

# TECHNICAL WORKING PARTY FOR VEGETABLES

Forty-Fifth Session  
Monterey, United States of America, July 25 to 29, 2011

## PREPARATORY WORKSHOP

July 24, 2011

### PROGRAM

1. Introduction to UPOV
2. Overview of the General Introduction  
(document TG/1/3 and TGP documents)
3. Guidance on drafting Test Guidelines (document TGP/7)
  - (a) Selection of characteristics
  - (b) Guidance on drafting characteristics
    - (i) *Types of expression (QL, QN, PQ), notes and distinctness*
    - (ii) *Method of observation (V/M; G/S)*
    - (iii) *Asterisked, grouping and TQ characteristics*
    - (iv) *Example varieties*
  - (c) The process for developing UPOV Test Guidelines

4. UPOV databases (UPOV-ROM Plant Variety Database; GENIE database)
5. The UPOV website
6. Role of UPOV Technical Working Parties (TWPs) and the BMT
7. Agenda for the TWV Session
8. Feedback

## **1. INTRODUCTION TO UPOV**



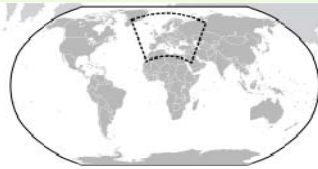
# UPOV

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

**U**nion internationale pour la **p**rotection des **o**btentions **v**égétales



## 2. OVERVIEW OF THE GENERAL INTRODUCTION

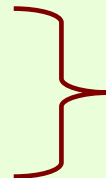
(DOCUMENT TG/1/3 AND TGP DOCUMENTS)

### GUIDANCE FOR DUS EXAMINATION

## 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)

3

= 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	New Types of Characteristics

### 3. GUIDANCE ON DRAFTING TEST GUIDELINES

#### 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**

**UPOV**

**E**

**UPOV**  
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>2</sup>

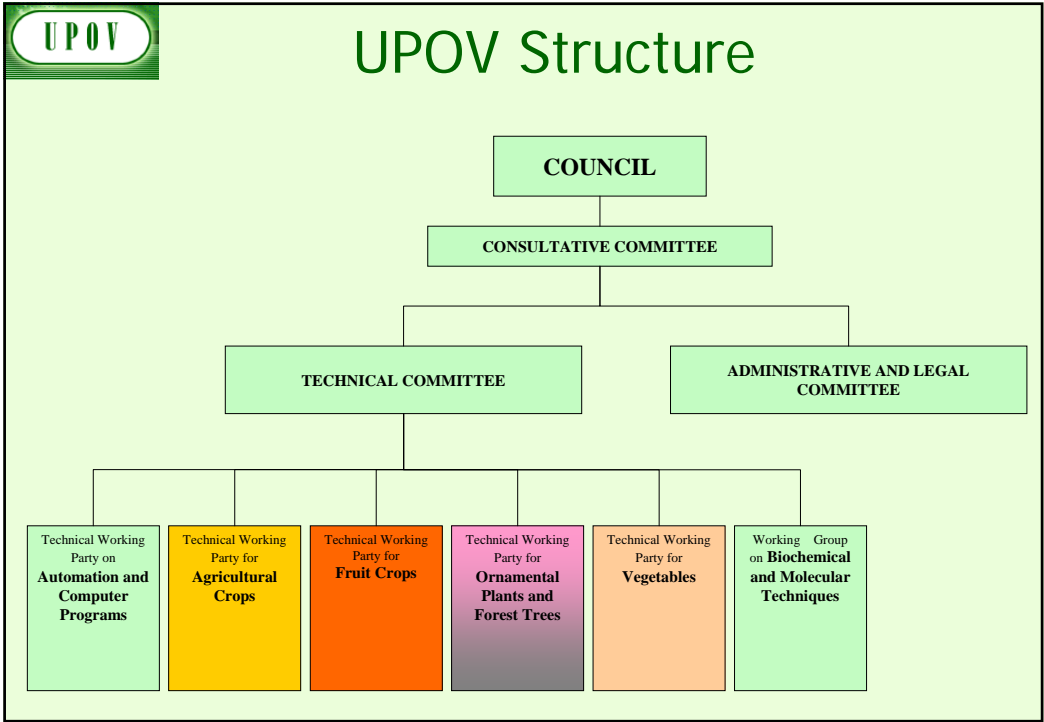
Botanical name	English	French	German	Spanish
<i>Dioscorea alata</i> L.	Creole yam, Guyana arrowroot, Yam-swath yam, White yam, White yam, Winged yam, Yam	Grande igname, Igname blanc, Igname de Chine	Goldgelber Yam, Wasser- Yamwurz	Saña Minceo, Saña de agua, Tabana
<i>Dioscorea polystachya</i> Turcz. <i>Dioscorea batatas</i> Decne.	Chinese yam, Chinese potato, Cinnamom-vine	Ignome	Chinesische Yamwurz	
<i>Dioscorea japonica</i> Thunb.	Japanese yam	Ignome japonaise		

The purpose of these guidelines ("Test Guidelines") is to elaborate the principles contained in the General Introduction (document TG/1/1), 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>2</sup> These names were correct at the time of the introduction of these Test Guidelines but may be revised or updated. Readers are advised to consult the UPOV Code, which can be found on the UPOV Website (www.upov.int), for the latest information.





# TGP/7

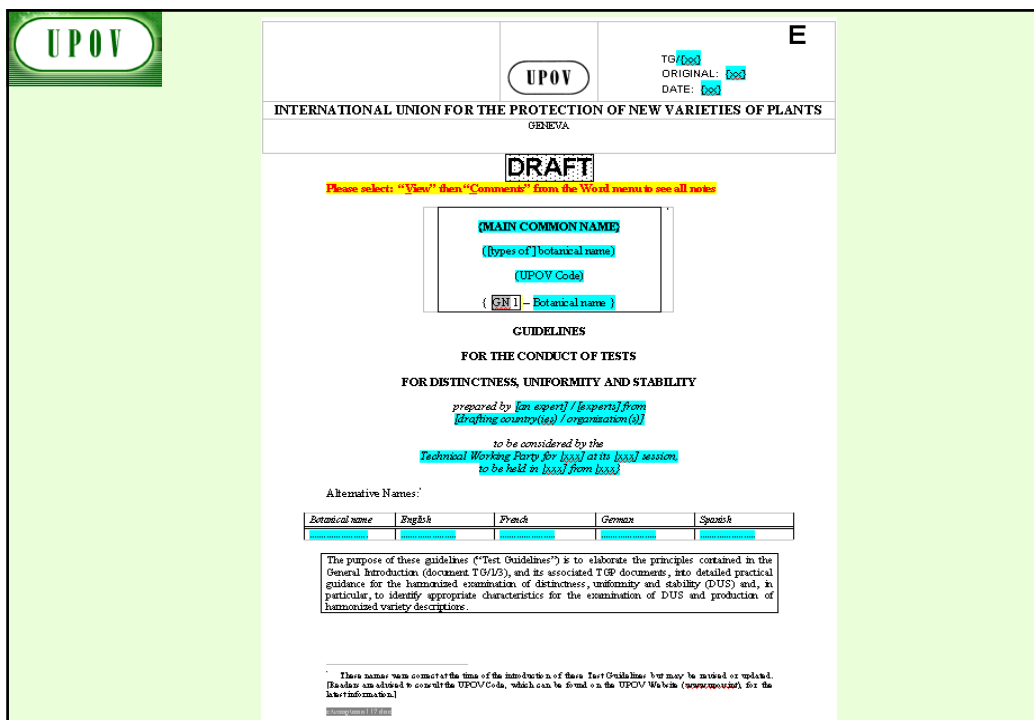
## “Development of Test Guidelines”

### 1. Introduction

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

### 3. Guidance for Drafting Test Guidelines

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



**UPOV**

## 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

### 3. TEST GUIDELINES

#### (a) 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.**

UPOV			
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>	Yes	Yes	

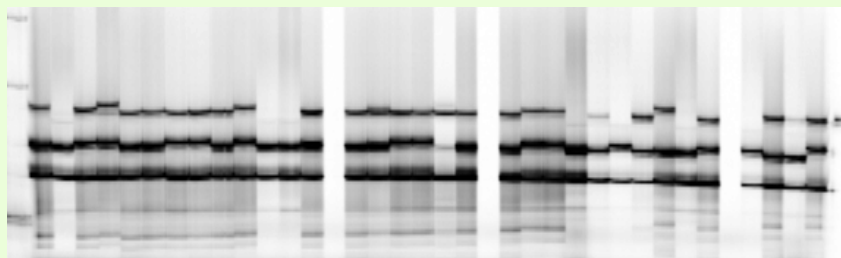
UPOV			
Selection of Characteristics			
Criteria	Fruit: color	Leaf: shape	Yield
(a) results from a given genotype or combination of genotypes	Yes	Yes	Yes
(b) sufficiently consistent and repeatable in a particular environment	Yes	Yes	(No)
(c) exhibits sufficient variation between varieties to be able 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
	<i>Difficult and expensive</i>



## Molecular Techniques?



### 3. TEST GUIDELINES

#### **(b) Guidance on drafting characteristics**

*(i) Types of expression (QL, QN, PQ),  
notes and distinctness*

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

## Types of Expression

**QL: QUALITATIVE**

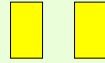
**QN: QUANTITATIVE**

**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
1. (*) (+)	<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	halbaufrrecht	semierecto	D0158-1	2
	spreading	étalé	breitwüchsig	abierto	Sunnem 03	3
	semi-trailing	semi-étalé	halbhängend	semirrastrero	Inupsaf	4
	trailing	coureux	hängend	rastrero	Organza	5
2. (+)	<b>Plant: height</b>	<b>Plante : hauteur</b>	<b>Pflanze: Höhe</b>	<b>Planta: altura</b>		
QN	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



NON-Qualitative characteristic

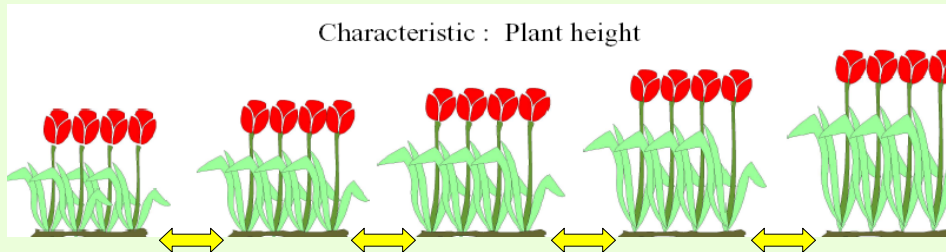
Anthocyanin coloration: absent / present

	Variety A	Variety B	Variety C
Environment A			
Environment B			

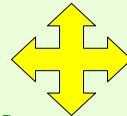
QUANTITATIVE Characteristics 

“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

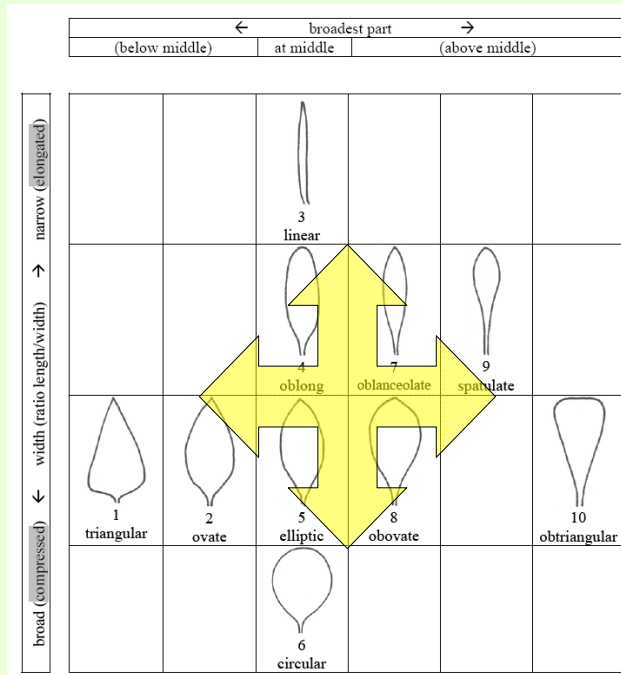
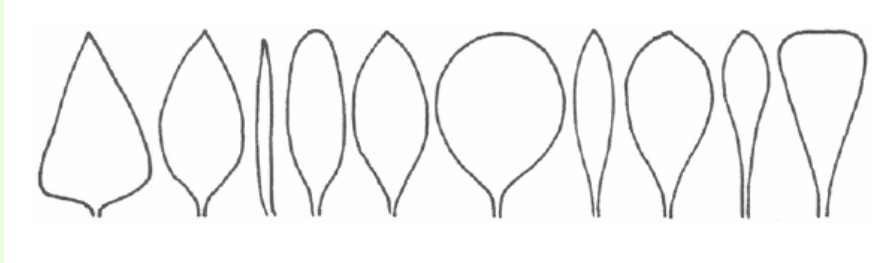


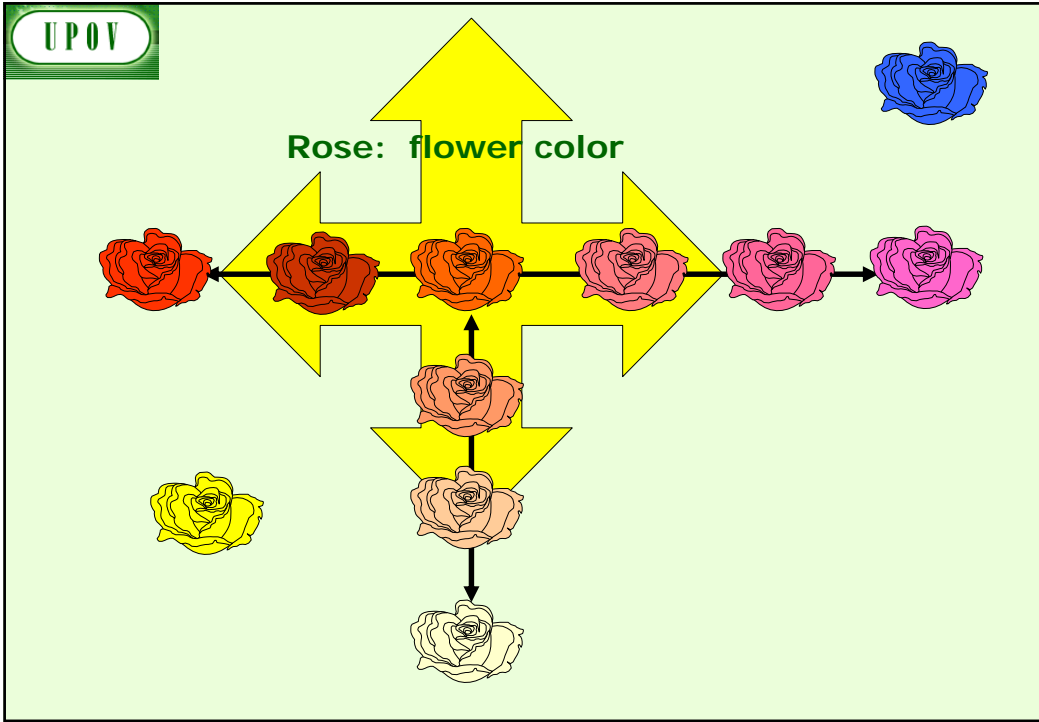
## PSEUDO-QUALITATIVE Characteristics



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







UPOV

STATES / NOTES for QL, QN ,PQ

## Qualitative Characteristics (typical example)

	English	français	deutsch	español	Example Varieties/ Exemples/ Beispielssorten/ Variedades ejemplo	Note/ Nota
<b>19. VG</b>	<b>Inflorescence: type</b>					
(*) (+)						
<b>QL</b>	Type 1					1
	Type 2					2
	Type 3					3
		1 Type 1	2 Type 2	3 Type 3		

## Qualitative Characteristics (special cases)

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



## Quantitative Characteristics

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

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

State	Example 1 <b>Size relative to:</b>	Example 2 <b>Angle:</b>	Example 3 <b>Position:</b>	Example 4 <b>Length in relation to:</b>
<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

### **Limited range**

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

### **Condensed range**

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

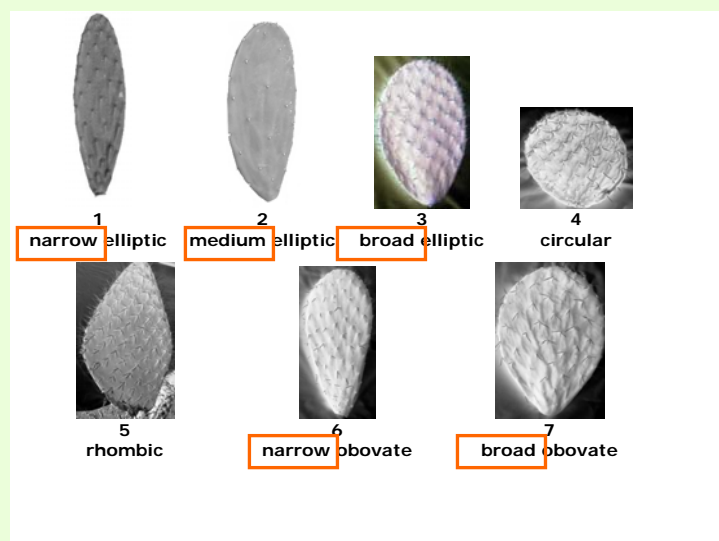
<b>Example 2</b>	
1	e.g. absent or weak <i>(absent or weakly expressed)</i>
2	moderate (or medium) <i>(moderately expressed)</i>
3	strong <i>(strongly expressed)</i>

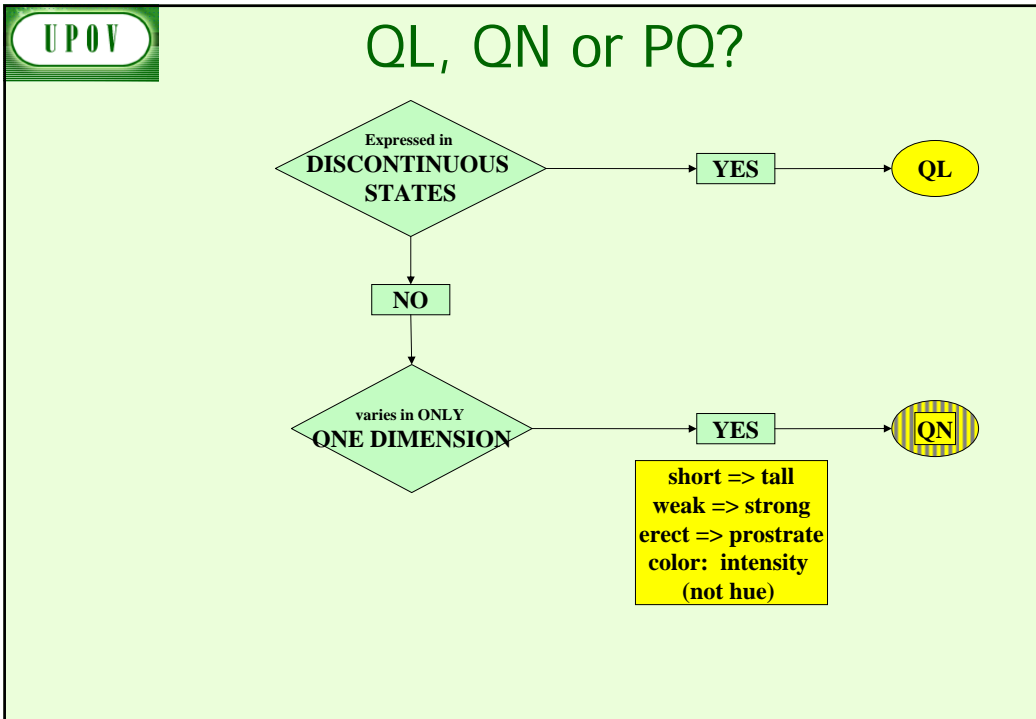
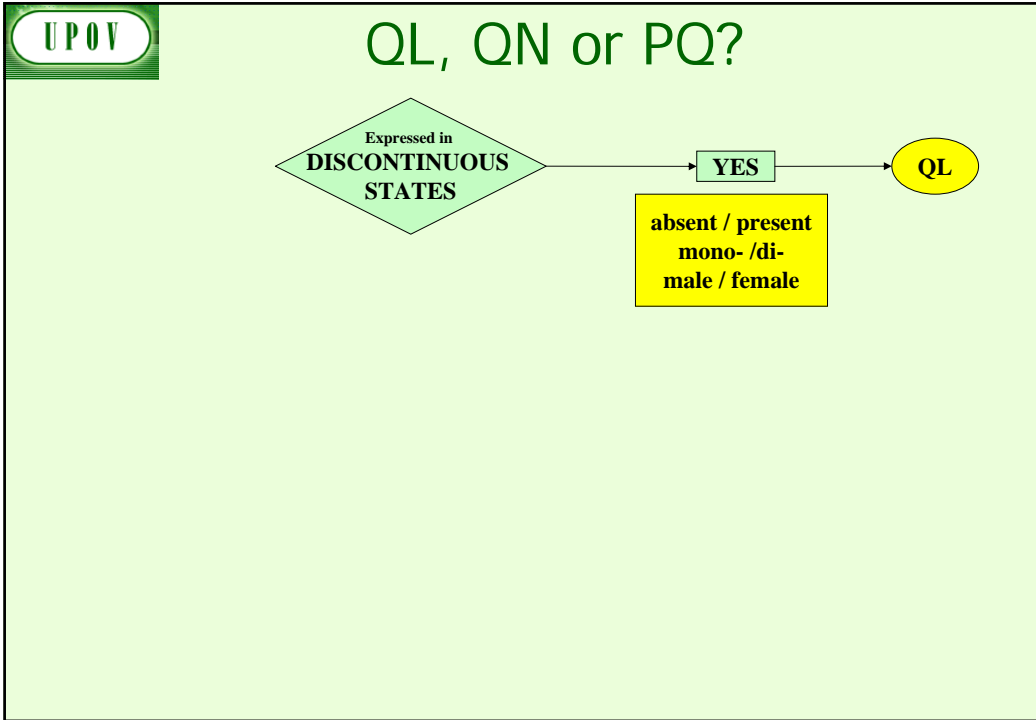


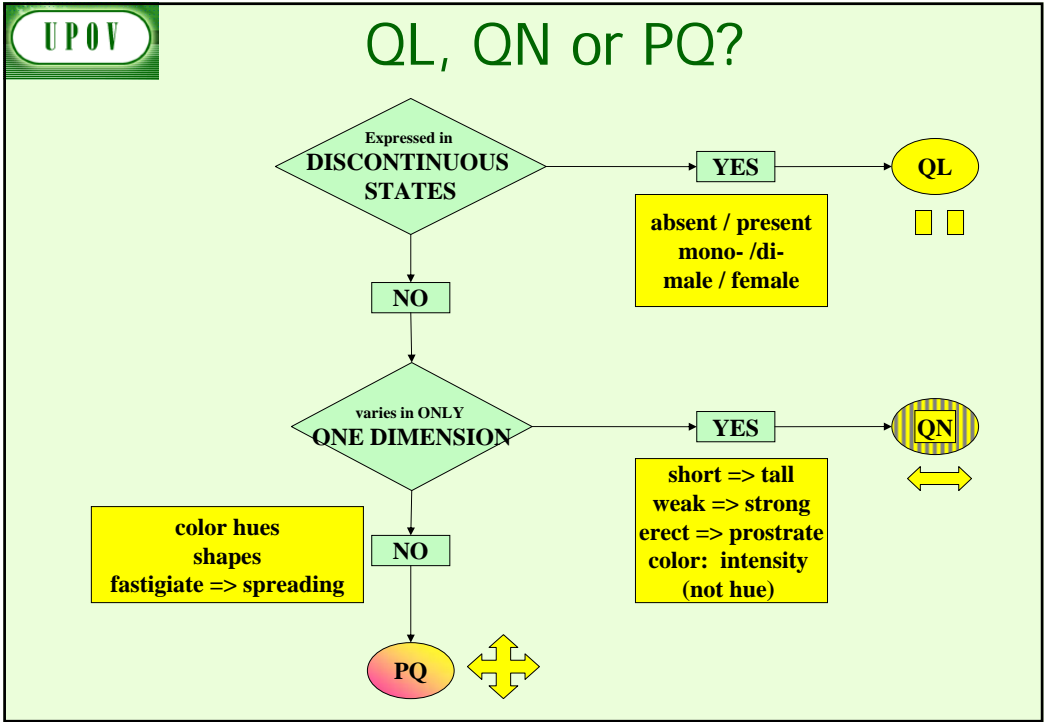
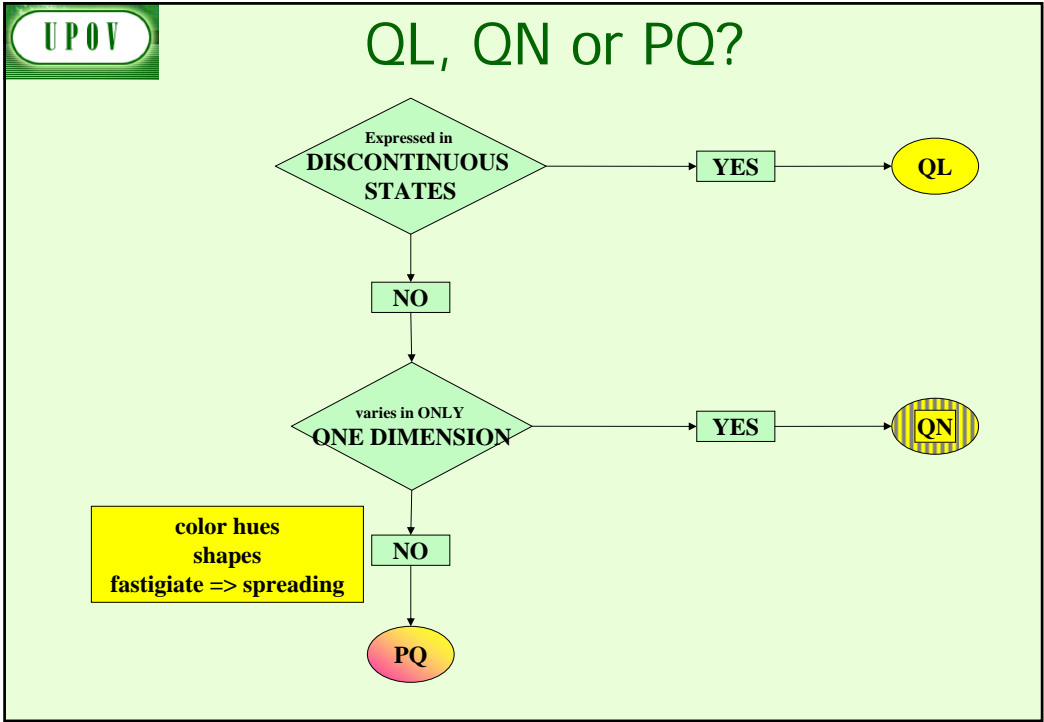
## Pseudo-qualitative Characteristics (typical examples)

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	púrpura	6

## Opuntia: Shape of Cladode







## EXERCISE

### What type of Expression?

**QL:** Qualitative

**QN:** Quantitative

**PQ:** Pseudo-qualitative

---

	Note/ Nota
<b>1. Plant: ploidy</b>	
diploid	2
tetraploid	4
hexaploid	6
octoploid	8

---

<b>2. Leaf sheath: anthocyanin coloration</b>	
absent or very weak	1
weak	3
medium	5
strong	7
very strong	9

---

**3. Plant: rhizomes**

absent	1
present	9

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**4. Petal: color**

white	1
yellow	2
orange	3
red	4
pink	5
purple	6

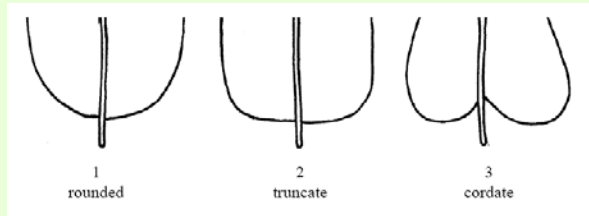
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**5. Leaf blade: intensity of green color of upper side**

light	3
medium	5
dark	7

**6. Leaf blade: shape of base**

rounded	1
truncate	2
cordate	3



**7. Petal: color**

RHS Colour Chart  
(indicate reference  
number)

---

**8. Leaf blade: profile in  
cross section**

straight or weakly concave	1
moderately concave	2
strongly concave	3

---



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

## Types of Expression

**QL: QUALITATIVE**

QN: QUANTITATIVE

PQ: PSEUDO-QUALITATIVE

## 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)).

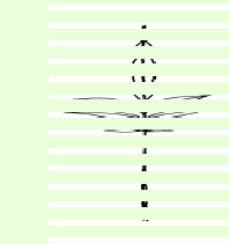
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### Qualitative characteristic

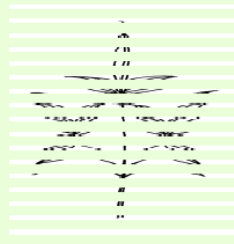
Clematis: Leaf: type



1  
simple



2  
ternate



3  
biternate



4  
triternate



### 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

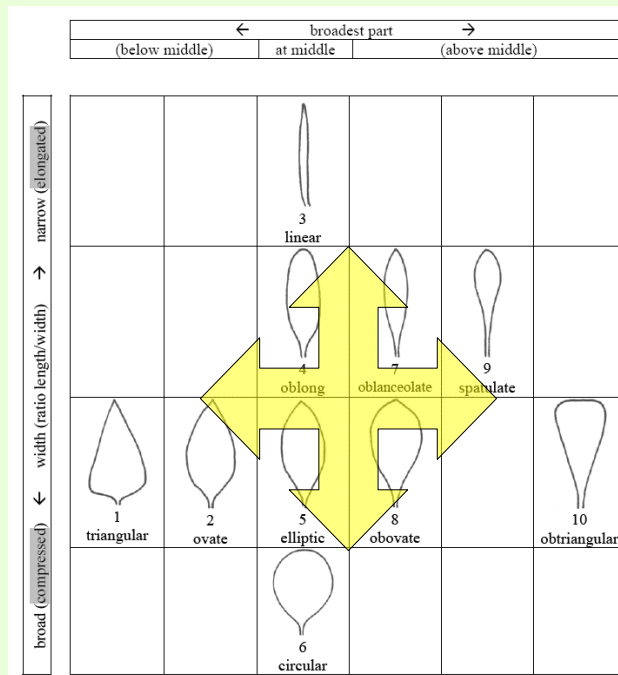
QL: QUALITATIVE

QN: QUANTITATIVE

**PQ: PSEUDO-QUALITATIVE**

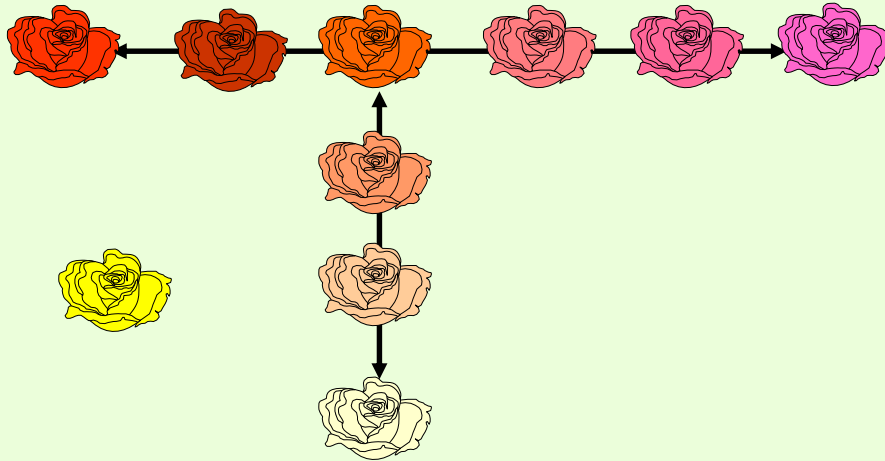
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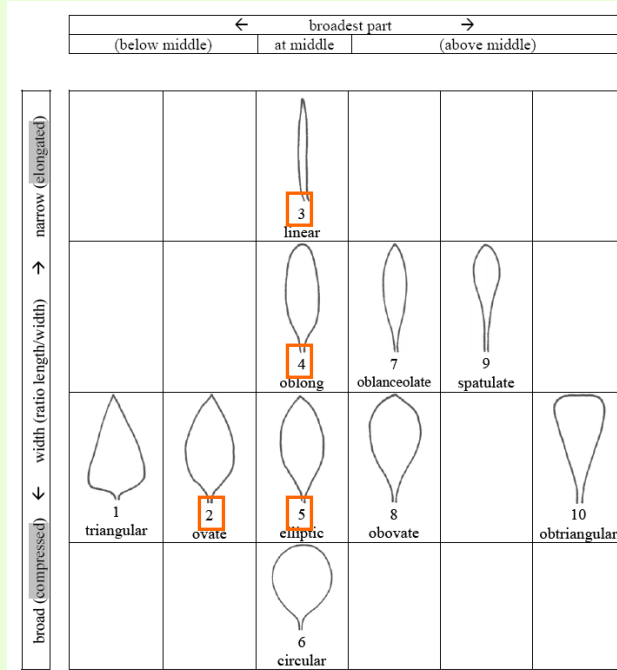


### Rose: flower color



### 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

### Quantitative Characteristics: **distinctness**

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

**UPOV**

### Quantitative Characteristic

**Clear difference**  
Characteristic : Plant height

The diagram illustrates a clear difference in plant height. At the top, five groups of tulips are shown, each with three flowers. From left to right, the plants are progressively taller. Below these groups, two individual tulips are shown. The first is the shortest, and the second is the tallest. A bracket labeled "Clear difference" spans the height difference between these two individual plants.

**UPOV**

### Quantitative Characteristic

**Clear difference**  
Characteristic : Plant height

The diagram illustrates a lack of clear difference in plant height. At the top, five groups of tulips are shown, each with three flowers. From left to right, the plants are progressively taller. Below these groups, two individual tulips are shown. The first is the shortest, and the second is the tallest. A bracket labeled "May not be a clear difference" spans the height difference between these two individual plants, indicating that the difference is not as distinct as in the first diagram.



**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?**

**UPOV**

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

4 5

4.5

**UPOV**

"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**:

**Quantitative Characteristics: distinctness**

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

English	français	Deutsch	español	Example Varieties/ Exemples/ Beispielssorten/ 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	Hecchiam	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

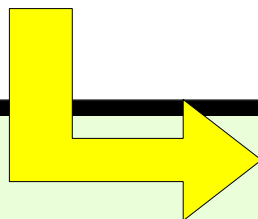
## Process levels other than Notes...



### 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	Az 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	Az hoc Working Group to Study the Impact of Plant Breeders' Rights
WG-PVD	Az hoc Working Group on the Publication of Variety Descriptions
WG-YD	Az hoc Working Group on Variety Denominations
Seminar on DUS Testing	UPOV, Geneva, March 18 to 20, 2010

### 3. TEST GUIDELINES

#### (b) Guidance on drafting characteristics

##### *(ii) Method of observation (V/M; G/S)*

#### 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*)	**



**UPOV** 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	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*)	**

**UPOV** Type of Record

(for the purposes of distinctness)

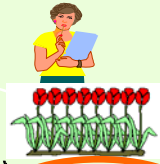
**G:** **single record** for a variety, or a **GROUP of plants** or parts of plants;

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 ...

Single record for a group of plants or parts of plants (G)

Section 4.3.2.3  
Example (VG): Flower: type  
(tulip: vegetatively propagated)



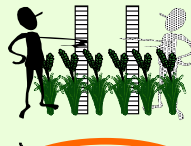
single variety record

Section 4.3.2.3  
Example (VG): Lowest leaf: hairiness of leaf sheaths  
(barley: self-pollinated)



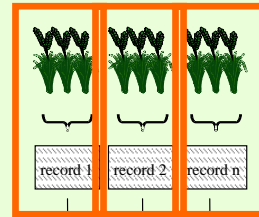
single variety record

Section 4.3.2.3  
Example (MG): Plant: height  
(wheat: self-pollinated)



single variety record

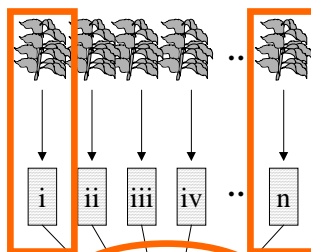
Section 4.3.2.4  
Example: (statistical analysis)



variety mean / statistical analysis of individual group data

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

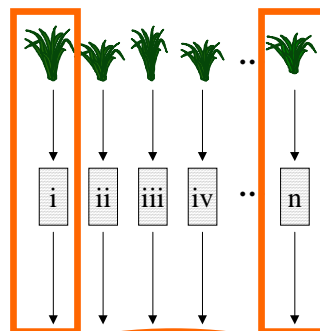
Section 4.3.3.1  
Example (MS): Leaflet: length  
(pea: self-pollinated)



calculation of mean

variety mean

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



Statistical analysis of individual plant data

## EXERCISE

### 3. TEST GUIDELINES

#### **(b) Guidance on drafting characteristics**

*(iii) 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
	<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	halbaufrecht	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

UPOV

### Apple: Fruit color



UPOV

### 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, 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>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>to organize the growing trial so that similar varieties are grouped together</b></li> </ol>	<ol style="list-style-type: none"> <li>(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>Must be useful for functions 1 and 2.</li> <li>Should be an <b>asterisked characteristic</b> and/or included in the <b>Technical Questionnaire</b> or application form.</li> </ol>

## 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**.



### 3. TEST GUIDELINES

#### (b) Guidance on drafting characteristics

##### *(iv) Example varieties*

#### Example Varieties: the Objective

Clarify states  
of expression

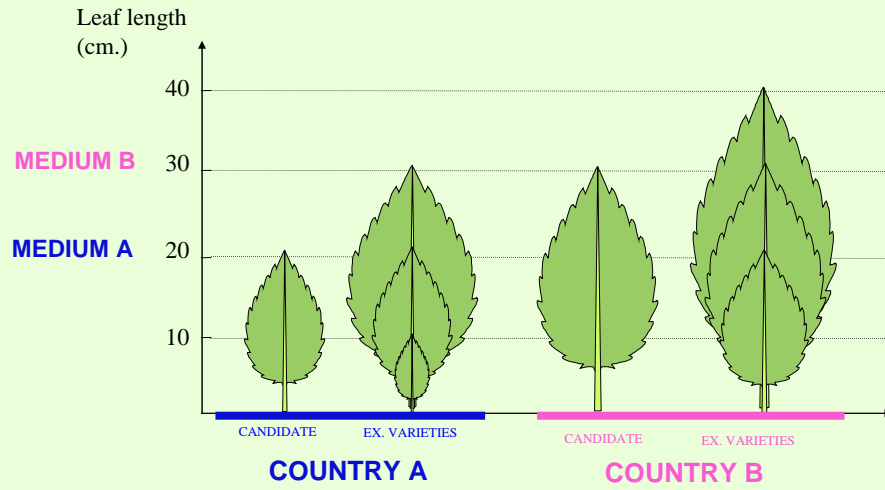
Illustrate characteristics

Determine the state of expression



Harmonized descriptions

## Example Varieties versus Measurements



## Example Varieties –the need

# Example Varieties – the need

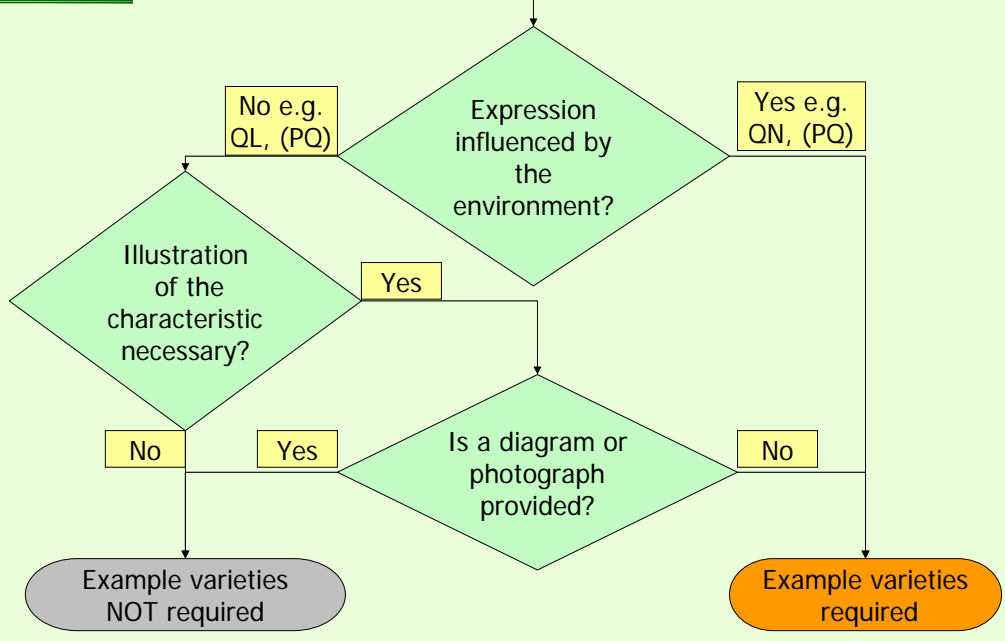
**NEED**

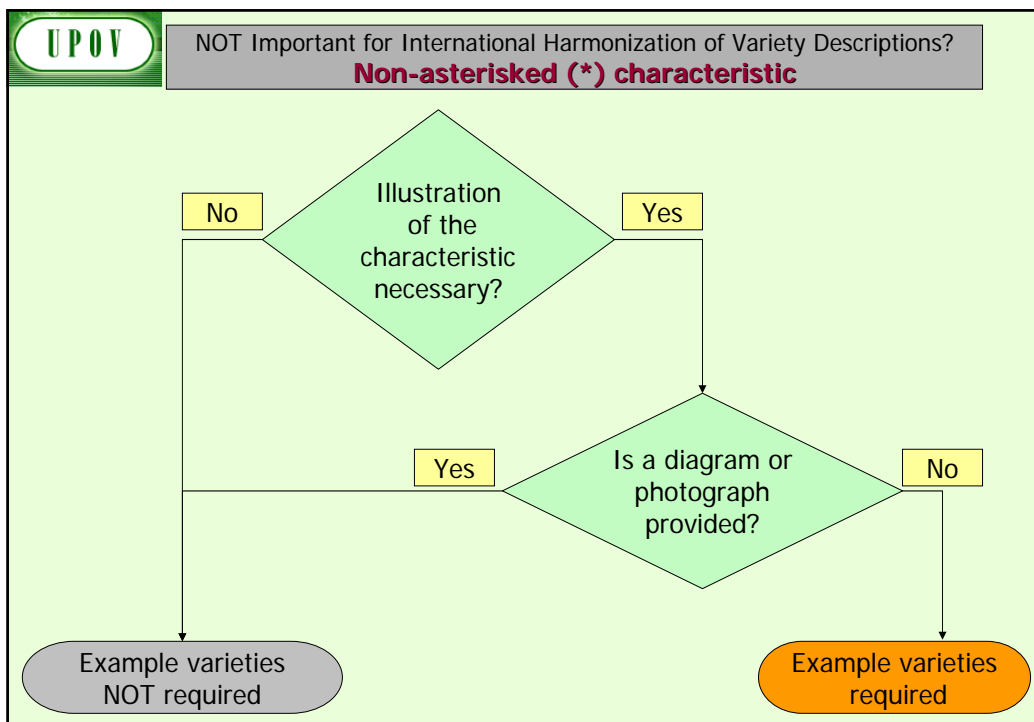
in characteristics used to **harmonize descriptions**

and

which are **influenced by the environment**

Important for International Harmonization of Variety Descriptions?  
**Asterisked (\*) characteristic**





**UPOV** 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 Beispielsorten Variedades ejemplo	Note/ Nota
<b>1. Seed: color (*)</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	Kagrner Sommer	3
<b>2. Seedling: anthocyanin coloration (+)</b>	<b>Seedling: anthocyanin coloration</b>	<b>Plantule: pigmentation anthocyanique</b>	<b>Keimpflanze: Anthocyanfärbung</b>	<b>Plántula: pigmentación antocianica</b>		
	absent	absente	fehlend	ausente	Verpia	1
	present	présente	vorhanden	presente	Pirat	9
<b>3. Seedling: size of cotyledon (fully developed)</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/ Beispielsorten/ 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 púrpuro 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/ Beispielsorten/ 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	arbustivo		2
<b>2. (+)</b>	<b>Only varieties with bushy growth type: Plant: predominant attitude of stems</b>	<b>Variétés à type de croissance buissonnant: uniquement: 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 arbustiva: 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: uniquement: Plante: nombre de tiges</b>	<b>Nur Sorten mit buschigem Wuchstyp: Pflanze: Anzahl Triebe</b>	<b>Sólo variedades con tipo de crecimiento arbustiva: 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

### 3. TEST GUIDELINES (document TGP/7)

#### (c) The process for developing UPOV Test Guidelines

#### Test Guidelines

- **264 Test Guidelines** adopted

but...

- **>2,750 genera and species** with  
varieties examined for PBR

## Test Guidelines

- **264 Test Guidelines** adopted
- Further **58 to be discussed** in 2011
  - 37 new Test Guidelines
  - 15 Revisions
  - 6 Partial revisions  
(29 “final” draft stage)

## 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 (2005):	Alpha (proj. <b>1</b> )
TWX (2006):	Alpha (proj. <b>2</b> )
TWX (2007):	Alpha (proj. <b>3</b> )
Enlarged Editorial Committee (2008):	Alpha (proj. <b>4</b> )
Technical Committee (2008):	Alpha (proj. <b>5</b> )
Final adopted document (2008):	<b>TG/500/1</b>

**4. UPOV DATABASES**



## Article 20 of the 1991 Act (Variety denominations)

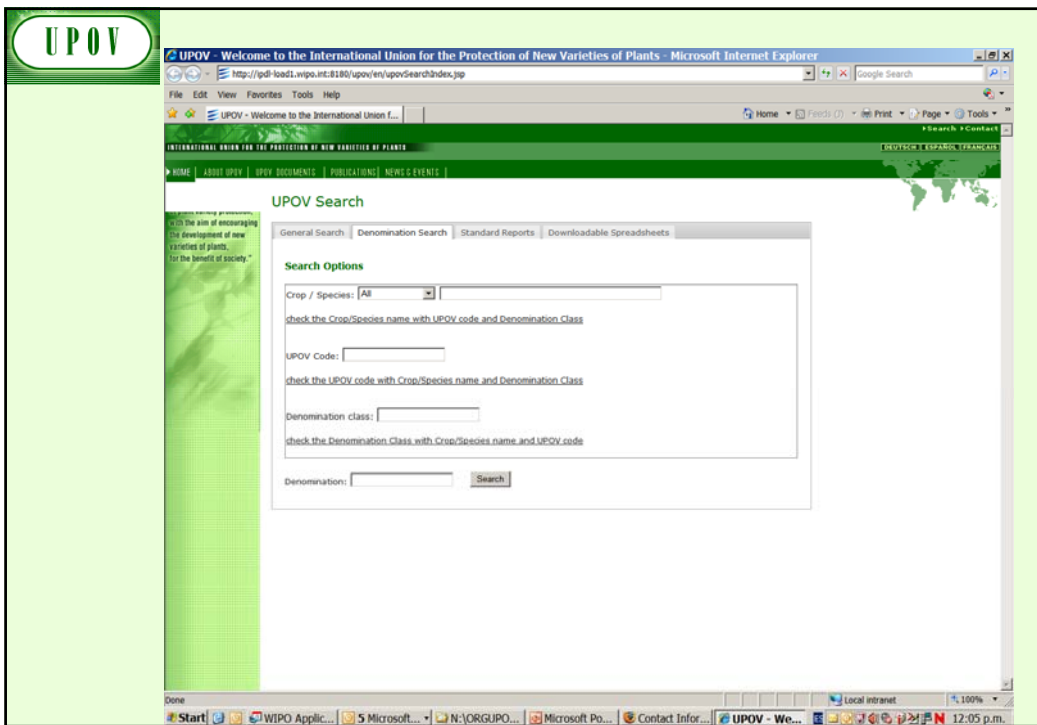
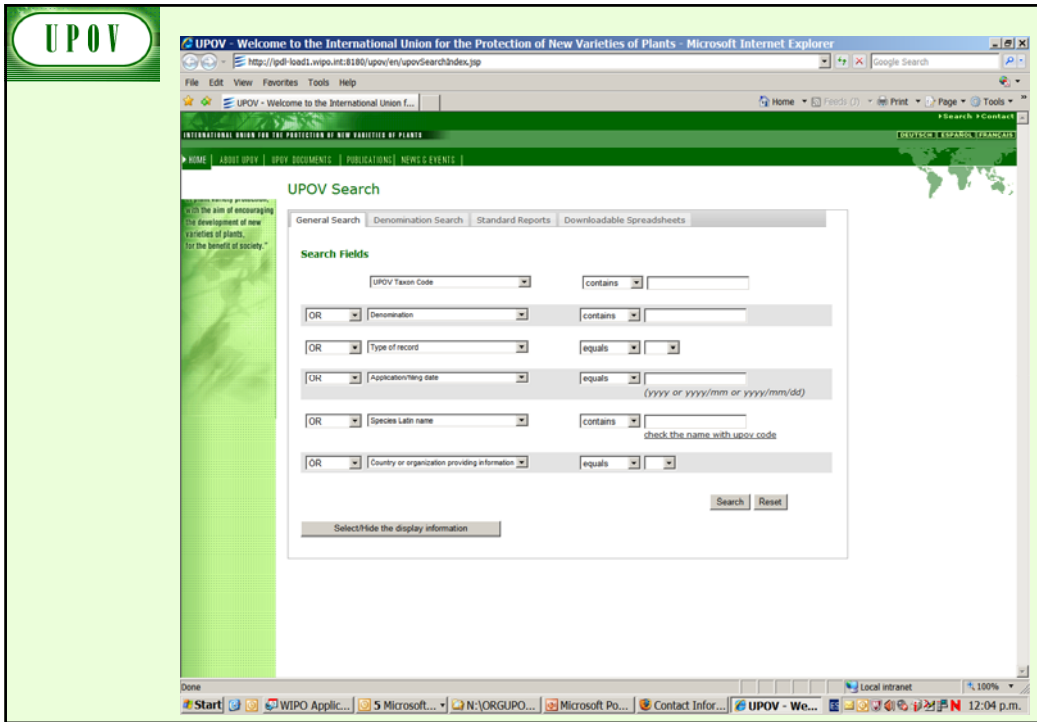
### (2) [*Characteristics of the **denomination***]

In particular, it **must be different from every denomination** which designates, in the territory of any Contracting Party, **an existing variety** of the same plant species or of a closely related species.



## Plant Variety Database

Freely accessible  
on the UPOV website  
during 2011



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## GENIE Database (Genus / species)



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## GENIE Database



Variety denomination related information  
Protection offered by UPOV members

### **DUS information**

- UPOV Test Guidelines
- practical experience of UPOV  
(document TC/44/4)
- cooperation in DUS examination  
(document C/41/5)

UPOV INTERNATIONAL UNION FOR THE PROTECTION OF NEW VARIETIES OF PLANTS

DEUTSCH | ESPAÑOL | EN

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GENIE Database

List of Crop / Species

List of Authorities

Standard Reports

Spreadsheets

UPOV-ROM Plant Variety Database

UPOV Code System

### GENIE Database


Simple Search | Multiple Search Report

Search Crop / Species:  Botanical Name  
Common Name in English  
Common Name in French  
Common Name in Spanish  
Common Name in German  search

UPOV Code:  search

Search Authority: by Name:

by 2-letter ISO Code:  search



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## 5. THE UPOV WEBSITE

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# UPOV Website

<http://www.upov.int>

(e-mail: [upov.mail@upov.int](mailto:upov.mail@upov.int))

The screenshot shows the UPOV website interface. On the left is a vertical navigation menu with the following items: UPOV Convention, List of UPOV Publications, Gazette & Newsletter, Laws & Treaties, List of Taxa Protected, Plant Variety Protection Statistics, Impact Study, Explanatory Notes, General Introduction to DUS, TGP Documents, Test Guidelines, Practical Technical Knowledge, Cooperation in Examination, Variety Denominations, Plant Variety Database, and GENIE Database. The main content area features a header with the UPOV logo, navigation links (HOME, ABOUT UPOV, UPOV DOCUMENTS, PUBLICATIONS, NEWS & EVENTS), and language options (DEUTSCH, ESPAÑOL). Below the header, there are several content blocks: a 'TG/1/3 General Introduction' box, a table titled 'Associated TGP Documents' with columns 'Ref.' and 'Title', a thumbnail of a UPOV document cover, a thumbnail of a UPOV document page, and a cartoon illustration of a person holding a plant. Yellow arrows point from the 'Impact Study', 'General Introduction to DUS', 'Test Guidelines', and 'Practical Technical Knowledge' menu items to their respective content areas.

Ref.	Title
TG/1/3	General Introduction
TG/1/3	General Introduction with Explanatory Notes
TG/1/3	List of TGP Documents and Latest Date Issues
TG/1/3	List of Test Guidelines adopted by UPOV
TG/1/3	List of Taxa Protected
TG/1/3	Varieties of Common Knowledge
TG/1/3	Characterization and Identification of Variety Cultivars
TG/1/3	Examination and Examination in DUS Testing
TG/1/3	Arrangements for DUS Testing
TG/1/3	Identification of DUS Samples
TG/1/3	Characterization of DUS Samples
TG/1/3	Test Design and Techniques Used in the Examination of DUS
TG/1/3	Training Guidelines
TG/1/3	Examining Guidelines
TG/1/3	Similar Characteristics
TG/1/3	Guidelines for New Types and Strains
TG/1/3	Glossary of Technical, Botanical and Statistical Terms Used in UPOV Documents
TG/1/3	New Types of Characteristics

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

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[Mission Statement](#)  
[Introduction](#)  
[UPOV Convention](#)  
[Membership](#)  
[UPOV Bodies](#)  
[Impact Study](#)  
[Legal Resources](#)  
[Key Issues](#)  
[Contact us](#)

**DL-205**

**UPOV Distance Learning Course DL-205**

**Introduction to the UPOV System of Plant Variety Protection under the UPOV Convention**

The International Union for the Protection of New Varieties of Plants is pleased to inform you about the next sessions of the distance learning course "Introduction to the UPOV System of Plant Variety Protection under the UPOV Convention" (DL-205). The objective of the course is to provide a comprehensive introduction to the UPOV system of plant variety protection under the International Convention for the Protection of New Varieties of Plants. The course comprises 11 modules.

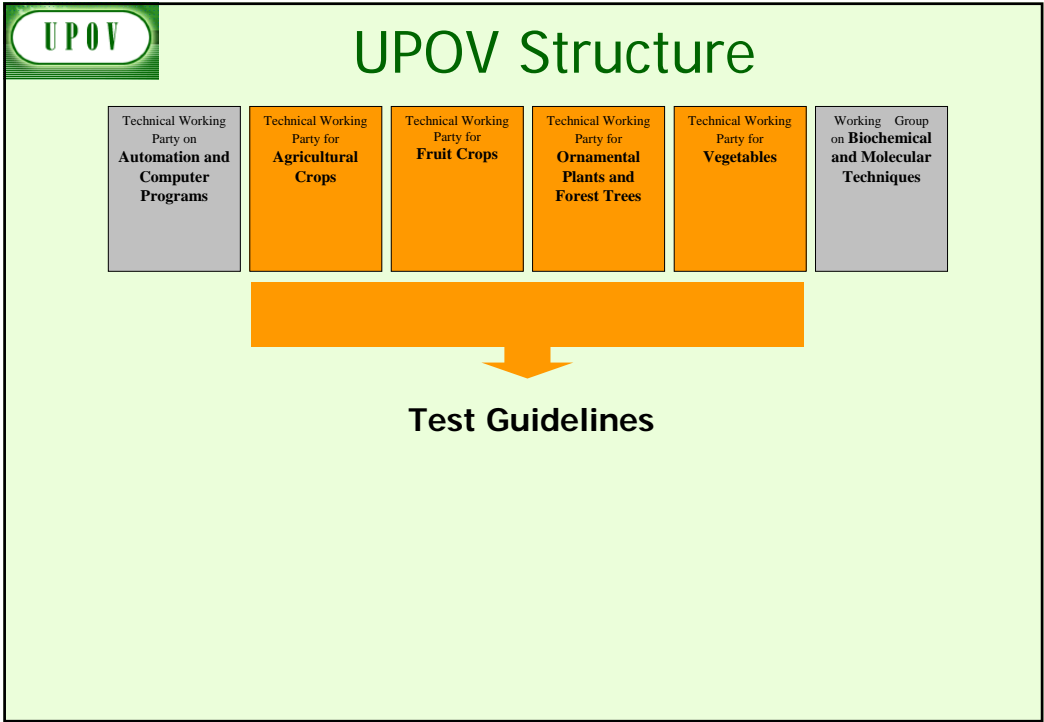
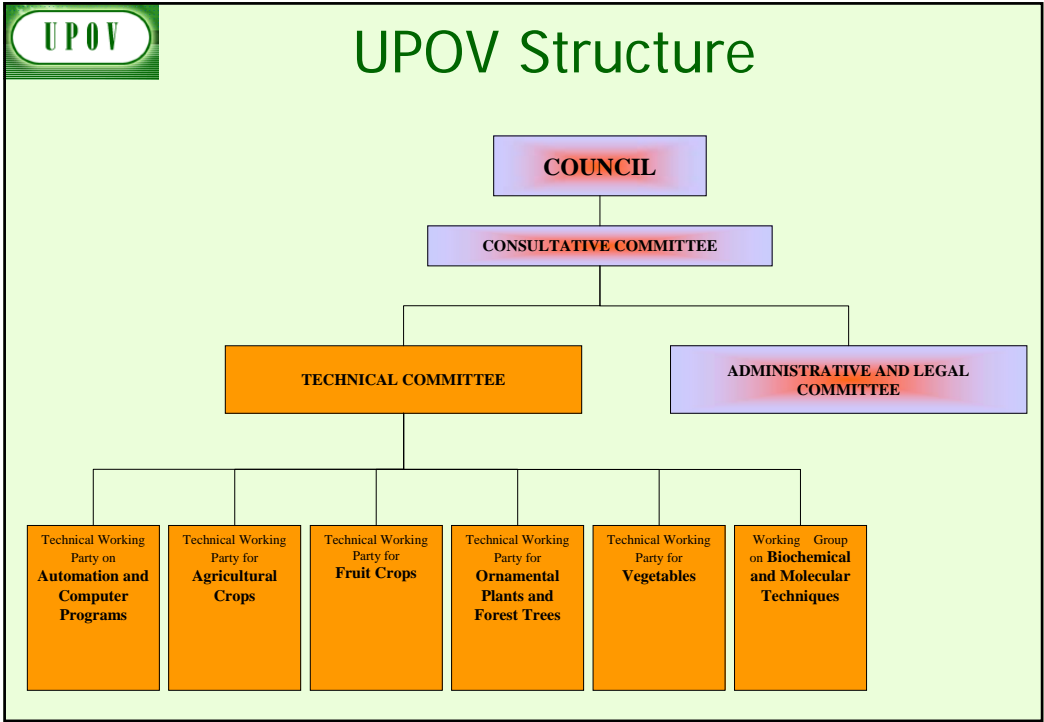
- Nature of Plant Breeding and the Need for Plant Breeders' Rights
- Subject Matter and Entitlement to Protection
- Conditions of Protection
- Applying for a Plant Breeder's Right
- Testing of Distinctness, Uniformity and Stability (DUS)
- Scope of the Plant Breeder's Right; Acts and Material Covered
- Scope of the Plant Breeder's Right; Varieties within the Scope of the Plant Breeder's Right
- Exceptions and Restrictions to the Plant Breeder's Right
- Nullity and Cancellation of the Plant Breeder's Right
- Union for the Protection of New Varieties of Plants
- Implementation of the Convention and Final Provisions
- Final Exam

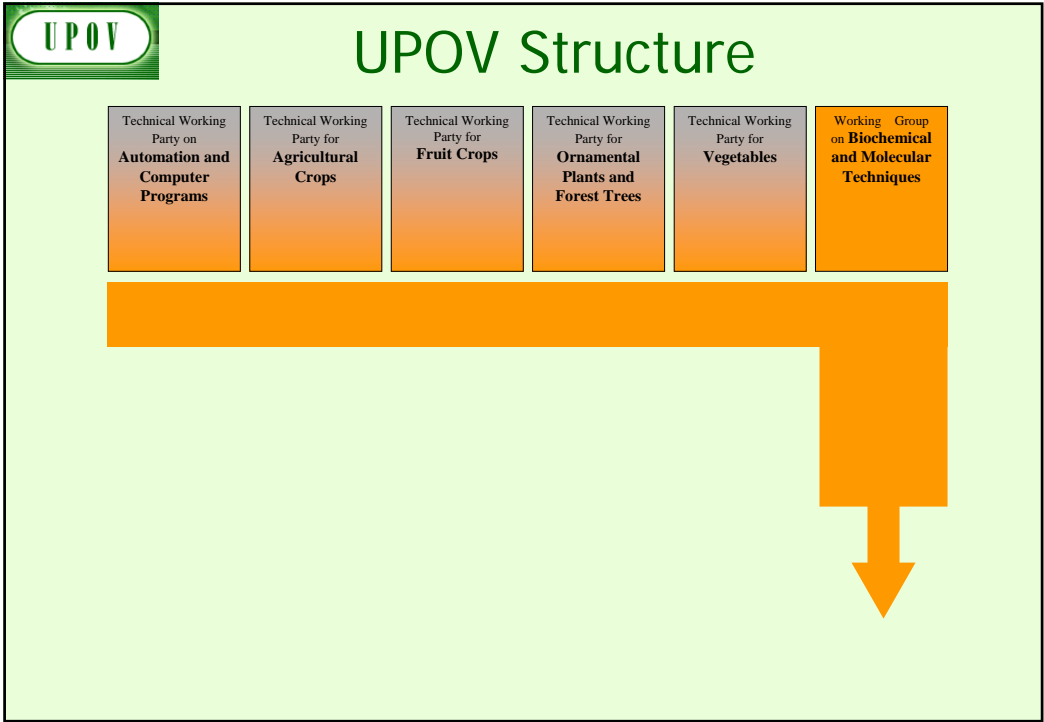
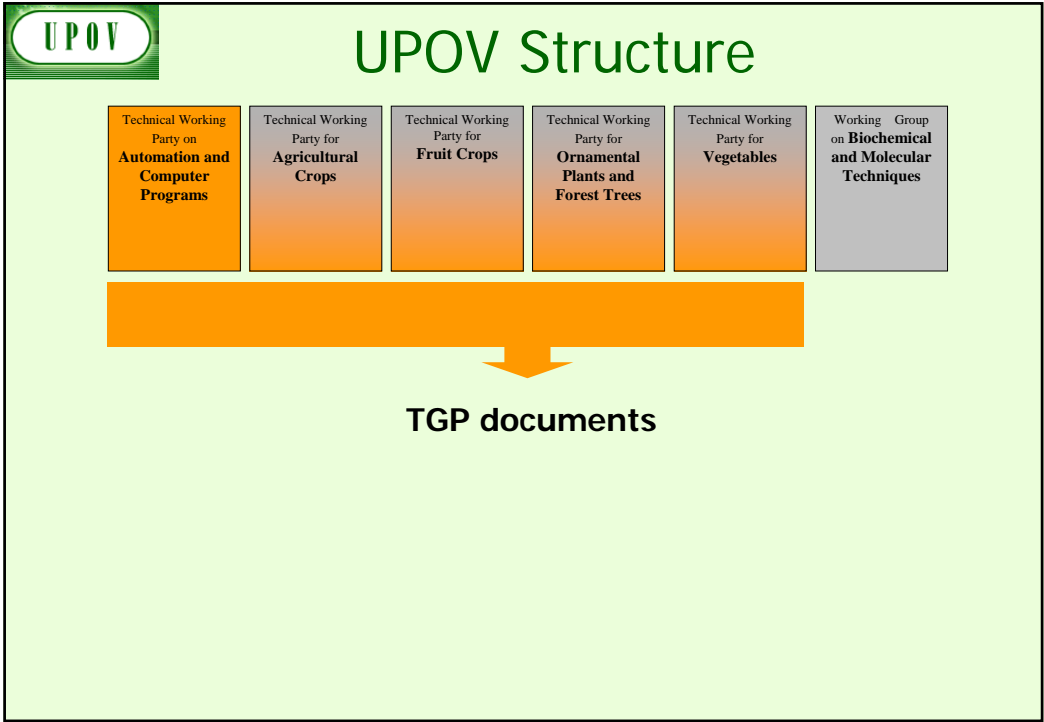
The course is followed on-line, via the internet. Each student studies at their own pace, on their PC or, alternatively, may download the course to study on paper. The course is estimated to require around 36 hours of study, which can be undertaken at any time within the 4-week study period. The course contains comprehensive explanations, diagrams, self-assessment questions and end of module tests to guide participants. Tutoring by UPOV experts provides students with the opportunity for further clarification and discussion.

The course materials and tutoring are available to the participants for a period of four weeks. The final exam is taken in the fifth week of the course. Certificates are issued at the end of the course.

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## 6. ROLE OF THE TECHNICAL WORKING PARTIES AND THE BMT







## Role of the BMT

*(see document BMT/12/2: Annex, page 2)*

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.

## Role of the BMT

**Consider the possible application of biochemical and molecular techniques in DUS testing**

*(see document BMT/12/2: Annex, page 2)*

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

- (iii) Consider the possible application of biochemical and molecular techniques in DUS testing and report its considerations to the TC;
- (v) Consider initiatives from TWPs, for the establishment of crop specific subgroups [...];
- (vii) Receive reports from Crop Subgroups and the BMT Review Group;

**=> BMT/12 agenda items 4, 6 and 12 and  
=> BMT/DUS Draft 3 “Possible Use of Molecular Markers in the Examination of Distinctness, Uniformity and Stability (DUS)”**

## Role of the BMT

### Guidance and harmonization for a range of applications

(see document BMT/12/2: Annex, page 2)

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

- (iv) If appropriate, establish guidelines for biochemical and molecular methodologies and their harmonization [...];
- (vi) Develop guidelines regarding the management and harmonization of databases of biochemical and molecular information, in conjunction with the TWC;

=> BMT Guidelines

=> BMT/12 agenda items 7 to 9

## Role of the BMT

### Raise awareness of general developments:

(see document BMT/12/2: Annex, page 2)

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;

=> BMT/12 agenda item 5

## Role of the BMT

*(see document BMT/12/2: Annex, page 2)*

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

- (viii) Provide a **forum for discussion** on the use of biochemical and molecular techniques in the consideration of **essential derivation** and **variety identification**.

=> BMT/12 agenda items 10 and 11 and  
=> presentations to follow

## BMT Forum

### **"BREEDERS' DAY"**

at BMT/12, May 11, 2010, Ottawa

Use of molecular techniques in:

- **variety identification**
- **essential derivation**

## 7. AGENDA for the TWP Session

### 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		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		END OF SESSION	
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		
	Continuation		RECEPTION				Continuation			

# EXCHANGING INFORMATION

## 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			
[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			
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		END OF SESSION	
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		
	Continuation		RECEPTION			Continuation				

# 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 program Adoption of report	
	COFFEE		COFFEE				COFFEE		END OF SESSION	
	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		
Continuation		RECEPTION				Continuation				

	TWA	TWC	TWF	TWO	TWV	BMT
1994	Spain	Israel	New Zealand	Australia	UK	France
1995	Germany	Poland	UK	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	Kenya	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 May 24-28	European Union June 28 - July 2	Mexico Sept. 27 - Oct. 1	Mexico Sept. 20 - 24	Bulgaria July 5 - 9	Canada May 11 - 13

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# 8. FEEDBACK



**THANK YOU**