

UPOV

**TECHNICAL WORKING PARTY
FOR AGRICULTURAL CROPS**

Thirty-Ninth Session
Osijek, Croatia, May 24 to 28, 2010

PREPARATORY WORKSHOP

May 23, 2010

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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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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 (OL, ON, PO), 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
5. The UPOV website
6. Role of the Technical Working Parties
7. Agenda for the TWA Session
8. Feedback

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1. INTRODUCTION TO UPOV

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**2. OVERVIEW OF THE GENERAL
INTRODUCTION**

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

**GUIDANCE FOR
DUS EXAMINATION**

UPOV

THE CONDITIONS FOR GRANTING A BREEDER'S RIGHT

Criteria to be satisfied

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

} **"DUS"**

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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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THE CONDITIONS FOR GRANTING A BREEDER'S RIGHT

Other conditions

- VARIETY DENOMINATION
- FORMALITIES
- PAYMENT OF FEES

NO OTHER CONDITIONS!

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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

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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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3. GUIDANCE ON DRAFTING TEST GUIDELINES

EPOV

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**

EPOV

TGP/7

"Development of Test Guidelines"

EPOV

E

TGP/7
ORIGINAL: English
DATE: 2004/05/10

INTERNATIONAL UNION FOR THE PROTECTION OF NEW VARIETIES OF PLANTS
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YAM
SYMBOL: DM06_AJA, DM06_BAT, DM06_JAP
Character: plant of the genus *Oryza sativa* (Swartz), subgenus *Oryza*

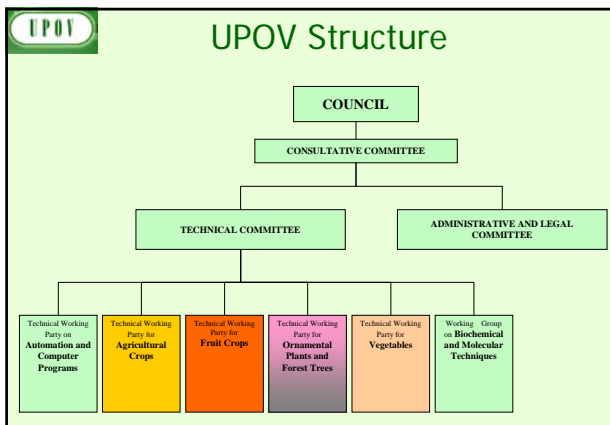
GUIDELINES FOR THE CONDUCT OF TESTS FOR DISTINCTNESS, UNIFORMITY AND STABILITY

Administrative Notes:

Administrative notes	English	French	German	Spanish
Characteristics	General rules [document ID]	Spécifices générales [document ID]	Allgemeine Regeln [document ID]	Reglas generales [document ID]
Administrative guidelines	General rules [document ID]	Spécifices générales [document ID]	Allgemeine Regeln [document ID]	Reglas generales [document ID]
Administrative guidelines	General rules [document ID]	Spécifices générales [document ID]	Allgemeine Regeln [document ID]	Reglas generales [document ID]

EPOV

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



EPOV

E

TGP/7
ORIGINAL: English
DATE: 2004/05/10

INTERNATIONAL UNION FOR THE PROTECTION OF NEW VARIETIES OF PLANTS
UBEPV

DRAFT

Please refer to "Main", "Annex" or "Comments" from the TG/1/3 annex to use all links

MAIN COMMUNICATION
 [document ID]
 [document ID]
 [document ID]

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

prepared by the expert group on test procedures for the botanical characteristics of distinctness, uniformity and stability (DUUS), as established by the Technical Working Party for Ornamental Plants and Forest Trees (TWOP) in 2003 (2003/001)

Administrative Notes:

Administrative notes	English	French	German	Spanish
Characteristics	[document ID]	[document ID]	[document ID]	[document ID]

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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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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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3. TEST GUIDELINES

(a) Selection of characteristics

- UPOV**
- ## Selection of Characteristics
- Yield ???
 - Straw strength ???
- Etc.

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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

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	

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
ACCEPTABILITY	Yes	Yes	No

UPOV 3. TEST GUIDELINES


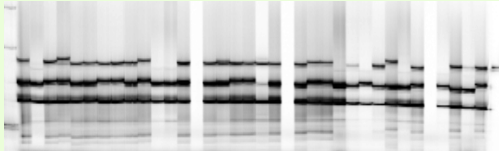
(b) Guidance on drafting characteristics

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

UPOV 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	

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

UPOV Molecular Techniques?

UPOV 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

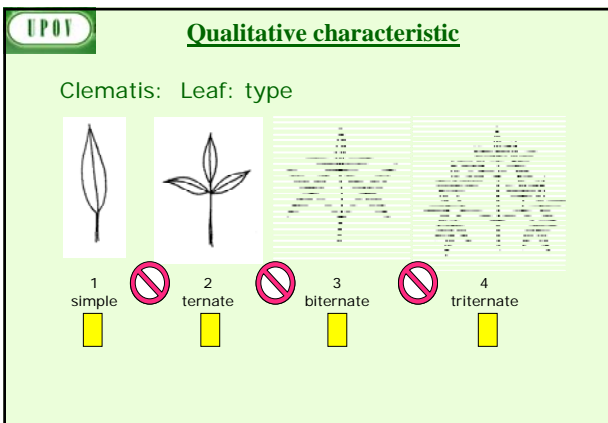
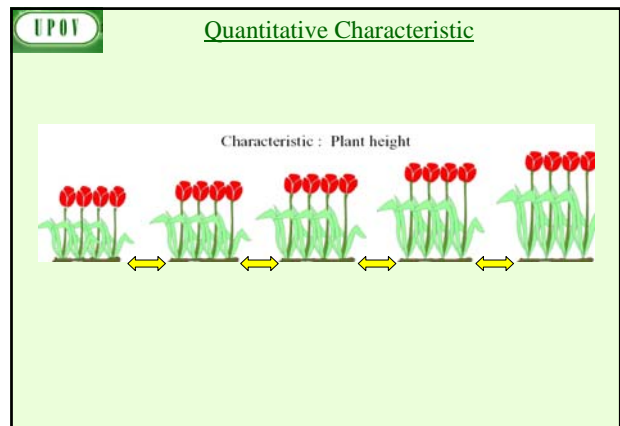
Char. No	English	français	Deutsch	español	Example Varieties Ejemplos Beispielsorten Variedades ejemplo	Note
1. (*) (*)	Plant: growth habit	Plante : port	Pflanze: Wuchsform	Planta: porte		
QN	upright	dressé	aufrecht	erecto	Impati	1
	semi-upright	semi dressé	halbofrecht	semiserecto	D0158-1	2
	spreading	étalé	breitwüchsig	aberto	Suttons 63	3
	semi-trailing	semi-étalé	halbhängend	semicaractero	Impatof	4
	trailing	coureur	hängend	rastroso	Organza	5
2. (*)	Plant: height	Plante : hauteur	Pflanze: Höhe	Planta: altura		
QN	short	basse	niedrig	baja	Yatere	3
	medium	moyenne	mittel	media	D0158-1	5
	tall	haute	hoch	alta	Impati	7


UPOV **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.

UPOV **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**.



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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Example

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STATES / NOTES for QL, QN ,PO

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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 Type 1	2 Type 2	3 Type 3	

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Rose: flower color

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Qualitative Characteristics
(special cases)

Char No.	Method of Examination	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- Gopooing	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

UPO1

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

UPO1

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	-

UPO1

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	plápana	6

UPO1

Quantitative Characteristics

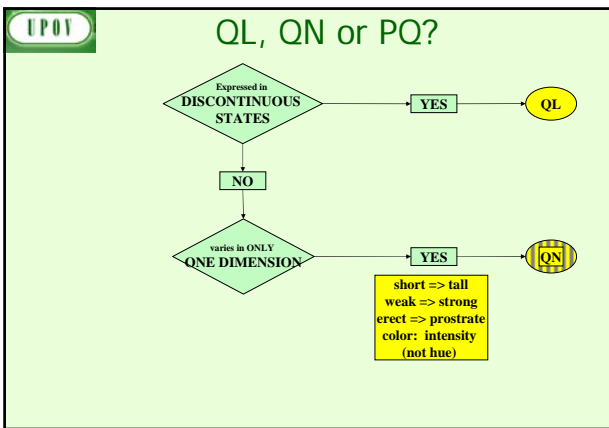
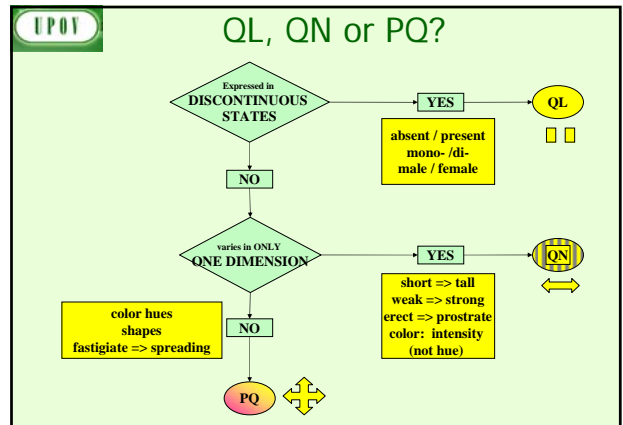
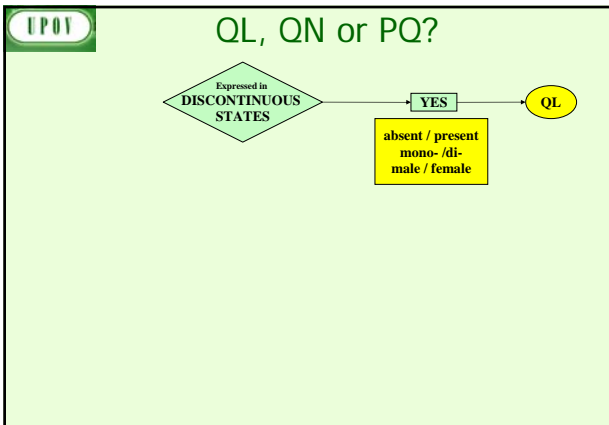
State	Example 1	Example 2	Example 3	Example 4
	Size relative to:	Angle:	Position:	Length in relation to:
1	much smaller	very acute	at base	equal
3	moderately smaller	moderately acute	one quarter from base	slightly shorter
5	same size	right angle	in middle	moderately shorter
7	moderately larger	moderately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

UPO1

Opuntia: Shape of Cladode

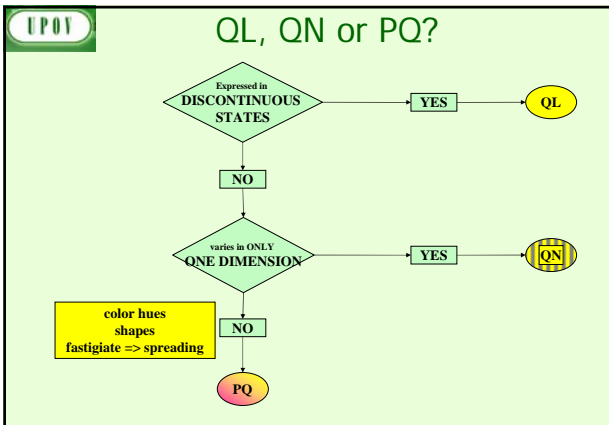
1 narrow elliptic 2 medium elliptic 3 broad elliptic 4 circular

5 rhombic 6 narrow obovate 7 broad obovate



UPO1

EXERCISE



UPO1

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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4. Petal: color	
white	1
yellow	2
orange	3
red	4
pink	5
purple	6

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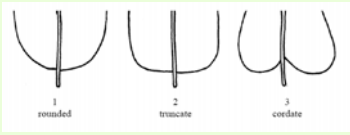
5. Leaf blade: intensity of green color of upper side	
light	3
medium	5
dark	7

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3. Plant: rhizomes	
absent	1
present	9

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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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Types of Expression

QL: QUALITATIVE

QN: QUANTITATIVE

PQ: PSEUDO-QUALITATIVE

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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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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**.

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

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Qualitative characteristic

Clematis: Leaf: type

1 simple

2 ternate

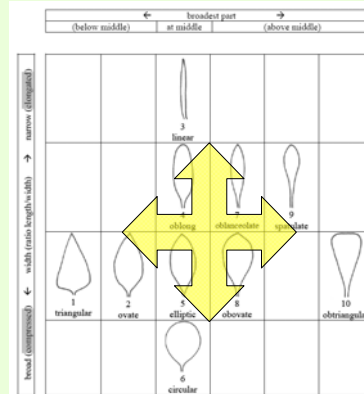
3 biternate

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)).



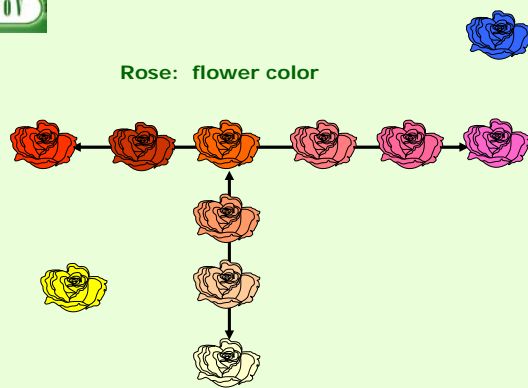
Types of Expression

QL: QUALITATIVE

QN: QUANTITATIVE

PQ: PSEUDO-QUALITATIVE

Rose: flower color

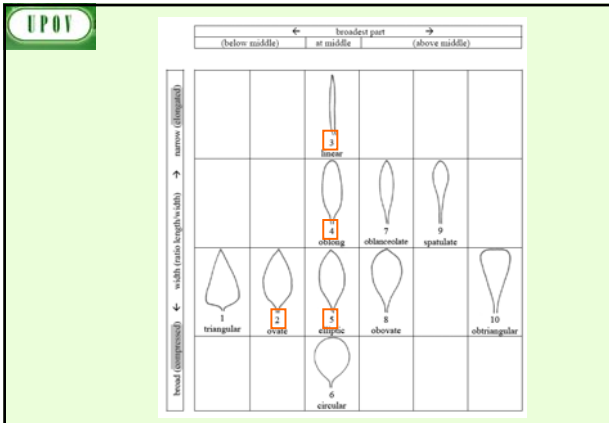


PSEUDO-QUALITATIVE Characteristics

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

Pseudo-Qualitative Characteristics: 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.



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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...

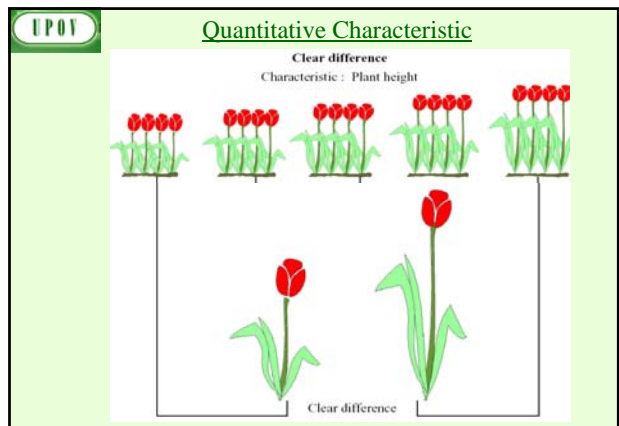
UPOV

Types of Expression

QL: QUALITATIVE

QN: QUANTITATIVE

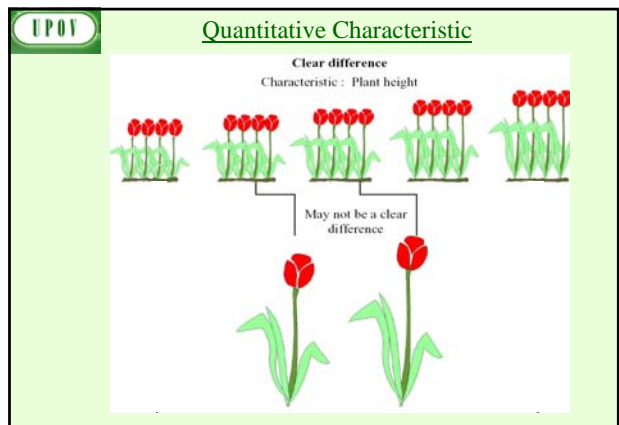
PQ: PSEUDO-QUALITATIVE



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QUANTITATIVE Characteristics

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NOTES
versus
SIDE-BY-SIDE COMPARISON

(Quantitative characteristics)

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.**

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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...and comparison with descriptions in databases

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

4.5

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Quantitative Characteristics: distinctness

TG/233/1
Dusca Dusca, 2007-03-28
- 9 -

	English	français	Deutsch	español	Example Varieties/ Exemples/ Beispielsorten/ Variedades ejemplo	Note/ Nota
6. (4) Leaf blade length (*)						
QN	short	courte	kurz	corto	Codine, Strawberry Souda	3
	medium	moyenne	mittel	medio	Codacre	5
	long	longue	lang	largo	Babwislax, Babwislax	7

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

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"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!

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Quantitative Characteristics: distinctness

TG/233/1
Dusca Dusca, 2007-03-28
- 9 -

	English	français	Deutsch	español	Example Varieties/ Exemples/ Beispielsorten/ Variedades ejemplo	Note/ Nota
5. Stem: anthocyanin coloration below inflorescence						
QN	absent or weak	absente ou faible	fehlernd oder gering	ausente o débil	Heccharm	1
	medium	moyenne	mittel	media	Hecrace	2
	strong	forte	stark	fuerte		3

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

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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.

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**:

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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

- UPOV/1: Administrative and Legal Committee
- UPOV/2: Administrative and Legal Committee Ad-hoc Group
- UPOV/3: Technical Committee
- UPOV/4: Strategic Cultural Committee
- UPOV/5: Technical Working Party for Agricultural Crops
- UPOV/6: Technical Working Party for Horticultural and Cereals Programs
- UPOV/7: Technical Working Party for Fruit Crops
- UPOV/8: Technical Working Party for Ornamental Plants and Forest Trees
- UPOV/9: Technical Working Party for Vegetables
- UPOV/10: International and Technical and Molecular Techniques, and DNA Profiling in Plant Breeding
- UPOV/11: Ad-hoc Subgroup of Technical and Legal Experts of Horticultural and Molecular Techniques
- UPOV/12: Working Group on Horticultural and Molecular Techniques, and DNA Profiling in Plant Breeding - DNA Subgroup
- UPOV/13: Ad-hoc Working Group to Study the Impact of Plant Breeder's Rights
- UPOV/14: Ad-hoc Working Group on the Publication of Variety Descriptions
- UPOV/15: Ad-hoc Working Group on Variety Identification
- UPOV/16: UPOV, Geneva, March 18 to 20, 2010

UP01

3. TEST GUIDELINES

(b) Guidance on drafting characteristics

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

UP01 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*)	**

UP01 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**.

UP01 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*)	**

UP01 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*)	**

UP01 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)

single variety record

single variety record

single variety record

record 1 record 2 record n

variety mean / statistical analysis of individual group data

UPOV

3. TEST GUIDELINES

(b) Guidance on drafting characteristics

(iii) Asterisked, grouping and TQ characteristics

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

calculation of mean

variety mean

Statistical analysis of individual plant data

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

EXERCISE

UPOV

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
(*) QN	Plant: growth habit	Plante : port	Pflanze: Wuchsform	Planta: porte		
	upright	dressé	aufrecht	erecto	Impatiak	1
	semi-upright	semi dressé	halbaufricht	semierecto	DO158-1	2
	spreading	étalé	breitwüchsig	aberto	Sonnenm 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.	<p>1.Must be a characteristic included in the Test Guidelines.</p> <p>2. Should always be examined for DUS and included in the variety description by all members of the Union</p> <p>EXCEPT 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>

UPOV

Apple: Fruit color

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

Apple: Fruit color

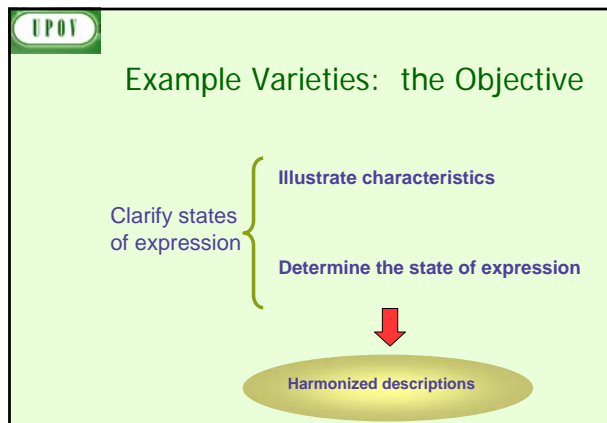
UPOV

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
5.5 Fruit: hue of over color - with bloom removed (37)		
orange red	Cox's Orange Pippin, Egremont Passet	1]
pink red	Cripps Pink, Delcourt	2]
red	Akane, Galaxy, Red Elstar, Regal Prince	3]
purple red	Red Joupprance, Spartan	4]
brown red	Fiesta, Joban, Lord Dunsley	5]
5.6 Fruit: pattern of over color (39)		
only solid flush	Red Joupprance, Richard Delicieux	1]
solid flush with weakly defined stripes	Galaxy	2]
solid flush with strongly defined stripes	Joupprance	3]
weakly defined flush with strongly defined stripes	Gravenstein	4]
only stripes (no flush)	Helios	5]
flushed and mottled	Elstar	6]
flushed, striped and mottled	Jouppold	7]

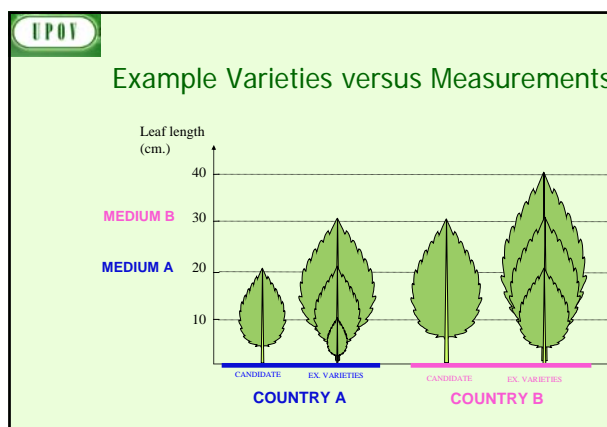
UPOV

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

4. TEST GUIDELINES

(b) Guidance on drafting characteristics

(iv) Example varieties

UPOV

Example Varieties –the need

UPOV

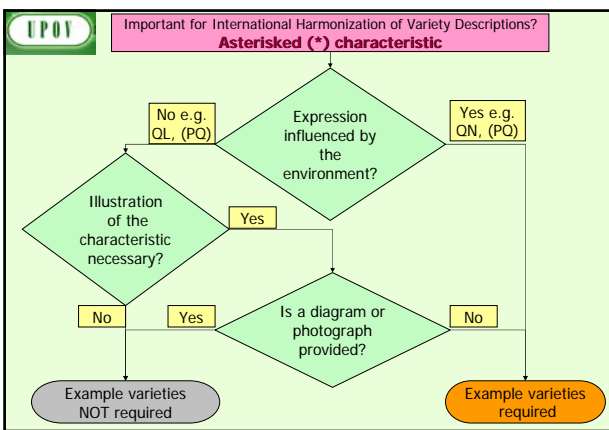
Example Varieties – the need

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

UPOV TG/139
Lettuce/Laine/Sala/Lechuga, 2004-03-31
- 7 -

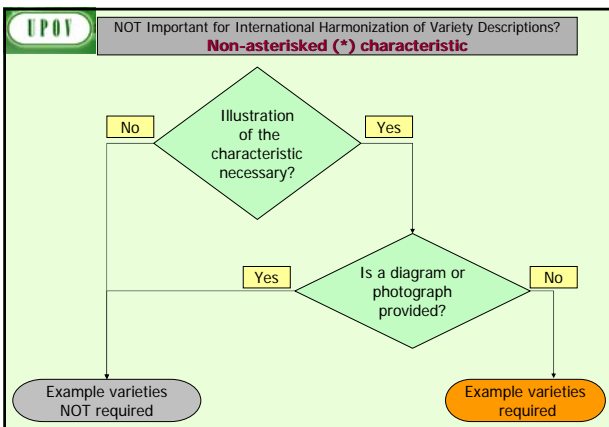
7. Table of Characteristics/ Tableau des caractères/ Merkmalstabelle/Tabla de caracteres

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



UPOV TG/219-1
Perilla Perilla Perilla Perilla, 2004-03-31
- 10 -

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



UPOV TG/219-1
Brachycomia/Bianca/Graue/Blanche, 2003-04-06
- 7 -

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

	English	français	deutsch	español	Example Varieties/ Exemples/ Beispielenamen/ Variedades ejemplo	Note/ Nota	
1. (*)	Plant: growth type	Plante: type de croissance	Pflanze: Wuchsform	Planta: tipo de crecimiento			
	QN (*)	head cluster	en ombre à la base	Stapel Blüchel	en racimos basales	1	
		tuft	en touffure	Stapel	en touffure		2
2. (*)	Stem: position and number of stem	Leurre: position de la tige et nombre de tiges	Stängel: Stellung und Anzahl der Stängel	Stipe: posición y número de tallos			
	QN (*)	erect upright	érecte dressée	aufrecht	erecta	1	
		horizontal	horizontales	horizontal	horizontal		3
	erect upright	érecte dressée	aufrecht	erecta		5	
3.	Stem: position and number of stem	Leurre: position de la tige et nombre de tiges	Stängel: Stellung und Anzahl der Stängel	Stipe: posición y número de tallos			
	QN (*)	low	à peu élevées	klein	bajo	3	
		medium	moyennement élevées	mittel	medio		5
	erect	élevées	groß	alto		7	
4. (*)	Plant: height including flowers	Plante: hauteur	Pflanze: Höhe einschließlich Blüten	Planta: altura, incluyendo las flores			
	QN (*)	short	basse	stumpf	corta	Mardi Gray	3
		medium	moyenne	mittel	media	Brookdale	5
	tall	élevée	hoch	larga	Happy Face Pink	7	

UPOV

3. TEST GUIDELINES (document TGP/7)

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

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 **Test Guidelines**

- **264 Test Guidelines** adopted

but...

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

UPOV

4. UPOV DATABASES

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 **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

5. THE UPOV WEBSITE

UPOV

GENIE Database 

Variety denomination related information
Protection offered by UPOV members

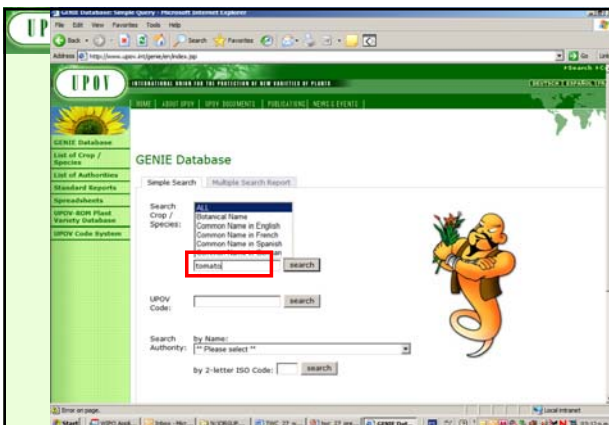
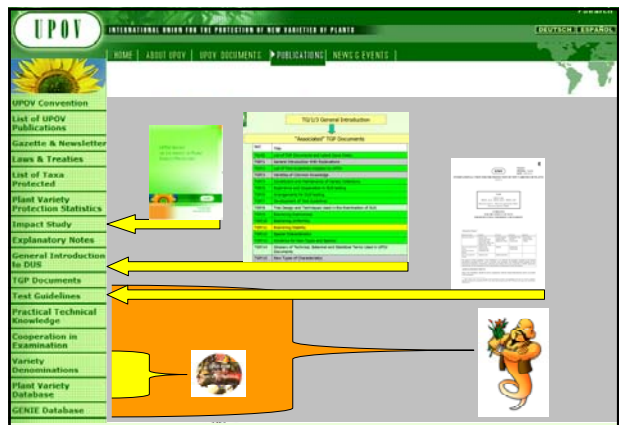
DUS information

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

UPOV

UPOV Website
<http://www.upov.int>

(e-mail: upov.mail@upov.int)

EPOV

EPOV

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 session 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.

Topics of Plant Breeding and the Need for Plant Breeder's Rights
 Select Breeds and Applicants to Protection
 Conditions of Protection
 Applying for a Plant Breeder's Right
 Status of Breeders, Infringement and Damages (DUS)
 Scope of the Plant Breeder's Right
 Plant and Sexual Crossing
 Scope of the Plant Breeder's Right, Infringement
 About the Scope of the Plant Breeder's Right
 Exceptions and Restrictions to the Plant Breeder's Right
 Rights and Obligations of the Plant Breeder's Right
 Basis for the Protection of New Varieties of Plants
 Implementation of the Convention and Final Provisions

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.

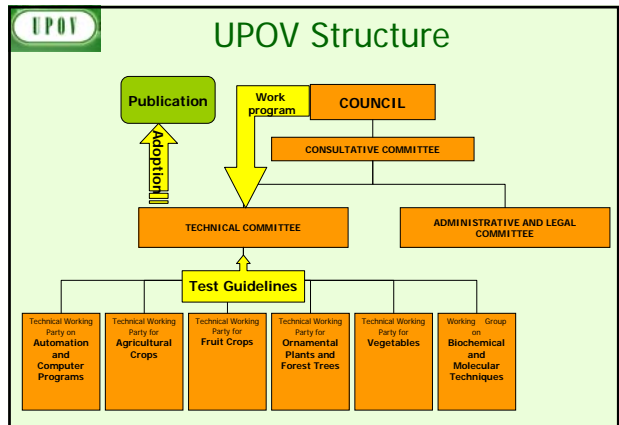
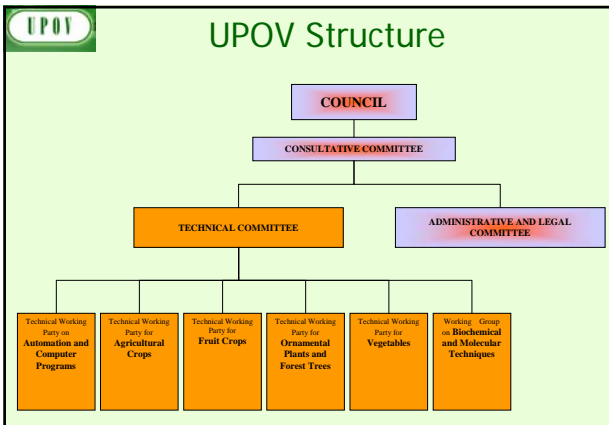
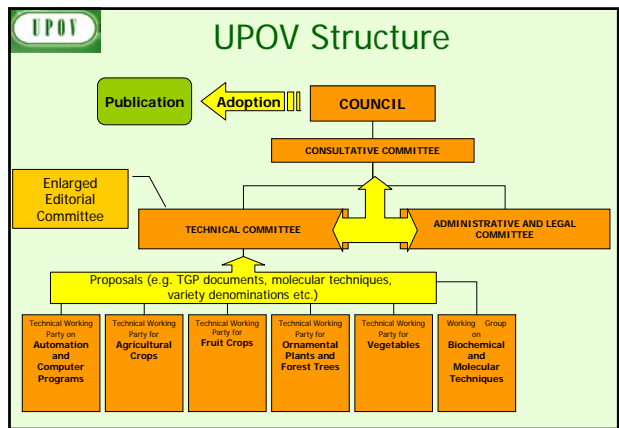
The course materials and tutoring are available to the participants for a period of four weeks. The final exam is taken in the fifth week of the course. Certificates are issued at the end of the course.

EPOV

DEVELOPING GUIDANCE
to facilitate
HARMONIZATION and COOPERATION

EPOV

6. ROLE OF THE UPOV TECHNICAL WORKING PARTIES (THE DUS EXAMINATION)



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	Uniformity method development	Recommendations on Test Guidelines
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	Room.1 Test Guidelines subgroup	Room.2 Test Guidelines subgroup
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	Room.1 Test Guidelines subgroup	Room.2 Test Guidelines subgroup
	Continuation	RECEPTION		Continuation	END OF SESSION	

UPOV

**AN OPPORTUNITY
for
TRAINING**

UPOV

EXCHANGING INFORMATION

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	Uniformity method development	Recommendations on Test Guidelines
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	Room.1 Test Guidelines subgroup	Room.2 Test Guidelines subgroup
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	Room.1 Test Guidelines subgroup	Room.2 Test Guidelines subgroup
	Continuation	RECEPTION		Continuation	END OF SESSION	

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	Uniformity method development	Recommendations on Test Guidelines
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	Room.1 Test Guidelines subgroup	Room.2 Test Guidelines subgroup
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	Room.1 Test Guidelines subgroup	Room.2 Test Guidelines subgroup
	Continuation	RECEPTION		Continuation	END OF SESSION	

UPOV

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 Comm.	China	
2010	Croatia	European Comm.	Mexico	Mexico	Bulgaria	Canada
	May 24-28	June 28 - July 2	Sept. 27 - Oct. 1	Sept. 20 - 24	July 5 - 9	May 11 - 13

**7. AGENDA
for the
TWP Session**

8. FEEDBACK

THANK YOU