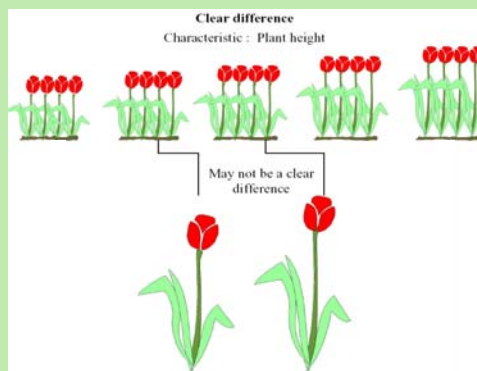
### Quantitative Characteristics: distinctness

Quantitative characteristics are considered for distinctness according to the method of observation and the features of propagation of the variety concerned...

### Quantitative Characteristic



### Quantitative Characteristic



### Quantitative Characteristics (1-9)

weak/strong  
short/long  
small/large

Note	State	Note	State
1	very weak (or: absent or very weak)	1	very small (or: absent or very small)
2	very weak to weak	2	very small to small
3	<b>weak</b>	3	<b>small</b>
4	weak to medium	4	small to medium
5	<b>medium</b>	5	<b>medium</b>
6	medium to strong	6	medium to large
7	<b>strong</b>	7	<b>large</b>
8	strong to very strong	8	large to very large
9	very strong	9	very large

### Quantitative Characteristics (1-9)

Standard Range Version 1	Standard Range Version 2	Standard Range Version 3	Standard Range Version 4
1 very weak (or: absent or very weak)	1 very weak (or: absent or very weak)	-	-
3 weak	3 weak	3 weak	3 weak
5 medium	5 medium	5 medium	5 medium
7 strong	7 strong	7 strong	7 strong
9 very strong	-	9 very strong	-

### Quantitative Characteristics (1-9)

State	Example 1	Example 2	Example 3	Example 4
	<b>Size relative to:</b>	<b>Angle:</b>	<b>Position:</b>	<b>Length in relation to:</b>
1	<b>much smaller</b>	<b>very acute</b>	<b>at base</b>	<b>equal</b>
3	moderately smaller	moderately acute	one quarter from base	slightly shorter
5	<b>same size</b>	<b>right angle</b>	<b>in middle</b>	<b>moderately shorter</b>
7	moderately larger	moderately obtuse	one quarter from apex end	much shorter
9	<b>much larger</b>	<b>very obtuse</b>	<b>at apex</b>	<b>very much shorter</b>

### Quantitative Characteristics (at least 3 notes)

Example 2
1 e.g. absent or weak ( <i>absent or weakly expressed</i> )
2 moderate (or medium) ( <i>moderately expressed</i> )
3 strong ( <i>strongly expressed</i> )

State	Example 1
	<b>Stem: attitude</b>
1	erect
3	semi-erect
5	prostrate

### NOTES

*versus*

### SIDE-BY-SIDE COMPARISON

(Quantitative characteristics)



## TGP/9/1 "Examining Distinctness"

### 5.2 Approaches for assessing distinctness

#### 5.2.1 Introduction

5.2.1.1 Approaches for assessment of distinctness based on the growing trial can be summarized as follows:

- (a) **Side-by-side visual comparison** in the growing trial (see Section 5.2.2);
- (b) **Assessment by Notes / single variety records ("Notes")**: the assessment of distinctness is based on the recorded state of expression of the characteristics of the variety (see Section 5.2.3);
- (c) Statistical analysis of growing trial data:

### Quantitative Characteristics: **distinctness**

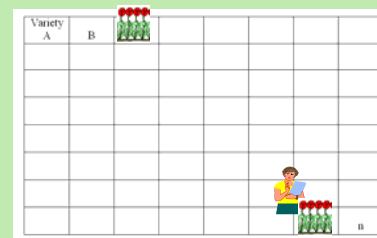
The General Introduction explains that, in the case of visually observed quantitative characteristics:

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

## TGP/9/1 "Examining Distinctness"

5.2.3.1.2 Where the requirements for distinctness assessment by Notes / single variety records are met it would usually also be possible to make a side-by-side visual comparison. However, **in the case of assessment by Notes / single variety records, such proximity is not required, which is a particular advantage where the growing trial contains a large number of varieties and where there are limited possibilities for ensuring that all similar varieties are grouped together in the growing trial. ...**

On the other hand, because the varieties are not the subject of a side-by-side visual comparison, **the difference required between varieties as a basis for distinctness is, with the exception of qualitative characteristics (see below), somewhat greater.**



...and comparison with descriptions in databases



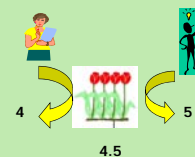
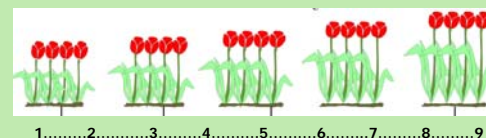
### Quantitative Characteristics: **distinctness**

Quantitative characteristics are considered for distinctness according to the method of observation and the features of propagation of the variety concerned.

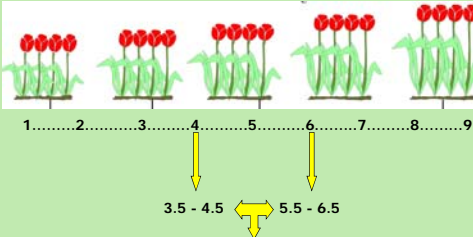
Test Guidelines (TGP/7 proposed revised text)

Difference of **two Notes** to represent a clear difference if the **comparison** between two varieties is performed **at the level of Notes**:

**WHY?**



# "Two Note" rule...



1.....2.....3.....4.....5.....6.....7.....8.....9

3.5 - 4.5      5.5 - 6.5

...means at least ONE note difference!

Quantitative Characteristics: distinctness

Quantitative characteristics are considered for distinctness according to the method of observation and the features of propagation of the variety concerned.

Test Guidelines (TGP/7 proposed revised text)

Difference of **two Notes to represent a clear difference if the comparison** between two varieties is performed **at the level of Notes**:

<p style="text-align: center;">TG 233-1 Dacia Dancu, 2007-03-28 - 9 -</p>						
	English	français	Deutsch	español	Example Varieties/ Exemples/ Beispiele/sorten/ Variedades ejemplo	Note
6. (*)	(a) Leaf blade: length	Limbe: longueur	Blattbreite: Länge	Limbo: longitud		
QN	short	courte	kurz	corto	Codator, Strawberry Sandae	3
	medium	moyenne	mittel	medio	Codauze	5
	long	longue	lang	largo	Babbarlapu, Babbarvat	7

**1 to 9 scale: Notes 1 and 3, Notes 2 and 4, Notes 3 and 5 etc.**  
 represent a clear difference

## Quantitative Characteristics: distinctness

TG 233.1 Dianthus Descent, 2007-03-28 - 9 -						
	English	français	Deutsch	español	Example Varieties/ Exemples Bretzelsorten/ Variedades ejemplo	Note Nota
5.	Stem: anthocyanin coloration below inflorescence	Tige: pigmentation anthocy unique sous inflorescence	Trieb: Anthocy anfärbung unter dem Blütenstand	Tallo: pigmentación antocianina por debajo de la inflorescencia		
QN	absent or weak  medium  strong	absente ou faible  moyenne  forte	fehldend oder gering  mittel  stark	ausente o debil  media  fuerte	Heecharm  Heerace  2	1  2  3

**1 to 3 scale: only Notes 1 and 3 represent a clear difference**

# Process levels other than Notes...

## Transformation of Observations and Measurements into Notes for Distinctness and for Variety Descriptions

Beate Rücker

Federal Variety Office, Hannover, Germany

Seminar on DUS Testing, Geneva, March 15-20, 2010

### UPOV Documents

#### First restricted area

UAT	Administrative and Legal Committee
UAT/AG	Administrative and Legal Committee/Advisory Group
TC	Technical Committee
TC/AG	Technical Committee/Advisory Group
TC/AG/SG	Technical Working Party for Agricultural Crops
TC/AG/SG/CP	Technical Working Party for Administrative and Computer Programs
TC/AG/SG/CP/CP	Technical Working Party for Plant Clones
TC/AG/SG/CP/CP/CP	Technical Working Party for Ornamental Plants and Related Trees
TC/AG/SG/CP/CP/CP/CP	Technical Working Party for Vegetables
TC/AG/SG/CP/CP/CP/CP/CP	Working Group on Biotechnical and Molecular Techniques, and Data Profiling in Plant Breeding
TC/AG/SG/CP/CP/CP/CP/CP/CP	Working Group on Biotechnical and Molecular Techniques, and Data Profiling in Plant Breeding - 2008 Subgroup
TC/AG/SG/CP/CP/CP/CP/CP/CP/CP	Working Group on Biotechnical and Molecular Techniques, and Data Profiling in Plant Breeding - 2008 Subgroup
TC/AG/SG/CP/CP/CP/CP/CP/CP/CP/CP	At the Working Group to Study the Impact of Plant Breeder's Rights
TC/AG/SG/CP/CP/CP/CP/CP/CP/CP/CP/CP	At the Working Group on the Publication of Variety Descriptions
TC/AG/SG/CP/CP/CP/CP/CP/CP/CP/CP/CP/CP	At the Working Group on Variety Descriptions
TC/AG/SG/CP/CP/CP/CP/CP/CP/CP/CP/CP/CP/CP	UPOV, Geneva, March 28 to 30, 2010

### 3. GUIDANCE ON DRAFTING TEST GUIDELINES

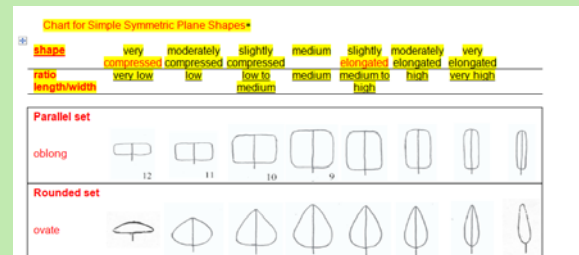
*d) Shape and Color Characteristics*

## TGP/14: Shape

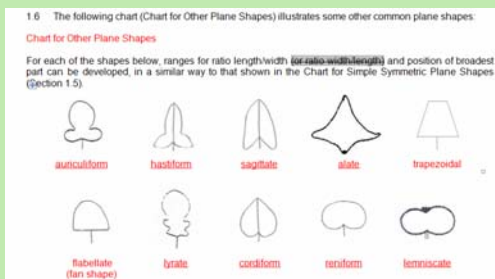
Characteristics related to shape, could use the following components:

- Shape: e.g. ovate (1), elliptic (2), circular (3), obovate (4)...
- Ratio length/ width (from low to high)
- Position of broadest part
- Shape of base
- Shape of apex
- Lateral outline

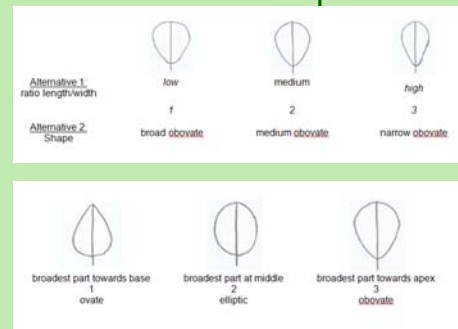
## TGP/14: Shape



## TGP/14: Shape



## TGP/14: Shape

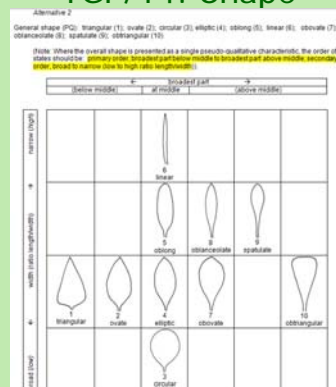


## TGP/14: Shape



- Alternative 1
- (a) position of broadest part (QN):  
e.g. strongly towards base (1); moderately towards base (3); at middle (5); moderately towards apex (7); strongly towards apex (9)
- (b) ratio length/width (QN):  
e.g. very low (1); low (3); medium (5); high (7); very high (9)

## TGP/14: Shape



## TGP/14: Color

	state of expression	example
level of precision ↓ low	single color	yellow, orange, red
	color range	(a) yellow, yellow orange, orange, orange red, red (b) white, yellowish white, yellow, yellowish orange
	intensity	light yellow, medium yellow, dark yellow
	RHS Colour Chart No.	RHS 41 B

Species?  
Level of variation?

## TGP/14: Color

### Single color

- A single color has the lowest precision to describe the state of expression.
- Example: Flower: color: white (1); yellow (2); orange (3); red (4)

## TGP/14: Color

### Color range

- (a) In color combinations the second color indicates the predominant color with blending of both colors, resulting in what can look like a single color. For example in "green red" the predominant color is red and in "red green" the predominant color is green.
- Example: Flower: color: white (1); yellow white (2); yellow (3); yellow orange (4); orange (5)
- (b) The use of "ish" in color combinations indicates that there is a predominant color (e.g. yellow) together with another minor color. For example,
- yellowish, covers all colors which are predominantly yellow (would include, for example, white yellow; brown yellow; orange yellow; etc.)
- yellowish green covers all colors which are predominantly green with some yellow (would include, for example, white yellow green; brown yellow green; orange yellow green etc.)
- Example: Flower: color: whitish (1); yellowish (2); greenish (3)

## TGP/14: Color

### Intensity

- Depending on the organ described, the intensity can be presented either in relation to a single color or in combination with different colors (example 2).
- Example 1: Leaf: green color of upper side: light (3); medium (5); dark (9)
- Example 2: Flower: color: white (1); light yellow (2); medium yellow (3); dark yellow (4); orange (5)

## TGP/14: Color

### Color Chart

- The "RHS Colour Chart" because of its worldwide availability.
  - 5 editions of this color chart, dating from 1966, 1986, 1995, 2001 and 2007.
  - Reference number of the RHS color, color name and edition of the chart to be mentioned.
  - UPOV names for colors in ANNEX.
  - Other color charts might also be appropriate.
- "Because daylight varies, color determinations made against a color chart should be made either in a suitable cabinet providing artificial daylight or in the middle of the day in a room without direct sunlight. The spectral distribution of the illuminant for artificial daylight should conform with the CIE Standard of Preferred Daylight D 6500 and should fall within the tolerances set out in the British Standard 950, Part I. These determinations should be made with the plant part placed against a white background".
- Observations should not be made in direct sunlight. The observations should be made on a cloudy day with sufficient light intensity, or in a shaded area.

Allocation of UPOV Color Groups for each RHS Color in RHS Reference order

RHS COLORS (RHS COLOUR CHART, EDITIONS 1986, 1995, 2001 AND 2007)  
BY UPOV COLOR GROUPS

UPOV roup No.	No. RHS	English	français	deutsch	español
11	001A	yellow	jaune	gelb	amarillo
5	001B	yellow green	vert-jaune	gelbgrün	verde amarillento
5	001C	yellow green	vert-jaune	gelbgrün	verde amarillento
5	001D	yellow green	vert-jaune	gelbgrün	verde amarillento
11	002A	yellow	jaune	gelb	amarillo
11	002B	yellow	jaune	gelb	amarillo
5	002C	yellow green	vert-jaune	gelbgrün	verde amarillento
5	002D	yellow green	vert-jaune	gelbgrün	verde amarillento
11	003A	yellow	jaune	gelb	amarillo
11	003B	yellow	jaune	gelb	amarillo
11	003C	yellow	jaune	gelb	amarillo
5	003D	yellow green	vert-jaune	gelbgrün	verde amarillento
11	004A	yellow	jaune	gelb	amarillo
11	004B	yellow	jaune	gelb	amarillo
5	004C	yellow green	vert-jaune	gelbgrün	verde amarillento
10	004D	light yellow	jaune clair	hellgelb	amarillo claro
11	005A	yellow	jaune	gelb	amarillo
11	005B	yellow	jaune	gelb	amarillo
11	005C	yellow	jaune	gelb	amarillo
10	005D	light yellow	jaune clair	hellgelb	amarillo claro
11	006A	yellow	jaune	gelb	amarillo
11	006B	yellow	jaune	gelb	amarillo
11	006C	yellow	jaune	gelb	amarillo
10	006D	light yellow	jaune clair	hellgelb	amarillo claro
11	007A	yellow	jaune	gelb	amarillo
11	007B	yellow	jaune	gelb	amarillo
11	007C	yellow	jaune	gelb	amarillo
11	007D	yellow	jaune	gelb	amarillo

## TGP/14: Color

### Order of states of expression

- normally presented in the following order: white, green, yellow, orange, pink, red, purple, violet, blue, brown, black
- chronological appearance of the color (e.g. as the fruit ripens)

## TGP/14: Color

### APPROACHES TO DESCRIBE COLORS AND COLOR PATTERNS

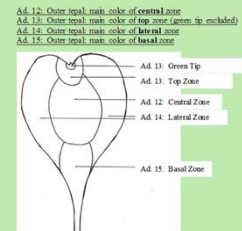
- depends on the number of colors...
- the types of color distribution...
- and the number of color patterns possible for the species concerned.

## TGP/14: Color

### Approach according to the size of the surface area

- (a) only a few colors, a few types of color distribution and a few patterns to be described,
- the colors are described according to the size of the surface area they cover

## TGP/14: Color



## TGP/14: Color

### Approach according to tissue layers

- one layer is covering the other:
- (a) Ground color (not always the largest surface area):
  - (i) the first color to appear chronologically.
  - (ii) has a continuous dispersion across the surface.
- (b) Over color (not always occupying the smallest surface area):
  - a second color, such as a flush, spots or blotches developed over time.

## APPLE – TG/14/9

35. (*)	Fruit: ground color		37. (*)	Fruit: hue of over color – with bloom removed		
PQ	(f)	not visible	1	PQ	(f) orange red	1
		whitish yellow	2		pink red	2
		yellow	3		red	3
		whitish green	4		purple red	4
		yellow green	5		brown red	5
		green	6			

## TGP/14: Color

Approach according to defined parts of an organ

- (a) If the different parts of a plant organ can have different colors, the color of these different parts can be described separately.
  - Example:
    - Petal: color of margin
    - Petal: color of middle zone
    - Petal: color of base
- (b) When an organ has one color with different intensities, the parts of the organ which are lighter or darker could be described as follows:
  - Example:
    - Ray floret: color distribution on upper side:
      - lighter towards base (1); even (2); lighter towards apex (3)

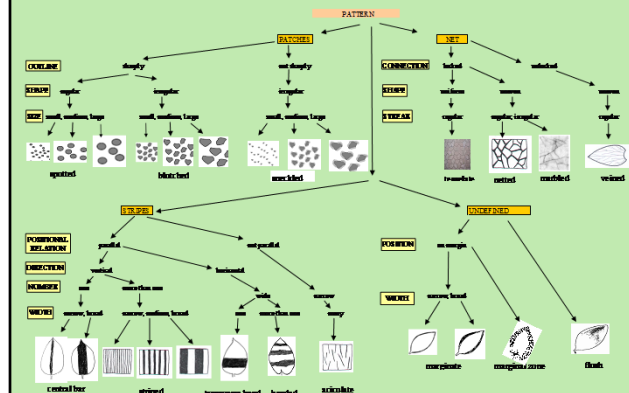


Approach according to the RHS Colour Chart  
number  
("Lisbon" approach)

- All colors of the plant part concerned are assessed using the RHS Colour Charts first.
- The color should first be described, followed by:
  - area,
  - distribution,
  - Pattern
  - conspicuousness of the color (if necessary).
- The same sequence should be followed for color two, color three and so on. I

36. Leaf blade: color one – RHS Colour Chart – Yellow-Green 144C  
37. Leaf blade: color one: distribution – marginal zone (7)  
38. Leaf blade: color one: pattern – solid or nearly solid (5)  
39. Leaf blade: color one: total area – very small to small (2)  
40. Leaf blade: color two – RHS Colour Chart – Greyed-Orange 176B  
41. Leaf blade: color two: distribution – along veins (2)  
42. Leaf blade: color two: pattern – solid or nearly solid (5)  
43. Leaf blade: color two: total area – small (3)  
44. Leaf blade: color three – RHS Colour Chart – Greyed-Orange 177D but more grey  
45. Leaf blade: color three: distribution – between veins in intermediate zone (6)  
46. Leaf blade: color three: pattern – solid or nearly solid (5)  
47. Leaf blade: color three: total area – large (7)  
48. Leaf blade: color four – RHS Colour Chart – not applicable  
49. Leaf blade: color four: distribution – none (1)  
50. Leaf blade: color four: pattern – not applicable  
51. Leaf blade: color four: total area – not applicable

## TGP/14: Color



### 3. GUIDANCE ON DRAFTING TEST GUIDELINES

#### e) Example Varieties

7. Table of Characteristics/ Tableau des caractères/ Merkmalstabelle/ Tabla de caracteres

	English	français	Deutsch	español	Example Varieties Exemples Beispielsorten/ Variedades ejemplo	Note/ Nota
1. (*)	Seed: color	Semence: couleur	Samen: Farbe	Semilla: color		
	white	blanche	weiß	blanco	Vorpia	1
	yellow	jaune	gelb	amarillo	Duango	2
	black	noire	schwarz	negro	Kagener Sommer	3
2. (*) (*)	Seedling: anthocyanin coloration	Plante: pigmentation anthocyanique	Keimling: Anthonfarbung	Plántula: pigmentación anociánica		
	absent	absente	fehlernd	ausente	Vorpia	1
	present	présente	vorhanden	presente	Pirat	9
3.	Seedling: size of cotyledons (fully developed)	Plante: taille du cotyledon (à complet développement)	Keimling: Größe des Keimblatts (voll entwickelt)	Plántula: tamaño del cotédlon (plánamente desarrollado)		
	small	petit	klein	pequeño	Romance	3
	medium	moyen	mittel	medio	Expreste	5
	large	grand	groß	grande	Vorpia	7

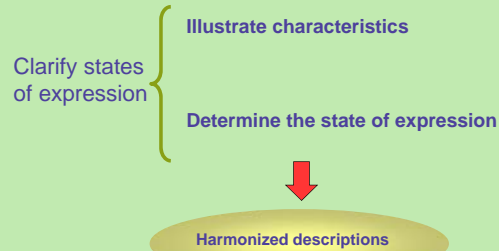
7. Table of Characteristics/ Tableau des caractères/ Merkmalstabelle/ Tabla de caracteres

	English	français	deutsch	español	Example Varieties/ Exemples/ Beispielsorten/ Variedades ejemplo	Note/ Nota
14. VG	Leaf blade: intensity of purplish color of lower side	Limbe: intensité de la couleur pourpre de la face inférieure	Blattspitze: Intensität der Purpurfarbe der Unterseite	Limbo: intensidad del color púrpura del envés		
Q5 (*)	very light	très claire	sehr hell	muy claro		1
	light	claire	hell	claro	Perline	3
	medium	moyenne	mittel	medio		5
	dark	foncée	dunkel	oscuro	Pero	7
	very dark	très foncée	sehr dunkel	muy oscuro	Bora, Purple	9
15. VG	Leaf blade: profile	Limbe: profil	Blattspitze: Profil	Limbo: perfil		
Q5 (*)	concave	concave	konkav	cóncavo	Pero	3
	plane	plan	flach	plano	Pergo, Sacyspud	5
	convex	convexe	konvex	convexo		7

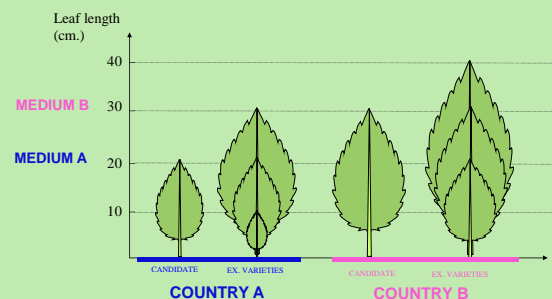
7. Table of Characteristics/ Tableau des caractères/ Merkmalstabelle/ Tabla de caracteres

	English	français	deutsch	español	Example Varieties/ Exemples/ Beispielsorten/ Variedades ejemplo	Note/ Nota
1. (*) (*)	Plant: growth type	Plante: type de croissance	Pflanze: Wuchstyp	Planta: tipo de crecimiento		
Q5 (*)	erect clusters	en grappe à la base	buschig	en racimos basales		1
	erect	érigé	hoch	erecto		2
2. (*)	Plant: growth habit	Plante: habitude de croissance	Pflanze: Wuchsform	Planta: forma de crecimiento		
Q5 (*)	erect	érigé	hoch	erecto		1
	erect	érigé	hoch	erecto		2
	erect	érigé	hoch	erecto		3
	erect	érigé	hoch	erecto		4
	erect	érigé	hoch	erecto		5
	erect	érigé	hoch	erecto		6
	erect	érigé	hoch	erecto		7
	erect	érigé	hoch	erecto		8
	erect	érigé	hoch	erecto		9
3. (*)	Plant: height	Plante: hauteur	Pflanze: Höhe	Planta: altura		
Q5 (*)	short	bas	niedrig	alta		1
	medium	moyenne	mittel	media		2
	medium	moyenne	mittel	media		3
	medium	moyenne	mittel	media		4
	medium	moyenne	mittel	media		5
	medium	moyenne	mittel	media		6
	medium	moyenne	mittel	media		7
	medium	moyenne	mittel	media		8
	medium	moyenne	mittel	media		9

### Example Varieties: the Objective



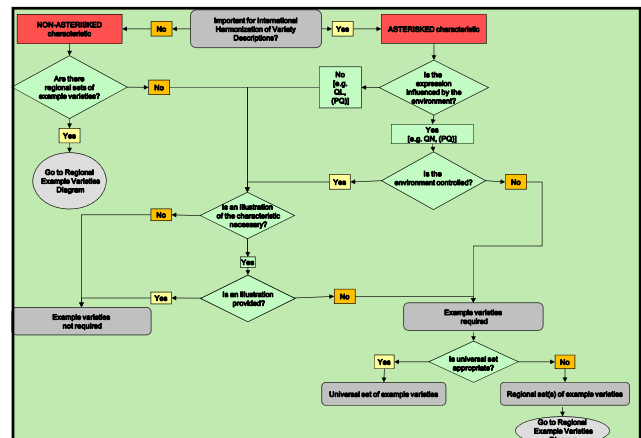
### Example Varieties versus Measurements



## Example Varieties – the need

### NEED

in characteristics used to  
harmonize descriptions  
and  
which are influenced by the  
environment



## 3. GUIDANCE ON DRAFTING TEST GUIDELINES

f) The process for developing UPOV Test Guidelines, including: TG Template; Additional Standard Wording; and Guidance Notes;

## Genera and Species

- >3,000 genera and species with varieties examined for PBR
- >2,700 genera and species for which UPOV members have practical DUS experience
- 295 Test Guidelines adopted

Note: 295 Test Guidelines estimated to cover 90% of PBR-related varieties in UPOV Plant Variety Database

## PRIORITY for UPOV Test Guidelines

PRIORITY for species or crops with high:

- number of authorities receiving PBR applications;
- number of PBR applications;
- number of foreign applications received by UPOV members;
- economic importance;
- level of breeding activity

## EXAMPLE (New Test Guidelines)

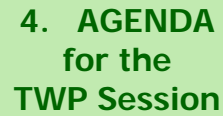
Test Guidelines: *Plantus magnifica* L.  
(Common name: Alpha)

Technical Working Party: TWX

TWX (2013):	Alpha (proj. 1)
TWX (2014):	Alpha (proj. 2)
TWX (2015):	Alpha (proj. 3)
Enlarged Editorial Committee (2016):	Alpha (proj. 4)
Technical Committee (2016):	Alpha (proj. 5)
Final adopted document (2016):	TG/500/1



- The **TG Template**
- Additional Standard Wording** for the TG Template
- Guidance Notes** for the TG Template



## EXCHANGING INFORMATION

AN OPPORTUNITY  
for  
TRAINING

Example TWP Session									
Sunday	Monday		Tuesday		Wednesday		Thursday		Friday
[TECHNICAL WORKSHOP] (optional)	Reports on developments in PVP		TGP document development		TGP document development		Experiences with new types and species Variety denominations		Databases, Electronic application systems Exchangeable software
	COFFEE		COFFEE		COFFEE		COFFEE		COFFEE
	Reports (Continuation) Molecular techniques		TGP document development		Room.1 Test Guidelines subgroup	Room.2 Test Guidelines subgroup	Uniformity method development		Recommendations on Test Guidelines
	LUNCH		LUNCH		LUNCH		LUNCH		LUNCH
PREPARATORY WORKSHOP	Room.1 Test Guidelines subgroup	Room.2 Test Guidelines subgroup	Room.1 Test Guidelines subgroup	Room.2 Test Guidelines subgroup	TECHNICAL VISIT		Room.1 Test Guidelines subgroup	Room.2 Test Guidelines subgroup	Future programs Adoption of report  

TWP Venues						
	TWA	TWC	TWF	TWO	TWV	BMT
1994	Spain	Israel	New Zealand	Australia	United Kingdom	France
1995	Germany	Poland	United Kingdom	Netherlands	Netherlands	Netherlands
1996	Greece	Germany	Israel	Israel	Czech Rep.	
1997	Uruguay	Hungary	Netherlands	Denmark	Spain	United Kingdom
1998	France	Belgium	Australia	New Zealand	Poland	USA
1999	Canada	Finland	Slovakia	Czech Rep.	Germany	
2000	Sweden	Ukraine	Hungary	Hungary	France	France
2001	Mexico	Czech Rep.	Spain	Japan	Italy	Germany
2002	Brazil	Mexico	Argentina	Ecuador	Japan	
2003	Japan	Denmark	Canada	Canada	Netherlands	Japan
2004	Poland	Japan China (workshop)	Germany	Germany	Rep. of Korea	
2005	New Zealand	Canada	Japan	Rep. of Korea	Slovakia	USA
2006	China	Kenya	Brazil	Brazil	Mexico	Rep. of Korea
2007	Hungary	Romania	Rep. of Korea	China	Kenya	
2008	South Africa	Rep. of Korea	Portugal	Netherlands	Poland	Spain
2009	Rep. of Korea	USA	France	European Union	China	
2010	Croatia	European Union	Mexico	Mexico	Bulgaria	Canada
2011	Brazil	Geneva - LIPOV	Japan	Japan	USA	Brazil
2012	France	Rep. Moldova	China	Rep. of Korea	Netherlands	

## 5. FEEDBACK FROM PARTICIPANTS

From TC/49/10:

Survey to seek views on improving the effectiveness of the Preparatory Workshops

10. In conjunction with the survey of participants at the TWP session in 2013 (see document TC/49/3 "Matters arising from the Technical Working Parties") it is proposed to conduct a survey of participants in the preparatory workshop in 2013, *with a view to seeking improvements to the effectiveness of the Preparatory Workshops*

[See document TC/49/41 Report on Conclusions, paragraph 21]

THANK YOU