TECHNICAL WORKING PARTY FOR VEGETABLES

Forty-Sixth Session

PREPARATORY WORKSHOP

near the city of Venlo, Netherlands
June 10, 2012

PROGRAM

1. Introduction to UPOV
2. Overview of the General Introduction (document TG/1/3 and TGP documents)
3. Guidance on drafting Test Guidelines (document TGP/7)

(a) Selection of characteristics

(b) Guidance on drafting characteristics
- *(i) Types of expression (QL, QN, PQ), notes and distinctness*
- *(ii) Method of observation (V/M; G/S)*
- *(iii) Asterisked, grouping and TQ characteristics*
- *(iv) Example varieties*

(c) The process for developing UPOV Test Guidelines

PROGRAM

4. Situation in UPOV Concerning the possible use of Molecular Techniques in the DUS Examination
5. UPOV databases (UPOV-ROM Plant Variety Database; GENIE database)
6. The UPOV website
7. Role of UPOV Technical Working Parties (TWPs) and the BMT
8. Agenda for the TWV Session
9. Feedback

1. INTRODUCTION TO UPOV

UPOV: INDEPENDENT INTERGOVERNMENTAL ORGANIZATION

The International Convention for the Protection of New Varieties of Plants

established in 1961

The International Union for the Protection of New Varieties of Plants

Union internationale pour la protection des obtentions végétales

2. OVERVIEW OF THE GENERAL INTRODUCTION

(DOCUMENT TG/1/3 AND TGP DOCUMENTS)

GUIDANCE FOR DUS EXAMINATION

THE CONDITIONS FOR GRANTING A BREEDER'S RIGHT

Criteria to be satisfied

- NOVELTY
- **D**ISTINCTNESS
- **U**NIFORMITY
- **S**TABILITY

} **"DUS"**

THE CONDITIONS FOR GRANTING A BREEDER'S RIGHT

Other conditions

- VARIETY DENOMINATION
- FORMALITIES
- PAYMENT OF FEES

NO OTHER CONDITIONS!

Guidance for DUS Examination

facilitates:

BEST PRACTICE (based on experience)

=> good decisions

=> good definition of the object of protection (strong protection)

=> efficiency in method of examination (learn from the best)

HARMONIZATION

=> efficiency

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

UPOV provides guidance by:

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

= version 3

TG/1/3 General Introduction

"Associated" TGP Documents

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

3. GUIDANCE ON DRAFTING TEST GUIDELINES

UPOV provides guidance by:

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

AND

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

E

UPOV

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

INTERNATIONAL UNION FOR THE PROTECTION OF NEW VARIETIES OF PLANTS
GENEVA

YAM

UPOV Code:
DIOSC_ALA; DIOSC_BAT; DIOSC_JAP

Dioscorea alata L.; *Dioscorea polystachya* Turcz.; *Dioscorea japonica* Thunb.

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

Alternative Names:*

Botanical name	*English*	*French*	*German*	*Spanish*
Dioscorea alata L.	Greater yam, Guyana arrowroot, Ten-months yam, Water yam, White yam, Winged yam, Yam	Grande igname, Igname ailée, Igname de Chine	Geflügelter Yam, Wasser-Yamswurzel	Ñame blanco, Ñame de agua, Tabena
Dioscorea polystachya Turcz., *Dioscorea batatas* Decne.	Chinese yam, Chinese-potato, Cinnamon-vine	Igname	Chinesische Yamswurzel	
Dioscorea japonica Thunb.	Japanese yam	Igname japonaise		

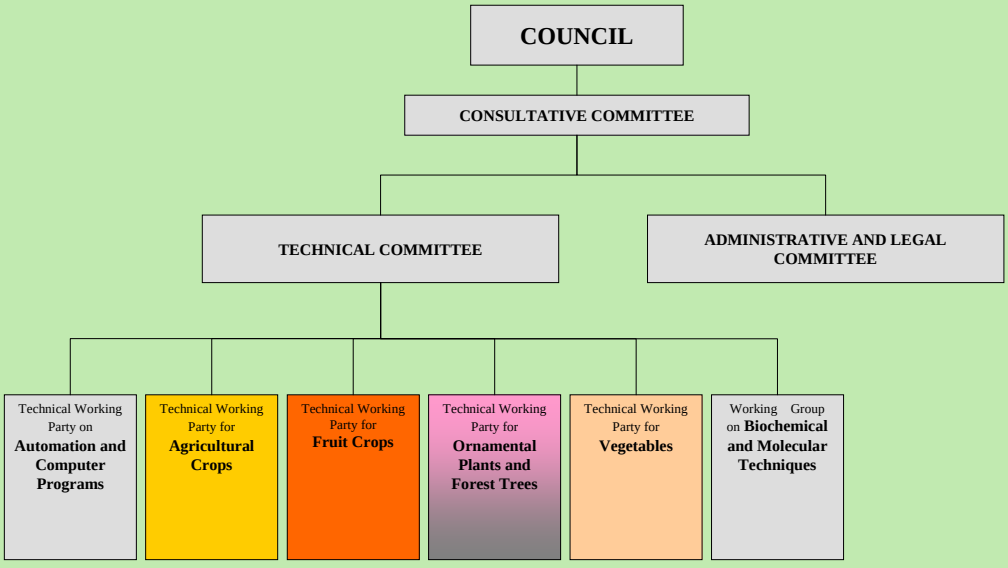
The purpose of these guidelines ("Test Guidelines") is to elaborate the principles contained in the General Introduction (document TG/1/3), and its associated TGP documents, into detailed practical guidance for the harmonized examination of distinctness, uniformity and stability (DUS) and, in particular,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

ASSOCIATED DOCUMENTS

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

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

UPOV Structure



TGP/7
"Development of Test Guidelines"

1. Introduction

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

3. Guidance for Drafting Test Guidelines

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

E

UPOV

TG/{xx}
ORIGINAL: {xx}
DATE: {xx}

INTERNATIONAL UNION FOR THE PROTECTION OF NEW VARIETIES OF PLANTS
GENEVA

DRAFT

Please select: "View" then "Comments" from the Word menu to see all notes

{MAIN COMMON NAME}

([types of] botanical name)

(UPOV Code)

{ GN 1 – Botanical name }

GUIDELINES

FOR THE CONDUCT OF TESTS

FOR DISTINCTNESS, UNIFORMITY AND STABILITY

prepared by [an expert] / [experts] from [drafting country(ies) / organization(s)]

to be considered by the Technical Working Party for [xxx] at its [xxx] session, to be held in [xxx] from [xxx]

Alternative Names:*

Botanical name	*English*	*French*	*German*	*Spanish*
....	....	....	....	....

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

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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

3. TEST GUIDELINES

(a) Selection of characteristics

"CHARACTERISTICS"

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

Selection of Characteristics

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

(a) **results from a given genotype** or combination of genotypes;

(b) is sufficiently **consistent and repeatable** in a **particular environment**;

(c) exhibits sufficient **variation between varieties** to be able to establish distinctness;

(d) is capable of **precise definition and recognition**;

(e) allows **uniformity requirements** to be fulfilled;

(f) allows **stability requirements** to be fulfilled, meaning that it produces consistent and repeatable results after repeated propagation or, where appropriate, at the end of each cycle of propagation.

Selection of Characteristics

- **Yield ???**
- **Straw strength ???**

Etc.

Selection of Characteristics

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

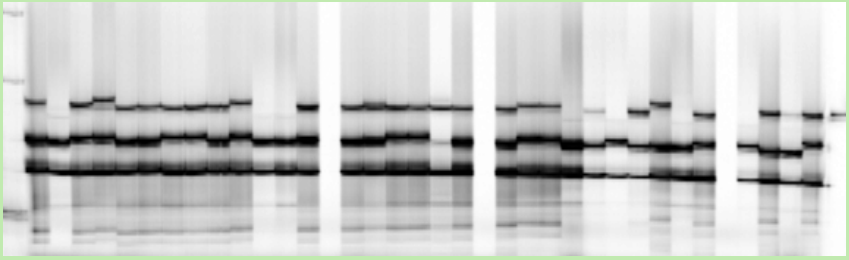
Selection of Characteristics

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

Special Characteristics: Disease Resistance

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

Molecular Techniques?



3. TEST GUIDELINES

(b) Guidance on drafting characteristics

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

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

Types of Expression

QL: QUALITATIVE

QN: QUANTITATIVE

PQ: PSEUDO-QUALITATIVE

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

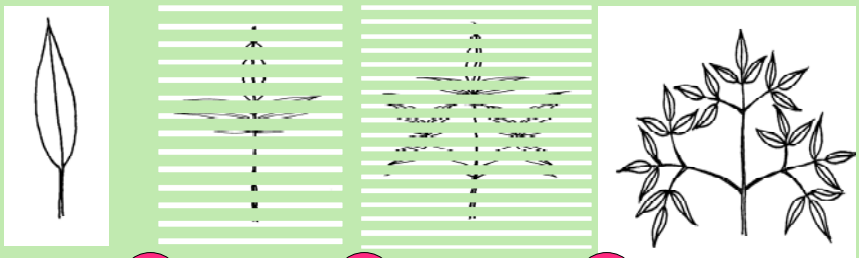
Char. No.	English	français	Deutsch	español	Example Varieties Exemples Beispielssorten Variedades ejemplo	Note/ Nota
1. (*) (+)	**Plant: growth habit**	**Plante : port**	**Pflanze: Wuchsform**	**Planta: porte**		
QN	upright	dressé	aufrecht	erecto	Inuppink	1
	semi-upright	semi dressé	halbaufrecht	semierecto	D0158-1	2
	spreading	étalé	breitwüchsig	abierto	Sumnem 03	3
	semi-trailing	semi-étalé	halbhängend	semirrastrero	Inupsaf	4
	trailing	coureux	hängend	rastrero	Organza	5
2. (+)	**Plant: height**	**Plante : hauteur**	**Pflanze: Höhe**	**Planta: altura**		
QN	short	basse	niedrig	baja	Yateye	3
	medium	moyenne	mittel	media	D0158-1	5
	tall	haute	hoch	alta	Inuppink	7

QUALITATIVE Characteristics

"Qualitative characteristics" are those that are **expressed in discontinuous states** (e.g. sex of plant: dioecious female (1), dioecious male (2), monoecious unisexual (3), monoecious hermaphrodite (4)).
These states are self-explanatory and independently meaningful. All states are necessary to describe the full range of the characteristic, and every form of expression can be described by a single state. The order of states is not important. As a rule, the **characteristics are not influenced by environment**.

Qualitative characteristic

Clematis: Leaf: type



1 simple | 2 ternate | 3 biternate | 4 triternate

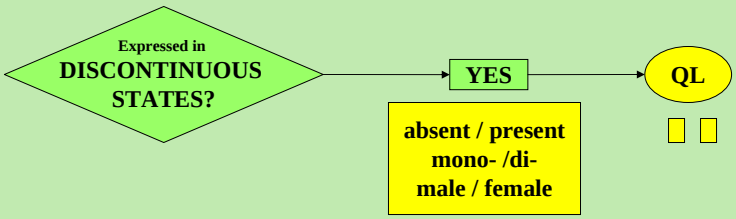
Qualitative (QL) characteristic?

Anthocyanin coloration: QL (=absent / present)?

NO!

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

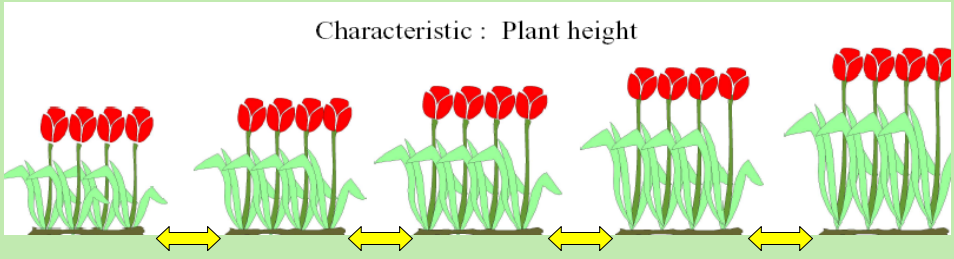
QL, QN or PQ?



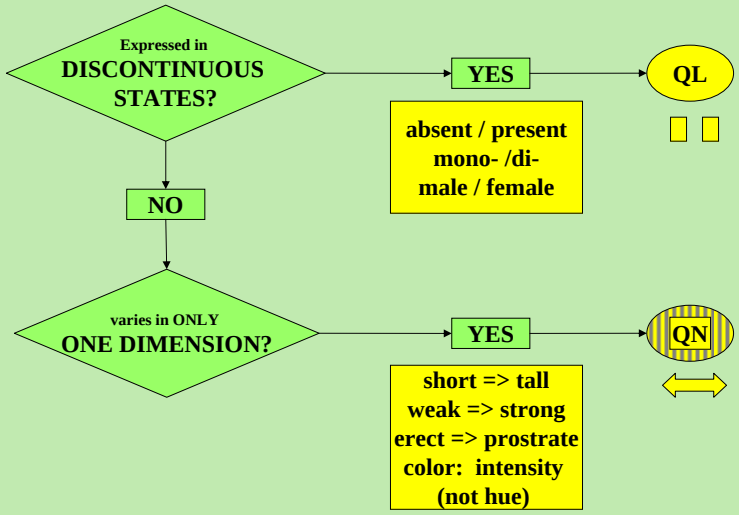
QUANTITATIVE Characteristics

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

Quantitative Characteristic



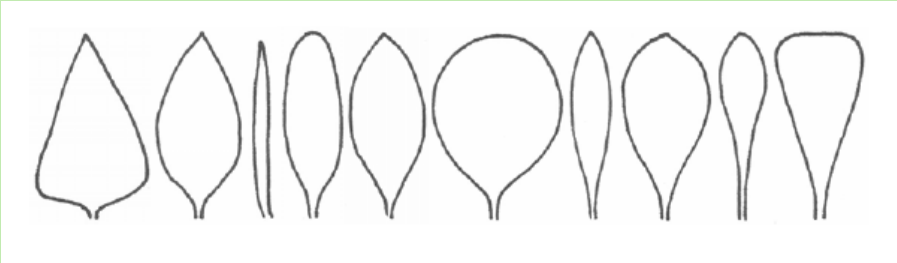
QL, QN or PQ?

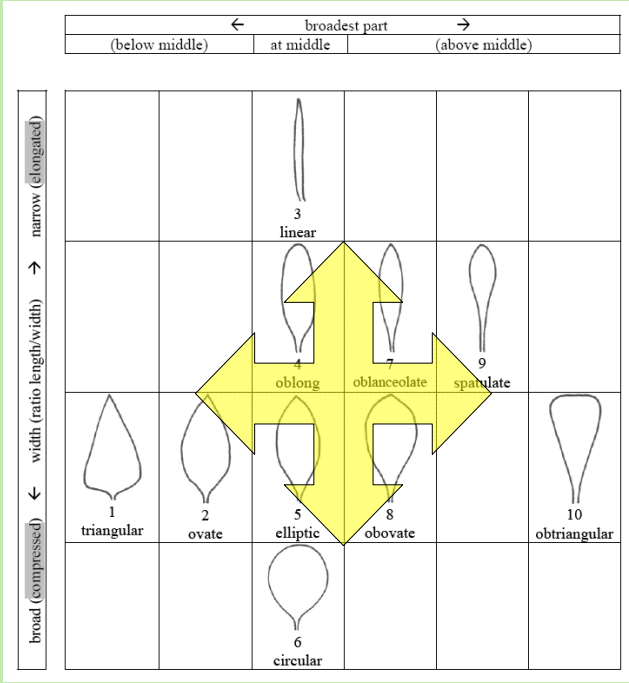


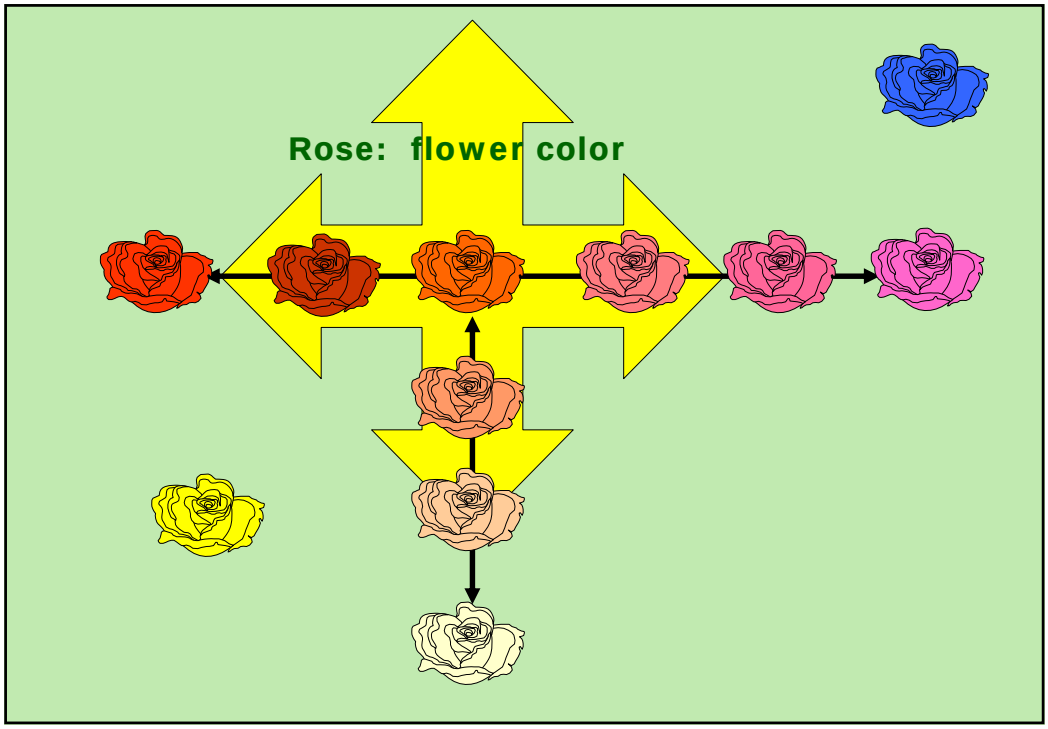
PSEUDO-QUALITATIVE Characteristics

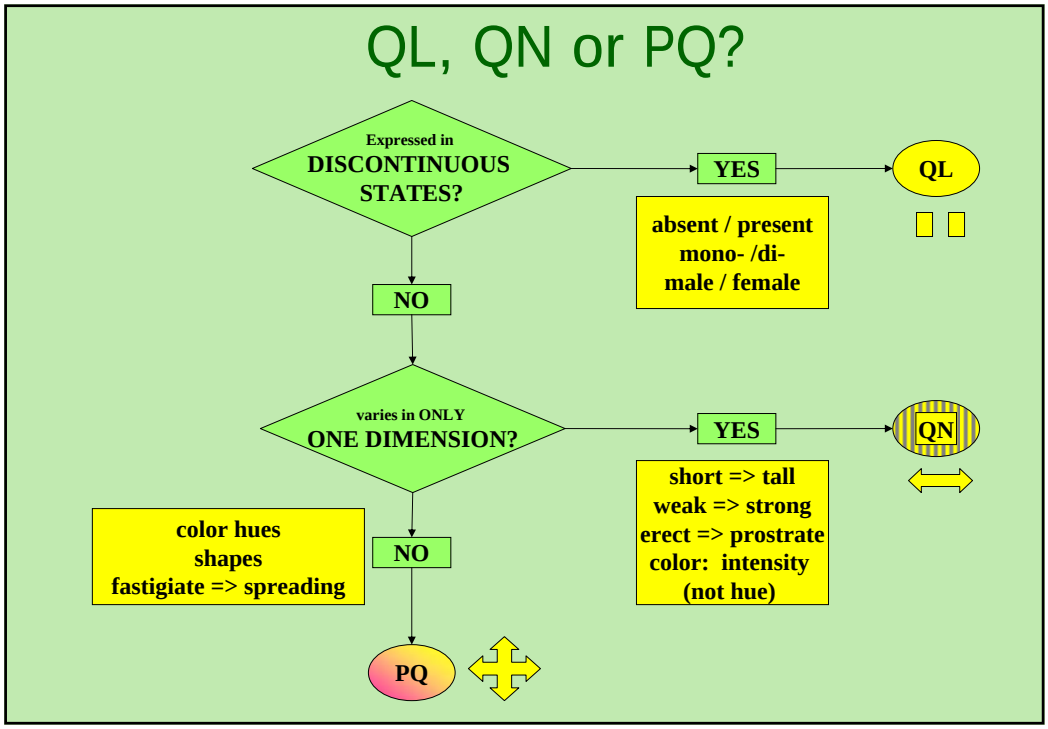
In the case of "pseudo-qualitative characteristics," the **range of expression is at least partly continuous, but varies in more than one dimension** (e.g. shape: ovate (1), elliptic (2), circular (3), obovate (4)) and cannot be adequately described by just defining two ends of a linear range. In a similar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

Example




broadest part
(below middle)
at middle
(above middle)
broad (compressed) ← width (ratio length/width) → narrow (elongated)
1
triangular
2
ovate
3
linear
4
oblong
5
elliptic
6
circular
7
oblanceolate
8
obovate
9
spatulate
10
obtriangular


Rose: flower color


QL, QN or PQ?
Expressed in
DISCONTINUOUS
STATES?
YES
QL
absent / present
mono- /di-
male / female
NO
varies in ONLY
ONE DIMENSION?
YES
QN
short => tall
weak => strong
erect => prostrate
color: intensity
(not hue)
color hues
shapes
fastigiate => spreading
NO
PQ

EXERCISE

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

Types of Expression

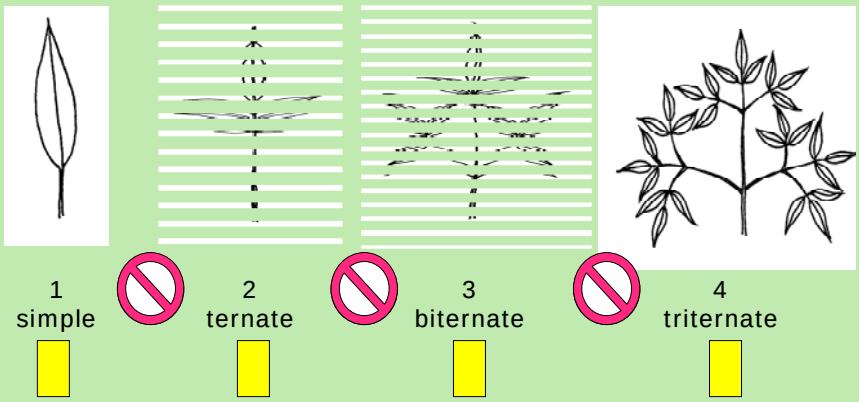
QL: QUALITATIVE

QN: QUANTITATIVE

PQ: PSEUDO-QUALITATIVE

Qualitative characteristic

Clematis: Leaf: type



Qualitative Characteristics

(special cases)

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

Qualitative Characteristics: **distinctness**

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

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

Types of Expression

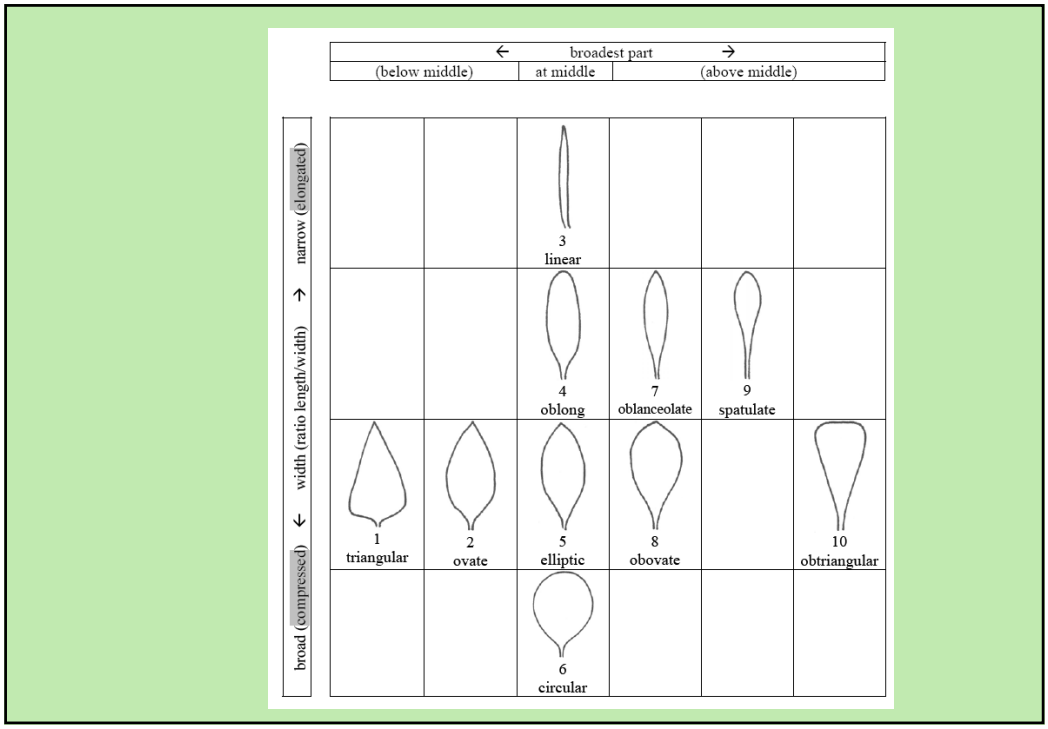
QL: QUALITATIVE

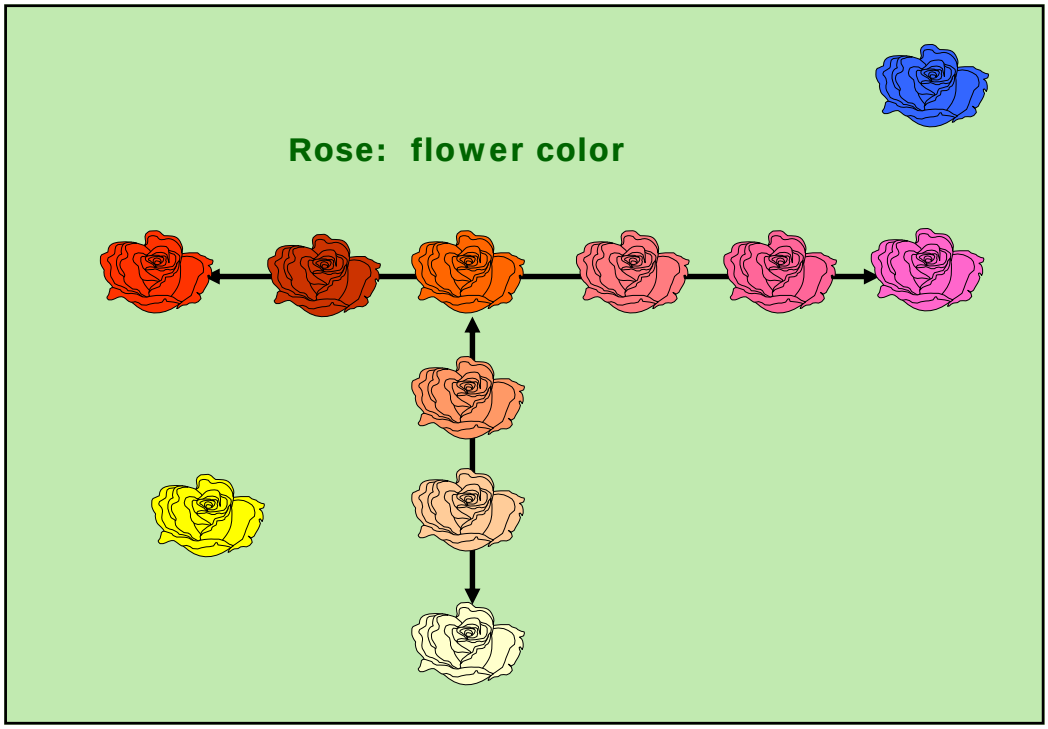
QN: QUANTITATIVE

PQ: PSEUDO-QUALITATIVE

PSEUDO-QUALITATIVE Characteristics

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

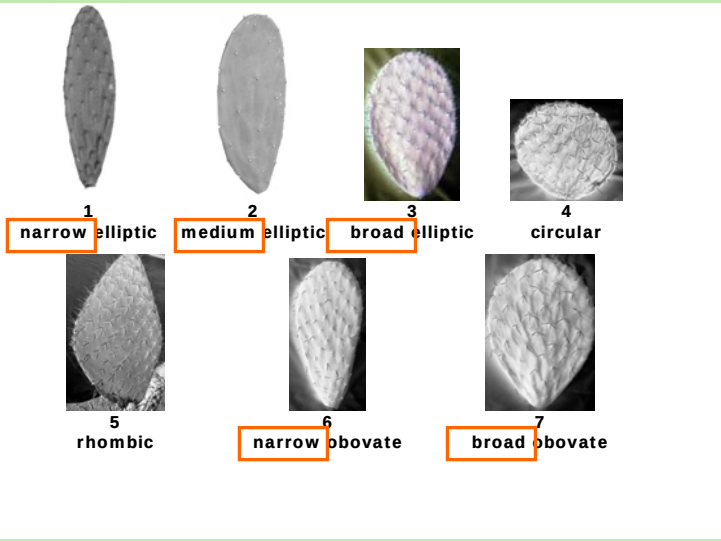

← broadest part →
(below middle)
at middle
(above middle)
broad (compressed) ← width (ratio length/width) → narrow (elongated)
1 triangular
2 ovate
3 linear
4 oblong
5 elliptic
6 circular
7 oblanceolate
8 obovate
9 spatulate
10 obtriangular


Rose: flower color

PSEUDO-QUALITATIVE Characteristics (typical examples)

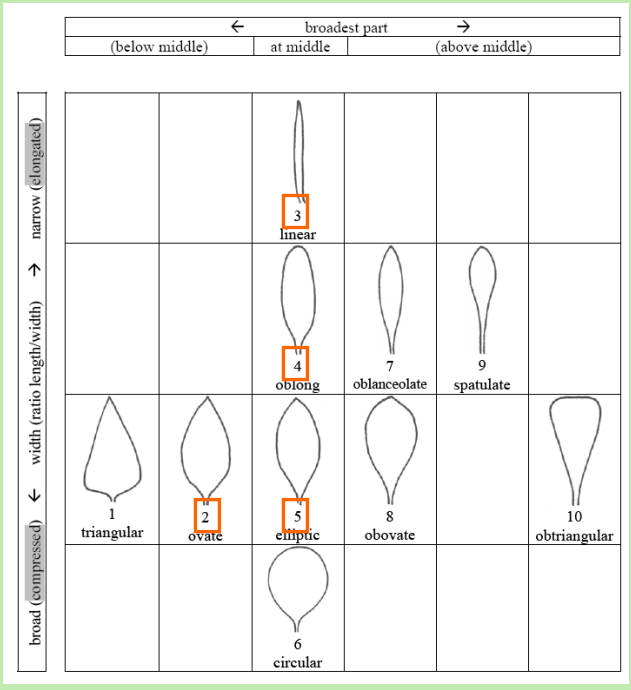
24. (+)	Flower: color of the center	Fleur: couleur du centre	Farbe der Mitte	Flor: color del centro	
PQ	green	vert	grün	verde	1
	yellow	jaune	gelb	amarillo	2
	orange	orange	orange	naranja	3
	pink	rose	rosa	rosa	4
	red	rouge	rot	rojo	5
	purple	pourpre	purpurn	púrpura	6

Opuntia: Shape of Cladode



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

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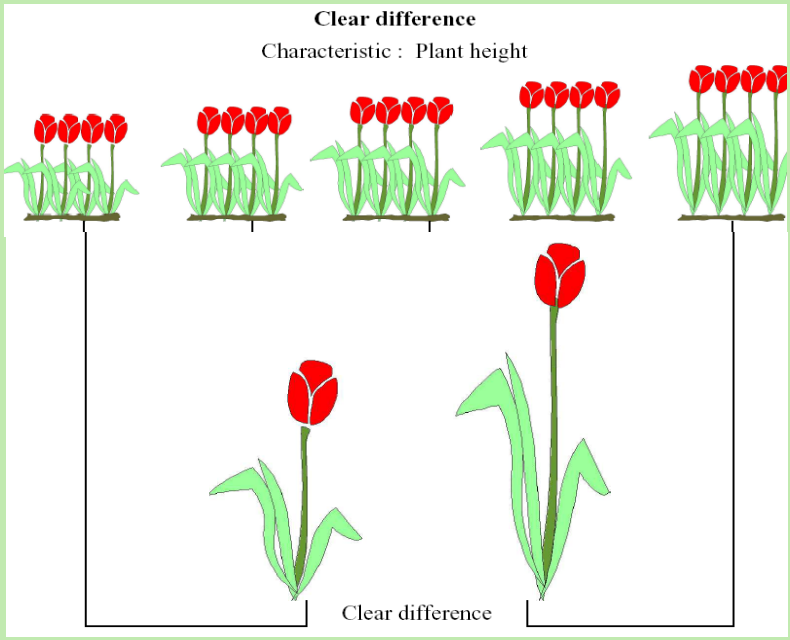
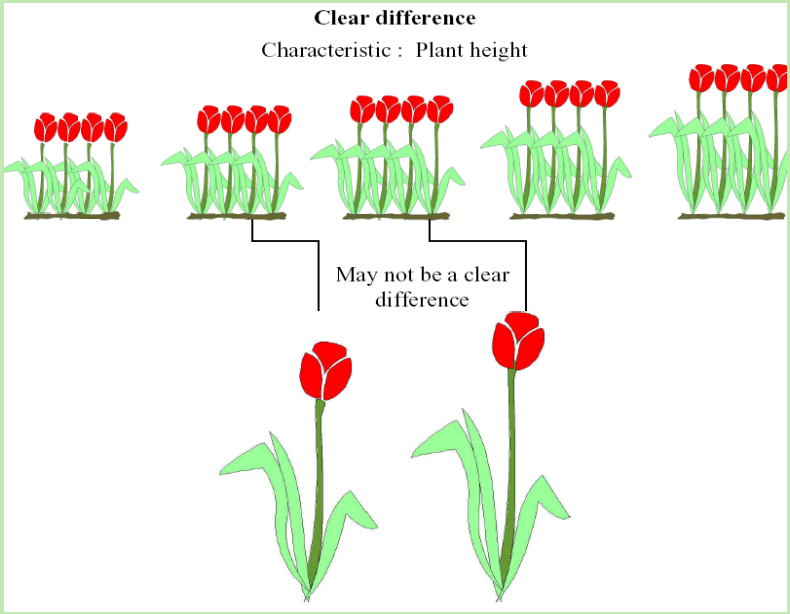
Quantitative Characteristics: **distinctness**

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

Quantitative Characteristic



Quantitative Characteristic



Quantitative Characteristics (1-9)

weak/strong
short/long
small/large

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

Note	State
1	very small (or: absent or very small)
2	very small to small
3	**small**
4	small to medium
5	**medium**
6	medium to large
7	**large**
8	large to very large
9	very large

Quantitative Characteristics (1-9)

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

Quantitative Characteristics (1-9)

State	Example 1 **Size relative to:**	Example 2 **Angle:**	Example 3 **Position:**	Example 4 **Length in relation to:**
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**

Quantitative Characteristics (at least 3 notes)

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

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

NOTES

versus

SIDE-BY-SIDE COMPARISON

(Quantitative characteristics)

TGP/9/1 "Examining Distinctness"

5.2 Approaches for assessing distinctness

5.2.1 Introduction

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

(a) **Side-by-side visual comparison** in the growing trial (see Section 5.2.2);

(b) **Assessment by Notes / single variety records ("Notes"):** the assessment of distinctness is based on the recorded state of expression of the characteristics of the variety (see Section 5.2.3);

(c) Statistical analysis of growing trial data:

Quantitative Characteristics: **distinctness**

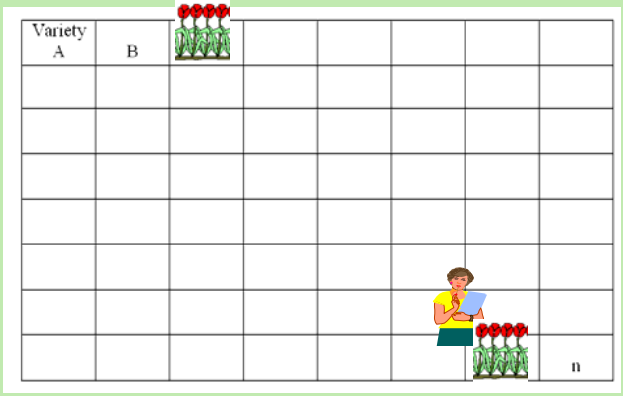
The General Introduction explains that, in the case of visually observed quantitative characteristics:

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

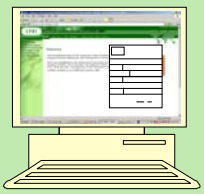
TGP/9/1 “Examining Distinctness”

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

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



…and comparison with descriptions in databases



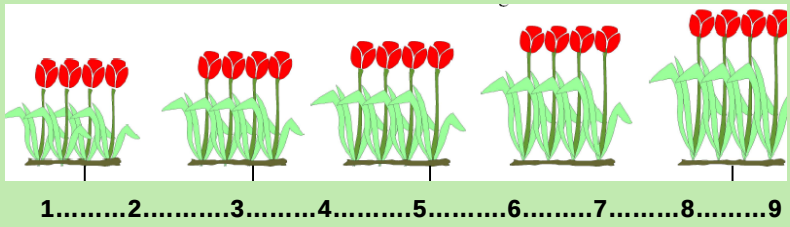
Quantitative Characteristics: **distinctness**

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

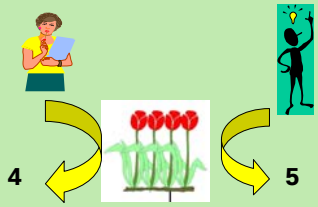
Test Guidelines (TGP/7 proposed revised text)

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

WHY?

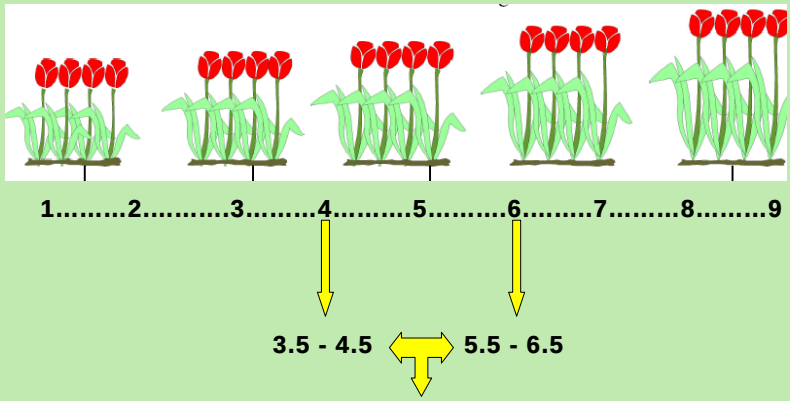


1.....2.....3.....4.....5.....6.....7.....8.....9



4.5

“Two Note” rule...



...means at least ONE note difference!

Quantitative Characteristics: **distinctness**

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

Test Guidelines (TGP/7 proposed revised text)

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

Quantitative Characteristics: **distinctness**

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

		English	français	Deutsch	español	Example Varieties/ Exemples/ Beispielssorten/ Variedades ejemplo	Note/ Nota
6. (*)	**(a)**	**Leaf blade: length**	**Limbe: longueur**	**Blattspreite: Länge**	**Limbo: longitud**		
QN		short	courte	kurz	corto	Coditer, Strawberry Sundae	3
		medium	moyenne	mittel	medio	Codiusre	5
		long	longue	lang	largo	Balwhislapi, Balwhiswhit	7

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

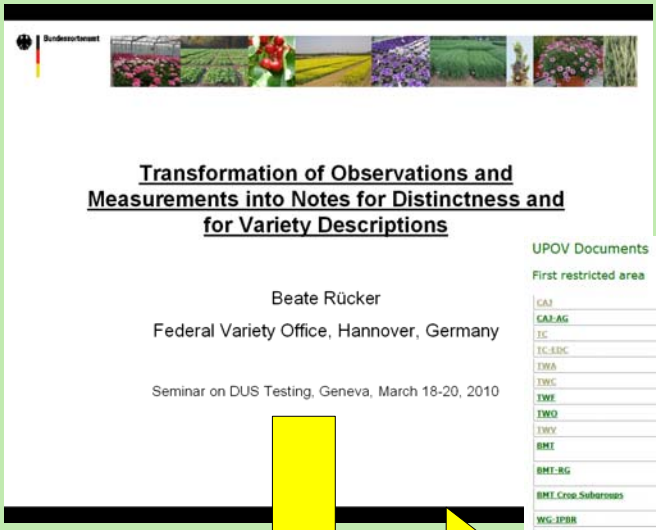
Quantitative Characteristics: **distinctness**

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

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

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

Process levels other than Notes...



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

Beate Rücker

Federal Variety Office, Hannover, Germany

Seminar on DUS Testing, Geneva, March 18-20, 2010

UPOV Documents

First restricted area

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

3. TEST GUIDELINES

(b) Guidance on drafting characteristics

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

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

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

Method of Observation

M: Measurement:

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

V: Visual observation:

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

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

TGP/9/1 "Examining Distinctness"

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

TGP/9/1 "Examining Distinctness"

V= Visual observation

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

TGP/9/1 “Examining Distinctness”

V= Visual observation or
M= Measurement

	Type of expression of characteristic		
Method of propagation of the variety	QL (QUALitative)	PQ (PSEUDO qualitative)	QN (QUANTitative)
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*)*	**

Type of Record
(for the purposes of distinctness)

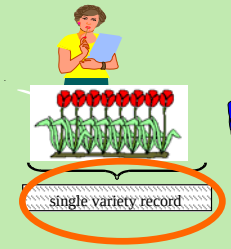
G: **single record** for a variety, or a **GROUP of plants** or parts of plants;

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

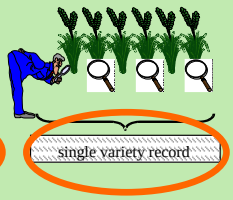
S: **records** for a number of **SINGLE**, individual **plants** or parts of plants ...

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

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

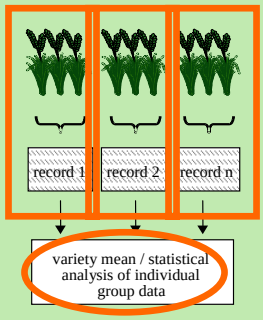


Section 4.3.2.3
Example (VG): Lowest leaf: hairiness of leaf sheaths
(barley: self-pollinated)



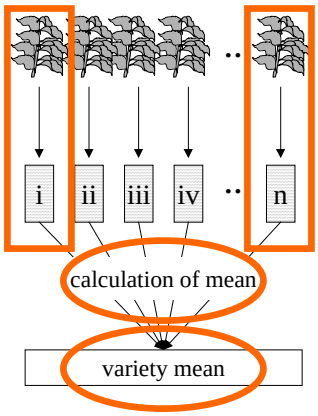
Section 4.3.2.3
Example (MG): Plant: height
(wheat: self-pollinated)

Section 4.3.2.4
Example: (statistical analysis)

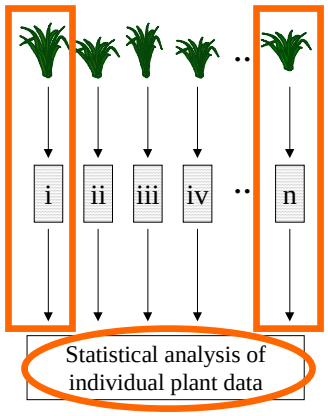


Records for a number of single, individual plants or parts of plants (S)

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



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



EXERCISE

3. TEST GUIDELINES

(b) Guidance on drafting characteristics

(iii) Asterisked, grouping and TQ characteristics

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.

Asterisked Characteristic

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

Char. No.	English	français	Deutsch	español	Example Varieties Exemples Beispielssorten Variedades ejemplo	Note/ Nota
1. (*) (+)	**Plant: growth habit**	**Plante : port**	**Pflanze: Wuchsform**	**Planta: porte**		
QN	upright	dressé	aufrecht	erecto	Inuppink	1
	semi-upright	semi dressé	halbaufrecht	semierecto	D0158-1	2
	spreading	étalé	breitwüchsig	abierto	Sumnem 03	3
	semi-trailing	semi-étalé	halbhängend	semirrastrero	Inupsaf	4
	trailing	coureux	hängend	rastrero	Organza	5

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.

Grouping Characteristic

5. Grouping of Varieties and Organization of the Growing Trial

5.1 The selection of varieties of common knowledge to be grown in the trial with the candidate varieties and the way in which these varieties are divided into groups to facilitate the assessment of distinctness are aided by the use of grouping characteristics.

5.2 Grouping characteristics are those in which the documented states of expression, even where produced at different locations, can be used, either individually or in combination with other such characteristics: (a) to select varieties of common knowledge that can be excluded from the growing trial used for examination of distinctness; and (b) to organize the growing trial so that similar varieties are grouped together.

5.3 The following have been agreed as useful grouping characteristics:

(a) Plant: growth habit (characteristic 1)
(b) Leaf blade: variegation (characteristic 11)
(c) Upper lobes of corolla: main color (characteristic 24), with the following groups:
Gr. 1: white
Gr. 2: yellow
Gr. 3: orange
Gr. 4: pink
Gr. 5: red
Gr. 6: red purple
Gr. 7: violet
Gr. 8: blue

Apple: Fruit color

Apple: Fruit color

10. Technical Questionnaire

TECHNICAL QUESTIONNAIRE	Page {x} of {y}	Reference Number:
		Application date: (not to be filled in by the applicant)

TECHNICAL QUESTIONNAIRE
to be completed in connection with an application for plant breeders' rights

1. Subject of the Technical Questionnaire

1.1	Botanical name	*Malus domestica* Borkh.
1.2	Common name	Apple

2. Applicant

Name	
Address	
Telephone No.	

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 (37) Fruit: hue of over color – with bloom removed		
orange red	Cox's Orange Pippin, Egremont Russet	1[ ]
pink red	Cripps Pink, Delorgue	2[ ]
red	Akane, Galaxy, Red Elstar, Regal Prince	3[ ]
purple red	Red Jonaprince, Spartan	4[ ]
brown red	Fiesta, Joburn, Lord Burghley	5[ ]
5.6 (39) Fruit: pattern of over color		
only solid flush	Red Jonaprince, Richared Delicious	1[ ]
solid flush with weakly defined stripes	Galaxy	2[ ]
solid flush with strongly defined stripes	Jonagored	3[ ]
weakly defined flush with strongly defined stripes	Gravensteiner	4[ ]
only stripes (no flush)	Helios	5[ ]
flushed and mottled	Elstar	6[ ]
flushed, striped and mottled	Jonagold	7[ ]

Grouping Characteristic

Function	Criteria
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.

Relationship between functions

(a) **GROUPING CHARACTERISTICS** selected from the Table of Characteristics should, in general, **receive an asterisk** in the Table of Characteristics and be **included in the Technical Questionnaire**.

(b) **TQ CHARACTERISTICS** selected from the Table of Characteristics should, in general, **receive an asterisk** in the Table of Characteristics and be **used as grouping characteristics**. TQ characteristics are **not restricted to** those characteristics used as **grouping characteristics**;

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

3. TEST GUIDELINES

(b) Guidance on drafting characteristics

(iv) Example varieties

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

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

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

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

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

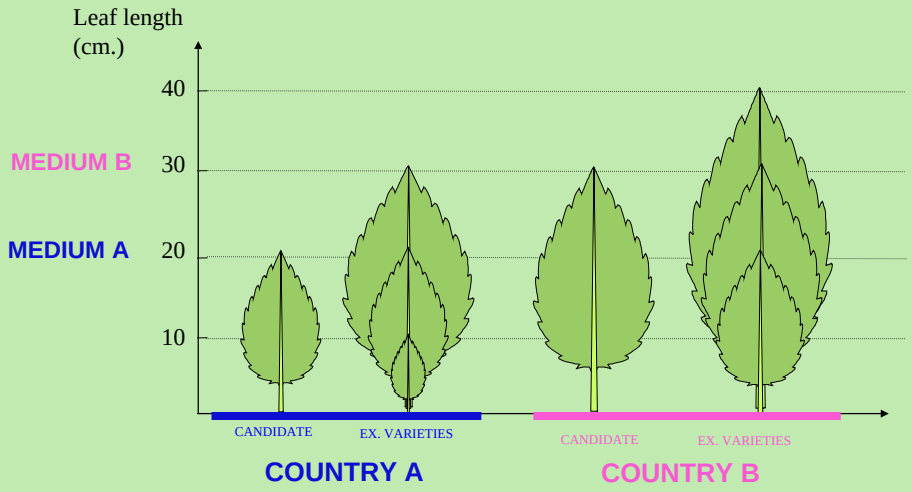
Example Varieties: the Objective

Clarify states of expression

- **Illustrate characteristics**
- **Determine the state of expression**

→ **Harmonized descriptions**

Example Varieties versus Measurements



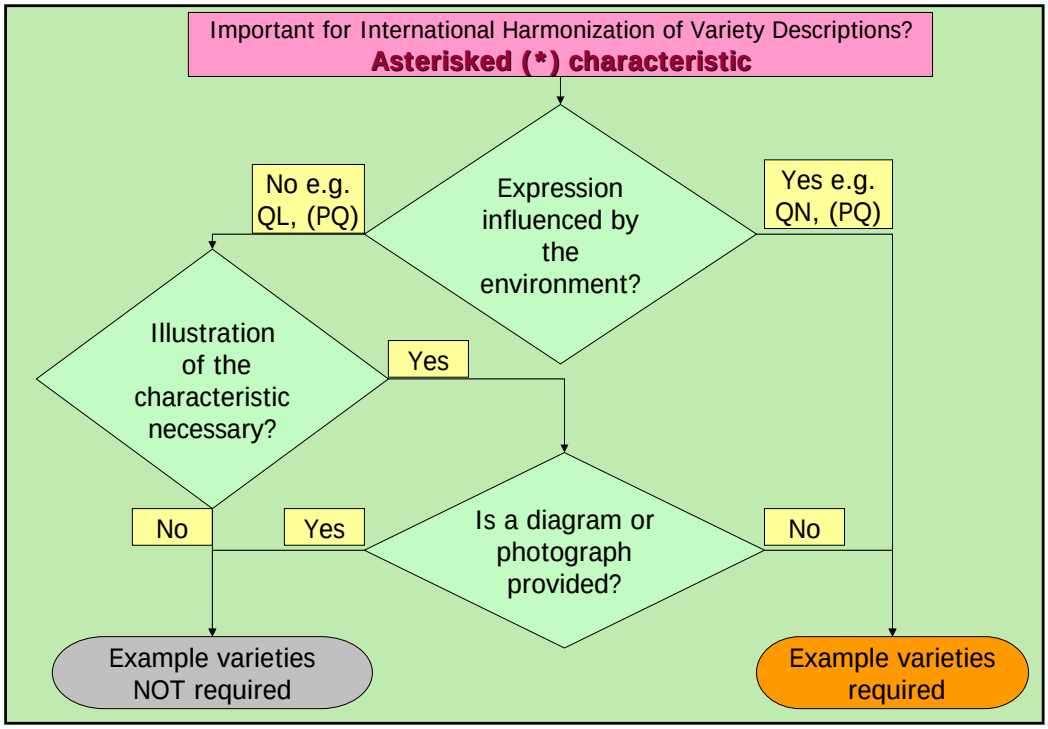
Example Varieties – the need

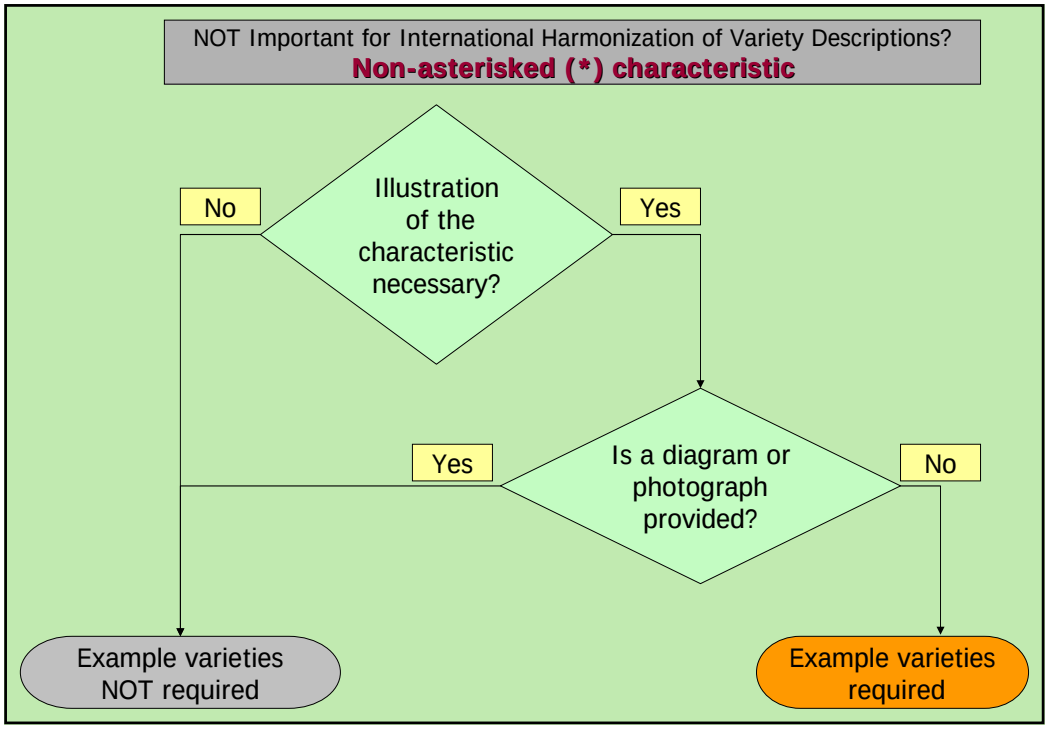
NEED

in characteristics used to **harmonize descriptions**

and

which are **influenced by the environment**





3. TEST GUIDELINES (document TGP/7)

(c) The process for developing UPOV Test Guidelines

Genera and Species

- **>3,000 genera and species** with varieties examined for PBR

- **>2,700 genera and species** for which UPOV members have practical DUS experience

- **281 Test Guidelines** adopted

Note: **281 Test Guidelines estimated to cover 90% of PBR-related varieties in UPOV Plant Variety Database**

PRIORITY for UPOV Test Guidelines

PRIORITY for species or crops with high:

- **number of authorities receiving PBR applications;**

- **number of PBR applications;**

- **number of foreign applications received by UPOV members;**

- **economic importance;**

- **level of breeding activity**

EXAMPLE (New Test Guidelines)

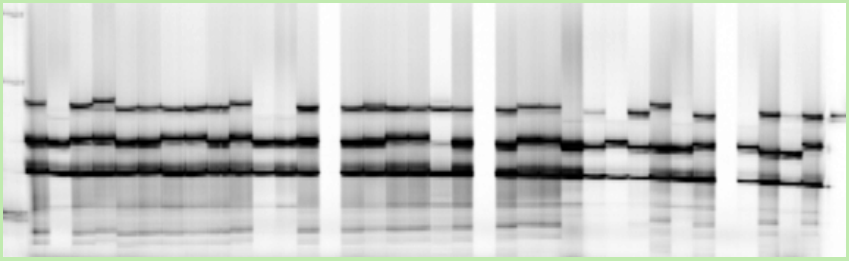
Test Guidelines: ***Plantus magnifica*** **L.**
(Common name: Alpha)

Technical Working Party: **TWX**

TWX (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**

4. Situation in UPOV Concerning the possible use of Molecular Techniques in the DUS Examination

Molecular Techniques?



Legal and other considerations

- **Conformity with the UPOV Convention**
- **Potential impact on the strength of protection**

Technical considerations

- **Reliability and robustness of techniques**
- **Accessibility of the technology**
- **Harmonization of methodologies**
- **Cost of examination**
- **Implications for breeders (e.g. cost and time involved for new uniformity requirements)**

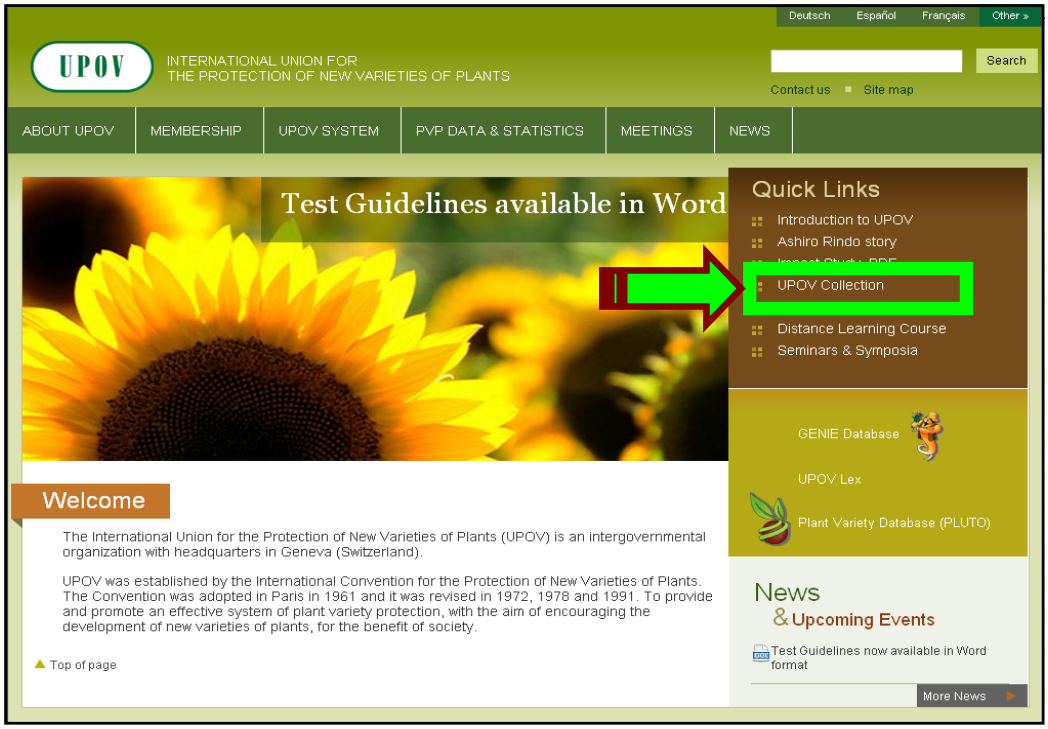
Harmonized approach

Harmonization

⇒ facilitates cooperation in DUS testing

e.g. purchase of DUS reports

⇒ internationally recognized variety descriptions (effective protection)



E

UPOV

UPOV/INF/18/1
ORIGINAL: English
DATE: October 20, 2011

INTERNATIONAL UNION FOR THE PROTECTION OF NEW VARIETIES OF PLANTS
GENEVA

POSSIBLE USE OF MOLECULAR MARKERS IN THE EXAMINATION OF DISTINCTNESS, UNIFORMITY AND STABILITY (DUS)

adopted by the Council
at its forty-fifth ordinary session
on October 20, 2011

POSSIBLE APPLICATION MODELS

MODELS WITH A POSITIVE ASSESSMENT

- Characteristic-specific molecular markers
- Combining phenotypic and molecular distances in the management of variety collections
- [Calibrated molecular distances in the management of variety collections]

MODELS WITHOUT A POSITIVE ASSESSMENT

- Use of molecular marker characteristics

POSSIBLE APPLICATION MODELS

MODELS WITH A POSITIVE ASSESSMENT

- Characteristic-specific molecular markers
- Combining phenotypic and molecular distances in the management of variety collections
- [Calibrated molecular distances in the management of variety collections]

MODELS WITHOUT A POSITIVE ASSESSMENT

- Use of molecular marker characteristics

Model: characteristic-specific molecular markers

Example: gene specific marker for herbicide tolerance introduced by genetic modification

View of the BMT Review Group, Technical Committee, Administrative and Legal Committee:

on the basis of the assumptions in the proposal, acceptable within the terms of the UPOV Convention and would not undermine the effectiveness of protection offered under the UPOV system

Model: characteristic-specific molecular markers

Assumptions for a gene specific marker:

(a) **DUS examination**: same no. of plants, growing cycles, DUS criteria;

(b) **Linkage**: ensure that the marker is a reliable predictor;

(c) **Different markers** for same gene would be treated as different methods for examining the **same characteristic**;

(d) **Different genes** would be treated as different methods for examining the **same characteristic**;

(e) **Different markers** linked to **different regulatory elements** for the **same gene** would all be treated as different methods for examining the **same characteristic**.

matter for the relevant authority to consider if the assumptions are met

POSSIBLE APPLICATION MODELS

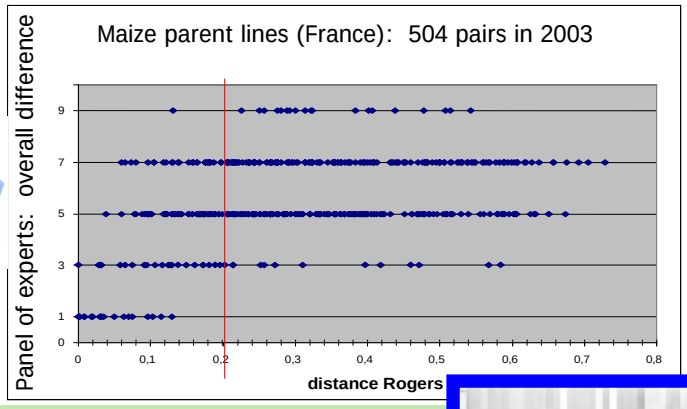
MODELS WITH A POSITIVE ASSESSMENT

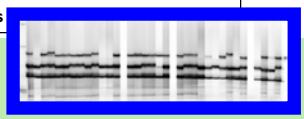
- Characteristic-specific molecular markers
- Combining phenotypic and molecular distances in the management of variety collections
- [Calibrated molecular distances in the management of variety collections]

MODELS WITHOUT A POSITIVE ASSESSMENT

- Use of molecular marker characteristics

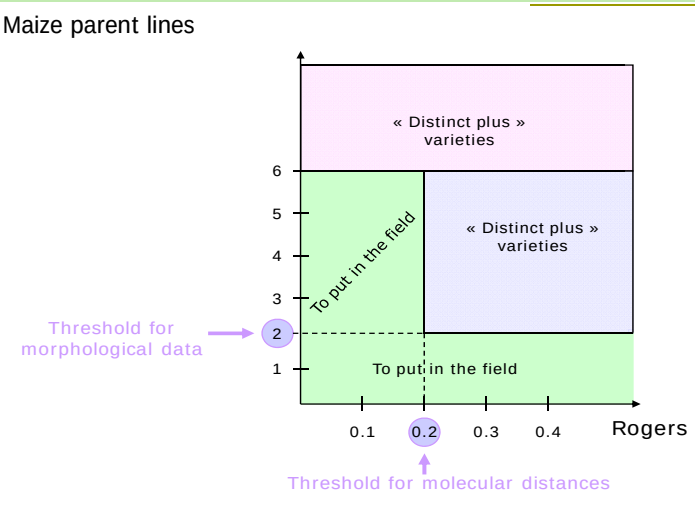
Model: Combining phenotypic and molecular distances in the management of variety collections





Each data point corresponds to the LOWEST note determined by the panel of experts and the Roger's distance, for a given pair

Model: Combining phenotypic and molecular distances in the management of variety collections



Model: Combining phenotypic and molecular distances in the management of variety collections

Example: maize parental lines

View of the BMT Review Group, Technical Committee, Administrative and Legal Committee:

where used for the management of variety collections, was acceptable within the terms of the UPOV Convention and would not undermine the effectiveness of protection offered under the UPOV system

POSSIBLE APPLICATION MODELS

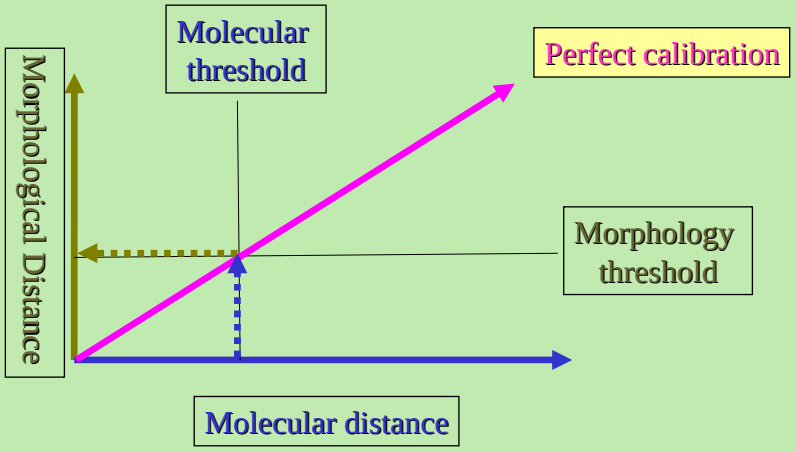
MODELS WITH A POSITIVE ASSESSMENT

- Characteristic-specific molecular markers
- Combining phenotypic and molecular distances in the management of variety collections
- [Calibrated molecular distances in the management of variety collections]

MODELS WITHOUT A POSITIVE ASSESSMENT

- Use of molecular marker characteristics

Model: Calibrated molecular distances in the management of variety collections



Model: Calibrated molecular distances in the management of variety collections

View of the BMT Review Group, Technical Committee, Administrative and Legal Committee:

where used for the management of reference collections was, on the basis of the assumptions in the proposals, acceptable within the terms of the UPOV Convention and would not undermine the effectiveness of protection offered under the UPOV system

whilst recognizing the need to improve the relationship between morphological and molecular distances

Model: Calibrated molecular distances in the management of variety collections

Assumptions for calibration of threshold levels :

(a) **Uniformity** and **Stability**:
  (i) [molecular] **differences** calculated between varieties **take into account the variation within varieties**;
  (ii) suitable uniformity standards could be developed for molecular markers **without requiring varieties, in general, to be more uniform**

(b) would only be used for the establishment of a **"Distinctness plus" threshold** in the management of reference collections;

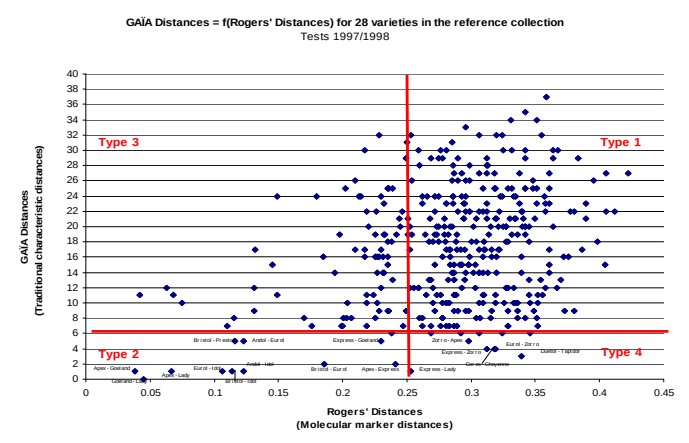
(c) would meet all the normal requirements for any characteristic to be used in the DUS examination and, in particular, would be checked to ensure they are **sufficiently consistent and repeatable**.

matter for the relevant authority to consider if the assumptions are met

Model: Calibrated molecular distances in the management of variety collections

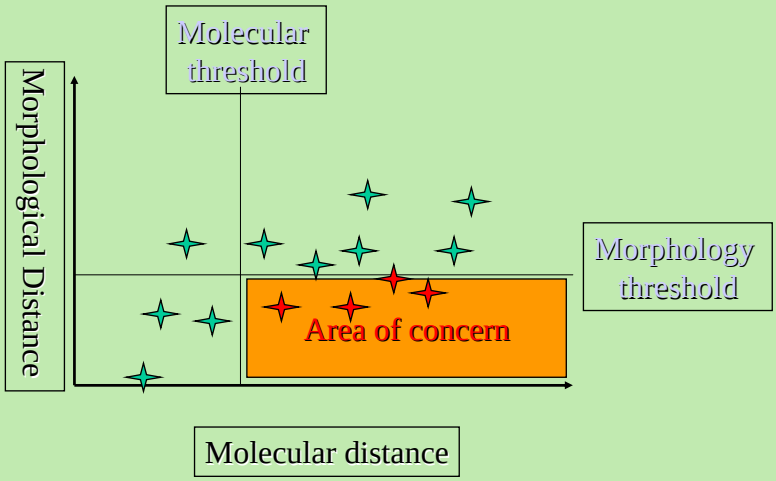
Example: **?**

Oilseed Rape



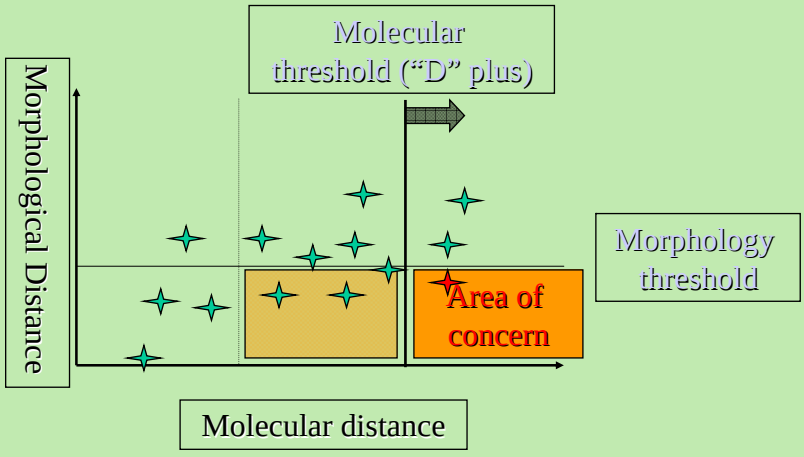
Model: Calibrated molecular distances in the management of variety collections

Example: ?



Model: Calibrated molecular distances in the management of variety collections

Example: ?



POSSIBLE APPLICATION MODELS

MODELS WITH A POSITIVE ASSESSMENT

- Characteristic-specific molecular markers
- Combining phenotypic and molecular distances in the management of variety collections
- [Calibrated molecular distances in the management of variety collections]

MODELS WITHOUT A POSITIVE ASSESSMENT

- Use of molecular marker characteristics

Model: Use of molecular marker characteristics

View of the BMT Review Group, Technical Committee, Administrative and Legal Committee:

- no consensus on the acceptability of the Option 3 proposals within the terms of the UPOV Convention and no consensus on whether they would undermine the effectiveness of protection offered under the UPOV system.
- concerns were raised that, in these proposals, using this approach, it might be possible to use a limitless number of markers to find differences between varieties. The concern was also raised that differences would be found at the genetic level which were not reflected in morphological characteristics

Harmonized approach

Harmonization

⇒ facilitates cooperation in DUS testing

e.g. purchase of DUS reports

⇒ internationally recognized variety descriptions (effective protection)

POSSIBLE APPLICATION MODELS

MODELS WITH A POSITIVE ASSESSMENT

Characteristic-specific molecular markers

Combining phenotypic and molecular distances in the management of variety collections

[Calibrated molecular distances in the management of variety collections]

MODELS WITHOUT A POSITIVE ASSESSMENT

- Use of molecular marker characteristics

5. UPOV DATABASES

Article 20 of the 1991 Act
(Variety denominations)

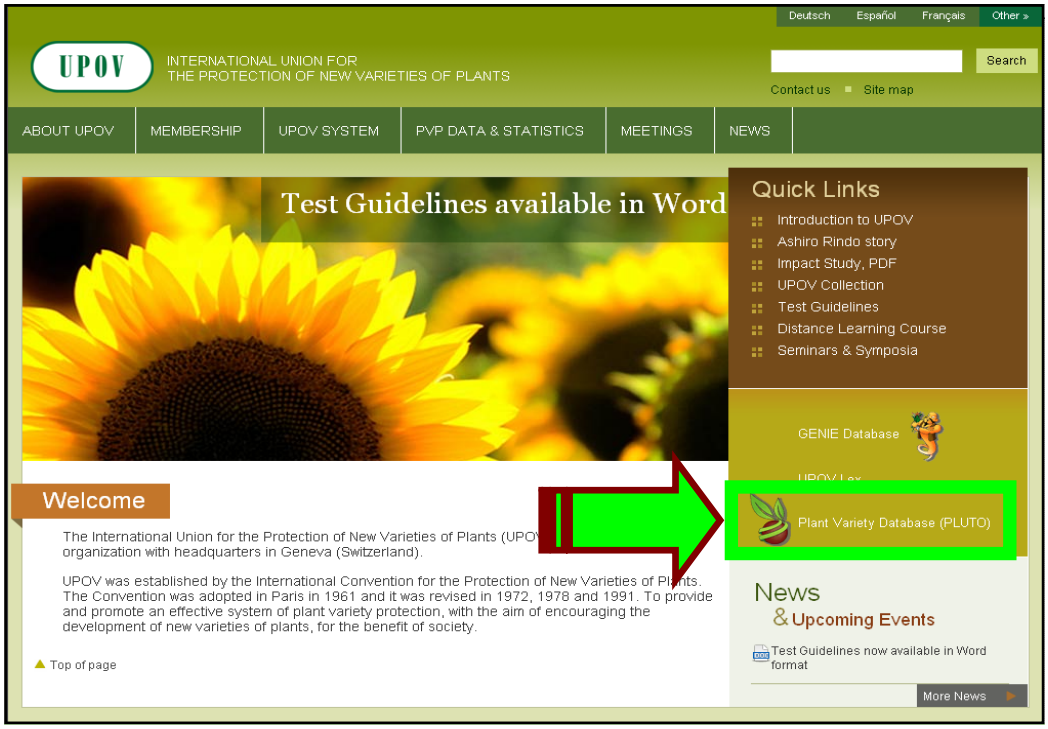
(2) [*Characteristics of the* ***denomination***]

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

UPOV Plant Variety database

UPOV-ROM

PLUTO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Français
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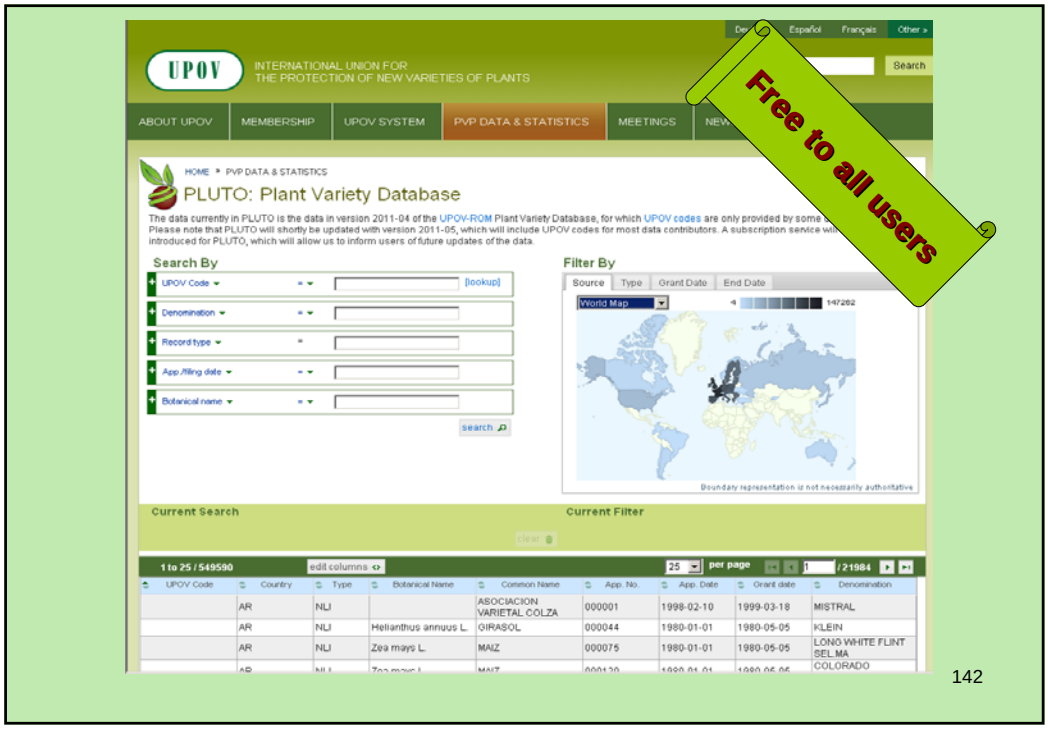
Impact Study, PDF
UPOV Collection
Test Guidelines
Distance Learning Course
Seminars & Symposia
GENIE Database
Plant Variety Database (PLUTO)
Welcome
The International Union for the Protection of New Varieties of Plants (UPOV
organization with headquarters in Geneva (Switzerland).
UPOV was established by the International Convention for the Protection of New Varieties of Plants.
The Convention was adopted in Paris in 1961 and it was revised in 1972, 1978 and 1991. To provide
and promote an effective system of plant variety protection, with the aim of encouraging the
development of new varieties of plants, for the benefit of society.
Top of page
News
& Upcoming Events
Test Guidelines now available in Word format
More News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PVP DATA & STATISTICS
MEETINGS
HOME ▸ PVP DATA & STATISTICS
PLUTO: Plant Variety Database
Free to all users
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Filter By
Current Search
Current Filter
1 to 25 / 549590
edit columns
per page
UPOV Code
Country
Type
Botanical Name
Common Name
App. No.
App. Date
Grant date
Denomination
AR NLI ASOCIACION VARIETAL COLZA 000001 1998-02-10 1999-03-18 MISTRAL
AR NLI Helianthus annuus L. GIRASOL 000044 1980-01-01 1980-05-05 KLEIN
AR NLI Zea mays L. MAIZ 000075 1980-01-01 1980-05-05 LONG WHITE FLINT SEL MA
COLORADO

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GENIE Database

(Genus / species)

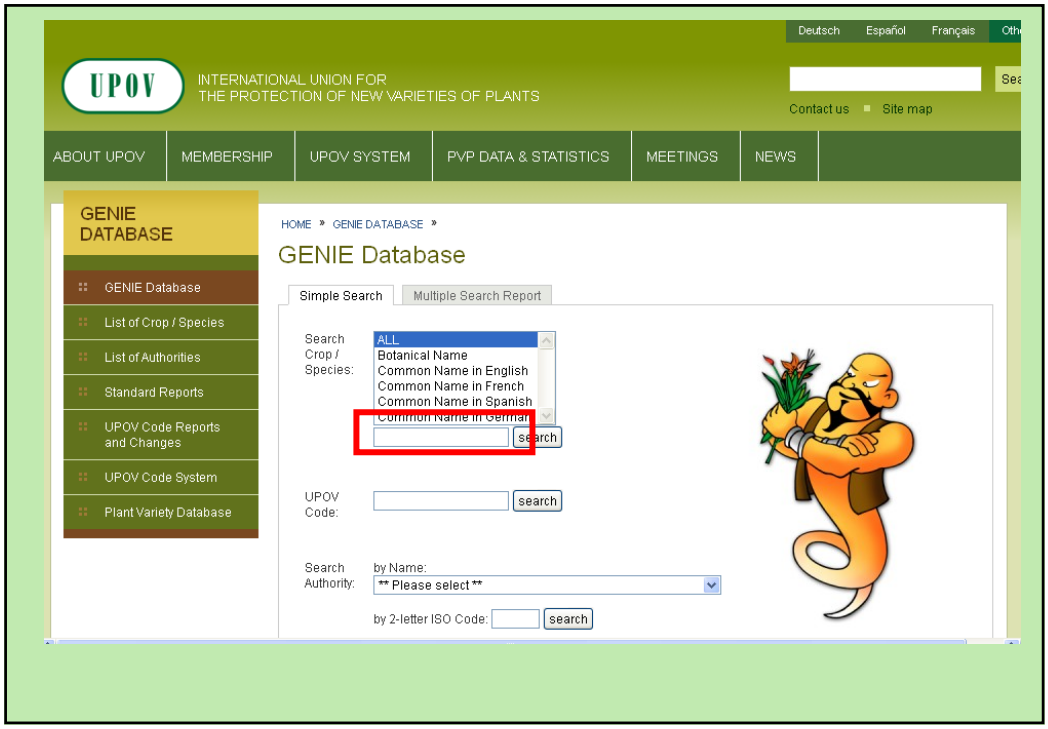
GENIE Database

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)

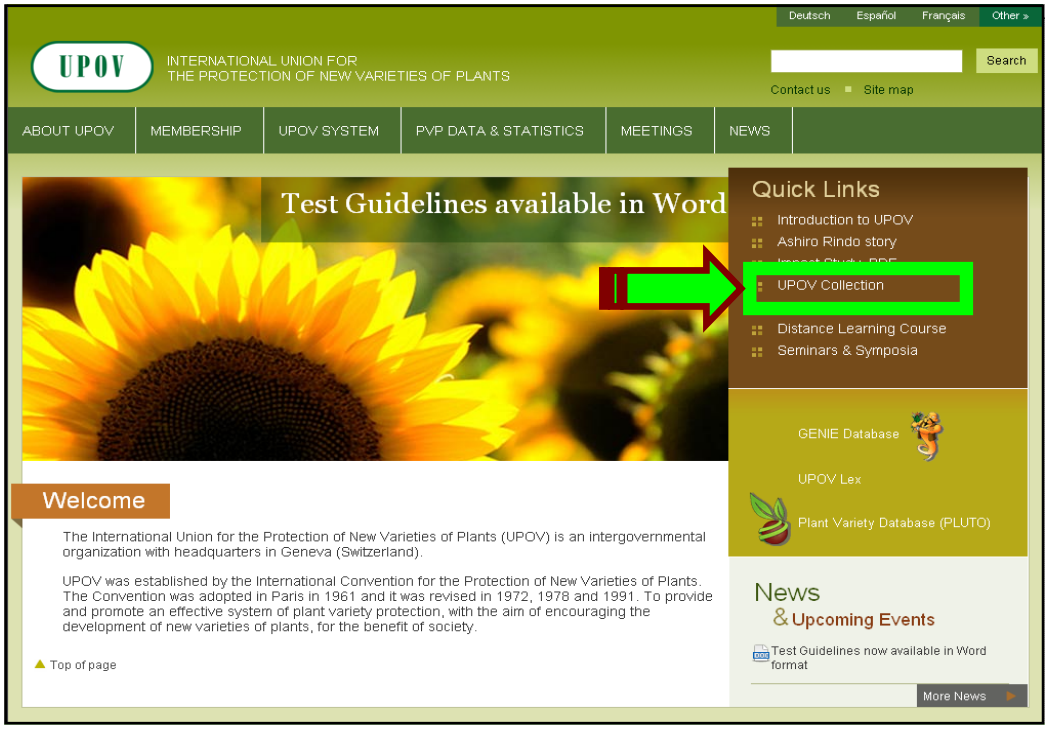


6. THE UPOV WEBSITE

UPOV Website

http://www.upov.int

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



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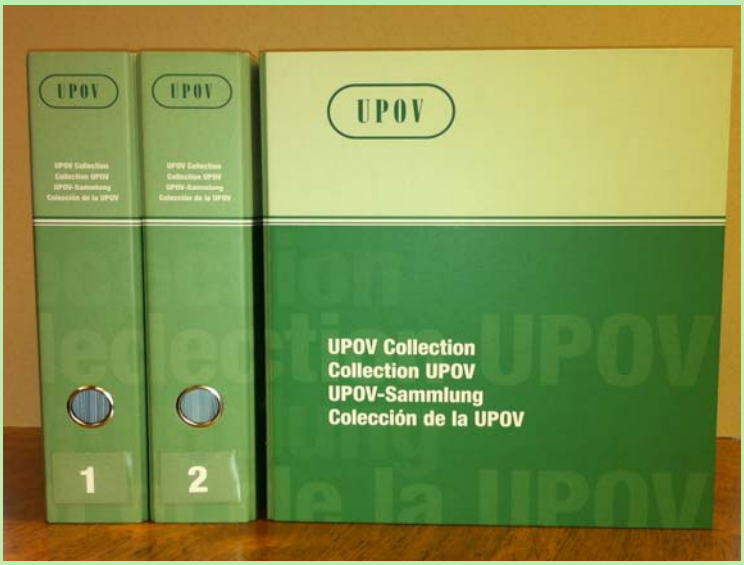
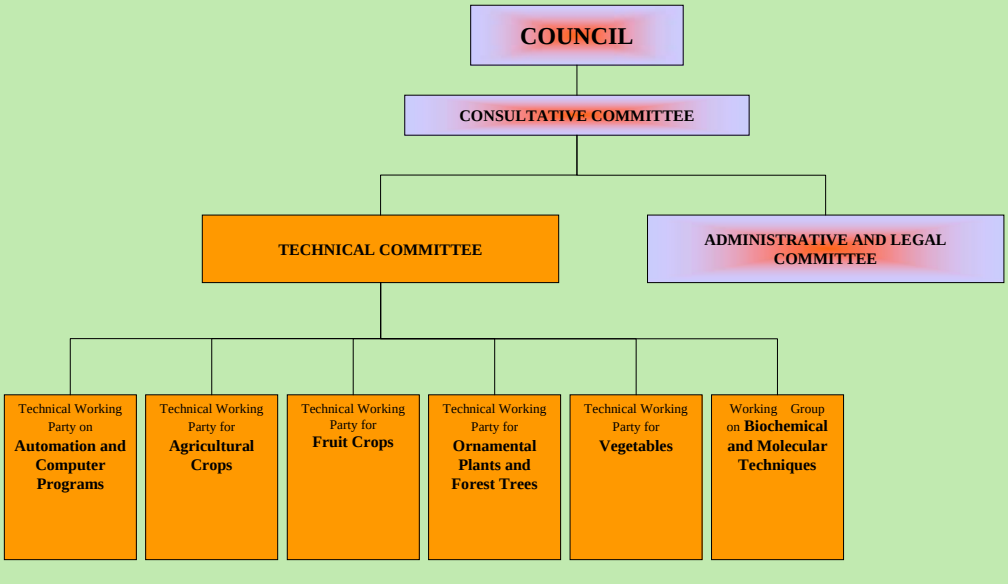
UPOV Collection: physical collection

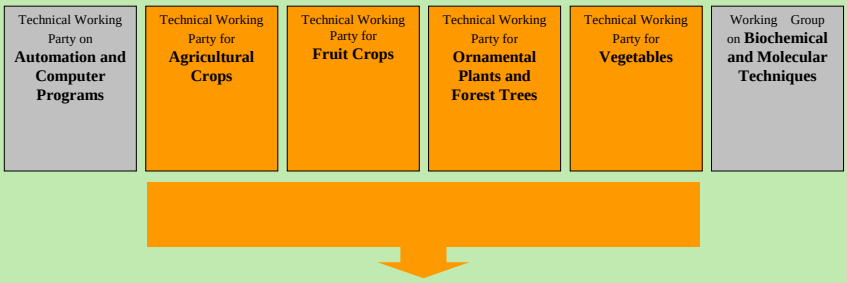


7. ROLE OF THE TECHNICAL WORKING PARTIES AND THE BMT

UPOV Structure

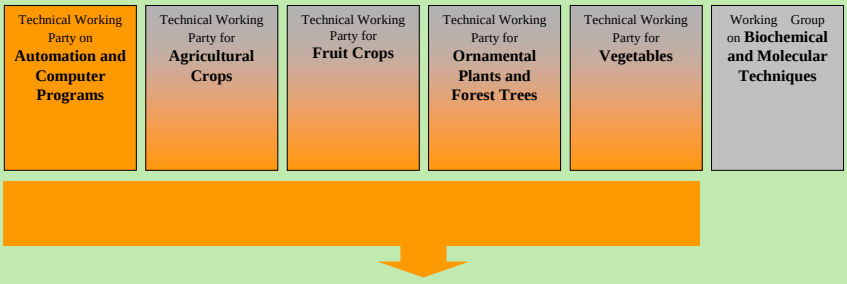


UPOV Structure



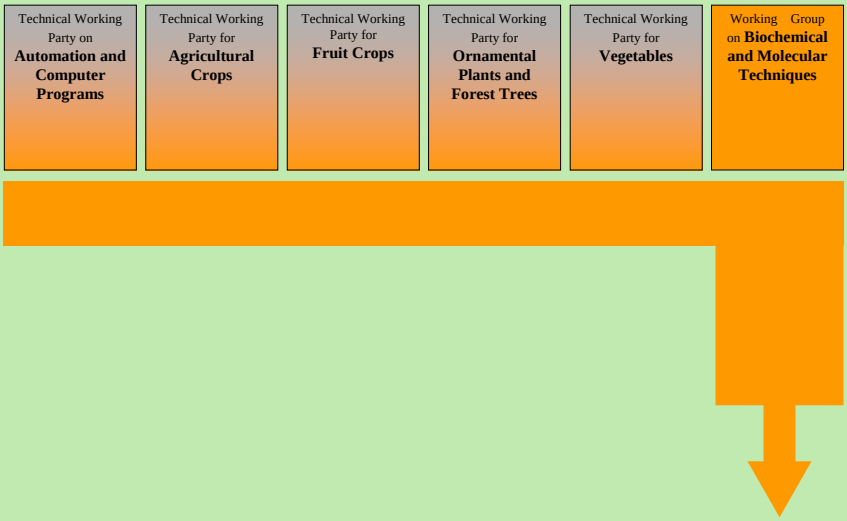
Test Guidelines

UPOV Structure



TGP documents

UPOV Structure



Role of the BMT

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

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

8. AGENDA for the TWP Session

Example TWP Session

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

EXCHANGING INFORMATION

Example TWP Session

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

AN OPPORTUNITY
for
TRAINING

Example TWP Session

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

TWP Venues

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

8. FEEDBACK

THANK YOU