

UPOV

**TECHNICAL WORKING PARTY FOR
ORNAMENTAL PLANTS AND FOREST TREES**

Forty-Third Session
Cuernavaca, Morelos State, Mexico,
September 20 to 24, 2010

PREPARATORY WORKSHOP

September 19, 2010

UPOV

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 for distinctness (V/M; G/S)*
 - (iii) *Asterisked, grouping and TQ characteristics*
 - (iv) *Example varieties*
 - (c) The process for developing UPOV Test Guidelines
4. UPOV databases
5. The UPOV website
6. Role of the Technical Working Parties
7. Agenda for the TWV Session
8. Feedback

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1. INTRODUCTION TO UPOV

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**The International Convention for the
Protection of New Varieties of Plants**
established in 1961

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

**Union internationale pour la
protection des obtentions végétales**

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**2. OVERVIEW OF THE GENERAL
INTRODUCTION**

**(DOCUMENT TG/1/3 AND TGP
DOCUMENTS)**

**GUIDANCE FOR
DUS EXAMINATION**

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THE CONDITIONS FOR GRANTING A BREEDER'S RIGHT

Criteria to be satisfied

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

} **"DUS"**

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THE CONDITIONS FOR GRANTING A BREEDER'S RIGHT

Other conditions

- VARIETY DENOMINATION
- FORMALITIES
- PAYMENT OF FEES

NO OTHER CONDITIONS!

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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)

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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

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TG/1/3 General Introduction

↓

"Associated" TGP Documents

Ref.	Title
TGP/00	List of TGP Documents and Latest Issue Dates
TGP/01	General Introduction With Explanations
TGP/02	List of Test Guidelines Adopted by UPOV
TGP/03	Varieties of Common Knowledge
TGP/04	Constitution and Maintenance of Variety Collections
TGP/05	Experience and Cooperation in DUS testing
TGP/06	Arrangements for DUS testing
TGP/07	Development of Test Guidelines
TGP/08	Trial Design and Techniques Used in the Examination of DUS
TGP/09	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

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3. GUIDANCE ON DRAFTING TEST GUIDELINES

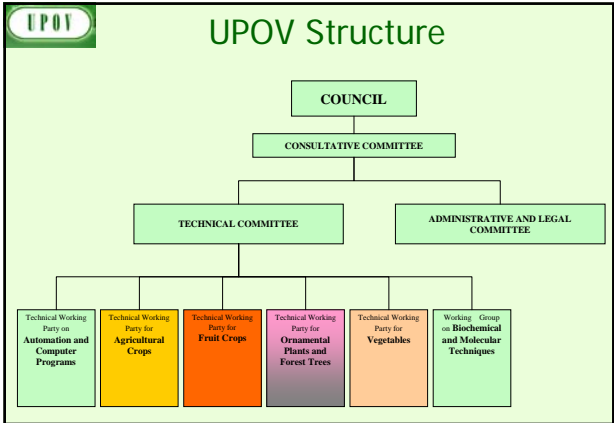
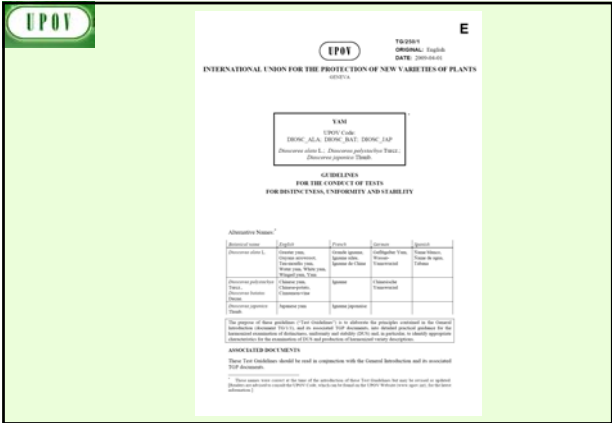
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UPOV provides guidance by:

- 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**

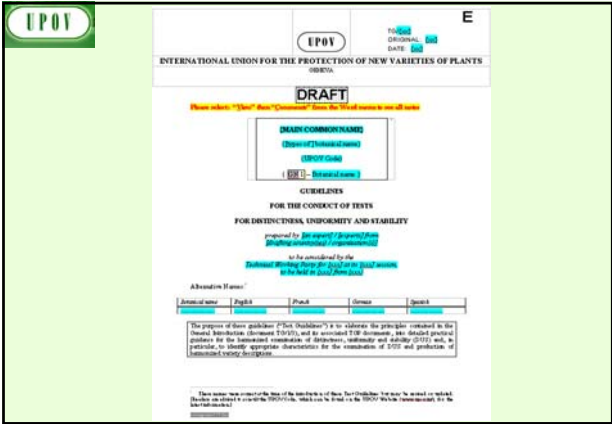


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TGP/7 "Development of Test Guidelines"

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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



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10 Chapters of UPOV Test Guidelines

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

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3. TEST GUIDELINES

(a) Selection of characteristics

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"CHARACTERISTICS"

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

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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) :

- results from a given genotype** or combination of genotypes;
- is sufficiently **consistent and repeatable** in a **particular environment**;
- exhibits sufficient **variation between varieties** to be able to establish distinctness;
- is capable of **precise definition and recognition**;
- allows **uniformity requirements** to be fulfilled;
- 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.

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Selection of Characteristics

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

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Selection of Characteristics

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

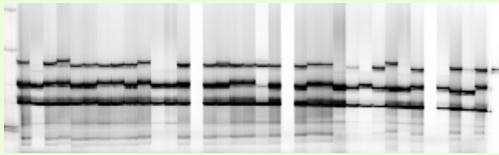
EPOV Selection of Characteristics			
Criteria	Fruit: color	Leaf: shape	Yield
(a) results from a given genotype or combination of genotypes	Yes	Yes	Yes
(b) sufficiently consistent and repeatable in a particular environment	Yes	Yes	(No)
(c) exhibits sufficient variation between varieties to be able to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

EPOV 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
	Difficult and expensive

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Molecular Techniques?



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3. TEST GUIDELINES

(b) Guidance on drafting characteristics

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

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

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Types of Expression

QL: QUALITATIVE

QN: QUANTITATIVE

PQ: PSEUDO-QUALITATIVE

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

Char. No	English	français	Deutsch	español	Example Varieties Exemples Beispielsorten Variedades ejemplo	Note
1. (*) (*)	Plant: growth habit	Plante : port	Pflanze: Wuchsform	Planta: porte		
QN	upright	dressé	aufrecht	erecto	Impatiak	1
	semi-upright	semi dressé	halboaufrecht	semierecto	D0158-1	2
	spreading	étalé	lehtwichtig	aberto	Suttons 63	3
	semi-trailing	semi-étalé	halbhängend	semirastroso	Impofaf	4
	trailing	coureux	hängend	rastroso	Organza	5
2. (*)	Plant: height	Plante : hauteur	Pflanze: Höhe	Planta: altura		
QN	short	basse	niedrig	baja	Vatere	3
	medium	moyenne	mittel	media	D0158-1	5
	tall	haute	hoch	alta	Impatiak	7

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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**.

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Qualitative characteristic

Clematis: Leaf: type

1 simple 2 ternate 3 biternate 4 triternate

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NON-Qualitative characteristic

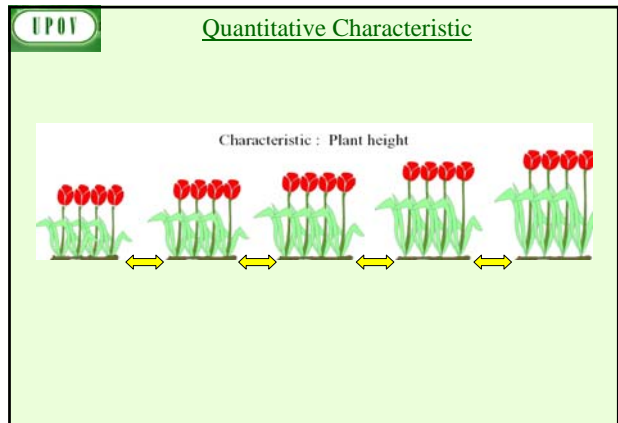
Anthocyanin coloration: absent / present

	Variety A	Variety B	Variety C
Environment A	○	●	○
Environment B	○	●	◐


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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.



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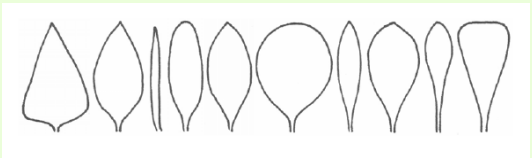


PSEUDO-QUALITATIVE Characteristics

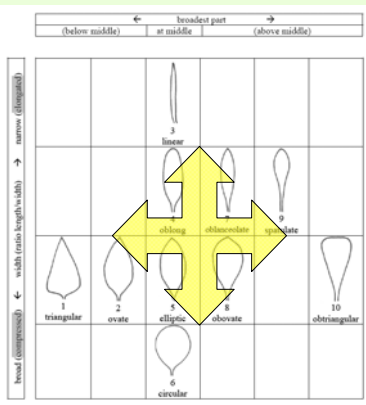
In the case of “pseudo-qualitative characteristics,” the **range of expression is at least partly continuous, but varies in more than one dimension** (e.g. shape: ovate (1), elliptic (2), circular (3), obovate (4)) and cannot be adequately described by just defining two ends of a linear range. In a similar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

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Example

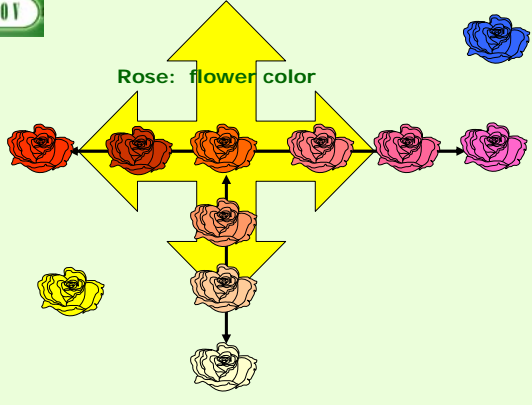


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Rose: flower color






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STATES / NOTES for QL, QN ,PQ

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Qualitative Characteristics
(typical example)

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

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Qualitative Characteristics (special cases)

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

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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	weak	3	small
4	weak to medium	4	small to medium
5	medium	5	medium
6	medium to strong	6	medium to large
7	strong	7	large
8	strong to very strong	8	large to very large
9	very strong	9	very large

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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	-

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Quantitative Characteristics

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

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Quantitative Characteristics

Limited range

State	Example 1 Stem: attitude
1	erect
3	semi-erect
5	prostrate

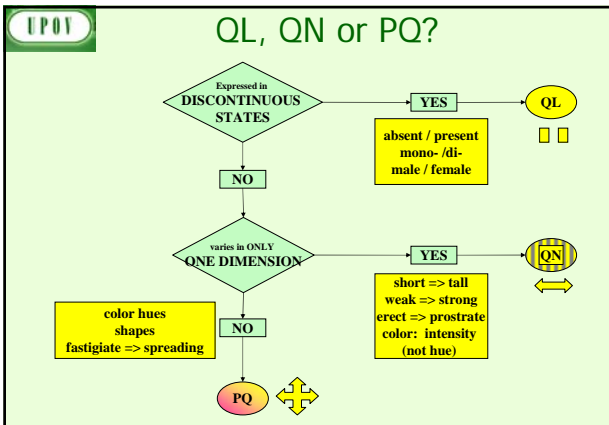
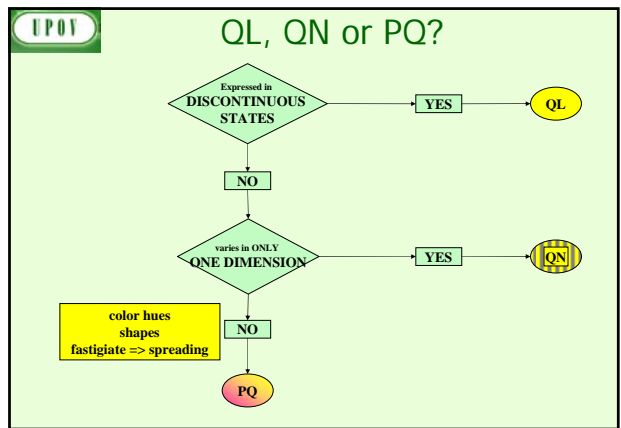
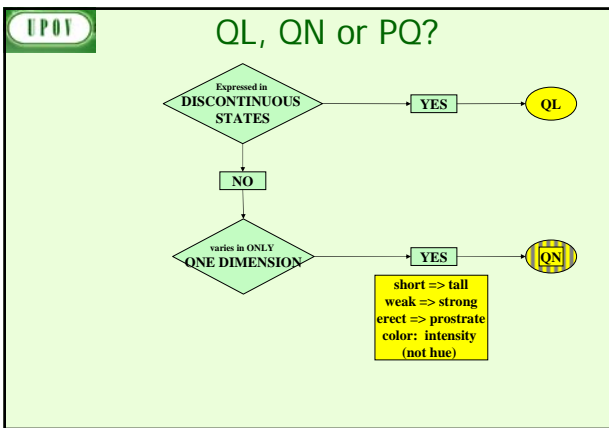
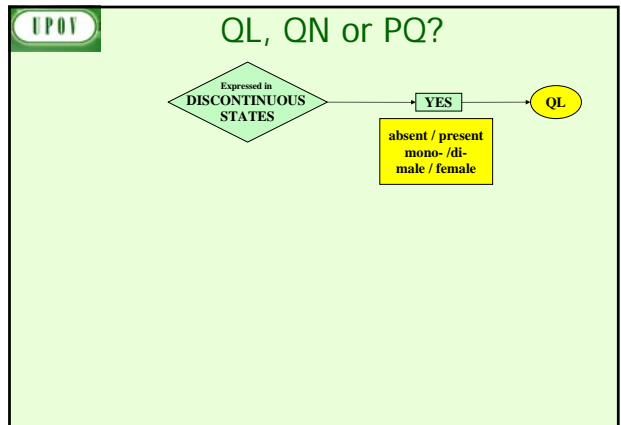
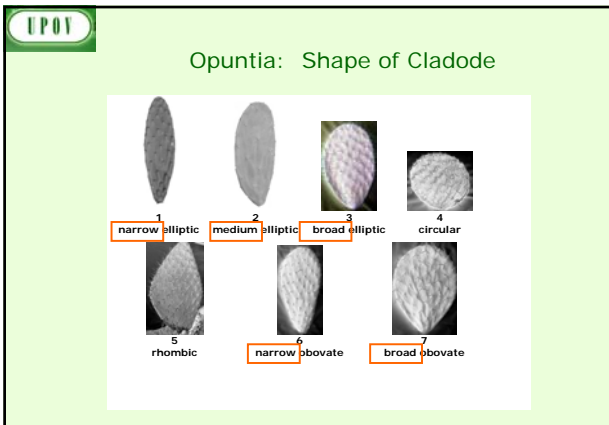
Condensed range

Example 1	Example 2
1 e.g. absent or very weak (absent or very weakly expressed)	1 e.g. absent or weak (absent or weakly expressed)
2 weak (weakly expressed)	2 moderate (or medium) (moderately expressed)
3 strong (strongly expressed)	3 strong (strongly expressed)

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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	purpura	plúpura	6



UPO1

EXERCISE

EPOV

What type of Expression?

QL: Qualitative
QN: Quantitative
PQ: Pseudo-qualitative

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

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

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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

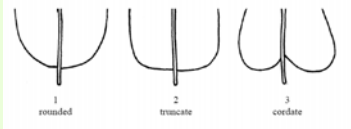
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5. Leaf blade: intensity of green color of upper side	
light	3
medium	5
dark	7

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6. Leaf blade: shape of base

rounded	1
truncate	2
cordate	3



1 rounded 2 truncate 3 cordate

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7. Petal: color

RHS Colour Chart
(indicate reference number)

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8. Leaf blade: profile in cross section

straight or weakly concave	1
moderately concave	2
strongly concave	3

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

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Types of Expression

QL: QUALITATIVE

QN: QUANTITATIVE

PQ: PSEUDO-QUALITATIVE

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QUALITATIVE Characteristics

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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.**

UPOV **Qualitative characteristic**

Clematis: Leaf: type

1 simple

2 ternate

3 biternate

4 triternate

UPOV **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)).

UPOV **Types of Expression**

QL: QUALITATIVE

QN: QUANTITATIVE

PQ: PSEUDO-QUALITATIVE

UPOV **PSEUDO-QUALITATIVE Characteristics**

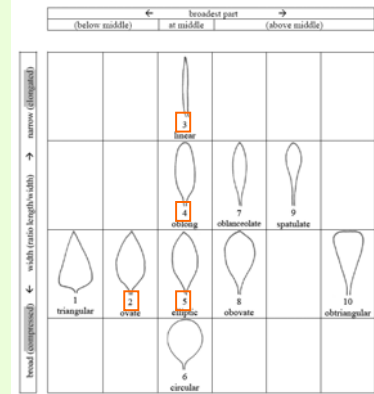
In the case of “pseudo-qualitative characteristics,” the **range of expression is at least partly continuous, but varies in more than one dimension** (e.g. shape: ovate (1), elliptic (2), circular (3), obovate (4)) and cannot be adequately described by just defining two ends of a linear range. In a similar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

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UPOV **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

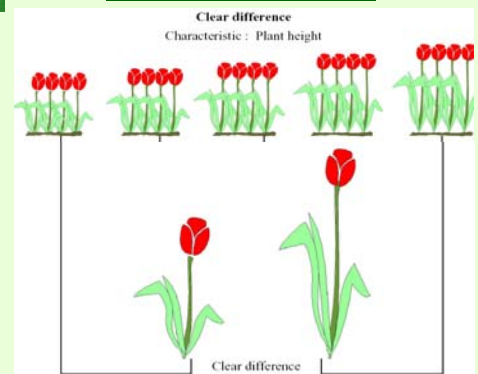
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Quantitative Characteristics: **distinctness**

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

Quantitative Characteristic



UPOV **Quantitative Characteristic**

Clear difference
Characteristic: Plant height

May not be a clear difference

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NOTES
versus
SIDE-BY-SIDE COMPARISON
(Quantitative characteristics)

UPOV **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:

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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.**"

UPOV **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.**

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...and comparison with descriptions in databases

UPOV **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?

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UPOV "Two Note" rule...

...means at least ONE note difference!

UPOV **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**:

UPOV **Quantitative Characteristics: distinctness**

TG 233-1 Diascia Diasce, 2007-03-28 - 9 -						
	English	français	Deutsch	español	Example Varieties/ Exemples/ Beispiele/sortes/ Variedades ejemplo	Note/ Nota
6. (a)	Leaf blade: length	Limbe: longueur	Blattspitze: Länge	Limbe: longitud		
QN	short	courte	kurz	corto	Codion, Strawberry Sandie	3
	medium	moyenne	mittel	medio	Codisce	5
	long	longue	lang	largo	Bah'aralapa, Bah'aravhar	7

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

UPOV **Quantitative Characteristics: distinctness**

TG 233-1 Diascia Diasce, 2007-03-28 - 9 -						
	English	français	Deutsch	español	Example Varieties/ Exemples/ Beispiele/sortes/ Variedades ejemplo	Note/ Nota
5.	Stem: anthocyanin coloration below inflorescence	Tige: pigmentation anthocyanique sous inflorescence	Trieb: Anthocyanfärbung unter dem Blütenstand	Tallo: pigmentación antocianica por debajo de la inflorescencia		
QN	absent or weak	absente ou faible	fehlernd oder gering	ausente o débil	Hecliam	1
	medium	moyenne	mittel	media	Heclace	2
	strong	forte	stark	fuerte		3

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

UPOV Process levels other than Notes...

Beate Rucker
Federal Variety Office, Hannover, Germany
Seminar on DUS Testing, Geneva, March 18-20, 2010

UPOV Documents
First restricted area

UPOV	Administrative and Legal Committee
UPOV/AG/MS	Administrative and Legal Committee Advisory Group
UPOV/AG	Technical Committee
UPOV/AG/MS	Biological Working Committee
UPOV/AG/MS	Technical Working Party for Agricultural Crops
UPOV/AG/MS	Technical Working Party on Substrates and Container Programs
UPOV/AG/MS	Technical Working Party for Fruit Crops
UPOV/AG/MS	Technical Working Party for Ornamental Plants and Forest Trees
UPOV/AG/MS	Technical Working Party for Vegetables
UPOV/AG/MS	Working Group on Botanical and Molecular Techniques, and Other Working in Partnership
UPOV/AG/MS	Ad Hoc Subgroup of Technical and Legal Experts of Botanical and Molecular Techniques
UPOV/AG/MS	Ad Hoc Subgroup on Development of Molecular Techniques, and Other Working in Partnership - "Gene Mapping"
UPOV/AG/MS	Ad Hoc Working Group to Study the Impact of Genetic Resources Rights
UPOV/AG/MS	Ad Hoc Working Group on the Publication of Variety Descriptions
UPOV/AG/MS	Ad Hoc Working Group on Genetic Delineation
UPOV/AG/MS	UPOV - Geneva, April 18 to 20, 2002

UPOV 3. TEST GUIDELINES

(b) Guidance on drafting characteristics

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

UPOV 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**.

UPOV 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*)	**

UPOV 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 ...

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

Section 4.3.2.3 Example (VG): Flower: type (tulip: vegetatively propagated)
Section 4.3.2.3 Example (VG): Lowest leaf: hairiness of leaf sheaths (barley: self-pollinated)
Section 4.3.2.3 Example (MG): Plant: height (wheat: self-pollinated)
Section 4.3.2.4 Example: (statistical analysis)

UPOV 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 (ryegrass: cross-pollinated)
Example (VS): Plant: growth habit (ryegrass: cross-pollinated)

UPOV

EXERCISE

UPOV EXERCISE ON METHOD OF OBSERVATION FOR DISTINCTNESS

Please, indicate:
1 - which method(s) of observation is/are not appropriate (-) and
2 - which method(s) of observation is/are probably most appropriate (+/+)
 MG: single measurement of a group of plants or parts of plants
 MS: measurement of a number of individual plants or parts of plants
 VG: visual assessment by a single observation of a group of plants or parts of plants
 VS: visual assessment by observation of individual plants or parts of plants

Exercise 1

Background information
 Crop: cross pollinated grass
 Number of Growing Cycles: two independent growing cycles
 Test Design: 60 spaced plants, divided between 2 replicates plus 8 meters of row plot, divided between 2 replicates
 Observations for distinctness: 60 spaced plants
 Characteristic: Plant: natural height at inflorescence emergence (states: short (3); medium (5); long (7))

MG MS VG VS

UPOV Exercise 2

Background information
 Crop: vegetatively propagated ornamental variety
 Number of Growing Cycles: single growing cycle
 Test Design: 10 plants
 Observations for distinctness: 5 plants
 Characteristic: Plant: height (states: short (3); medium (5); long (7))

MG MS VG VS

Exercise 3

Background information
 Crop: vegetatively propagated ornamental variety
 Number of Growing Cycles: single growing cycle
 Test Design: 10 plants
 Observations for distinctness: 5 plants
 Characteristic: Flower: presence of perianth (states: absent (1); present (9))

MG MS VG VS

UPOV **Exercise 4**

Background information

Crop: seed-propagated (self-pollinated) agricultural crop

Number of Growing Cycles: two independent growing cycles

Test Design: 2000 plants, divided between two replicates.

Observations for distinctness: 20 plants

Characteristics: **Awc: length compared to ear** (states: short (3); medium (5); long (7)) (see illustration)

MG MS VG VS

Awc: length compared to ear

3 short 5 medium 7 long

UPOV **3. TEST GUIDELINES**

(b) Guidance on drafting characteristics

(iii) Asterisked, grouping and TQ characteristics

UPOV **Standard Test Guidelines Characteristic**

Function	Criteria
1.Characteristics that are accepted by UPOV for examination of DUS and from which members of the Union can select those suitable for their particular circumstances.	1.Must satisfy the criteria for use of any characteristic for DUS as set out in Chapter 4, section 4.2 . 2.Must have been used to develop a variety description by at least one member of the Union . 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.

UPOV **Asterisked Characteristic**

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

Char. No.	English	français	Deutsch	español	Example Varieties Exemples Beispielsorten Varietades ejemplo	Note
	Plant: growth habit	Plante : port	Pflanze: Wuchsform	Planta: porte		
QN	upright	dressé	aufrecht	erecto	Imppink	1
	semi-upright	semi dressé	halbhoch	semirecto	DO158-1	2
	spreading	étalé	breitstüchtig	aberto	Sunsem 03	3
	semi-trailing	semi-étalé	halbhängend	semirastroso	Impsaf	4
	trailing	coureux	hängend	rastroso	Organza	5

UPOV **Asterisked Characteristic**

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

UPOV **Grouping Characteristic**

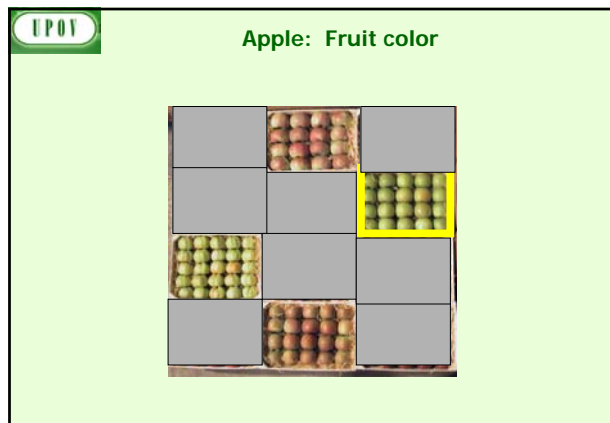
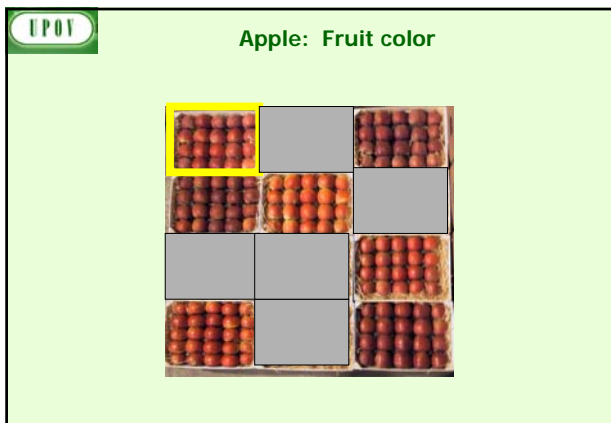
5. **Grouping of Varieties and Organization of the Growing Trial**

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

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"/>	

UPOV

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
5.8 Fruit: hue of ever color - with bloom removed (37)		
orange red	Cox's Orange Pippin, Egremont Russet	1]
pink red	Cripps Pink, Delbarge	2]
red	Akane, Galaxy, Red Elstar, Royal Prince	3]
purple red	Red Joupprance, Spartan	4]
brown red	Fiesta, Joban, Lord Burglady	5]
5.9 Fruit: pattern of ever color (39)		
only solid flush	Red Joupprance, Richared Delicious	1]
solid flush with weakly defined stripes	Galaxy	2]
solid flush with strongly defined stripes	Joupprance	3]
weakly defined flush with strongly defined stripes	Groensteele	4]
only stripes (no flush)	Helios	5]
flushed and mottled	Elstar	6]
flushed, striped and mottled	Jouppold	7]

UPOV **Grouping Characteristic**

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

- UPOV** **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.

UPOV

3. TEST GUIDELINES

(b) Guidance on drafting characteristics

(iv) Example varieties

UPOV

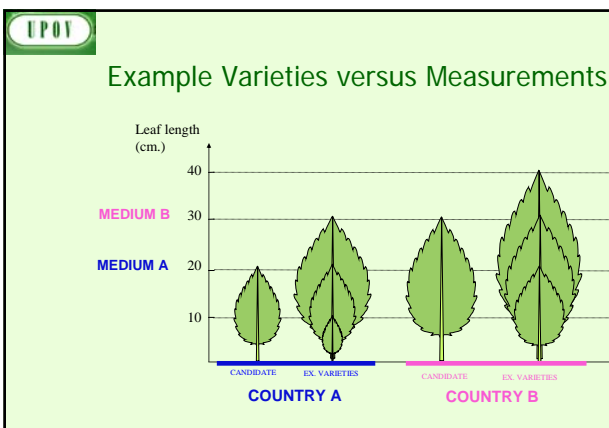
Example Varieties: the Objective

Clarify states of expression

- Illustrate characteristics
- Determine the state of expression

↓

Harmonized descriptions



UPOV

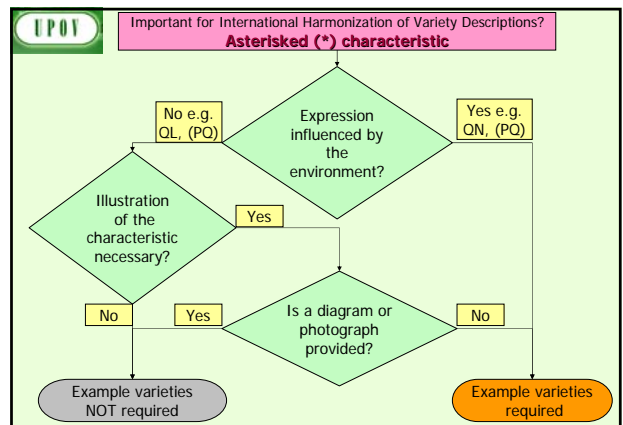
Example Varieties –the need

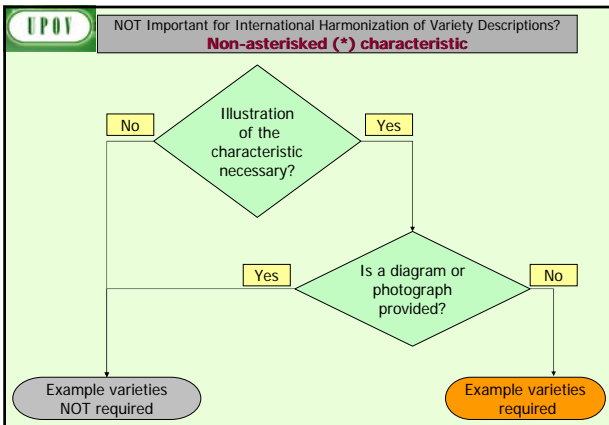
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Example Varieties – the need

NEED

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





EPOV TG 139
Lettuce/Laine/Sala/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
1. (*)	Seed color	Semence/ couleur	Samen/ Farbe	Semilla/ color		
	white	blanche	weiß	blanco	Verpia	1
	yellow	jaune	gelb	amarillo	Dunango	2
	black	noire	schwarz	negro	Kagraner Sommer	3
2. (*)	Seedling anthocyanin coloration	Plantelet anthocyanique	Kieplflanze Anthocyanfärbung	Plántula: pigmentación antocianica		
	absent	absente	fehlernd	ausente	Verpia	1
	present	présente	vorhanden	presente	Pizat	9
3.	Seedling size of cotyledons (fully developed)	Plantelet: taille du cotyledon à complet développement	Kieplflanze: Größe des Keimblatts (voll entwickelt)	Plántula: tamaño del cotiledón (plumaje desarrollado)		
	small	petit	klein	pequeño	Romance	3
	medium	moyen	mittel	medio	Expresse	5
	large	grand	groß	grande	Verpia	7

EPOV TG 219-1
Perrilla/Perrilla/Perrilla, 2004-03-31
- 10 -

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

EPOV TG 227-7
Brachycome/Blau/Gelb/Blau, 2003-04-06
- 7 -

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

	English	français	deutsch	español	Example Varieties/ Exemples/ Beispielsorten/ Variedades ejemplo	Note/ Nota
1. (*)	Plant growth type	Plante: type de croissance	Planze: Wachstum	Planta: tipo de crecimiento		
	QN (a)	head clusters	en amas à la base	traube/ Büschel	en racimos basales	1
	truly upright	truly	buschig	buschig	arbustivo	2
2. (*)	Leaf: upright	directes	aufrecht	erecto		1
	semi upright	semi-directes	halbaufrecht	semierecto		3
	horizontal	horizontales	wagrecht	horizontal		5
3. (*)	Leaf: upright	directes	aufrecht	erecto		1
	semi upright	semi-directes	halbaufrecht	semierecto		3
	horizontal	horizontales	wagrecht	horizontal		5
4. (*)	Plant height including leaves	Plante: hauteur, fleurs comprises	Planze: Höhe einschließlich Blüten	Planta: altura, incluyendo las flores		
	QN (a)	short	court	stumpf	Medi Croc	3
		medium	moyenne	mittel	media	Brookdale
	tall	élevée	hoch	larga	Happy Face Pink	7

EPOV

3. TEST GUIDELINES (document TGP/7)

(c) The process for developing UPOV Test Guidelines

EPOV

Test Guidelines

- 264 Test Guidelines adopted

but...

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

UPOV **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**

UPOV **EXAMPLE (New Test Guidelines)**

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

Technical Working Party: **TWX**

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


UPOV

4. UPOV DATABASES


UPOV **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.



UPOV **GENIE Database (Genus / species)**

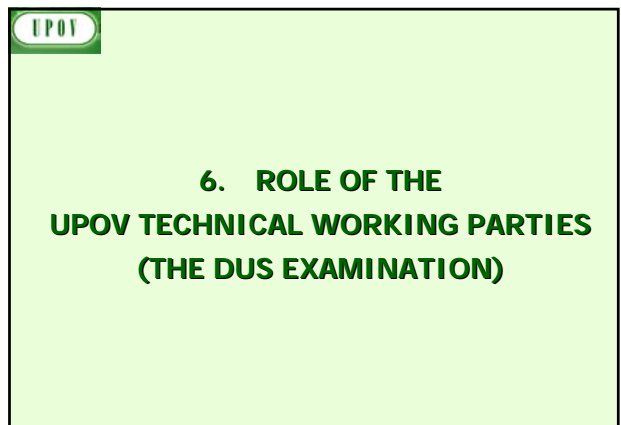
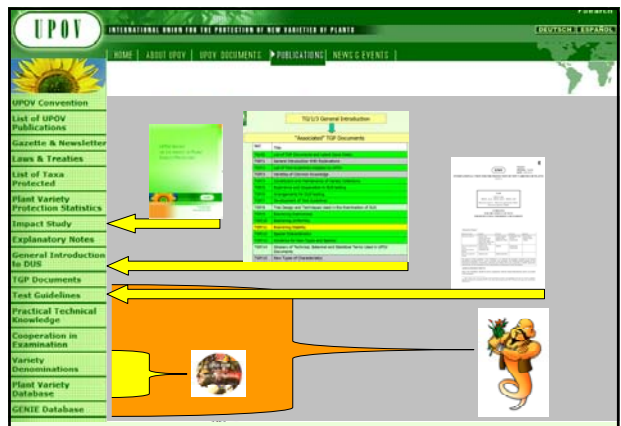
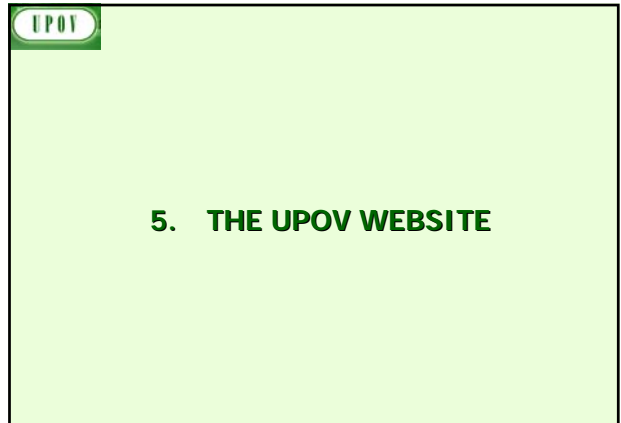
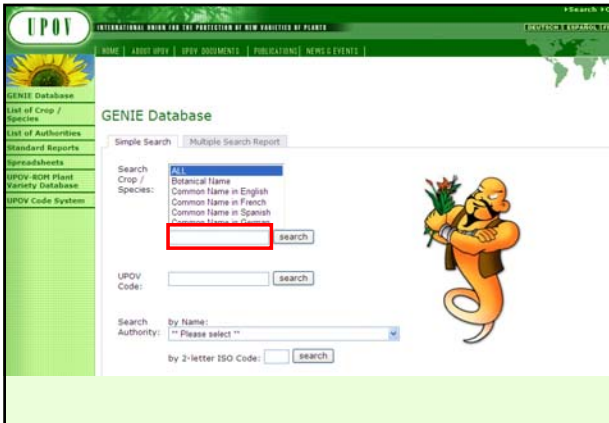


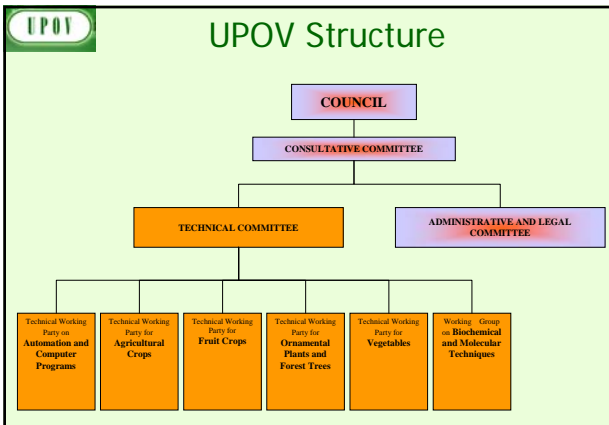
UPOV **GENIE Database** 

Variety denomination related information
Protection offered by UPOV members

DUS information

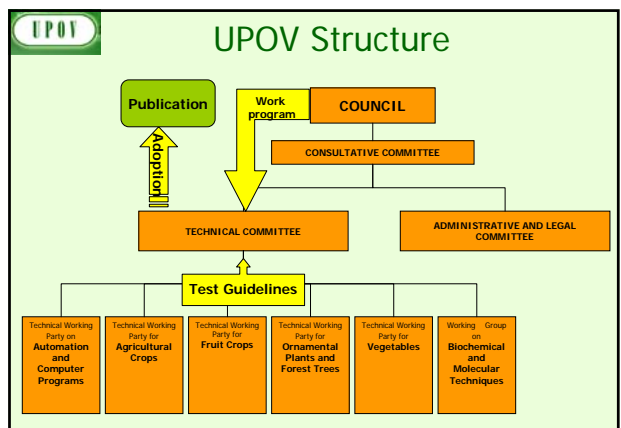
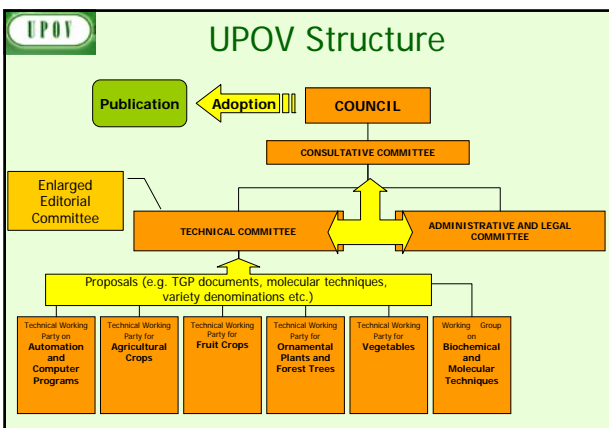
- UPOV Test Guidelines
- practical experience of UPOV (document TC/44/4)
- cooperation in DUS examination (document C/41/5)





UPOV

DEVELOPING GUIDANCE
to facilitate
HARMONIZATION and COOPERATION



UPOV

Example TWP Session

	Sunday	Monday	Tuesday	Wednesday	Thursday	Friday
TECHNICAL WORKSHOP (optional)		Reports on developments in PVP	TOP document development	TOP 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	TOP document development	Room.1 Test Guidelines subgroup	Room.2 Test Guidelines subgroup	Recommendations on Test Guidelines
		LENCH	LENCH	LENCH	LENCH	LENCH
PREPARATORY WORKSHOP		Room.1 Test Guidelines subgroup	Room.2 Test Guidelines subgroup	Room.1 Test Guidelines subgroup	Room.2 Test Guidelines subgroup	Future program Adoption of report
COFFEE		COFFEE	COFFEE	TECHNICAL VISIT	COFFEE	
PREPARATORY WORKSHOP		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	

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EXCHANGING INFORMATION

EPOV

Example TWP Session

Sunday	Monday	Tuesday	Wednesday	Thursday	Friday
(TECHNICAL WORKSHOP) (optional)	Reports on developments in PVP	TGP document development	TGP document development	Experiments 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	Recommendations on Test Guidelines
LUNCH		LUNCH		LUNCH	
PREPARATORY WORKSHOP	Room 1 Test Guidelines subgroup	Room 2 Test Guidelines subgroup	TECHNICAL VISIT		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	
	Continuation	RECEPTION		Continuation	

EPOV

**AN OPPORTUNITY
for
TRAINING**

EPOV

Example TWP Session

Sunday	Monday	Tuesday	Wednesday	Thursday	Friday
(TECHNICAL WORKSHOP) (optional)	Reports on developments in PVP	TGP document development	TGP document development	Experiments 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	Recommendations on Test Guidelines
LUNCH		LUNCH		LUNCH	
PREPARATORY WORKSHOP	Room 1 Test Guidelines subgroup	Room 2 Test Guidelines subgroup	TECHNICAL VISIT		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	
	Continuation	RECEPTION		Continuation	

EPOV

TWP Venues

	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	Hungary	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	European Union	Mexico	Mexico	Bulgaria	Canada
	May 24-28	June 28 - July 2	Sept. 27 - Oct. 1	Sept. 20 - 24	July 5 - 9	May 11 - 13

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**7. AGENDA
for the
TWO Session**

EPOV

8. FEEDBACK

EP01

THANK YOU