

# **TECHNICAL WORKING PARTY FOR FRUIT CROPS**

Forty-Sixth Session

## **PREPARATORY WORKSHOP**

**Mpumalanga, South Africa,  
August 23, 2015**

### **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)**

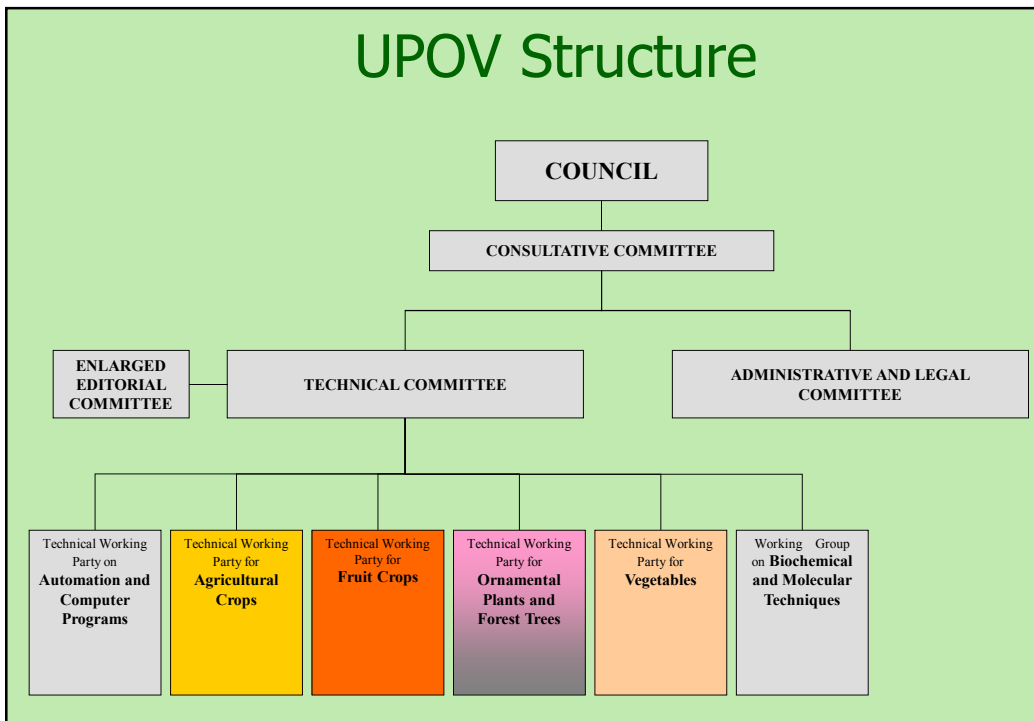
**UPOV: INDEPENDENT INTERGOVERNMENTAL  
ORGANIZATION**

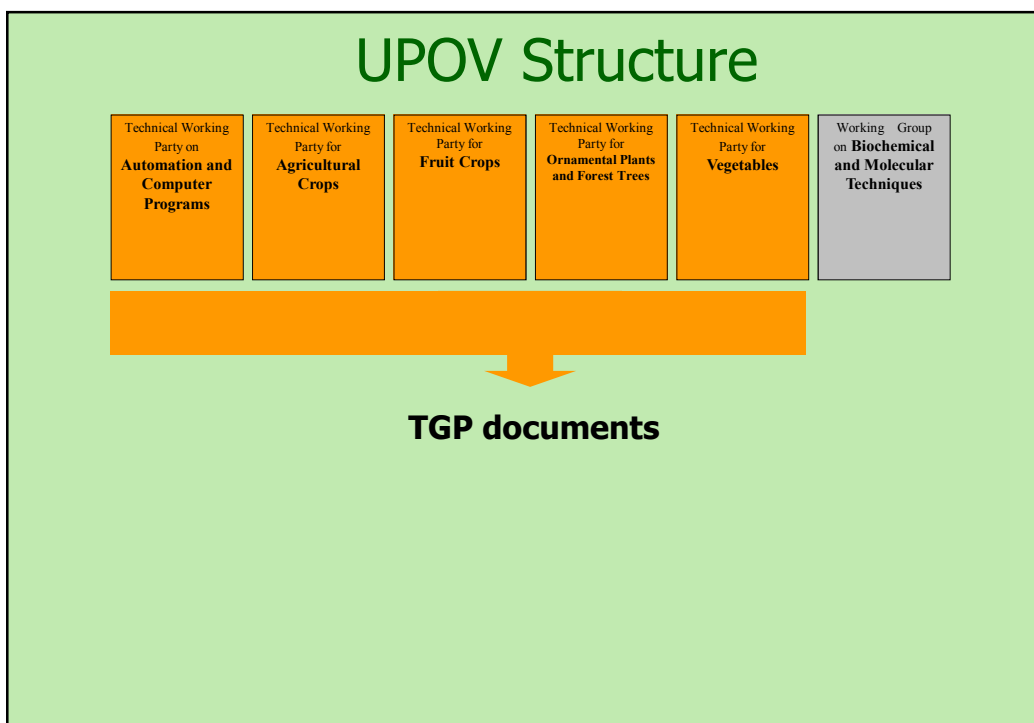
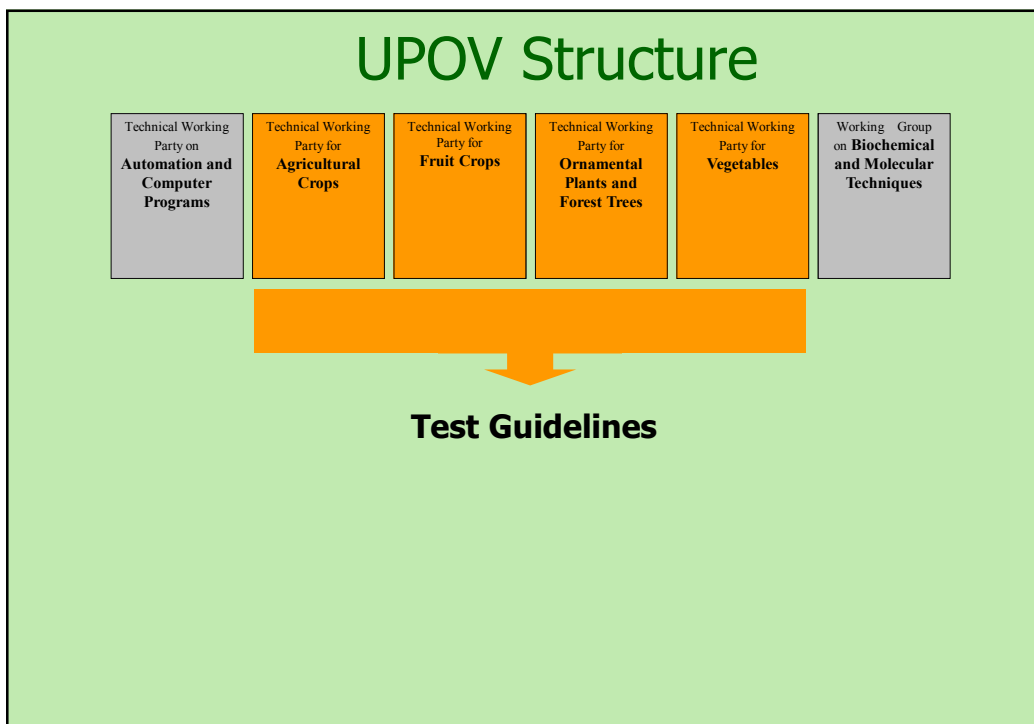
**The International **Convention** for the  
Protection of New Varieties of Plants**

**established in 1961**

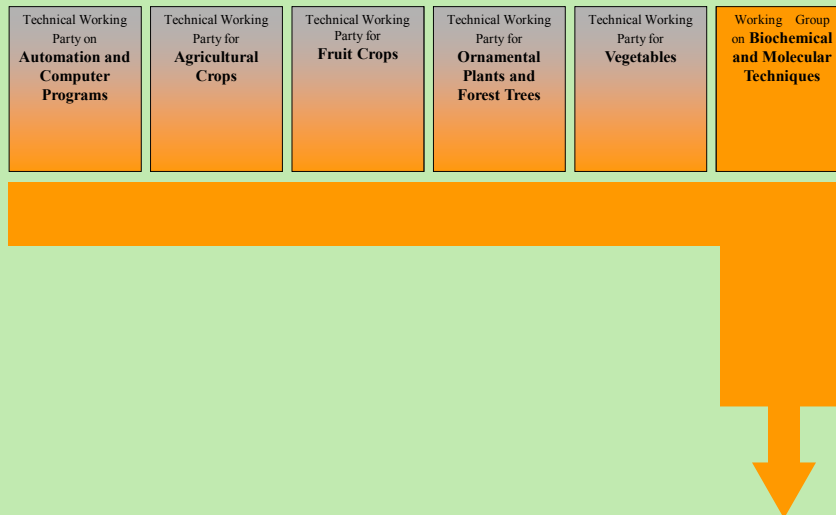
**The International **Union** for the Protection  
of New Varieties of Plants**

**Union internationale pour la  
protection des **o**btentions **v**égétales**





## 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
  - **D**ISTINCTNESS
  - **U**NIFORMITY
  - **S**TABILITY
- 
- "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	
<b>ACCEPTABILITY</b>	<b>Yes</b>	<b>Yes</b>	

## Selection of Characteristics

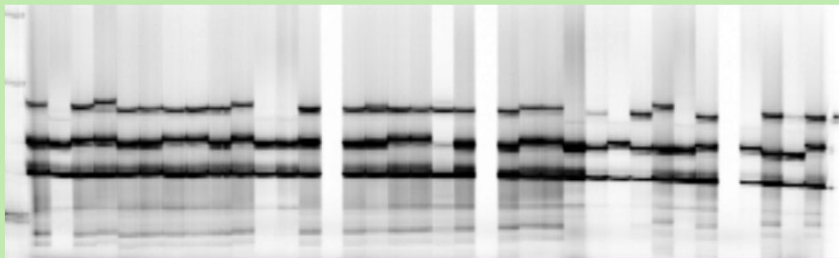
Criteria	Fruit: color	Leaf: shape	Yield
(a) results from a given genotype or combination of genotypes	Yes	Yes	Yes
(b) sufficiently consistent and repeatable in a particular environment	Yes	Yes	(No)
(c) exhibits sufficient variation between varieties to be able to establish distinctness	Yes	Yes	???
(d) 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
<b>ACCEPTABILITY</b>	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
<p>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>	<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 Beispielssorten Variedades ejemplo	Note/ Nota
	<b>Plant: growth habit</b>	<b>Plante : port</b>	<b>Pflanze: Wuchsform</b>	<b>Planta: porte</b>		
QN	upright	dressé	aufrecht	erecto	Inuppink	1
	semi-upright	semi dressé	halbaufrucht	semierecto	D0158-1	2
	spreading	étalé	breitwüchsig	abierto	Sunnem 03	3
	semi-trailing	semi-étalé	halbhängend	semirastrero	Inupsaf	4
	trailing	coureux	hängend	rastrero	Organza	5

## Asterisked Characteristic

Function	Criteria
<p>1.Characteristics that are important <b>for the international harmonization of variety descriptions.</b></p>	<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)
TECHNICAL QUESTIONNAIRE to be completed in connection with an application for plant breeders' rights		
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, Delorgue	2[ ]
red	Akane, Galaxy, Red Elstar, Regal Prince	3[ ]
purple red	Red Jonaprince, Spartan	4[ ]
brown red	Fiesta, Joburn, Lord Burghley	5[ ]
<b>5.6 Fruit: pattern of over color (39)</b>		
only solid flush	Red Jonaprince, Richared Delicious	1[ ]
solid flush with weakly defined stripes	Galaxy	2[ ]
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[ ]

## Grouping Characteristic

Function	Criteria
<p>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:</p> <ol style="list-style-type: none"> <li><b>1. to select varieties of common knowledge that can be excluded from the growing trial</b> used for examination of distinctness, and/or</li> <li><b>2. to organize the growing trial so that similar varieties are grouped together</b></li> </ol>	<ol style="list-style-type: none"> <li>1.(a) Qualitative characteristics or (b) Quantitative or pseudo-qualitative characteristics which provide useful discrimination between the varieties of common knowledge from documented states of expression recorded at different locations.</li> <li>2. Must be useful for functions 1 and 2.</li> <li>3. Should be an <b>asterisked characteristic</b> and/or included in the <b>Technical Questionnaire</b> or application form.</li> </ol>

## Relationship between functions

- (a) **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**.
- (b) **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**;
- (c) **ASTERISKED CHARACTERISTICS** are **not restricted to** those characteristics selected as **grouping or TQ characteristics**.

**3. GUIDANCE ON  
DRAFTING TEST GUIDELINES  
(Document TGP/7)**

**3. GUIDANCE ON  
DRAFTING TEST GUIDELINES**

***a) Subject of the Test Guidelines, Material  
Required and Method of Examination***


## UPOV provides guidance by:

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

AND

- “Test Guidelines”
  - Species/Crop-specific recommendations developed by crop experts
  - TGP/7 “Development of Test Guidelines” adopted

E



UPOV Code: TG/250/1  
ORIGINAL: English  
DATE: 2009-04-01

INTERNATIONAL UNION FOR THE PROTECTION OF NEW VARIETIES OF PLANTS  
GENEVA

YAM  
UPOV Code:  
DIOSC\_ALA; DIOSC\_BAT; DIOSC\_JAP  
*Dioscorea alata* L.; *Dioscorea polystachya* Turcz.;  
*Dioscorea japonica* Thunb.

GUIDELINES  
FOR THE CONDUCT OF TESTS  
FOR DISTINCTNESS, UNIFORMITY AND STABILITY

Alternative Names:<sup>1</sup>

Botanical name	English	French	German	Spanish
<i>Dioscorea alata</i> L.	Greater yam, Guyana arrowroot, Taro-arrinho yam, Water yam, White yam, Winged yam, Yam	Grande igname, Igname aïlé, Igname de Chine	Geßligether Yam, Wasser- Yamswurzel	Saane blanco, Saane de agua, Tabana
<i>Dioscorea polystachya</i> Turcz. <i>Dioscorea batatas</i> Desce. <i>Dioscorea japonica</i> Thunb.	Chinese yam, Chinese-potato, Cinnamon-vine Japanese yam	Igname	Chinesische Yamswurzel	

The purpose of these guidelines (“Test Guidelines”) is to elaborate the principles contained in the General Introduction (document TG/1/3), and its associated TGP documents, into detailed practical guidance for the harmonized examination of distinctness, uniformity and stability (DUS) and, in particular, to identify appropriate characteristics for the examination of DUS and production of harmonized variety descriptions.

**ASSOCIATED DOCUMENTS**

These Test Guidelines should be read in conjunction with the General Introduction and its associated TGP documents.

<sup>1</sup> These names were correct at the time of the introduction of these Test Guidelines but may be revised or updated [updates are advised to consult the UPOV Code, which can be found on the UPOV Website (www.upov.int), for the latest information.]

# TGP/7 “Development of Test Guidelines”

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

### Section 1. Introduction

TGP/7/3... Section 1: Introduction  
page 6

#### SECTION 1: INTRODUCTION

##### 1.1 UPOV Test Guidelines as the Basis for the DUS Test

The General Introduction (Chapter 2, section 2.2.1) states that “Where UPOV has established specific Test Guidelines for a particular species, or other group(s) of varieties, these represent an **agreed and harmonized approach for the examination of new varieties** and, in conjunction with the basic principles contained in the General Introduction, **should form the basis of the DUS test.**” It further states in Chapter 8, section 8.2.1, that “The individual Test Guidelines are prepared or, where appropriate, revised according to the procedures set out in document TGP/7, Development of Test Guidelines”. Thus, the purpose of this document is to **provide guidance on the development of these UPOV Test Guidelines** (“Test Guidelines”).

##### 1.2 Individual Authorities’ Test Guidelines

The General Introduction also states that “Where UPOV has not established individual Test Guidelines relevant to the variety to be examined, the examination should be carried out in accordance with the principles in this document [the General Introduction] and, in particular, the recommendations contained in Chapter 9, Conduct of DUS Testing in the Absence of Test Guidelines. In particular, the recommendations in Chapter 9 are based on the approach whereby, **in the absence of Test Guidelines, the DUS examiner proceeds in the same general way as if developing new Test Guidelines.**” Section 4 “Development of individual authorities’ test guidelines” provides guidance on the development of individual authorities’ test guidelines.

##### 1.3 Structure of TGP/7

# 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

E

UPOV  
INTERNATIONAL UNION FOR THE PROTECTION OF NEW VARIETIES OF PLANTS  
OIEA

**DRAFT**  
Please indicate "Draft" when Commissioning from the UPOV system to use all fields

TO: [ ] ORIGINAL  
DATE: [ ]

(MAIN COMMON NAME)  
(Support/Technical name)  
(UPOV CODE)  
(PRT) - (Botanical name)

**GUIDELINES  
FOR THE CONDUCT OF TESTS  
FOR DISTINCTNESS, UNIFORMITY AND STABILITY**

prepared by the expert group [ ]  
(Indicate national commission(s))  
to be considered by the  
Technical Committee on [ ]  
(Indicate date)

Alternative Names?

Alternative name	English	French	German	Spanish

The purpose of these guidelines (Pilot Guidelines) is to enhance the principles contained in the General Introduction (document TGP/1), and its associated TGP documents, into detailed practical guidelines for the harmonized examination of distinctness, uniformity and stability (DUS) test, to facilitate, to identify appropriate characteristics for the examination of DUS and production of distinctness, uniformity and stability.

The main aim of this pilot is to enhance the principles contained in the General Introduction (document TGP/1), and its associated TGP documents, into detailed practical guidelines for the harmonized examination of distinctness, uniformity and stability (DUS) test, to facilitate, to identify appropriate characteristics for the examination of DUS and production of distinctness, uniformity and stability.

**Coming Soon:  
Web-based TG  
Template**

**Table of Characteristics**

UPOV

Table of Characteristics

Table with columns: Characteristic, Unit, Method, etc.

Characteristic	Unit	Method	Remarks

## 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

## 10 Chapters of UPOV Test Guidelines

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9. Literature
10. Technical Questionnaire

# 10 Chapters of UPOV Test Guidelines

TGP/7/3... Annex 1: TG Template  
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## 1. Subject of these Test Guidelines

These Test Guidelines apply to all varieties of

- { GN 3 } (Chapter 1.1) – Subject of the Test Guidelines: More than one species
- { GN 4 } (Chapter 1.1) – Subject of the Test Guidelines: Different types or groups within a species or genus
- { GN 5 } (Chapter 1.1) – Subject of the Test Guidelines: Family name
- { GN 6 } (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 and where it is to be delivered. Applicants submitting material from a State other than that in which the testing takes place must ensure that all customs formalities and phytosanitary requirements are complied with.

2.2 The material is to be supplied in the form of {xx}.

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

- { GN 7 } (Chapter 2.3) – quantity of plant material required
- { ASW 1 } (Chapter 2.3) – seed quality requirements

2.4 The plant material supplied should be visibly healthy, not lacking in vigor, nor affected by any important pest or disease.

2.5 The plant material should not have undergone any treatment which would affect the expression of the characteristics of the variety, unless the competent authorities allow or request such treatment. If it has been treated, full details of the treatment must be given.

## 3. Method of Examination

3.1 Number of Growing Cycles

The minimum duration of tests should normally be:

- { ASW 2 } (Chapter 3.1(1)) – number of growing cycles
- { GN 3 } (Chapter 3.1.2) – explanation of the growing cycle
- { ASW 3 } (Chapter 3.1.2) – explanation of the growing cycle

## 3. GUIDANCE ON DRAFTING TEST GUIDELINES

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



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

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

Method of propagation of the variety	Type of expression of characteristic		
	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 ([MG]/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

Method of propagation of the variety	Type of expression of characteristic		
	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 ([MG]/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**



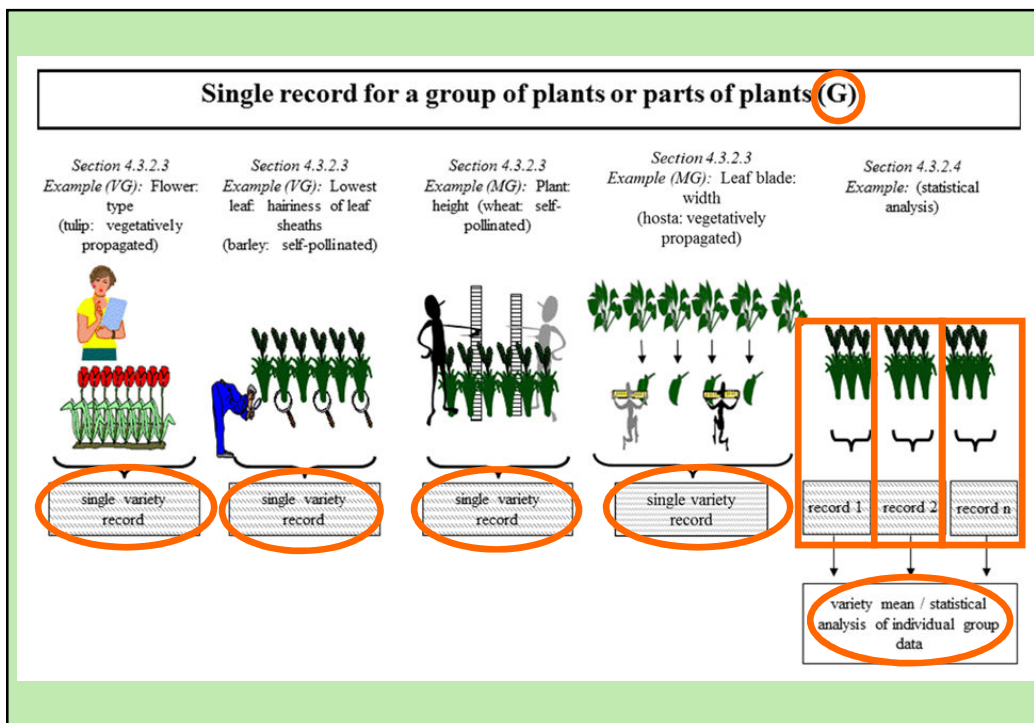
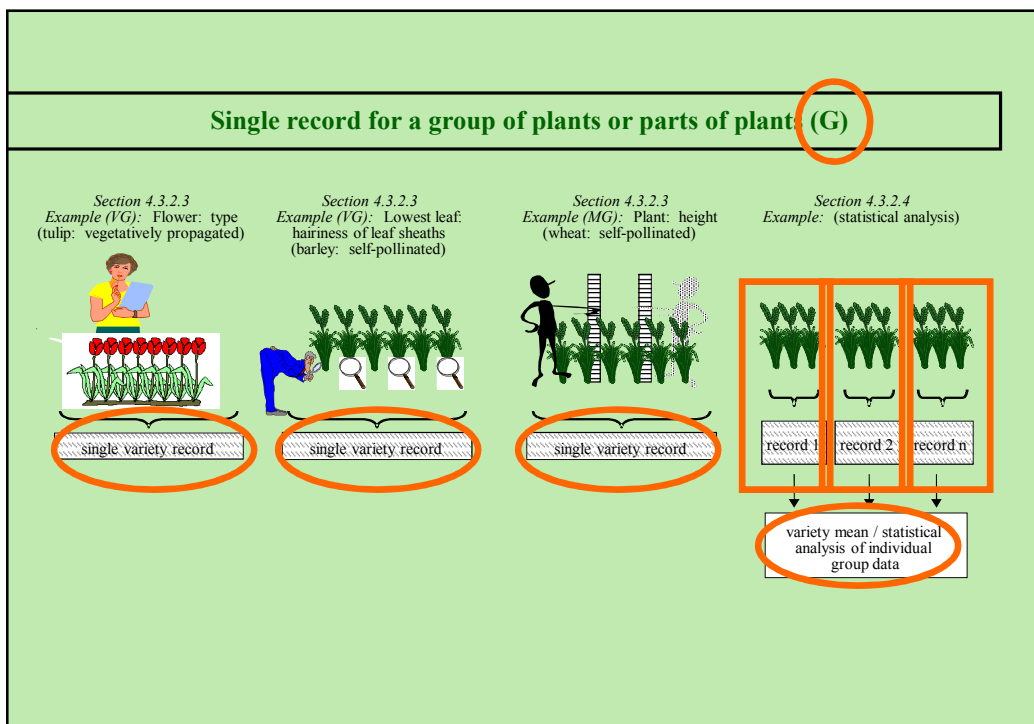
Method of propagation of the variety	Type of expression of characteristic		
	QL (QUAL itative)	PQ (PSEUDO qualitative)	QN (QUANT itative)
Vegetatively propagated, self-pollinated	<i>Notes (VG)</i>	<i>Notes (VG) Side-by-side (VG)</i>	<i>Notes (VG/MG/MS) Side-by-side (VG) Statistics (MG/MS)</i>
Cross-pollinated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

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

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

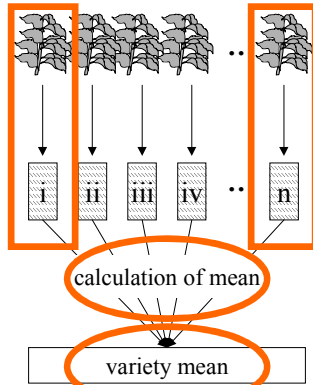
In most cases, "G" provides a single record per variety and it is not possible or necessary to apply statistical methods in a plant-by-plant analysis for the assessment of distinctness.

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

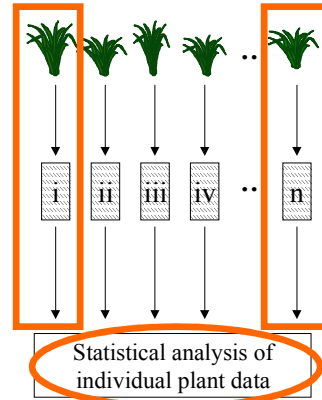


**Records for a number of single, individual plants or parts of plants (S)**

Section 4.3.3.1  
Example (MS): Leaflet: length  
(pea: self-pollinated)



Section 4.3.3.2  
Example (MS): Plant: natural height  
Example (VS): Plant: growth habit  
(ryegrass: cross-pollinated)



**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 Beispielsorten Variedades ejemplo	Note/ Nota
<b>1.</b> (*) (+)	<b>Plant: growth habit</b>	<b>Plante : port</b>	<b>Pflanze: Wuchsform</b>	<b>Planta: porte</b>		
<b>QN</b>	upright	dressé	aufrecht	erecto	Inuppink	1
	semi-upright	semi dressé	halbaufrecht	semierecto	D0158-1	2
	spreading	étalé	breitwüchsig	abierto	Sunmem 03	3
	semi-trailing	semi-étalé	halbhängend	semirrastrero	Inupsaf	4
	trailing	coureux	hängend	rastrero	Organza	5
<b>2.</b> (+)	<b>Plant: height</b>	<b>Plante : hauteur</b>	<b>Pflanze: Höhe</b>	<b>Planta: altura</b>		
<b>QN</b>	short	basse	niedrig	baja	Yateye	3
	medium	moyenne	mittel	media	D0158-1	5
	tall	haute	hoch	alta	Inuppink	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



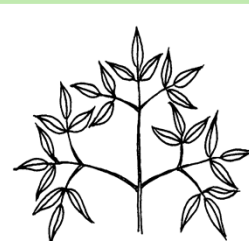
1  
simple



2  
ternate



3  
biternate



4  
triternate

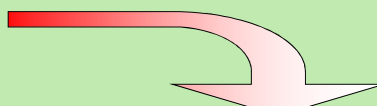










## Qualitative (QL) characteristic?

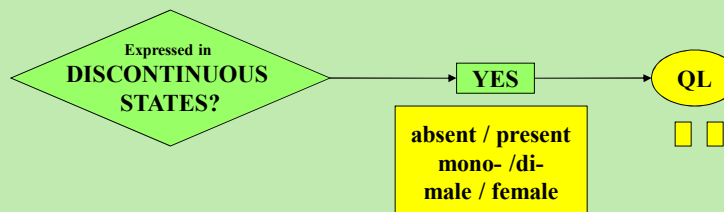
Anthocyanin coloration: QL (=absent / present)?

**NO!**

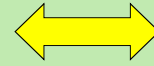


	Variety A	Variety B	Variety C
Environment A	 absent	 present	 absent
Environment B	 absent	 present	 present

## QL, QN or PQ?

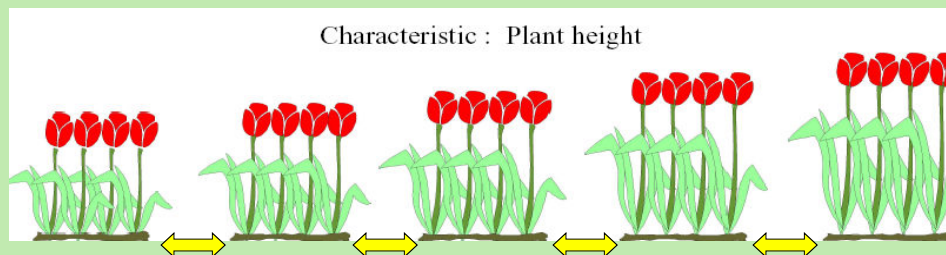


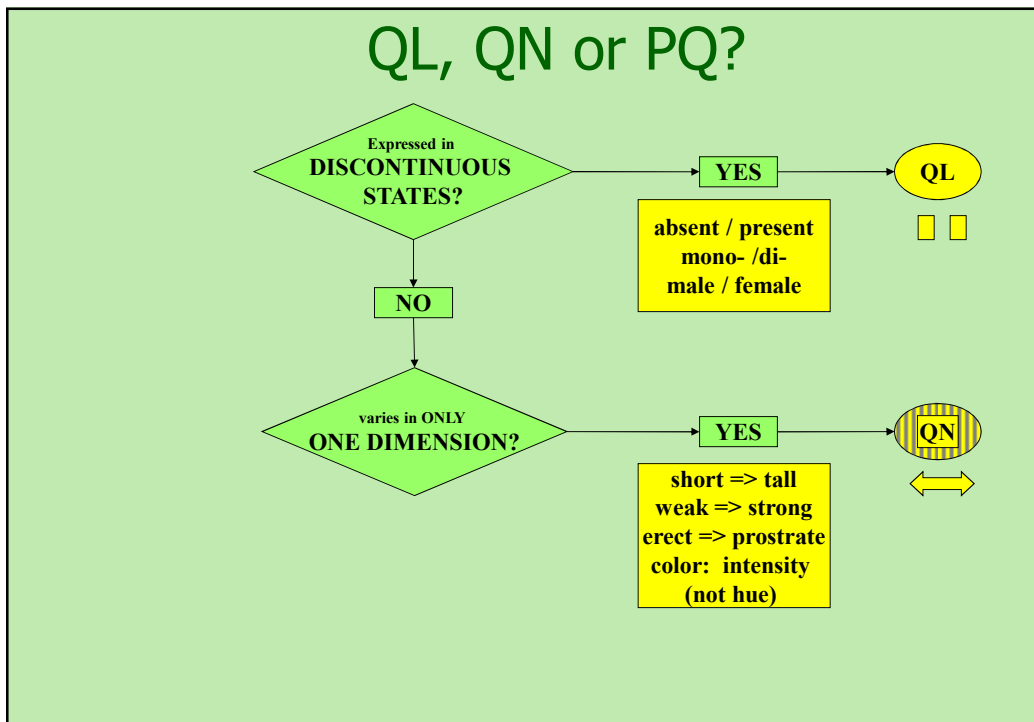
# QUANTITATIVE Characteristics



“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

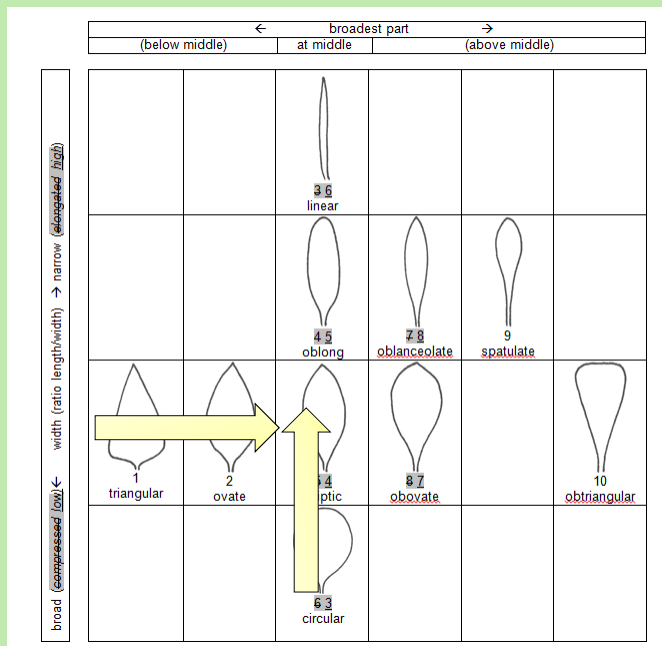
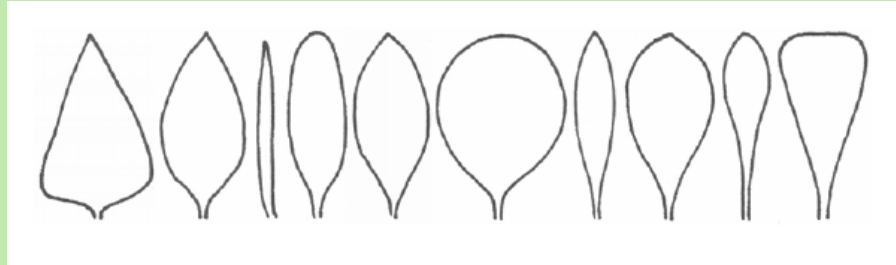


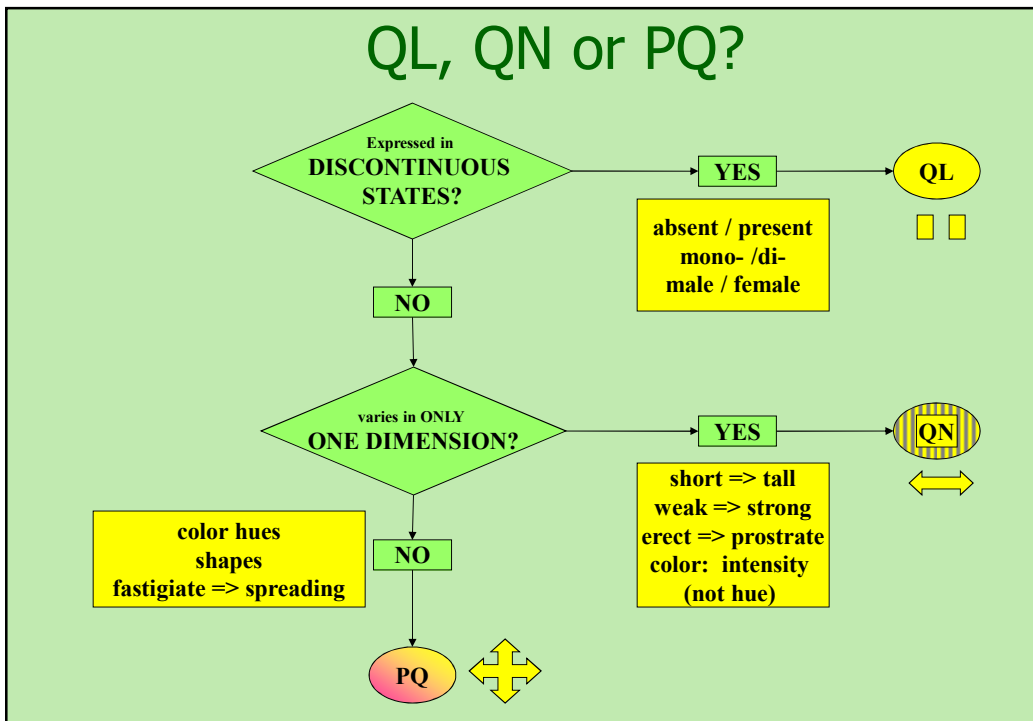
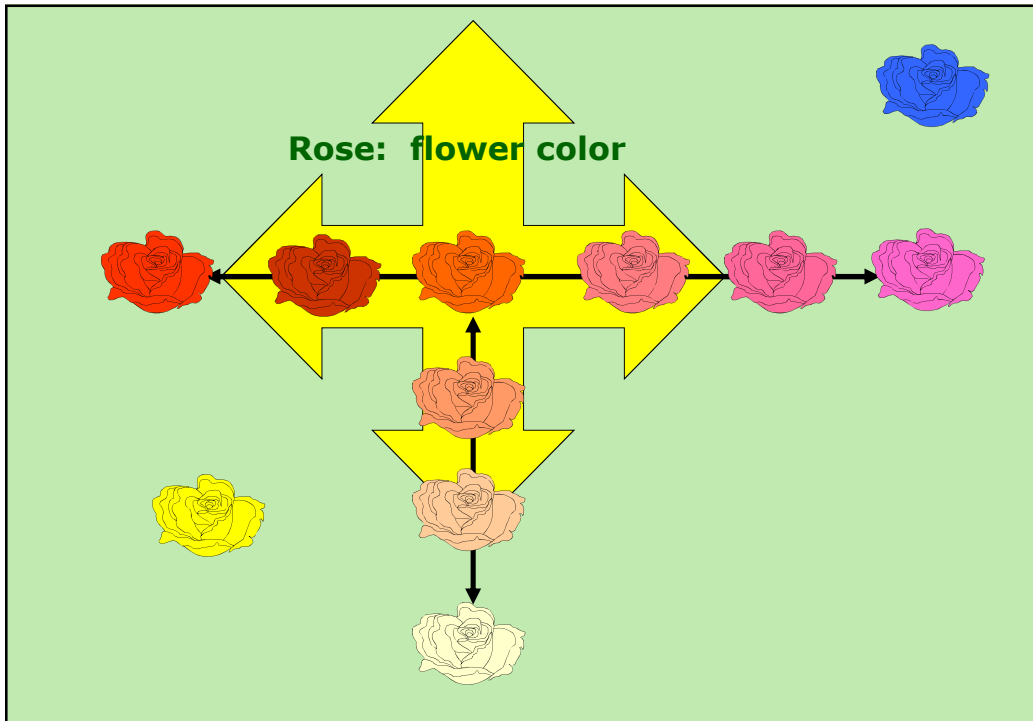


### PSEUDO-QUALITATIVE Characteristics

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	<input checked="" type="checkbox"/>	2 ternate	<input checked="" type="checkbox"/>
<input type="checkbox"/>	<input type="checkbox"/>	3 biterminate	<input checked="" type="checkbox"/>
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	4 triterminate
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

## Qualitative Characteristics (special cases)

Char No.	Method of Examination	English	français	deutsch	español	Example Varieties/ Exemples/ Beispielsorten/ Variedades ejemplo	Note/ Nota	
1. (*)	MS C	<b>Plant: ploidy</b>						
QL		diploid					2	
		tetraploid					4	
3. (*)	VG	<b>Stem: anthocyanin coloration</b>						
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

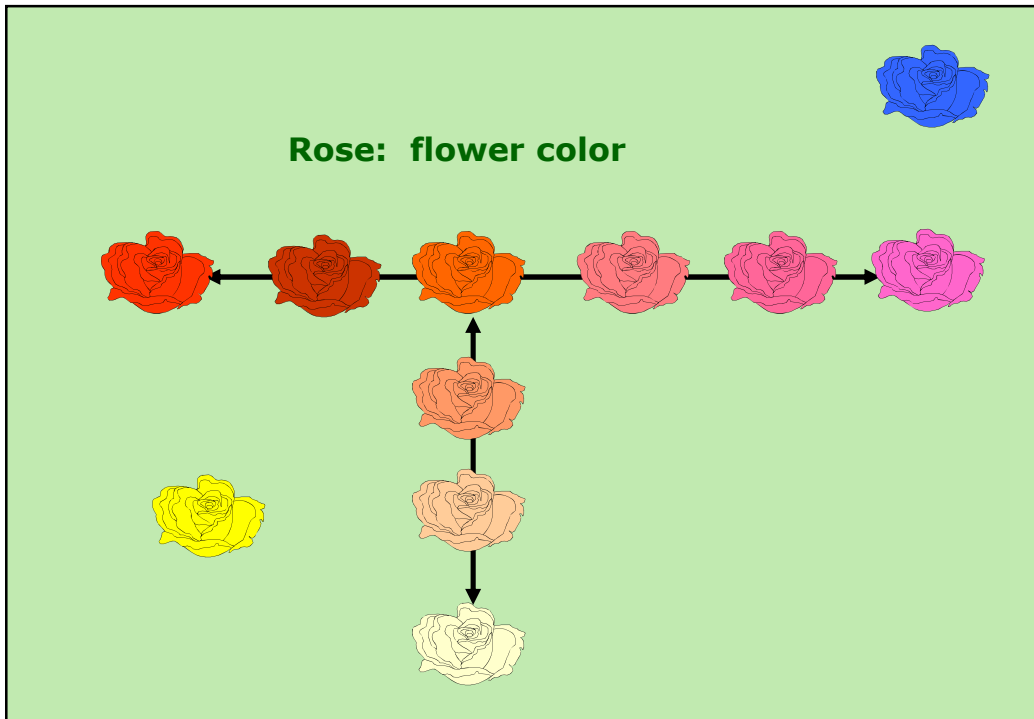
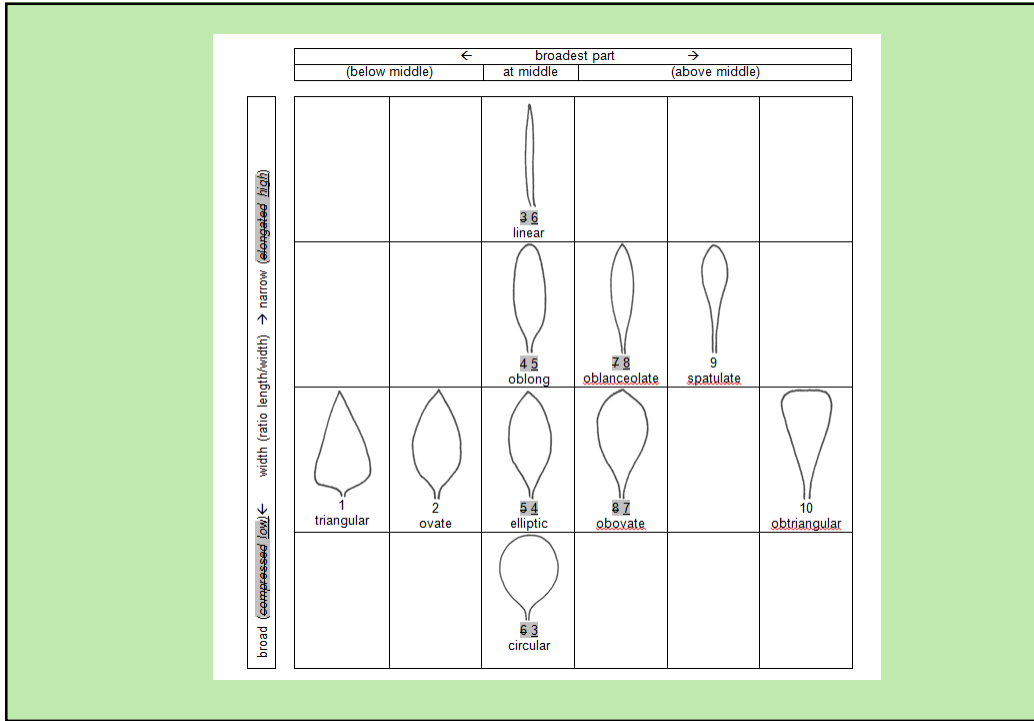
QL: QUALITATIVE

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.

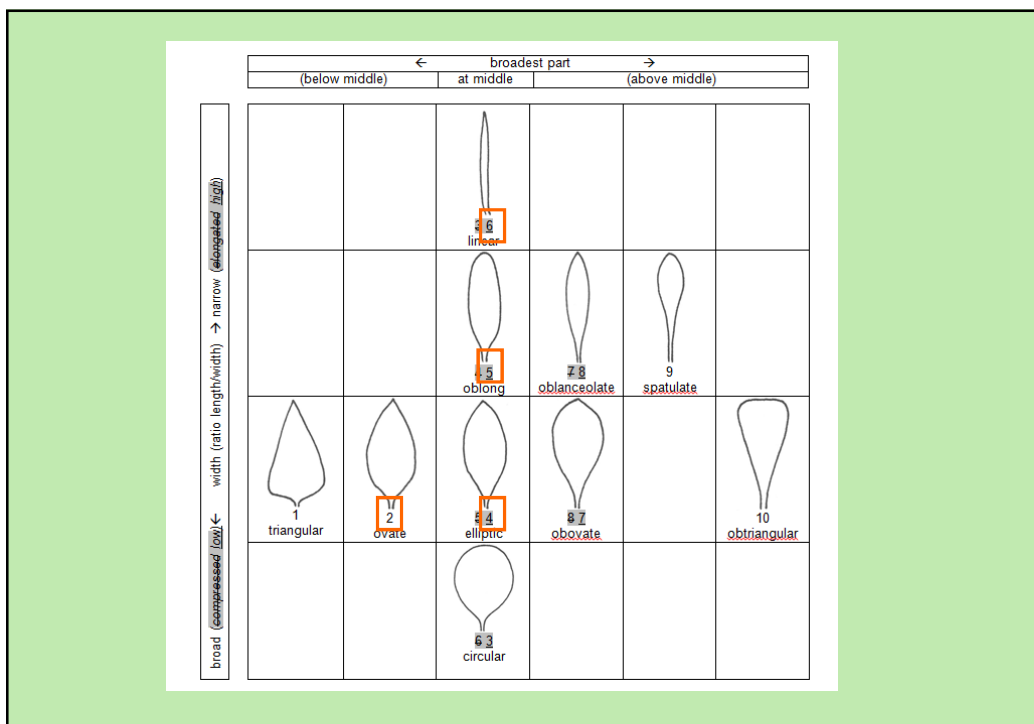


## PSEUDO-QUALITATIVE Characteristics (typical examples)

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	purpurn	púrpura	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.

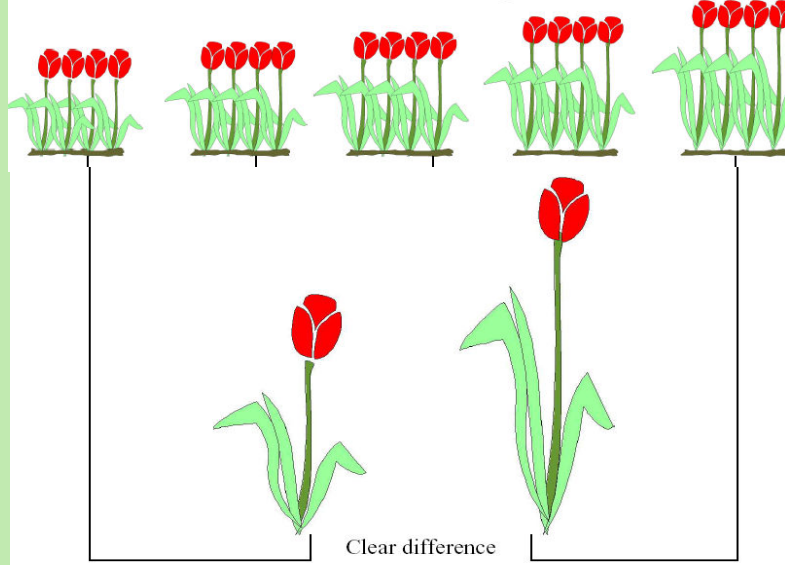
### Quantitative Characteristics: **distinctness**

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

## Quantitative Characteristic

Clear difference

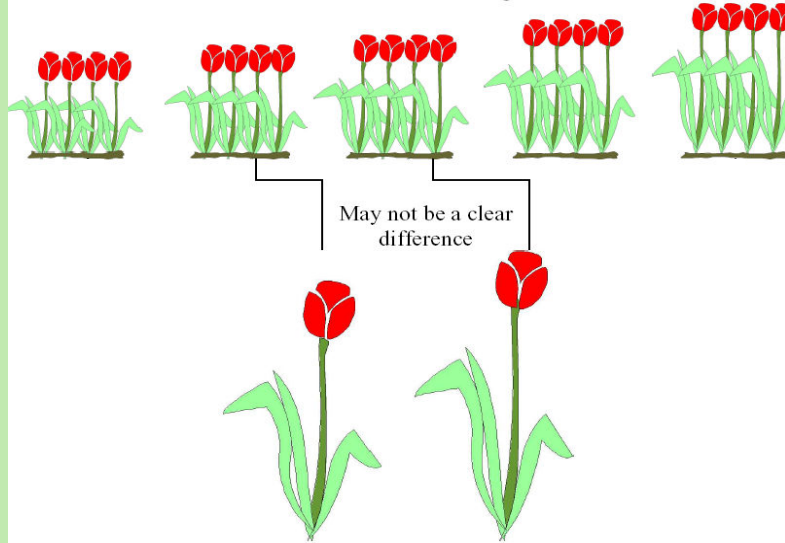
Characteristic : Plant height



## Quantitative Characteristic

Clear difference

Characteristic : Plant height



## Quantitative Characteristics (1-9)

weak/strong  
short/long  
small/large

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

Note	State
1	very small (or: absent or very small)
2	very small to small
3	<b>small</b>
4	small to medium
5	<b>medium</b>
6	medium to large
7	<b>large</b>
8	large to very large
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 Size relative to:	Example 2 Angle:	Example 3 Position:	Example 4 Length in relation to:
<b>1</b>	<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
<b>5</b>	<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
<b>9</b>	<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 Stem: attitude
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:

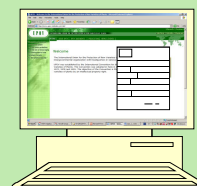
“5.5.2.2.2 **A direct comparison between two similar varieties is always recommended**, since direct pairwise comparisons are the most reliable. In each comparison, **a difference between two varieties is acceptable as soon as it can be assessed visually and could be measured, although such measurement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

Variety							
A	B						
							n



...and comparison with descriptions in databases

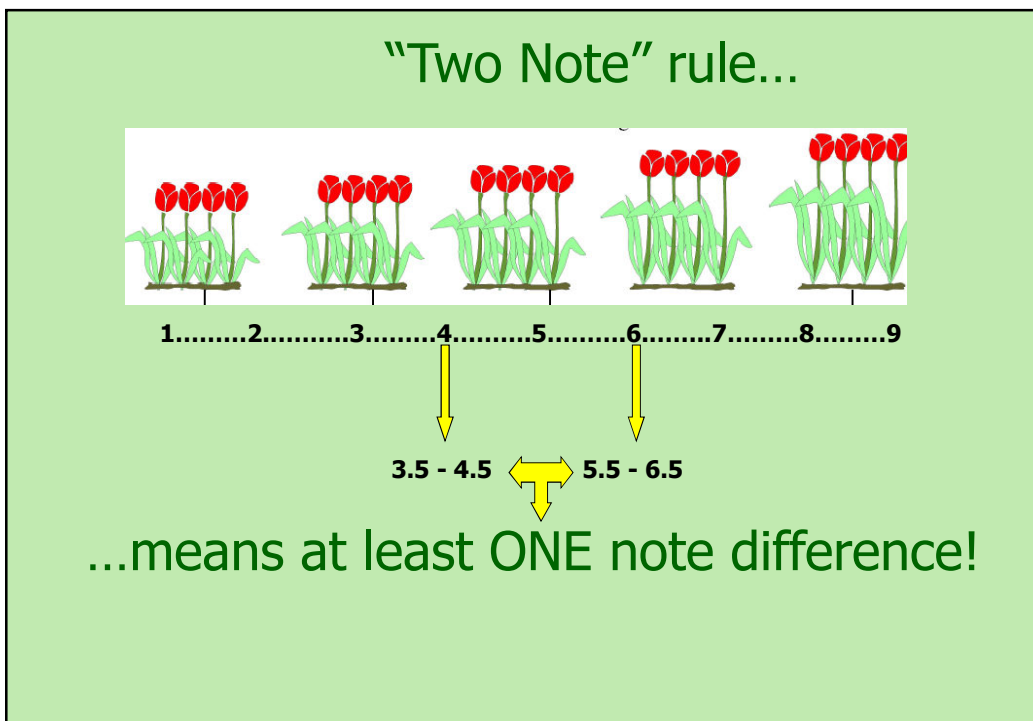
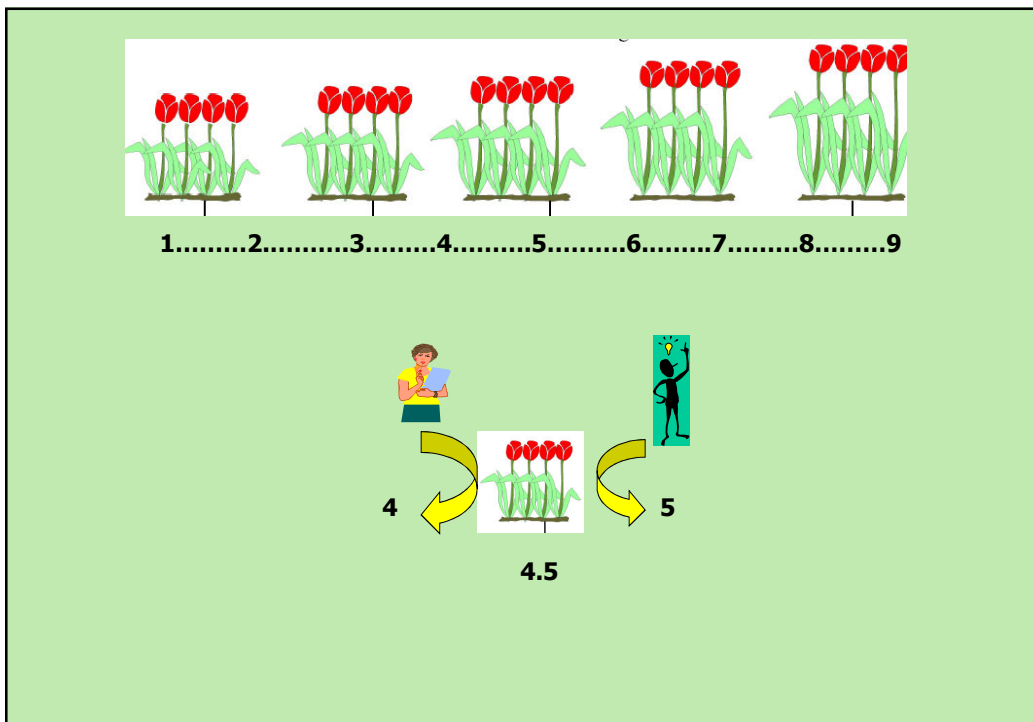
### Quantitative Characteristics: distinctness

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?**



## 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**:

## Quantitative Characteristics: distinctness

TG/233/1  
Diascia/Diascie, 2007-03-28  
- 9 -

	English	français	Deutsch	español	Example Varieties/ Exemples/ Beispielsorten/ Variedades ejemplo	Note/ Nota
6. (*)	(a) Leaf blade: length	Limbe: longueur	Blattspreite: Länge	Limbo: longitud		
QN	short	courte	kurz	corto	Coditer, Strawberry Sundae	3
	medium	moyenne	mittel	medio	Codiusre	5
	long	longue	lang	largo	Balwhislapi, Balwhiswhit	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  
Diascia/Diascie, 2007-03-28  
- 9 -

	English	français	Deutsch	español	Example Varieties/ Exemples/ Beispielsorten/ Variedades ejemplo	Note/ Nota
5.	<b>Stem: anthocyanin coloration below inflorescence</b>	<b>Tige: pigmentation anthocyanique sous inflorescence</b>	<b>Trieb: Anthocyanfärbung unter dem Blütenstand</b>	<b>Tallo: pigmentación antocianica por debajo de la inflorescencia</b>		
QN	absent or weak	absente ou faible	fehlend oder gering	ausente o débil	Heccharm	1
	medium	moyenne	mittel	media	Hecrace	2
	strong	forte	stark	fuerte		3

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

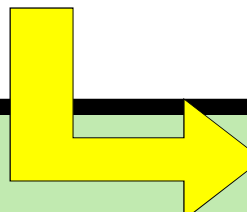
## Process levels other than Notes...



### 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 18-20, 2010



#### UPOV Documents

##### First restricted area

CAJ	Administrative and Legal Committee
CAJ-AG	Administrative and Legal Committee Advisory Group
TC	Technical Committee
TC-EDC	Enlarged Editorial Committee
TWA	Technical Working Party for Agricultural Crops
TWC	Technical Working Party on Automation and Computer Programs
TWF	Technical Working Party for Fruit Crops
TWO	Technical Working Party for Ornamental Plants and Forest Trees
TWV	Technical Working Party for Vegetables
BMT	Working Group on Biochemical and Molecular Techniques, and DNA-Profiling in Particular
BMT-RG	Ad hoc Subgroup of Technical and Legal Experts of Biochemical and Molecular Techniques
BMT-Crop Subgroups	Working Group on Biochemical and Molecular Techniques, and DNA-Profiling in Particular – Crop Subgroups
WG-IPBR	Ad hoc Working Group to Study the Impact of Plant Breeders' Rights
WG-PVD	Ad hoc Working Group on the Publication of Variety Descriptions
WG-VD	Ad hoc Working Group on Variety Denominations
Seminar on DUS Testing	UPOV, Geneva, March 18 to 20, 2010

### **3. GUIDANCE ON DRAFTING TEST GUIDELINES**

#### *d) Shape and Color Characteristics*















#### **TGP/14: Shape**

Characteristics related to shape, could use the following:

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

# TGP/14: Shape

**Chart for Simple Symmetric Plane Shapes\***











shape	very compressed	moderately compressed	slightly compressed	medium	slightly elongated	moderately elongated	very elongated
ratio length/width	very low	low	low to medium	medium	medium to high	high	very high
<b>Parallel set</b>							
oblong	 12	 11	 10	 9			
<b>Rounded set</b>							
ovate							

# TGP/14: Shape

1.6 The following chart (Chart for Other Plane Shapes) illustrates some other common plane shapes:

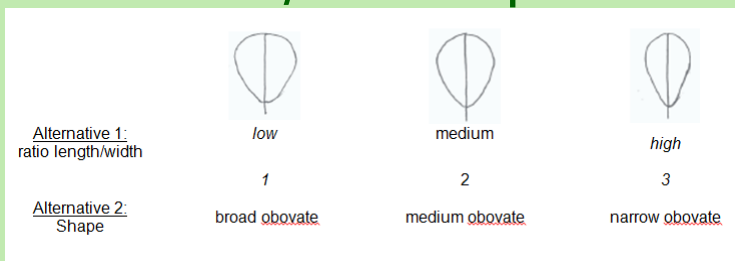
**Chart for Other Plane Shapes**

For each of the shapes below, ranges for ratio length/width (or ratio width/length) and position of broadest part can be developed, in a similar way to that shown in the Chart for Simple Symmetric Plane Shapes (Section 1.5).

				
auriculiform	hastiform	sagittate	alate	trapezoidal
				
flabellate (fan shape)	lyrate	cordiform	reniform	lemniscate



## TGP/14: Shape



## TGP/14: Shape



### Alternative 1

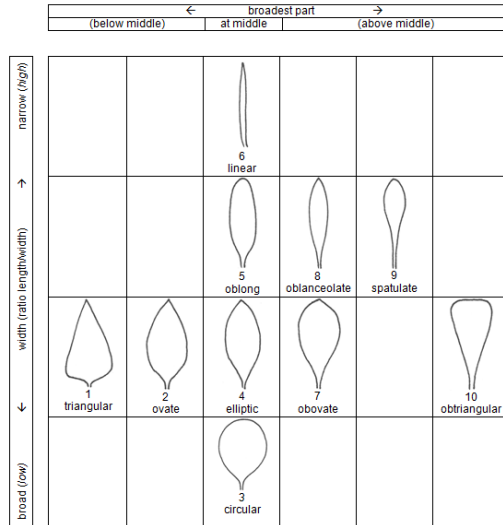
- (a) position of broadest part (QN):  
e.g. strongly towards base (1); moderately towards base (3); at middle (5); moderately towards apex (7); strongly towards apex (9)
- (b) ratio length/width (QN):  
e.g. very low (1); low (3); medium (5); high (7); very high (9);

# TGP/14: Shape

Alternative 2

General shape (PQ): triangular (1); ovate (2); circular (3); elliptic (4); oblong (5); linear (6); obovate (7); oblanceolate (8); spatulate (9); obtriangular (10)

(Note: Where the overall shape is presented as a single pseudo-qualitative characteristic, the order of states should be: primary order, broadest part below middle to broadest part above middle; secondary order, broad to narrow (low to high ratio length/width)).



# TGP/14: Color

	state of expression	example	
level of precision ↓ high	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	lightyellow	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	lightyellow	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	lightyellow	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

### 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			

## Phalaenopsis (TG/213/2(proj.7))



**Petal: ground color – RHS Colour Chart 155A - white**  
**Petal: over color – RHS Colour Chart 83A – dark violet**

## 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)



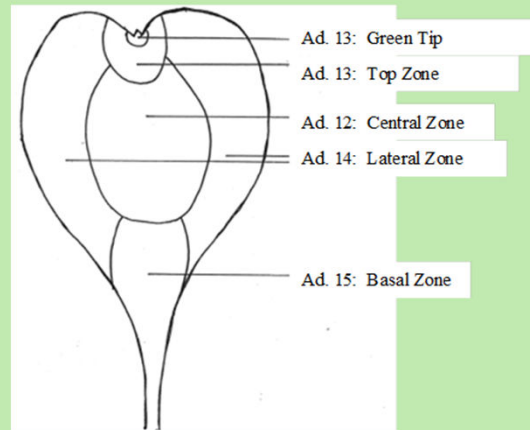
## TGP/14: Color

Ad. 12: Outer tepal: main color of **central** zone

Ad. 13: Outer tepal: main color of **top** zone (green tip excluded)

Ad. 14: Outer tepal: main color of **lateral** zone

Ad. 15: Outer tepal: main color of **basal** zone

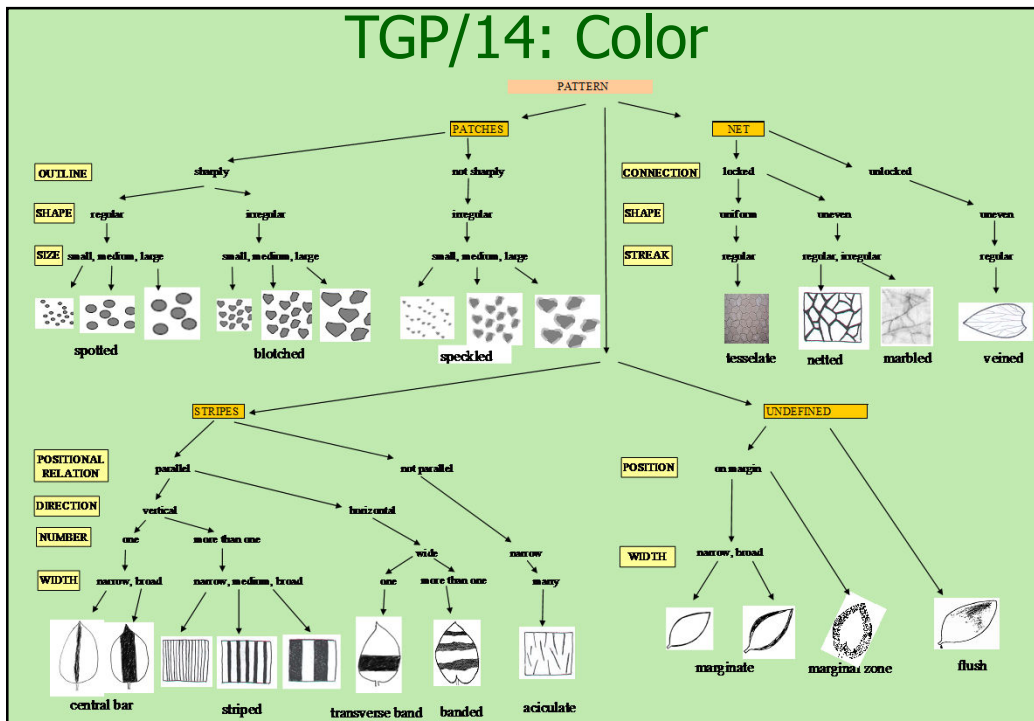


### Approach according to the RHS Colour Chart number ("Lisbon" approach)

- 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

## Heuchera and Heucherella (TG/280/1)

- 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



### 3. GUIDANCE ON DRAFTING TEST GUIDELINES

#### *e) Example Varieties*

TG/13/9  
Lettuce/Laitue/Salat/Lechuga, 2004-03-31  
- 7 -

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

	English	français	Deutsch	español	Example Varieties Exemples Beispielssorten Variedades ejemplo	Note/ Nota
<b>1. (*)</b>	<b>Seed: color</b>	<b>Semence: couleur</b>	<b>Samen: Farbe</b>	<b>Semilla: color</b>		
	white	blanche	weiß	blanco	Verpia	1
	yellow	jaune	gelb	amarillo	Durango	2
	black	noire	schwarz	negro	Kagranner Sommer	3
<b>2. (*) (+)</b>	<b>Seedling: anthocyanin coloration</b>	<b>Plantule: pigmentation anthocyanique</b>	<b>Keimpflanze: Anthocyanfärbung</b>	<b>Plántula: pigmentación antociánica</b>		
	absent	absente	fehlend	ausente	Verpia	1
	present	présente	vorhanden	presente	Pirat	9
<b>3.</b>	<b>Seedling: size of cotyledon (fully developed)</b>	<b>Plantule: taille du cotylédon (à complet développement)</b>	<b>Keimpflanze: Größe des Keimblatts (voll entwickelt)</b>	<b>Plántula: tamaño del cotiledón (plenamente desarrollado)</b>		
	small	petit	klein	pequeño	Romance	3
	medium	moyen	mittel	medio	Expresse	5
	large	grand	groß	grande	Verpia	7

	English	français	deutsch	español	Example Varieties/ Exemples/ Beispielssorten/ Variedades ejemplo	Note/ Nota
<b>14. VG</b>	<b>Leaf blade: intensity of purplish color of lower side</b>	<b>Limbe: intensité de la couleur pourpre de la face inférieure</b>	<b>Blattspreite: Intensität der Purpurfarbe der Unterseite</b>	<b>Limbo: intensidad del color púrpúreo del envés</b>		
<b>QN (a)</b>	very light	très claire	sehr hell	muy claro		1
	light	claire	hell	claro	Perlime	3
	medium	moyenne	mittel	medio		5
	dark	foncée	dunkel	oscuro	Perro	7
	very dark	très foncée	sehr dunkel	muy oscuro	Bora, Purple	9
<b>15. VG</b>	<b>Leaf blade: profile</b>	<b>Limbe: profil</b>	<b>Blattspreite: Profil</b>	<b>Limbo: perfil</b>		
<b>QN (a)</b>	concave	concave	konkav	cóncavo	Perro	3
	plane	plan	flach	plano	Pergro, Saeyeupsil	5
	convex	convexe	konvex	convexo		7

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

	English	français	deutsch	español	Example Varieties/ Exemples/ Beispielssorten/ Variedades ejemplo	Note/ Nota
<b>1. (*) (+)</b>	<b>Plant: growth type</b>	<b>Plante: type de croissance</b>	<b>Pflanze: Wuchstyp</b>	<b>Planta: tipo de crecimiento</b>		
<b>QL (a)</b>	basal clusters	en amas à la base	basale Büschel	en racimos basales		1
	bushy	buissonnant	buschig	arbusivo		2
<b>2. (*) (+)</b>	<b>Only varieties with bushy growth type: Plant: predominant attitude of stems</b>	<b>Variétés à type de croissance buissonnant: Plante: port le plus fréquent des tiges</b>	<b>Nur Sorten mit buschigem Wuchstyp: Pflanze: vorwiegende Haltung der Triebe</b>	<b>Sólo variedades con tipo de crecimiento arbusivo: Planta: porte predominante de los tallos</b>		
<b>QN (a)</b>	upright	dressées	aufrecht	erecto		1
	semi upright	demi-dressées	halbaufrecht	semierecto		3
	horizontal	horizontales	waagrecht	horizontal		5
<b>3. (*) (+)</b>	<b>Only varieties with bushy growth type: Plant: number of stems</b>	<b>Variétés à type de croissance buissonnant: Plante: nombre de tiges</b>	<b>Nur Sorten mit buschigem Wuchstyp: Pflanze: Anzahl Triebe</b>	<b>Sólo variedades con tipo de crecimiento arbusivo: Planta: número de tallos</b>		
<b>QN (a)</b>	few	peu nombreuses	klein	bajo		3
	medium	moyennement nombreuses	mittel	medio		5
	many	nombreuses	groß	alto		7
<b>4. (*) (+)</b>	<b>Plant: height including flowers</b>	<b>Plante: hauteur, fleurs comprises</b>	<b>Pflanze: Höhe einschließlich Blüten</b>	<b>Planta: altura, incluidas las flores</b>		
<b>QN (a)</b>	short	basse	niedrig	corta	Mardi Gras	3
	medium	moyenne	mittel	media	Breakoday	5
	tall	élevée	hoch	larga	Happy Face Pink	7

## Example Varieties: the Objective

Clarify states  
of expression

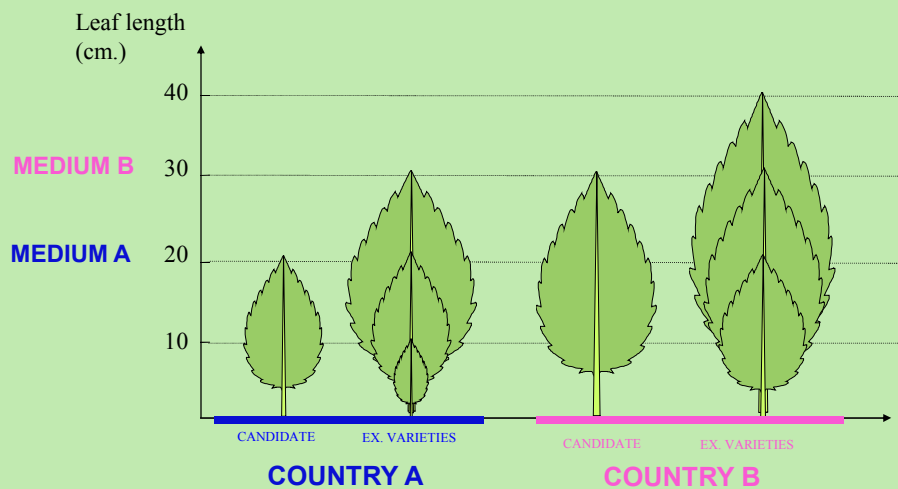
Illustrate characteristics

Determine the state of expression



Harmonized descriptions

## Example Varieties versus Measurements



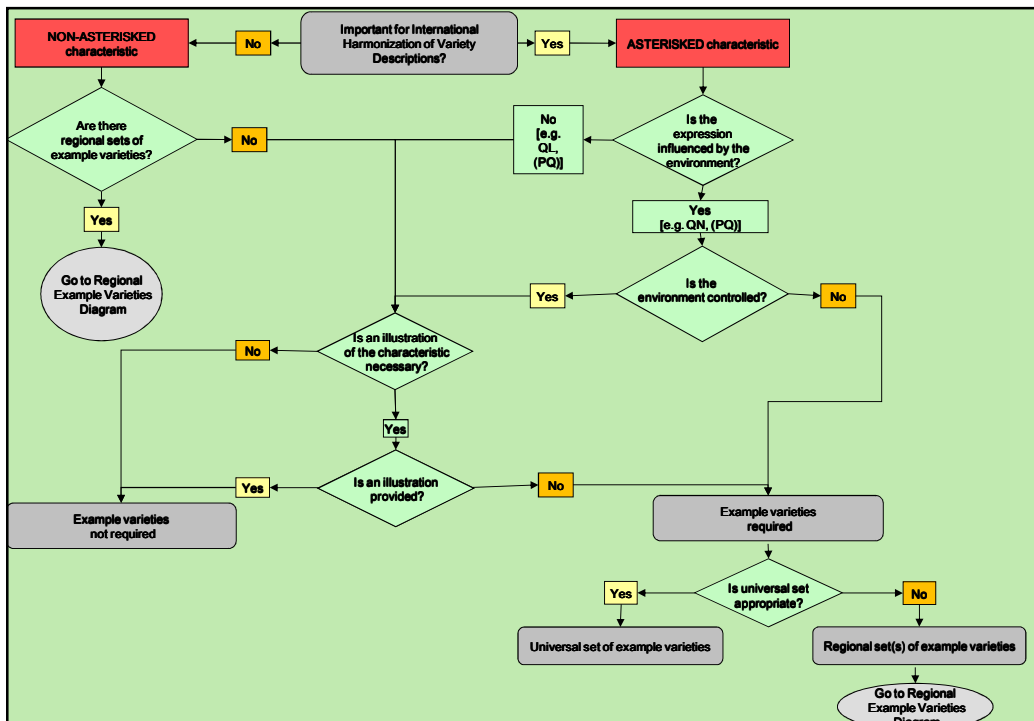
# Example Varieties – the need

**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

- **>3,450 genera and species** with varieties examined for PBR
- **>3,305 genera and species** for which UPOV members have practical DUS experience
- **313 Test Guidelines** adopted

Note: **313 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. <b>1</b> )
TWX (2014):	Alpha (proj. <b>2</b> )
TWX (2015):	Alpha (proj. <b>3</b> )
Enlarged Editorial Committee (2016):	Alpha (proj. <b>4</b> )
Technical Committee (2016):	Alpha (proj. <b>5</b> )
Final adopted document (2016):	<b>TG/500/1</b>



## 4. AGENDA for the TWP Session

<u>Example TWP Session</u>									
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	COFFEE	
[TECHNICAL WORKSHOP] (optional)	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 program Adoption of report
COFFEE	COFFEE		COFFEE				COFFEE		
PREPARATORY WORKSHOP	Room 1 Test Guidelines subgroup	Room 2 Test Guidelines subgroup	Room 1 Test Guidelines subgroup	Room 2 Test Guidelines subgroup			Room 1 Test Guidelines subgroup	Room 2 Test Guidelines subgroup	END OF SESSION
	Continuation		RECEPTION				Continuation		

# EXCHANGING INFORMATION

Draft Workplan for UPOV Technical Working Party for Agricultural Crops (TWA), Forty-Fourth Session, Obihiro, Japan						
	Sunday, July 5	Monday, July 6 Start 8.00	Tuesday, July 7 Start 8.30	Wednesday, July 8 Start 8.30	Thursday, July 9 Start 8.30	Friday, July 10 Start 8.30
08.30		<p>1. Opening</p> <p>2. Adoption of the agenda (TWA/44/1 Rev.)</p> <p>16. Date and place of next session</p> <p>3. Short reports on developments in PVP</p> <p>(a) Reports from members and observers (TWA/44/22)</p>	<p>TGP documents (cont'd)</p> <p>TGP/7: Development of Test Guidelines</p> <p>Regional Sets of Example Varieties (TWA/44/14)</p> <p>TGP/10: Examining Uniformity</p> <p>Assessing uniformity by off-types on basis of more than one growing cycle or on the basis of sub-samples (TWA/44/9)</p> <p>TGP/8: Trial Design and Techniques Used in DUS Examination</p> <p>Minimizing the Variation due to Different Observers (TWA/44/15)</p> <p>New proposals for Test Guidelines</p>	<p>TGP documents (cont'd)</p> <p>The Combined-Over-Years Uniformity Criterion (COYU) (TWA/44/16)</p> <p>Examining DUS in Bulk Samples (TWA/44/17)</p> <p>Data Processing for the Assessment of Distinctness and for Producing Variety Descriptions (TWA/44/18)</p> <p>9. Matters concerning variety descriptions (TWA/44/10) and presentations invited from members of the Union)</p>	<p>4. Molecular Techniques (TWA/44/2)</p> <p>6. Variety denominations (TWA/44/4)</p> <p>8. Definition of color groups from RHS Colour Charts (TWA/44/19)</p> <p>11. Experiences with new types and species</p> <p>12. Matters to be resolved concerning Test Guidelines adopted by the Technical Committee</p>	<p>7. Information and databases</p> <p>(a) UPOV information databases (TWA/44/5)</p> <p>(b) Variety description databases (TWA/44/6)</p> <p>(c) Exchangeable software (TWA/44/7)</p> <p>(d) Electronic application systems (TWA/44/8)</p> <p>14. Recommendations on Test Guidelines</p> <p>New proposals for Test Guidelines</p>
10.30		COFFEE	COFFEE	COFFEE	COFFEE	COFFEE
11.00		<p>3. Short reports on developments in PVP (cont'd)</p> <p>(b) Reports on developments within UPOV (TWA/44/21)</p> <p>5. TGP documents (TWA/44/3)</p> <p>TGP/7: Development of Test Guidelines</p> <p>Drafter's Kit for Test Guidelines (TWA/44/12)</p> <p>Use of Proprietary Text, Photographs and Illustrations in Test Guidelines (TWA/44/13)</p>	<p>Room 1 Soya Bean (AR)</p>	<p>10. Statistical Methods for Visually Observed Characteristics (TWA/44/20) and presentations invited from members of the Union)</p> <p>Early lunch break 11.30</p>	<p>Room 1 Cotton (ES)</p>	<p>15. Guidance for drafters of Test Guidelines (TWA/44/11)</p> <p>17. Future program</p> <p>18. Adoption of report</p> <p>19. Closing of the session</p>
12.30		LUNCH	LUNCH		LUNCH	LUNCH
14.00		<p>Room 1 "Elytrigia" (AR)</p>	<p>Room 1 Field Bean (GB)</p>	<p>Field Trip</p> <p>Departure from hotel: 12.50 Return to hotel: 18.30</p>	<p>Room 1 Quinoa (DK)</p>	<p>Closing 1pm</p>
15.30		COFFEE	COFFEE		COFFEE	
16.00	PREPARATORY WORKSHOP (14.00 – 17.00)	<p>Room 1 "Wheat" (FR)</p>	<p>Room 1 Oats (ES)</p>		Reserve	
17.30		Reserve	<p>Official dinner (informal) 18.30</p>		Reserve	
19.00						

**AN OPPORTUNITY  
for  
TRAINING**