UPOV

International Union for the Protection of New Varieties of Plants

E

TGP/14/4 Draft 1

Original: English
Date: August 1, 2019

DRAFT
(REVISION)

Associated Document to the
General Introduction to the Examination of Distinctness, Uniformity and Stability
and the Development of Harmonized Descriptions of New Varieties of Plants (document TG/1/3)

DOCUMENT TGP/14

GLOSSARY OF TERMS USED IN UPOV DOCUMENTS

Document prepared by the Office of the Union

to be considered by

the Technical Committee at its fifty-fifth session
to be held in Geneva on October 28 and 29, 2019,

the Administrative and Legal Committee at its seventy-sixth session
to be held in Geneva on October 30, 2019

and

the Council at its fifty-third ordinary session
to be held in Geneva on November 1, 2019

Disclaimer: this document does not represent UPOV policies or guidance

TABLE OF CONTENTS PAGE

SECTION 1. INSTITUTIONAL AND TECHNICAL TERMS 4

SECTION 2. BOTANICAL TERMS....13

SUBSECTION 1. INTRODUCTION 13

SUBSECTION 2. SHAPES AND STRUCTURES....14

I. SHAPE 14

1. Components of Shape 14

Chart for Simple Symmetric Plane Shapes 17
Chart for Other Plane Shapes....18

2. Developing Shape-Related Characteristics 19

2.1 Introduction....19
2.2 Full plane shape characteristics....19
2.3 Base Shape Characteristics....29
2.4 Apex/Tip Shape Characteristics....31
2.5 Combination of Full Plane-, Base- and Apex Shape Characteristics....34
2.6 Three-dimensional shape characteristics....36
2.7 Symmetry 36
2.8 Perspective from which to observe plant shapes 36
2.9 Use of composite characteristics for determining distinctness and uniformity....38
2.10 Shape: types of expression and states / notes....38
2.11 Shape: defining the characteristic....39
2.12 Shape: Technical Questionnaire Characteristics 39

3. Shape Illustrations 40

3.1 Full Plane Shapes 40
3.2 Base Shapes 40
3.3 Apex Shapes 41

3.3.1 Apex....41
3.3.2 Differentiated tip....41

3.4 Three-Dimensional Shapes 42
3.5 Symmetry 43

II. STRUCTURE 44

1. Developing Characteristics for Plant Structures....44

1.1 Growth habit 44
1.2 Attitude / direction (Plant parts)....45
1.3 Relative position 47
1.4 Margins....47
1.5 Hairs and Spines 48

2. Illustrations Of Plant Structures 49

2.1 Habit....49
2.2 Attitude / direction (Plant parts)....50
2.3 Relative position 51
2.4 Types of Inflorescence....52

2.4.1 Simple inflorescences 52
2.4.2 Compound inflorescences....52
2.4.3 Margins 54
2.4.4 Hairiness (Types of appendage covered by the general term “hair” in the Test Guidelines)....55
2.4.5 Spines (Types of appendage covered by the general term “spine” in the Test Guidelines)....55
2.4.6 Other appendages 56
2.4.7 Texture....56

SUBSECTION 3. COLOR 57

1. INTRODUCTION 57

2. COLOR 58

2.1 Terms used for color 58
2.2 States of expression for color characteristics 58

2.2.1 Single color 58
2.2.2 Color range 58
2.2.3 Intensity 59
2.2.4 Color Chart 59

2.3 Developing characteristics 59

2.3.1 Type of expression 59
2.3.2 Order of states of expression 60
2.3.3 Factors to be considered for creating color groups 60

2.4 Unsuitable color names 60
2.5 Timing of observations 61
2.6 Organ elements that may distort color 61

3. APPROACHES TO DESCRIBE COLORS AND COLOR PATTERNS 62

3.1 Approach according to the size of the surface area 62
3.2 Approach according to tissue layers 62
3.3 Approach according to defined parts of an organ 63
3.4 Approach according to the RHS Colour Chart number ("Lisbon" approach) 63
3.5 Special terms used for color characteristics 65

3.5.1 Variegation 65
3.5.2 Pigments (anthocyanin, carotenoid) 66
3.5.3 Conspicuousness 66

3.6 Color change over time 66

4. COLOR DISTRIBUTION AND COLOR PATTERNS 67

4.1 Schematic overview 67
4.2 Illustrations 68

4.2.1 Color Patterns 68

4.2.1.1 Flush 68
4.2.1.2 Spotted / Blotched / Speckled 68
4.2.1.3 Central Bar 69
4.2.1.4 Aciculate / Striped 69
4.2.1.5 Transverse Band / Banded 69
4.2.1.6 Marginate / Marginal Zone 69
4.2.1.7 Tesselate / Netted / Marbled / Veined 69

4.2.2 Color distribution 70

4.3 The use of photographs to illustrate color distribution and color patterns 70

5. LITERATURE 71

ANNEX COLOR NAMES FOR THE RHS COLOUR CHART 72

Appendix I to Annex: Allocation of UPOV Color Groups for each RHS Color in RHS Reference order 74

Appendix II to Annex: RHS Colors contained in each UPOV Color Group 89

SUBSECTION 4. DEFINITIONS FOR SHAPE, STRUCTURE AND COLOR TERMS 104

SECTION 3. STATISTICAL TERMS 118

INDEX OF ALL TERMS 133

SECTION 1. INSTITUTIONAL AND TECHNICAL TERMS

Additional characteristic	The General Introduction states in Chapter 4.2.3 that "The characteristics included in the individual Test Guidelines are not necessarily exhaustive and may be expanded with *additional characteristics* if that proves to be useful and the characteristics meet the conditions set out [in Chapter 4.2.1]". It further clarifies in Chapter 4.8, "Functional Categorization of Characteristics" that the function of *additional characteristics* is: "1. To identify new characteristics, not included in the Test Guidelines, that have been used by members of the Union in the examination of DUS and which should be considered for inclusion in future Test Guidelines"; and "2. To facilitate harmonization in the development and use of new characteristics and provide opportunity for expert review."
Additional Standard Wording (Test Guidelines)	In addition to the TG Template, further guidance is provided for drafters of Test Guidelines on how to develop individual Test Guidelines from the TG Template. This is provided by means of *additional standard wording* (ASW) and guidance notes (GN) and indications are provided within the TG Template on where this further guidance is available. (see document TGP/7 "Development of Test Guidelines": Section 3.2).
Additional test	An *additional test* is a test for examining relevant characteristics which is carried out in addition to the DUS growing trial. (see TGP/7 "Development of Test Guidelines", Annex I: TG Template, Chapter 3.6)
Administrative and Legal Committee	UPOV Administrative and Legal Committee (abbreviated to "CAJ") (see http://www.upov.int/about/en/organigram.html)
Asterisked characteristic	*Asterisked characteristics* (denoted by *) are those included in the Test Guidelines which are important for the international harmonization of variety descriptions and 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. (General Introduction, Chapter 4.8)
ASW (Test Guidelines)	abbreviation of "Additional Standard Wording" (see above)
Atypical plant	*see General Introduction, Chapter 6.4 "Methods for the Examination of Uniformity" and Chapter 6.5 "Unrelated and Very Atypical Plants"; and TGP/10/1 Section 4.2.2 "Guidance for determining Off-types", Section 4.2.3 "Investigating plants with atypical expression" and Section 4.6 "Plants which are not considered as Off-types"*
Authority	"authority" means the authority entrusted with the task of granting breeders' rights (see Article 30(1)(ii)of the 1991 Act of UPOV Convention)
BMT	abbreviation of "*UPOV Working Group on Biochemical and Molecular Techniques, and DNA-Profiling in Particular*" *(see* http://www.upov.int/about/en/organigram.html*)*
Breeder	Article 1(iv) of the 1991 Act states that: "'breeder' means - the person who bred, or discovered and developed, a variety, - the person who is the employer of the aforementioned person or who has commissioned the latter's work, where the laws of the relevant Contracting Party so provide, or - the successor in title of the first or second aforementioned person, as the case may be"
Breeder's Right	"breeder's right" means the right of the breeder provided for in the UPOV Convention. Synonymous with "plant breeder's right". (see Article 1(v)of the 1991 Act of UPOV Convention)

CAJ	abbreviation of "*UPOV Administrative and Legal Committee*" *(see* http://www.upov.int/about/en/organigram.html*)*
CC	abbreviation of "*Consultative Committee of UPOV*" *(see* http://www.upov.int/about/en/organigram.html*)*
Characteristic	The General Introduction states the following: "4.2.1 The basic requirements that a characteristic should fulfill before it is used for DUS testing or producing a variety description are that its expression: (a) results from a given genotype or combination of genotypes (this requirement is specified in Article 1(vi) of the 1991 Act of the UPOV Convention but is a basic requirement in all cases); (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 (this requirement is specified in Article 6 of the 1961/1972 and 1978 Acts of the UPOV Convention, but is a basic requirement in all cases); (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." "4.2.2 It should be noted that there is no requirement for a characteristic to have any intrinsic commercial value or merit. However, if a characteristic that is of commercial value or merit satisfies all the criteria for inclusion it may be considered in the normal way." "4.2.3 For inclusion in the Test Guidelines, further criteria are set out in [the General Introduction] section 4.8, "Functional Categorization of Characteristics" and in document TGP/7, "Development of Test Guidelines." The characteristics included in the individual Test Guidelines are not necessarily exhaustive and may be expanded with additional characteristics if that proves to be useful and the characteristics meet the conditions set out above."
Combined characteristic	A *combined characteristic* is a simple combination of a small number of characteristics. Provided the combination is biologically meaningful, characteristics that are assessed separately may subsequently be combined, for example the ratio of length to width, to produce such a combined characteristic. Combined characteristics must be examined for distinctness, uniformity and stability to the same extent as other characteristics. Combined characteristics are not to be confused with the application of methods, such as "multivariate analysis." (see General Introduction, Chapter 4.6.3)
Comparable varieties	Comparable varieties are varieties of the same type within the same or a closely related species that have been previously examined and considered to be sufficiently uniform (see document TGP/10 "Examining Uniformity", Section 5.2.1)
Composite characteristic	It is possible to derive additional characteristics for comparing between varieties by calculating 'composite' characteristics that are mathematical combinations of existing independently examined characteristics. While this can facilitate assessment of important differences between varieties, certain safeguards are necessary to ensure appropriate use. Therefore, composite characteristics should: (a) describe a definable plant characteristic; and (b) provide additional information over that of their components. (see Section 2, Subsection 2, Part I, chapter 2.9 of this document)
Consultative Committee	"*Consultative Committee of UPOV*" *(see* http://www.upov.int/about/en/organigram.html*)*
Contracting Party	State or Intergovernmental Organization party to the 1991 Act

Convention	International Convention for the Protection of New Varieties of Plants
Council	*Council of UPOV (see* http://www.upov.int/about/en/organigram.html*)*
Distinct / Distinctness	Article 7 "*Distinctness*" of the 1991 Act states: "The variety shall be deemed to be distinct if it is clearly distinguishable from any other variety whose existence is a matter of common knowledge at the time of the filing of the application. In particular, the filing of an application for the granting of a breeder's right or for the entering of another variety in an official register of varieties, in any country, shall be deemed to render that other variety a matter of common knowledge from the date of the application, provided that the application leads to the granting of a breeder's right or to the entering of the said other variety in the official register of varieties, as the case may be."
Drafter's Kit for Test Guidelines	A collection of guidance and information documents provided on the UPOV website for drafters of Test Guidelines (http://www.upov.int/restricted_temporary/tg/index.html)
Drilled plot	A drilled plot is one in which seed is planted with a machine which does not place the seed individually. Compare to "Spaced plant plot/trial"
DUS test	examination of Distinctness, Uniformity and Stability
DUS	abbreviation of Distinctness, Uniformity and Stability
DUST/ DUSTNT	Software for the application of COYD and COYU in DUS testing: see document TGP/8 "Trial Design and Techniques Used in the Examination of Distinctness, Uniformity and Stability"
Ear-row	A row of plants grown from seeds obtained from a single ear of a plant.
Editorial Committee	see "Enlarged Editorial Committee (TC-EDC)"
Enlarged Editorial Committee	Enlarged Editorial Committee of the Technical Committee (TC-EDC) (abbreviated to "TC-EDC") (see http://www.upov.int/about/en/organigram.html)
Essential characteristic	Article 6 (1)(d) of the 1961 Convention / 1972 Act and 1978 Acts require that a variety "must be stable in its essential characteristics, that is to say, it must remain true to its description after repeated reproduction or propagation or, where the breeder has defined a particular cycle of reproduction or multiplication, at the end of each cycle." The General Introduction (Chapter 7.2) clarifies that the essential characteristics include at least all characteristics used for the examination of DUS or included in the variety description established at the date of grant of protection of that variety. Therefore, all obvious characteristics may be considered, irrespective of whether they appear in the Test Guidelines or not.
Example variety	example varieties are provided in the Test Guidelines to clarify the states of expression of a characteristic (see General Introduction, Chapter 4.3 and TGP/7)
G	Document TGP/9/1, Section 4.3 "Type of record(s)" explains that "For the purposes of distinctness, observations may be recorded as a single record for a group of plants or parts of plants (G), or may be recorded as records for a number of single, individual plants or parts of plants (S).
GAIA	Software for the management of variety collections: see document TGP/8 "Trial Design and Techniques Used in the Examination of Distinctness, Uniformity and Stability"
General Introduction	abbreviation of document TG/1/3 "General Introduction to the Examination of Distinctness, Uniformity and Stability and the Development of Harmonized Descriptions of New Varieties of Plants"

GENIE database	The GENIE database has been developed to provide online information on GENera and specIEs (hence GENIE) in relation to protection offered by members of the Union, cooperation in examination, experience in DUS testing and the existence of UPOV Test Guidelines. In addition, the GENIE database is the repository of the UPOV codes and provides information concerning alternative botanical and common names. (see http://www.upov.int/genie/en/)
GN (Test Guidelines)	abbreviation of "Guidance Note"
Grouping characteristic	*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. (see General Introduction, Chapter 4.8)
Grouping varieties	see document TGP/9 "Examining Distinctness", Sections 2 and 3, and the definition of "Grouping characteristic"
Growing cycle/ independent growing cycles	Chapter 3.1 of the Test Guidelines makes reference to the number of independent growing cycles for the DUS test.
Guidance Note (Test Guidelines)	In addition to the TG Template, further guidance is provided for drafters of Test Guidelines on how to develop individual Test Guidelines from the TG Template. This is provided by means of additional standard wording (ASW) and guidance notes (GN) and indications are provided within the TG Template on where this further guidance is available. (see document TGP/7 "Development of Test Guidelines": Section 3.3).
Interested Expert (Test Guidelines)	The drafting of Test Guidelines is led by an expert or experts (referred to as the "leading expert(s)") from within one of the UPOV Technical Working Parties (TWPs). The leading expert drafts the Test Guidelines in close cooperation with all those experts of the TWPs who have expressed an interest ("*interested experts*"). (see TGP/7 "Development of Test Guidelines": Section 2.1)
Leading Expert (Test Guidelines)	The drafting of Test Guidelines is led by an expert or experts (referred to as the "*leading expert(s)*") from within one of the UPOV Technical Working Parties (TWPs). The leading expert drafts the Test Guidelines in close cooperation with all those experts of the TWPs who have expressed an interest ("interested experts"). (see TGP/7 "Development of Test Guidelines": Section 2.1)
M, MG, MS	see explanations for "Measurement (M)", "G" and "S"
Measurement (M)	Document TGP/9/1, Section 4.2 "Method of observation (visual or measurement)" explains that "*measurement* (M) is an objective observation against a calibrated, linear scale e.g. using a ruler, weighing scales, colorimeter, dates, counts, etc."
Member of the Union	member of the International Union for the Protection of New Varieties of Plants: a State party to the 1961 UPOV Convention, the 1972 Act, or the 1978 Act, or a State or intergovernmental organization party to the 1991 Act. (see Article 1(xi) of the 1991 Act)
Note	Each state of expression in the Test Guidelines is allocated a corresponding numerical "Note" for ease of recording of data and for the production and exchange of variety descriptions. (see State of Expression)

Off-type	Where all the plants of a variety are very similar, and in particular for vegetatively propagated and self-pollinated varieties, it is possible to assess uniformity by the number of obviously different plants – "*off-types*" – that occur. In the case of the determination of off-types by visual assessment, a plant is to be considered an off-type if it can be clearly distinguished from the variety in the expression of any characteristic of the whole or part of the plant that is used in the testing of distinctness, taking into consideration the particular features of its propagation. This definition makes it clear that, in the assessment of uniformity, the standard for distinctness between off-types and a candidate variety is the same as for distinctness between a candidate variety and other varieties. (see General Introduction, Chapter 6.4 and document TGP/10 "Examining Uniformity")
Parent(al) formula	see document TGP/8 "Trial Design and Techniques Used in the Examination of Distinctness, Uniformity and Stability"
PBR	abbreviation of "plant breeder's rights"
Plant Breeders' Right	see "breeder's right" (abbreviated to "PBR")
Plant grouping	see "Variety"
Plant	In Linnaeus' system, living things were divided into the Kingdoms Vegetabilia (later Plantae) and Animalia. Fungi and several groups of algae have sometimes been classified as new kingdoms. However, for the purposes of plant breeders' rights, these are still considered to be plants by many members of the Union.
Plant Variety Database	see PLUTO database
PLUTO database	The PLUTO database contains data on plant varieties from contributing members of the Union and the Organization for Economic Co-operation and Development (OECD). Since the main reason for starting the database was the checking of variety denominations, the database is not restricted to varieties for which protection has been obtained or has been applied for, but covers any variety considered important for variety denomination purposes. It includes, for example, the varieties on national lists of varieties admitted to commerce and also varieties which are not on any official list, but also other varieties whose denomination should not be re-used for varieties of the same denomination class. (see http://www.upov.int/pluto/en/)
Pseudo-qualitative characteristic	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. (see General Introduction, Chapter 4.4.3)
Qualitative characteristic	"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. (see General Introduction, Chapter 4.4.1)

Quantitative characteristic	"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. (see General Introduction, Chapter 4.4.2)
Relevant characteristic	Article 8 of the 1991 Act deems that a variety is uniform if, "subject to the variation that may be expected from the particular features of its propagation, it is sufficiently uniform in its *relevant characteristics*". Similarly, Article 9 of the 1991 Act requires that a variety "shall be deemed to be stable if its *relevant characteristics* remain unchanged after repeated propagation or, in the case of a particular cycle of propagation, at the end of each such cycle." Document TGP/10/1, Section 1.2 states that "The 'General Introduction to the Examination of Distinctness, Uniformity and Stability and the Development of Harmonized Descriptions of New Varieties of Plants' (document TG/1/3), hereinafter referred to as the 'General Introduction', Chapter 6.2, clarifies that 'Relevant characteristics of a variety include at least all characteristics used for the examination of DUS or included in the variety description established at the date of grant of protection of that variety. Therefore, any obvious characteristic may be considered relevant, irrespective of whether it appears in the Test Guidelines or not.' Hence, it is a matter for the authority to decide, in addition to those characteristics included in the UPOV Test Guidelines or national guidelines, which other characteristics it may include in its consideration of distinctness, which must also be considered for uniformity and stability."
S	Document TGP/9/1, Section 4.3 "Type of record(s)" explains that "For the purposes of distinctness, observations may be recorded as a single record for a group of plants or parts of plants (G), or may be recorded as records for a number of single, individual plants or parts of plants (S)."
Spaced plant plot/trial	A spaced plant plot/trial is one in which the plants or seeds are planted at defined intervals. Compare to "Drilled plot".
Special characteristic	*Special characteristics* are those which are: characteristics based on the response to external factors, such as living organisms (e.g. disease resistance characteristics) or chemicals (e.g. herbicide resistance characteristics) (see General Introduction, Chapter 4.6.1); characteristics based on chemical constituents (see General Introduction, Chapter 4.6.2); and combined characteristics (see General Introduction, Chapter 4.6.3 and "combined characteristics" in this document) (see TGP/12 "Special Characteristics")
Stability	Article 9 "*Stability*" of the 1991 Act states: "The variety shall be deemed to be stable if its relevant characteristics remain unchanged after repeated propagation or, in the case of a particular cycle of propagation, at the end of each such cycle."
Standard Test Guidelines characteristic	Standard Test Guidelines characteristics are those which are approved by UPOV for examination of DUS and from which members of the Union can select those suitable for their particular circumstances. (see General Introduction, Chapter 4.8)
State of Expression	States of expression (e.g. short/medium/tall; white/yellow/red; early/medium/late) are given for each characteristic in the Test Guidelines to define the characteristic and to harmonize descriptions. Each state of expression is allocated a corresponding numerical "note" for ease of recording of data and for the production and exchange of the description. (see "Note")
Subgroup (Test Guidelines)	see "Test Guidelines Subgroup"

TC	abbreviation of "*UPOV Technical Committee*" *(see* http://www.upov.int/about/en/organigram.html*)*
TC-EDC	abbreviation of "Enlarged Editorial Committee"
Technical Committee	*UPOV Technical Committee (abbreviated to "TC")* *(see* http://www.upov.int/about/en/organigram.html*)*
Technical Questionnaire	To help in the process of examining varieties, certain information is requested from the breeder, usually through a Technical Questionnaire to be submitted with the application. The model Technical Questionnaire, included in the Test Guidelines, seeks information on specific characteristics of importance for distinguishing varieties, information on the breeding scheme of the variety and any other information which may help to distinguish the variety. It also requests the breeder to identify similar varieties and characteristics by which the candidate may be distinguished from these similar varieties. (Abbreviated to "TQ") (General Introduction, Chapter 5.3.1.4)
Technical Working Party for Agricultural Crops	*UPOV Technical Working Party for Agricultural Crops (abbreviated to "TWA")* *(see* http://www.upov.int/about/en/organigram.html*)*
Technical Working Party for Fruit Crops	*UPOV Technical Working Party for Fruit Crops (abbreviated to "TWF")* *(see* http://www.upov.int/about/en/organigram.html*)*
Technical Working Party for Ornamental Plants and Forest Trees	*UPOV Technical Working Party for Ornamental Plants and Forest Trees (abbreviated to "TWO")* *(see* http://www.upov.int/about/en/organigram.html*)*
Technical Working Party for Vegetables	*UPOV Technical Working Party for Vegetables (abbreviated to "TWV")* *(see* http://www.upov.int/about/en/organigram.html*)*
Technical Working Party on Automation and Computer Programs	*UPOV Technical Working Party on Automation and Computer Programs (abbreviated to "TWC")* *(see* http://www.upov.int/about/en/organigram.html*)*
Technical Working Party	*UPOV Technical Working Party (abbreviated to "TWP")* *(see* http://www.upov.int/about/en/organigram.html*)*
Territory	"*territory*", in relation to a UPOV member, means, where the UPOV member is a State, the territory of that State and, where the UPOV member is an intergovernmental organization, the territory in which the constituting treaty of that intergovernmental organization applies. (see Article 1(viii) of the 1991 Act)
Test Guidelines characteristic	see also "*Standard Test Guidelines characteristic*", "*Grouping characteristic*" and "*Asterisked characteristic*" (see General Introduction, Chapter 4.8)
Test Guidelines Subgroup	The Technical Working Party (TWP) establishes a subgroup consisting of the leading expert and the other interested experts wishing to participate in the drafting of the Test Guidelines in question. (see TGP/7 "Development of Test Guidelines": Section 2.1)
Test Guidelines	abbreviation of UPOV "Guidelines for the Conduct of Tests for Distinctness, Uniformity and Stability". The purpose of the *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. (see General Introduction)
TG Drafter's Kit	see Drafter's kit for Test Guidelines

TG Template	UPOV has developed a template ("*TG Template*") containing the universal standard wording which is appropriate for all UPOV Test Guidelines and which is prepared in the appropriate format. The TG Template is presented in document TGP/7 "Development of Test Guidelines", Annex 1.
TG	Test Guidelines
TGP documents	series of documents associated to the General Introduction specifying Test Guidelines' Procedures (see General Introduction, Chapter 1 and Annex)
TQ	abbreviation of "Technical Questionnaire"
TWA	abbreviation of "*UPOV Technical Working Party for Agricultural Crops*" *(see* http://www.upov.int/about/en/organigram.html*)*
TWC	abbreviation of "*UPOV Technical Working Party on Automation and Computer Programs*" *(see* http://www.upov.int/about/en/organigram.html*)*
TWF	abbreviation of "*UPOV Technical Working Party for Fruit Crops*" *(see* http://www.upov.int/about/en/organigram.html*)*
TWO	abbreviation of "*UPOV Technical Working Party for Ornamental Plants and Forest Trees*" *(see* http://www.upov.int/about/en/organigram.html*)*
TWP	abbreviation of "*UPOV Technical Working Party*" *(see* http://www.upov.int/about/en/organigram.html*)*
TWV	abbreviation of "*UPOV Technical Working Party for Vegetables*" *(see* http://www.upov.int/about/en/organigram.html*)*
Uniformity	Article 8 "*Uniformity*" of the 1991 Act states: "The variety shall be deemed to be uniform if, subject to the variation that may be expected from the particular features of its propagation, it is sufficiently uniform in its relevant characteristics."
UPOV Code System	The main purpose of the UPOV Code System is to enhance the usefulness of the Plant Variety Database ("PLUTO database") by overcoming the problem of synonyms for plant taxa. That is achieved by attributing each taxa a code according to the UPOV Code System ("UPOV code"); synonyms for the same plant taxa are attributed the same UPOV code. An explanation of the UPOV Code System is provided at: http://www.upov.int/genie/en/pdf/upov_code_system.pdf
UPOV code	see UPOV Code System
UPOV Lex	UPOV Lex contains the legislation of members of the Union that has been notified in accordance with the UPOV Convention, the UPOV Convention notifications concerning individual members of the Union (e.g. accessions, ratifications) and the text of the UPOV Convention and its Acts. (see http://www.upov.int/upovlex/en/)
UPOV member	see "*member of the Union*"
UPOV	International Union for the Protection of New Varieties of Plants
V, VG, VS	see explanations for "Visual observation (V)", "G" and "S"
Variety collection	Document TGP/4/1, Section 1.3 explains that a *variety collection* is a collection of varieties of common knowledge* which are relevant for the examination of distinctness of candidate varieties according to document TGP/4/1, Section 2 "Constitution of Variety Collections". (**variety of common knowledge* is an abbreviation of "variety whose existence is a matter of common knowledge at the time of the filing of the application" (see "Distinctness"))
Variety denomination	The UPOV Convention requires that a variety shall be designated by a denomination which will be its generic designation. (see Article 20 (1) of the 1991 Act / Article 13 (1) of the 1978 Act)
Variety of common knowledge	an abbreviation of "variety whose existence is a matter of common knowledge at the time of the filing of the application". (see "Distinctness")

Variety	Article 1(vi) of the 1991 Act states that: "(vi)"variety" means a plant grouping within a single botanical taxon of the lowest known rank, which grouping, irrespective of whether the conditions for the grant of a breeder's right are fully met, can be - defined by the expression of the characteristics resulting from a given genotype or combination of genotypes, - distinguished from any other plant grouping by the expression of at least one of the said characteristics and - considered as a unit with regard to its suitability for being propagated unchanged;"
Visual observation (V)	Document TGP/9/1, Section 4.2 "Method of observation (visual or measurement)" explains that "*visual observation* (V) is an observation made on the basis of the expert's judgment. For the purposes of this document, "visual" observation refers to the sensory observations of the experts and, therefore, also includes smell, taste and touch. 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)."
Working Group on Biochemical and Molecular Techniques, and DNA-Profiling in Particular	*UPOV Working Group on Biochemical and Molecular Techniques, and DNA-Profiling in Particular (BMT) (abbreviated to "BMT")* *(see* http://www.upov.int/about/en/organigram.html*)*

[Section 2 follows]

SECTION 2. BOTANICAL TERMS

SUBSECTION 1. INTRODUCTION

The purpose of Section 2: Botanical Terms is:

(a) to provide guidance on the development of characteristics related to plant shapes and plant structures;

(b) to provide standard illustrations of plant shapes and plant structures which may be useful for inclusion in Test Guidelines, whilst noting that illustrations for specific characteristics can be found in the relevant Test Guidelines and noting that searches for relevant individual characteristics can be made through TGP/7 “Collection of Approved Characteristics”;

(c) to provide definitions of botanical terms (e.g. dentate, fastigiate, exserted, elliptic, acute, etc.) which form states of expression for characteristics used in the examination of DUS. Emphasis is placed on the states of expression because those are the basis for the assessment of DUS and, therefore, need to be understood specifically in relation to that function. This document provides illustrations and definitions of some terms which, although not used in the Test Guidelines, may be useful for breeders / applicants for characteristics formulated for use in the Technical Questionnaire. The definitions in this document provide an indication of whether terms are generally used in Test Guidelines, or whether alternative terms might be more appropriate for use in Test Guidelines. In general, the meaning of botanical terms which are used in the Test Guidelines to indicate the relevant part of the plant to be examined, but which are not themselves used as states of expression (e.g. bract, petal, berry, etc.), do not require a UPOV-specific definition and are not included in this document;

(d) to provide guidance on the development of characteristics related to colors and color patterns; and

(e) to provide standard illustrations and examples in relation to colors and color patterns which may be useful for inclusion in the Test Guidelines, whilst noting that illustrations for specific characteristics can be found in the relevant Test Guidelines and noting that searches for relevant individual characteristics can be made through TGP/7 “Collection of Approved Characteristics”.

SUBSECTION 2. SHAPES AND STRUCTURES

I. SHAPE

1. Components of Shape

1.1 Document TG/1/3 "General Introduction to the Examination of Distinctness, Uniformity and Stability and the Development of Harmonized Descriptions of New Varieties of Plants" (General Introduction) explains that shape can be considered in terms of a pseudo-qualitative characteristic:

> "4.4.3 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."

However, document TGP/9 "Examining Distinctness" explains that the use of pseudo-qualitative characteristics for the assessment of distinctness on the basis of notes has particular limitations (see document TGP/9/1, Section 5.2.3):

> *"Pseudo-qualitative (PQ) characteristics*
>
> "[…]
>
> "5.2.3.2.2.1 […] However, an important additional factor with pseudo-qualitative characteristics is that, whilst a part of the range is continuous, there is not an even distribution across the scale and the range varies in more than one dimension (e.g. shape: ovate (1), elliptic (2), circular (3), obovate (4): there is a variation in the length/width ratio and in the position of the widest point[1]). This means that it is difficult to define a general rule on the difference in Notes to establish distinctness within a characteristic."

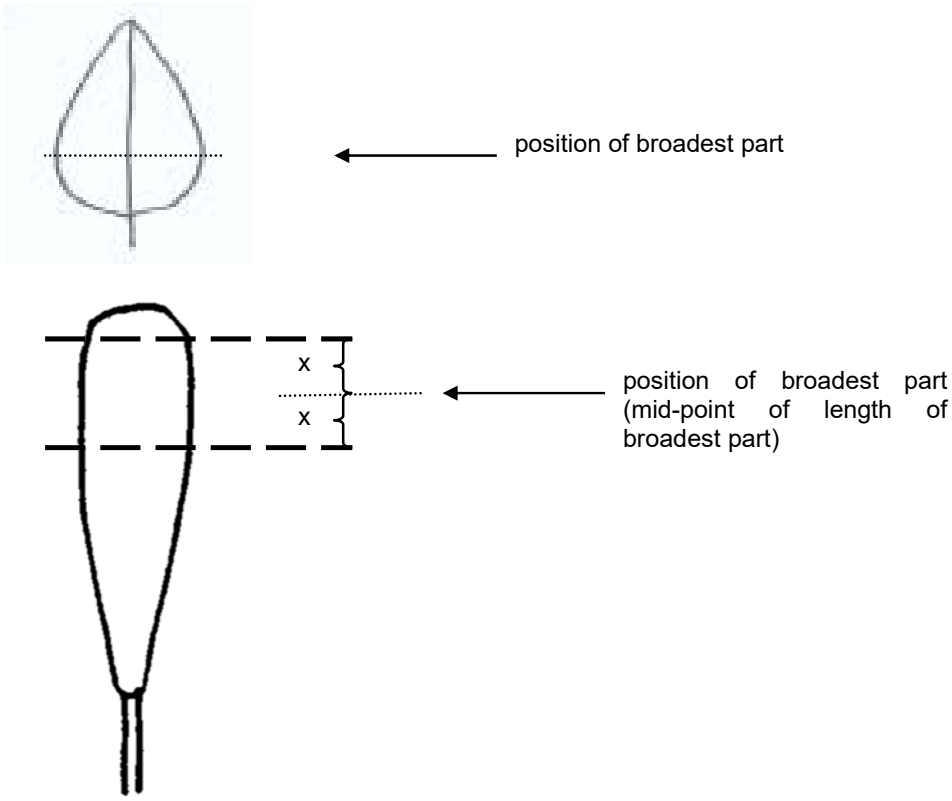
1.2 Therefore, for the purposes of DUS examination, it can be useful to develop quantitative or qualitative characteristics related to shape, rather than considering shape as a single pseudo-qualitative characteristic. In that respect, it is possible to define a plane shape using the following components:

(a) Ratio length/width (or ratio width/length)
(used as a generic term in this document to cover also ratio: thickness/length; diameter/length; thickness/width, for cross-sections of 3 dimensional shapes)

[1] The term "broadest part" is used in preference to "widest point" in this document, because the broadest part may be a point (e.g. for a circle) or, in cases where the sides are parallel (e.g. for an oblong), the broadest part is situated along a length (see Section 1.2(b)).

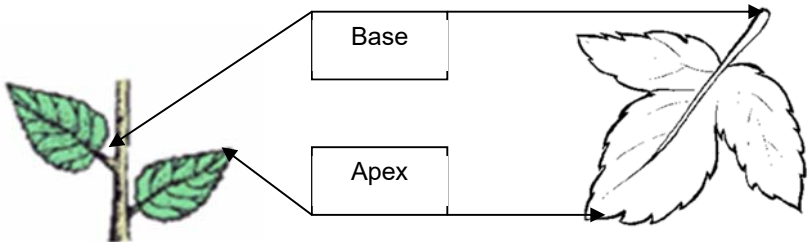
(b) Position of broadest part

The broadest part may be a point (e.g. for a circle) or, in cases where the sides are parallel (e.g. for an oblong), the broadest part is situated along a length. In cases where the broadest part is not a precise point, the position of the broadest part is considered to be the mid-point along the broadest part. For example:



(c) Shape of base (see Section 2.3 Base Shape Characteristics);
(d) Shape of apex (see Section 2.4 Apex/Tip Shape Characteristics);
(e) Lateral outline.

1.3 The apex (apical or distal part) of an organ or plant part is the end furthest from the point of attachment. The base (proximal part) of a plant part is the end nearest to the point of attachment. However, it should be noted that the illustrations of shapes in the Test Guidelines might not always be orientated with the point of attachment (base) at the bottom if that is not the natural orientation of the organ on the plant.



1.4 The shape of base and shape of apex are considered in Sections 2.3 and 2.4 respectively. The chart below (Chart for Simple Symmetric Plane Shapes) illustrates the other three components for simple symmetric plane shapes (those for which the angle at the base and at the apex does not exceed 180°) as follows:

(a) Ratio length/width (or ratio width/length): the ratio length/width varies from left to right within a row, but is approximately the same within a column;
(b) Position of broadest part: the position of the broadest part varies from row to row, but is approximately the same in each row;
(c) Lateral outline: the shape of the lateral sides varies from set to set, but is approximately the same within a set.

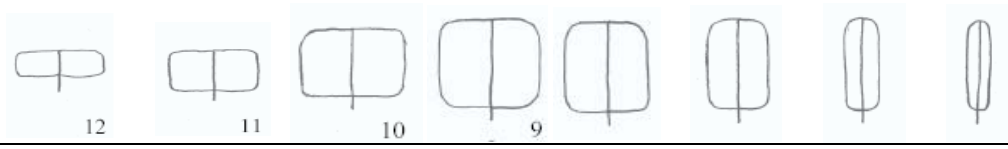
1.5 To ensure that the ratio length/width is clearly understood, it is recommended to present the characteristic as a shape with states such as “very compressed” to “very elongated”, or to present the characteristic as “ratio length/width” with states such as “very low” to “very high” and to provide an illustration. To avoid confusion concerning the absolute dimensions, it is recommended to avoid the use of terms such as “long” and “short” for ratio length/width, particularly where characteristics for the absolute dimensions are also included for the same plant part. The terms associated with certain length/width ratios used in the Chart for Simple Symmetric Plane Shapes are only intended to illustrate the use of ratio length/width. In the Test Guidelines, the use of terms such as “[very/moderately/slightly] low (compressed)” and “[very/moderately/slightly] high (elongated)“ will need to be determined according to the range of expression for the characteristic concerned.

Chart for Simple Symmetric Plane Shapes

shape	very compressed	moderately compressed	slightly compressed	medium	slightly elongated	moderately elongated	very elongated
ratio length/width	very low	low	low to medium	medium	medium to high	high	very high

Parallel set

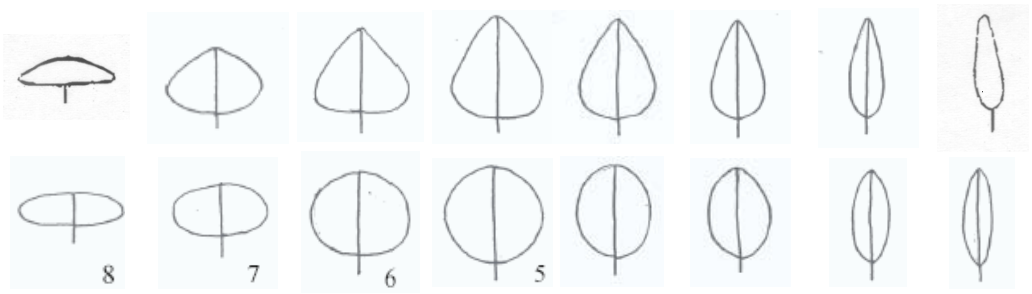
oblong



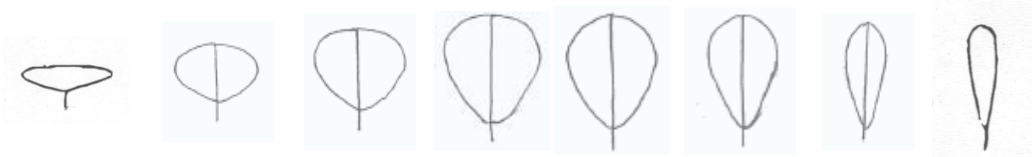
Rounded set

ovate

elliptic



obovate



Angular set

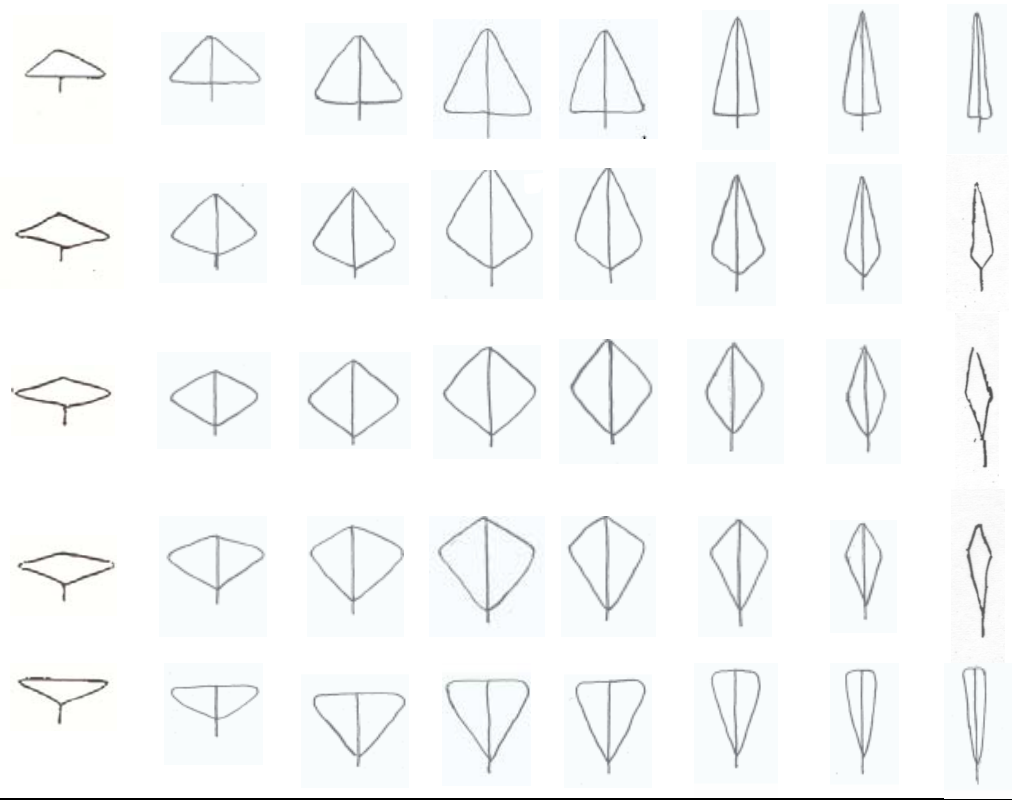
triangular

trullate

rhombic

obtrullate

obtriangular



Notes

1	(narrow deltate)	9	square
2	(medium deltate)	10	transverse broad oblong
3	(broad deltate)	11	transverse medium oblong
4	(quadrate rhombic)	12	transverse narrow oblong
5	circular	13	(narrow obdeltate)
6	narrow oblate	14	(medium obdeltate)
7	medium oblate	15	(broad obdeltate)
8	broad oblate		

Parallel set: the lateral sides are more or less straight over most of their length and more or less parallel to the main axis (The leaves of most of the monocotyledons belong in this group.)

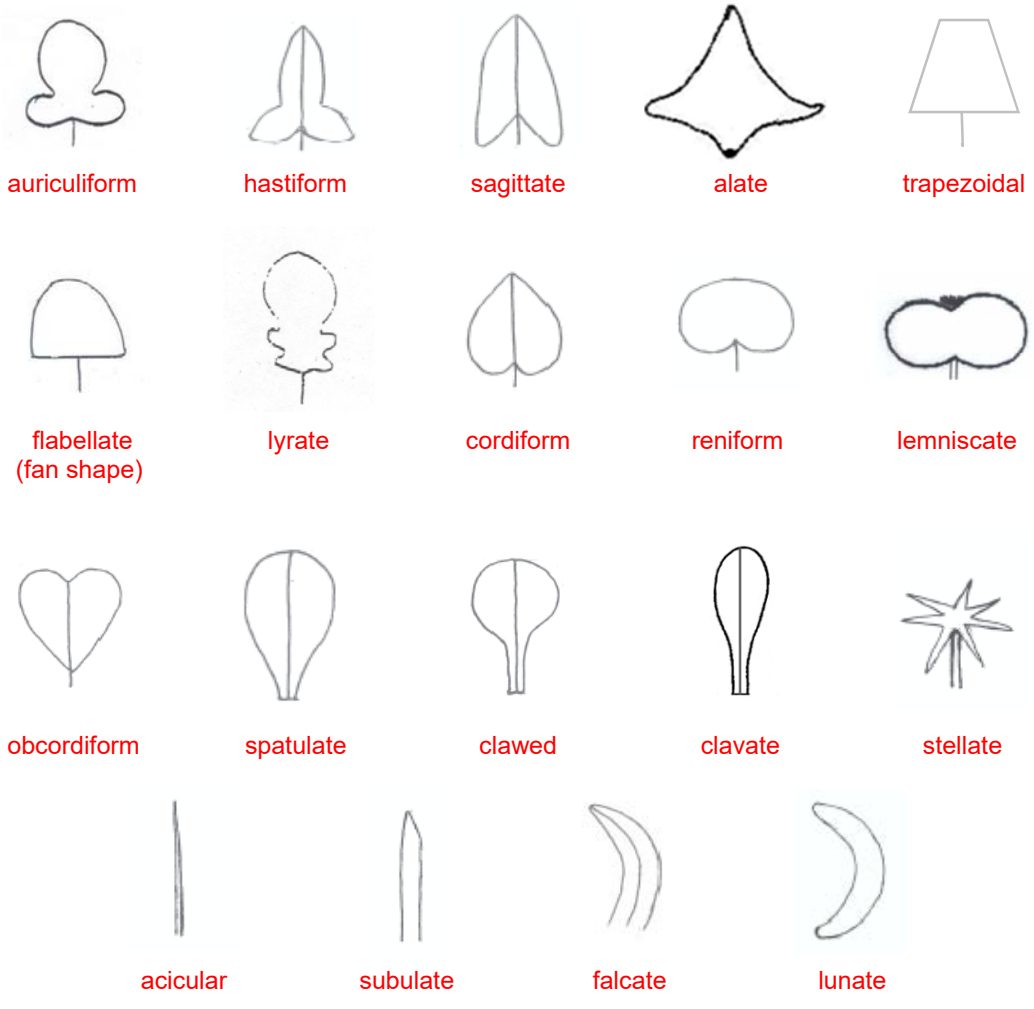
Rounded set: the lateral sides are rounded in a single, sweeping curve, without sudden changes of direction (The leaves of most of the dicotyledons belong in this group.)

Angular set: the lateral sides are somewhat bent at a certain point, resulting in a change of direction, combined with a somewhat straightening towards the base and apex from that point and more or less forming two triangles joined at the longitudinal axis.

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

Chart for Other Plane Shapes

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



2. Developing Shape-Related Characteristics

2.1 Introduction

2.1.1 In general, it can be most useful to consider the variation in shape between varieties in the variety collection using the following steps:

Step 1: Ratio length/width (see Section 1 Components of Shape);
Step 2: Position of broadest part (see Section 1 Components of Shape);
Step 3: Shape of base (see Section 2.3 Base Shape Characteristics);
Step 4: Shape of apex (see Section 2.4 Apex/Tip Shape Characteristics);
Step 5: Lateral outline (see Section 1 Components of Shape).

Thus, if all the variation in shape between varieties in the variety collection is accounted for by the ratio length/width (e.g. narrow elliptic, medium elliptic or broad elliptic), it is only necessary to have a characteristic "ratio length/width" (or ratio width/length). Similarly, if all the variation in shape between varieties in the variety collection is accounted for by ratio length/width and position of broadest part (e.g. all varieties fall within the rounded set in the Chart for Simple Symmetric Plane Shapes) it is only necessary to have the characteristics "ratio length/width" (or ratio width/length) and "position of broadest part". It is only necessary to go to subsequent steps when the variation in shape between varieties in the variety collection has not been accounted for by the preceding steps/components. Duplication of the same difference in two separate characteristics should be avoided: for example, the use of characteristics for both ratio length/width and for shape should be avoided where states of expression of the characteristic for shape relate to different length/width ratios.

2.1.2 In general, where shape characteristics are developed on the basis of the individual components above, it is appropriate to present the characteristics in the order of the steps 1 to 5. However, a particular exception to this approach should be made where a qualitative characteristic is identified. Qualitative characteristics should be presented as the first of the series of shape-related characteristics because of the value of such characteristics for assessing distinctness and because the examination of subsequent shape-related characteristics may not be relevant for varieties with certain states of expression for the qualitative characteristic. For example, "Only varieties with Leaf lateral outline: ovate: Leaf: ratio length/width (or ratio width/length)" might be appropriate if the preceding characteristic for "Leaf: lateral outline" was qualitative, e.g. ovate (1); hastiform (2) and there was no useful variation in ratio length/width for hastiform varieties.

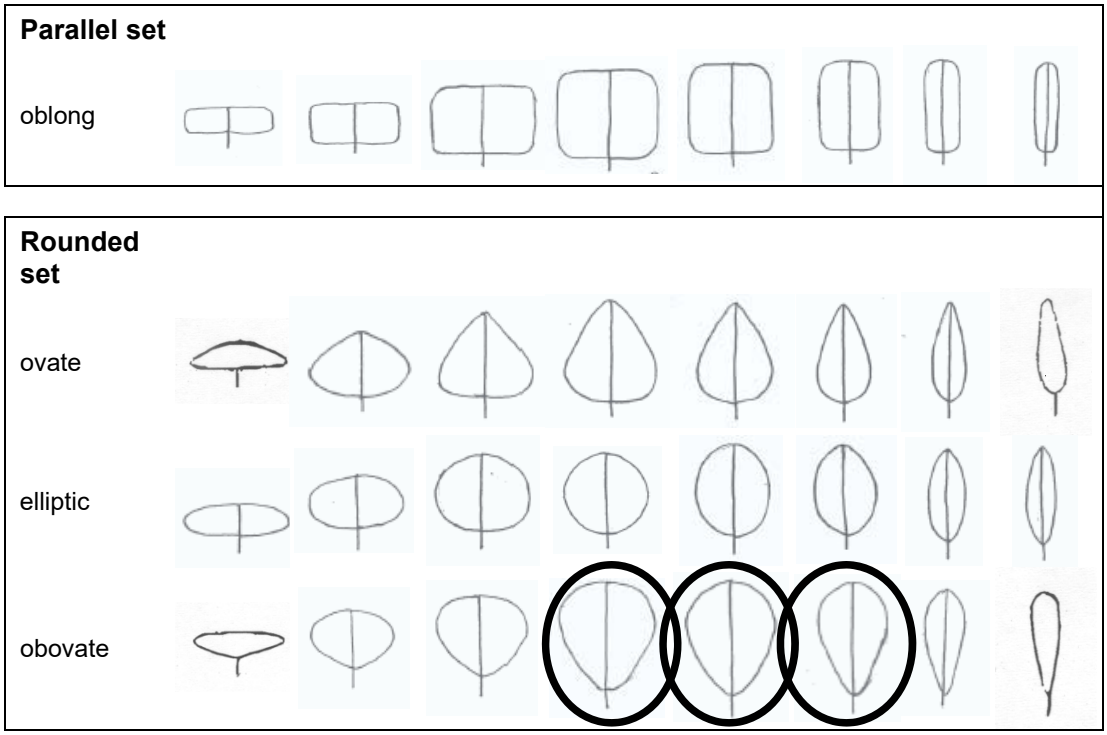
2.1.3 Notwithstanding the difficulty in using a difference in Notes to establish distinctness for a pseudo-qualitative characteristic (see Section 1), it may be appropriate to develop a single pseudo-qualitative characteristic for shape. In such cases, it is important that the difference between the states of expression is indicated in an illustration. The illustration should, as far as possible, place the states with the least difference closest together, regardless of their notes, e.g. the illustrations for notes 1 and 5 might be positioned side-by-side and notes 2 and 4 might be further apart. Where the overall shape is presented as a single pseudo-qualitative characteristic, the order of states should be: primary order, broadest part below middle to broadest part above middle; secondary order, narrow to broad (low to high ratio length/width) (see Section 2.2, Example 5, Alternative 2).

2.2 Full plane shape characteristics

The following illustrations provide examples of variation in full plane shape components (ratio length/width, position of broadest part and lateral outline) for the development of characteristics, either as characteristics for the individual components or as a single overall shape characteristic:

Example 1 (a circle indicates the shape of one or more varieties in the variety collection)

The only variation between varieties is found in the ratio length/width.



Possible characteristic(s) (Example 1)

Alternative 1

Plant [part]: ratio length/width (low to high) (QN)

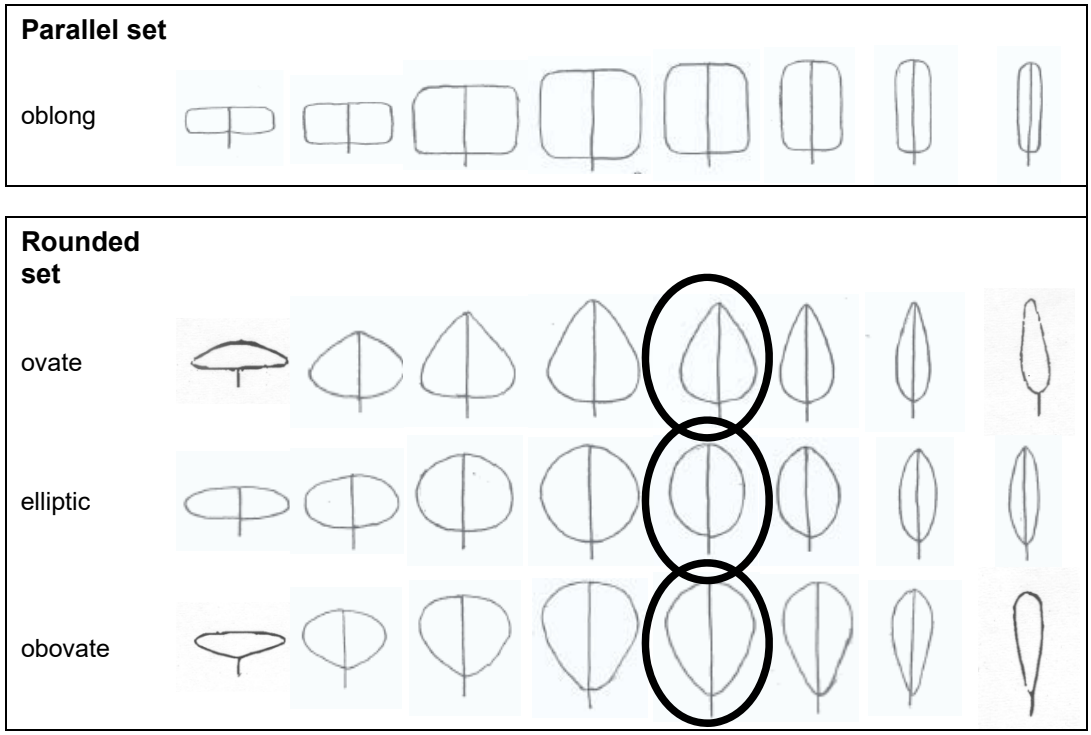
Alternative 2

Plant [part]: shape (broad obovate (1); medium obovate (2); narrow obovate (3)) (QN)
with the following illustration

Alternative 1:	ratio length/width: low	ratio length/width: medium	ratio length/width: high
Alternative 2:	1	2	3
	Shape: broad obovate	Shape: medium obovate	Shape: narrow obovate

Example 2 (a circle indicates the shape of one or more varieties in the variety collection)

The only variation between varieties is found in the position of the broadest part.



Possible characteristic(s) (Example 2)

Alternative 1

Plant [part]: position of broadest part (towards base to towards apex) (QN)

Alternative 2

Plant [part]: shape (ovate (1); elliptic (2); obovate (3)) (QN)

with the following illustration

broadest part towards base	broadest part at middle	broadest part towards apex
1	2	3
ovate	elliptic	obovate

Example 3 (a circle indicates the shape of one or more varieties in the variety collection)

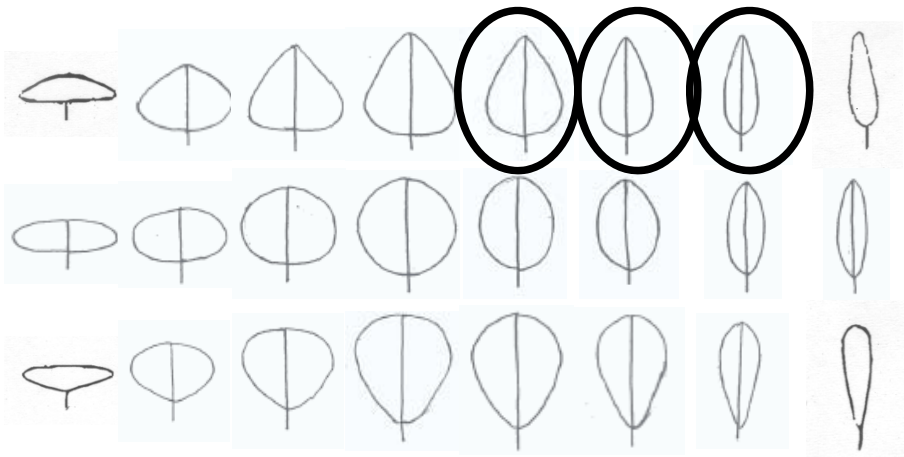
There is variation between varieties in the ratio length/width, the shape of the base and the lateral outline. The lateral outline varies between ovate and trullate.

Rounded set

ovate

elliptic

obovate

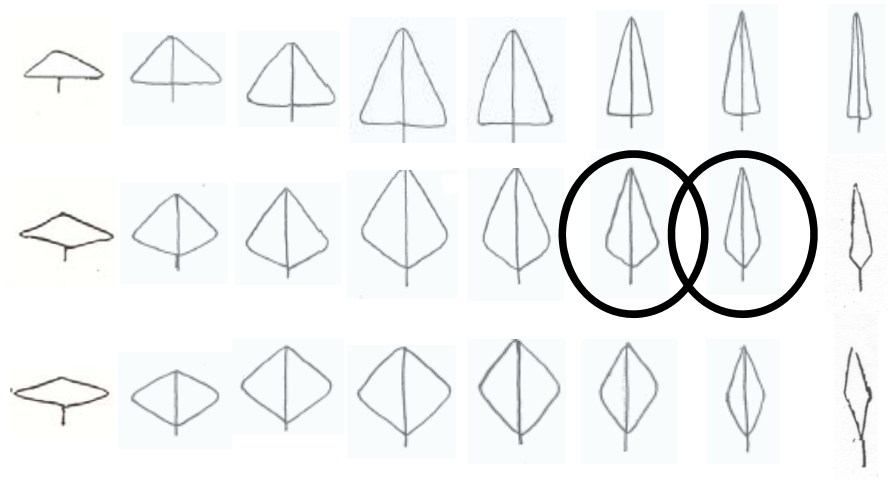


Angular set

triangular

trullate

rhombic



Possible characteristic(s) (Example 3)

Alternative 1

Plant [part]: ratio length/width (low to high) (QN)

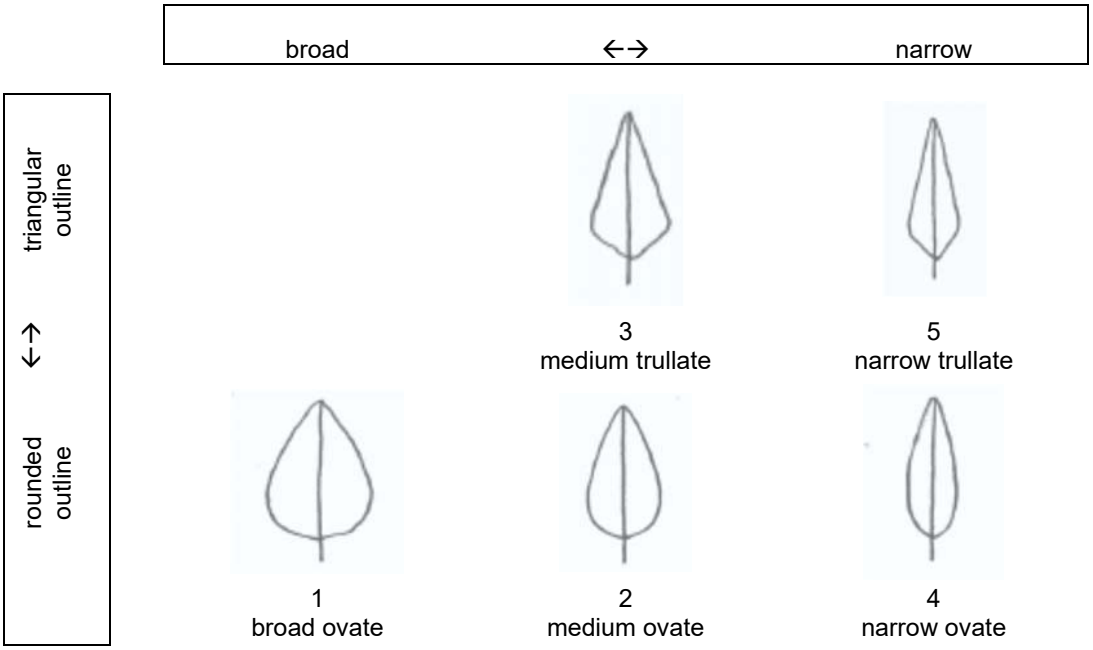
Plant [part]: shape of base (acute, obtuse, rounded) (PQ)

Plant [part]: lateral outline (clearly rounded to clearly triangular) (QN)

Alternative 2

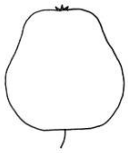
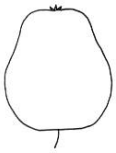
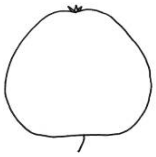
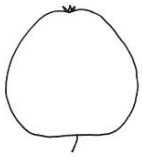
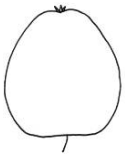
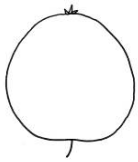
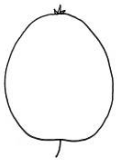
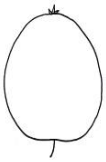
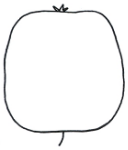
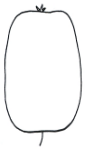
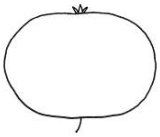
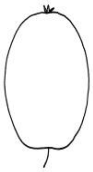
Plant [part]: shape (broad ovate (1); medium ovate (2); medium trullate (3); narrow ovate (4); narrow trullate (5)) (PQ)

with the following illustration



Example 4

There is variation between varieties in the ratio height/diameter, position of broadest part and the lateral outline in the apical half. The lateral outline varies between ovate and trullate.

	lateral outline in apical half (Notes)	ratio height/diameter: low (3)	ratio height/diameter: medium (5)	ratio height/diameter: high (7)	position of broadest part (Notes)
cylindrical waisted	concave (4)				at middle (1); moderately towards base (2); or strongly towards base (3)
conic	flat taper (3)				at middle (1); moderately towards base (2); or strongly towards base (3)
ovoid	rounded (1)				moderately towards base (2); or strongly towards base (3)
cylindrical	parallel (2)				at middle (1)
ellipsoid	rounded (1)	 (oblate)	 (round)	 (elliptic)	at middle (1)

Possible characteristic(s) (Example 4)

Alternative 1

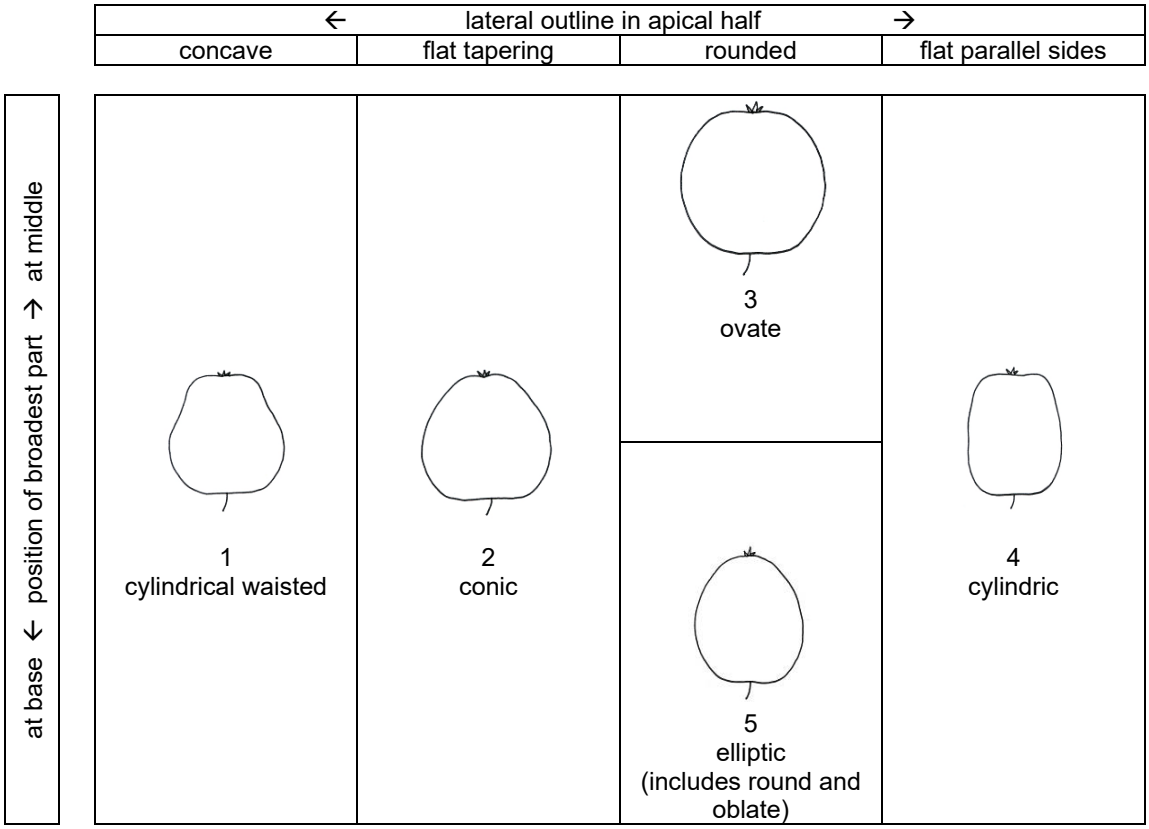
(a) ratio *height/diameter* (QN):
e.g. very low (1); low (3); medium (5); high (7); very high (9);
(b) position of broadest part (QN):
e.g. at middle (1); moderately towards base (2); strongly towards base (3);
(c) lateral outline in apical half (PQ):
e.g. rounded (1); parallel (2); flat taper (3); concave (4)

Alternative 2

(a) ratio *height/diameter* (QN):
e.g. very low (1); low (3); medium (5); high (7); very high (9);

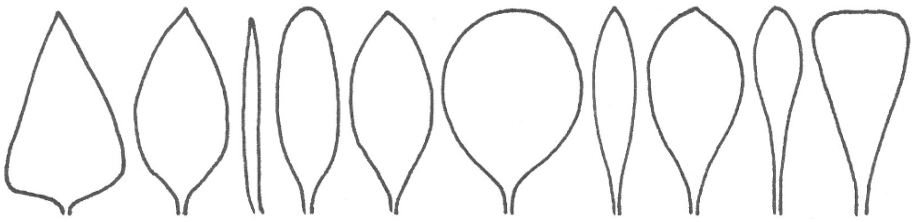
(b) general shape (PQ):
e.g. cylindrical waisted (1); conic (2); ovate (3); cylindric (4); elliptic (5)

with the following illustration:



Example 5

the variation between the range of shapes indicated by the illustrations below:



Possible characteristic(s) (Example 5)

Alternative 1

(a) position of broadest part (QN):
e.g. strongly towards base (1); moderately towards base (3); at middle (5); moderately towards apex (7); strongly towards apex (9)

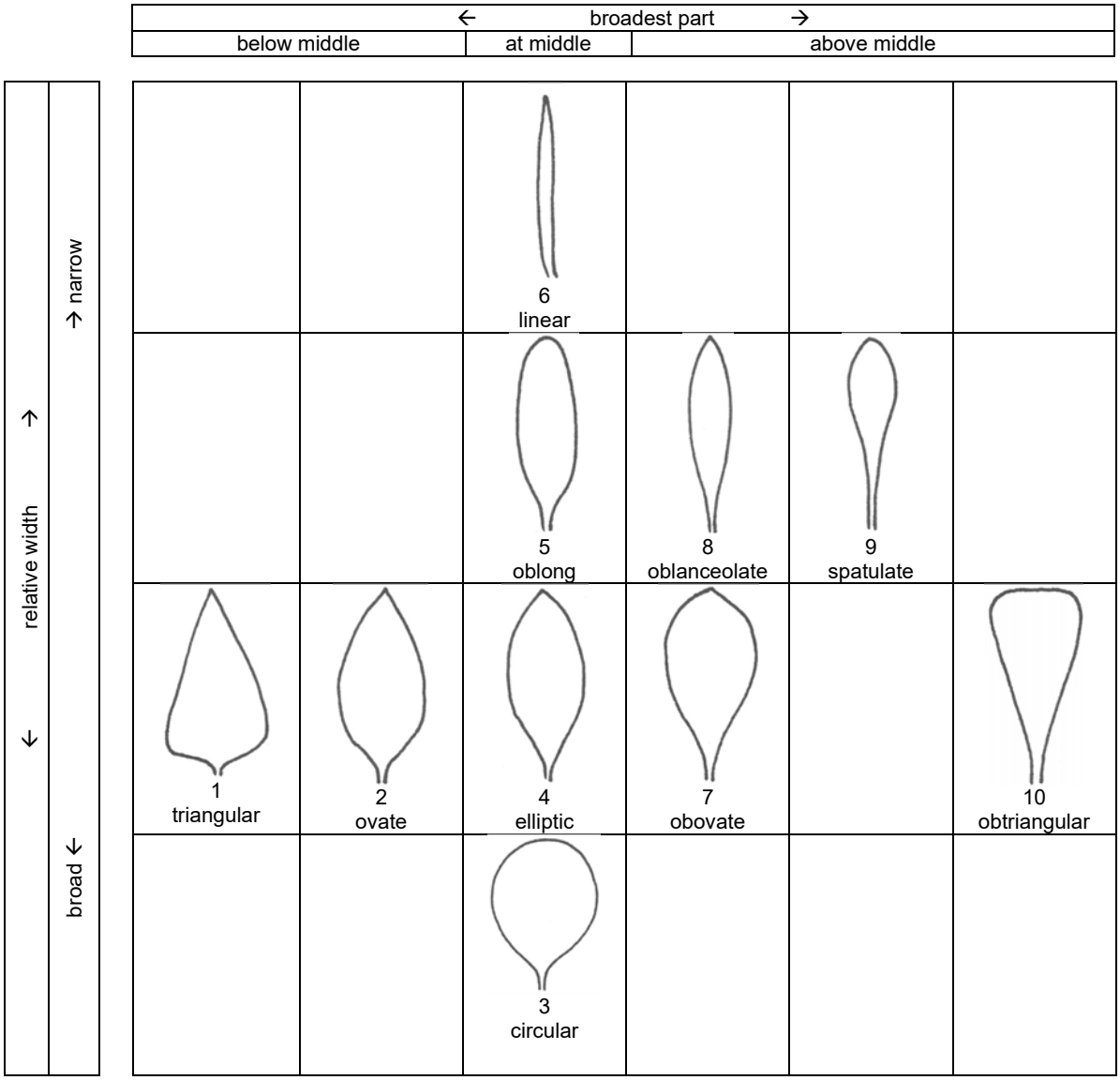
(b) ratio length/width (QN):
e.g. very low (1); low (3); medium (5); high (7); very high (9);

Alternative 2

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

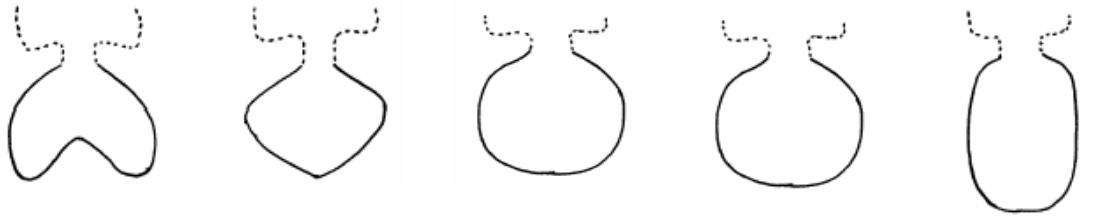
(Note: Where the overall shape is presented as a single pseudo-qualitative characteristic, the order of states should be: primary order, broadest part below middle to broadest part above middle; secondary order, broad to narrow (low to high ratio length/width)).

with the following illustration:



Example 6

The variation between the range of shapes indicated by the illustrations below:



Possible characteristic(s) (Example 6)

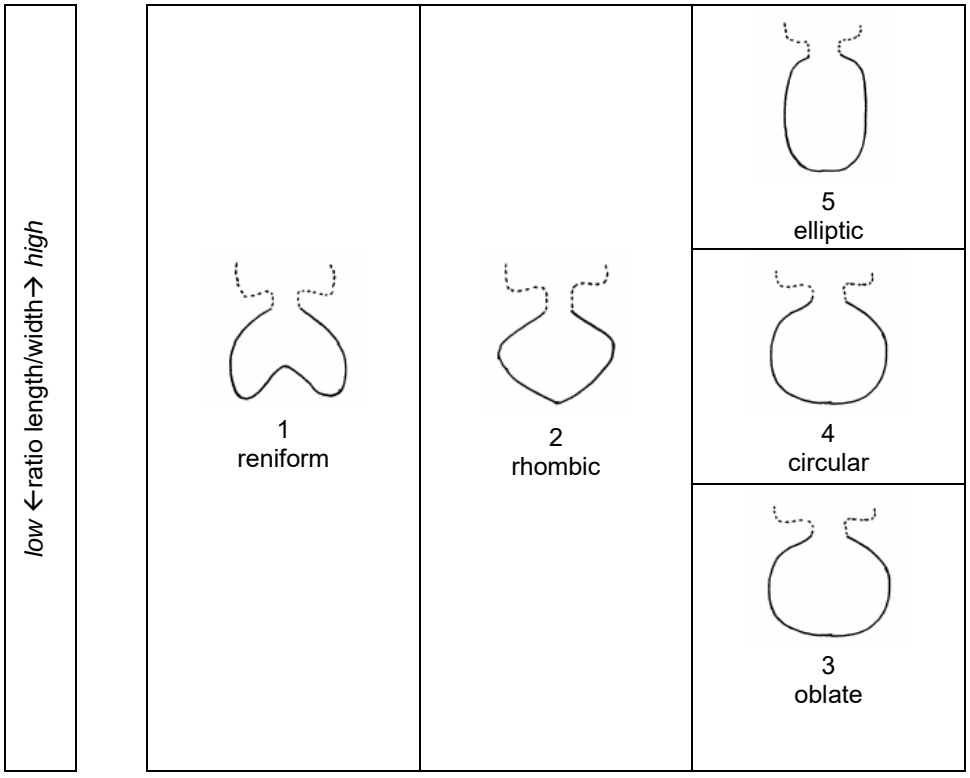
Alternative 1

(a) lateral outline (QL)
e.g. reniform (1); rhombic (2); elliptic (3)
(b) ratio length/width (QN):
e.g. low (1); medium (2); high (3);

Alternative 2

General shape (PQ): reniform (1); rhombic (2); oblate (3); circular (4); elliptic (5)

with the following illustration:



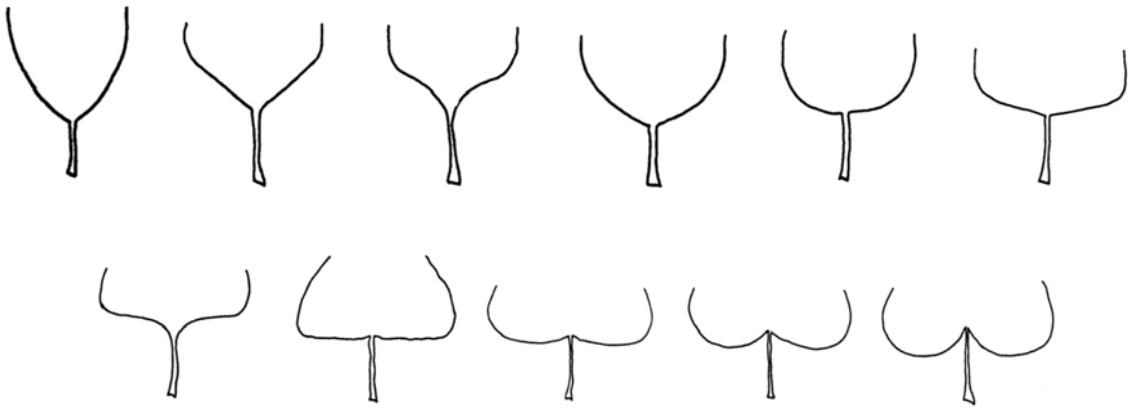
2.3 Base Shape Characteristics

2.3.1 As explained in Section 2.1, it is only necessary to develop a characteristic for the shape of base when the variation in shape between varieties in the variety collection has not been accounted for by the ratio length/width or the position of the broadest part concerning the full plant part.

2.3.2 In the same way as for plane shapes, whilst a base shape can be considered in terms of a pseudo-qualitative characteristic, it can be useful to develop quantitative or qualitative characteristics related to base shape, rather than considering shape as a single pseudo-qualitative characteristic. A particular example of this is the consideration of the angle of the base (e.g. as a quantitative characteristic) and the curvature at the base, an example of which is provided below for illustrations purposes.

Example

the variation between the range of base shapes indicated by the illustrations below



Possible characteristic(s)

Alternative 1

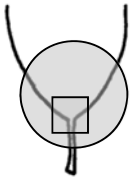
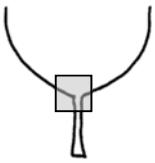
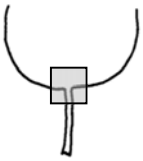
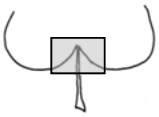
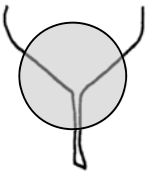
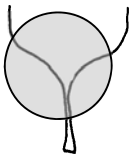
(a) angle of base (QN):
e.g. acute (1); obtuse (2); straight (180°) (3); weakly reflex (4); strongly reflex (5)

(b) curvature at base (QN):
e.g. concave (1); flat (2); convex (3)

Alternative 2

Shape of base (PQ): wedge-shaped, convex (1); wedge-shaped, straight (2); wedge-shaped concave (3); broad wedge-shaped, convex (4); broad wedge-shaped, straight (5); broad wedge-shaped, concave (6); rounded (7); flat (8); weakly cordate (9); medium cordate (10); strongly cordate (11).

with the following illustration:

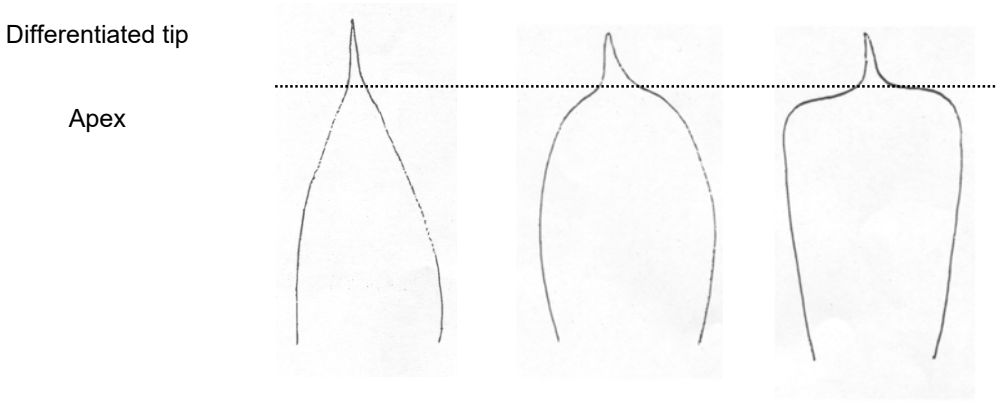
		← angle at base →					
		acute	obtuse	straight	weakly reflexed	medium reflexed	strongly reflexed
curvature →	convex	 1 wedge-shaped, convex	 4 broad wedge-shaped, convex	 7 rounded	 9 weakly cordate	 10 medium cordate	 11 strongly cordate
	flat	 2 wedge-shaped, straight	 5 broad wedge-shaped, straight	 8 flat			
←	concave	 3 wedge-shaped concave	 6 broad wedge-shaped, concave				

2.4 Apex/Tip Shape Characteristics

2.4.1 The APEX (apical or distal part) of an organ or plant part is the end furthest from the point of attachment. In some cases, the distal extremity of the apex may be differentiated into a "TIP".

2.4.2 In considering the approach to describe the apex, the size of the organ and the number of apex shapes should be taken into account. Apex characteristics can be described in simple terms and if a differentiated tip is present it could be further described as a separate characteristic. Generally, it is not necessary to separate the apex shape characteristic into differentiated tip and apex characteristics.

2.4.3 In cases where it is appropriate to separate into differentiated tip and apex characteristics, the shape of the apex is taken as the general shape, excluding any differentiated tip (if present) and the separation of tip and apex should be indicated in the explanation of the characteristic. For example:



Differentiated tip:	acuminate	acuminate	acuminate
Apex:	acute	rounded	truncate

2.4.4 As explained in Section 2.1, it is only necessary to develop a characteristic for the shape of apex when the variation in shape between varieties in the variety collection has not been accounted for by the ratio length/width or the position of the broadest part concerning the full plant part.

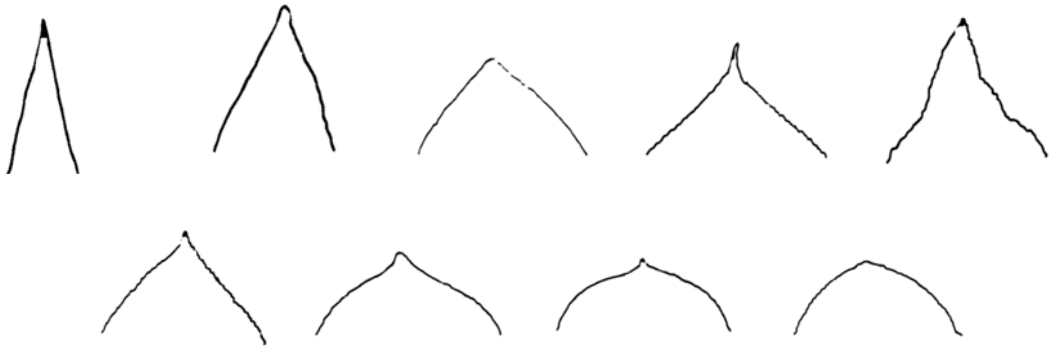
2.4.5 In the same way as for plane shapes, whilst an apex shape can be considered in terms of a pseudo-qualitative characteristic, it can be useful to develop quantitative or qualitative characteristics related to apex shape, rather than considering shape as a single pseudo-qualitative characteristic. A particular example of this is the consideration of the angle of the apex (e.g. as a quantitative characteristic).

2.4.6 In cases where the tip is differentiated within the general shape of the apex, characteristics concerning the shape of the tip may be developed independently from those concerning the general shape of the apex. Different combinations between these two categories are possible, for example: a first characteristic for the general shape of the apex (e.g. acute, obtuse, rounded), together with a second characteristic for emargination at apex (absent, present), or apiculate tip (absent, present).

2.4.7 In the case of tip shapes, it may be more appropriate to have a simple characteristic such as length of tip, rather than using botanical terms. The only difference between mucronate and aristate is the length of the 'tip', the only difference between cuspidate and pungent is the length of the 'tip', and the only difference between emarginate and retuse is the angle and depth of the notch. These pairs can therefore also be quantified where applicable, by stating, for example, 'length of tip' or 'depth of notch', instead of using the specific botanical terms.

Example

the variation between the range of apex shapes indicated by the illustrations below



Possible characteristic(s)

Alternative 1

(a) angle of apex (excluding tip, if present) (QN):
e.g. strongly acute (1); moderately acute (2); right-angle (3); moderately obtuse (4); strongly obtuse (5)

(b) length of acuminate tip (QN):
e.g. absent or short (1); medium (2); long (3)

Alternative 2

(a) angle of apex (excluding tip, if present) (QN):
e.g. strongly acute (1); moderately acute (2); right-angle (3); moderately obtuse (4); strongly obtuse (5)

(b) tip (PQ): *absent or very weak (1); mucronate (2); narrow short acuminate (3); broad short acuminate (4); narrow long acuminate (5); broad long acuminate (6)*

with the following illustration:

← width of tip →	← length of tip →			
	absent or very weak	short	medium	long
narrow	[see below]	 2 mucronate	 3 narrow short acuminate	 5 narrow long acuminate
broad			 4 broad short acuminate	 6 broad long acuminate

examples of tip: absent or very weak (1) with different angles of apex (characteristic (a)):

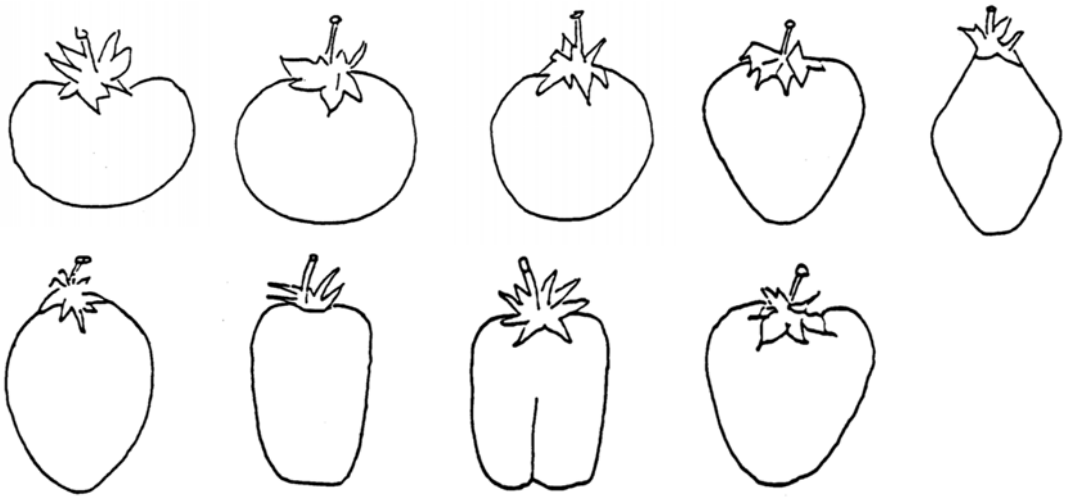
 strongly acute apex	 right-angle apex	 obtuse apex

2.5 Combination of Full Plane-, Base- and Apex Shape Characteristics

The following example illustrates how the overall shape of an organ or plant part can be observed in relation to the components of shape explained in Sections 2.2 to 2.4.

Example

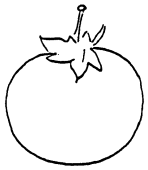
the range of shapes covered by the illustrations below



can be observed in relation to:

(a) ratio length/width (QN):
e.g: very low (1); low (3); medium (5); high (7); very high (9);
(b) position of broadest part (QN):
e.g. at middle (1); moderately towards base (2); strongly towards base (3);
(c) shape of base (QN/PQ):
e.g. pointed (1); rounded (2); depressed (3)
(d) shape of apex (QN/PQ):
e.g. pointed (1); rounded (2); truncate (3); notched (4)

The chart below illustrates how the different components cover the range of overall shapes. Such a chart is not appropriate in the Test Guidelines, although illustrations may be useful for the individual characteristics to clarify the parts to be observed.

	shape of base				
shape of apex	pointed (1)		rounded (2)		depressed (3)
pointed (1)					
rounded (2)			 (ovate)	position of broadest part	
		ratio length/width	 (round)		
			 (oblate)		
truncate (3)					
notched (4)					

2.6 Three-dimensional shape characteristics

Wherever possible, three-dimensional plant parts should be described in cross-section as plane or two-dimensional shapes (see Section 2.1: ratio length/width, position of broadest part, base, shape and lateral outline), e.g. using characteristics in cross-section, lateral view, longitudinal section, etc. To describe the three-dimensional shape fully it may also be necessary to use, for example, a characteristic for hollow or solid interior in addition to the characteristics describing the plane shape. The use of characteristics for three-dimensional shapes should only be used where it is not practical to describe the characteristic in a two-dimensional way.

2.7 Symmetry

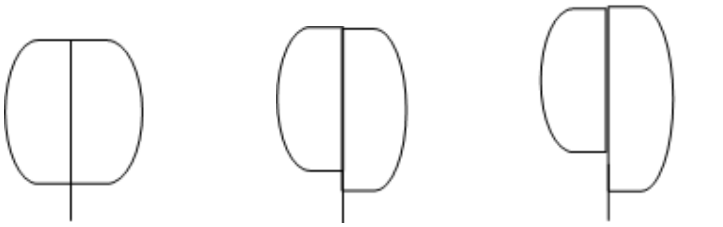
2.7.1 Lateral symmetry around the main axis may be handled in different ways. For example:

(a) lateral symmetry of plant part shapes may be considered within a particular shape, e.g. falcate and lunate are laterally asymmetric (see Section 1.6); or

(b) it may be appropriate to introduce symmetry as a separate characteristic. In such cases, whether the characteristic for symmetry is a qualitative (symmetric / asymmetric), a quantitative (e.g. symmetric or weakly asymmetric (1), moderately asymmetric (2), strongly asymmetric (3)) or a pseudo-qualitative characteristic needs to be considered on a case-by-case basis.

Example:

quantitative characteristic for symmetry



1
symmetric or weakly asymmetric

2
moderately asymmetric

3
strongly asymmetric

2.8 Perspective from which to observe plant shapes

Where appropriate, an explanation of the perspective from which to observe the shape should be included in the Test Guidelines.

Example 1

Fruit: symmetry (viewed from pistil end)

symmetric

strongly asymmetric

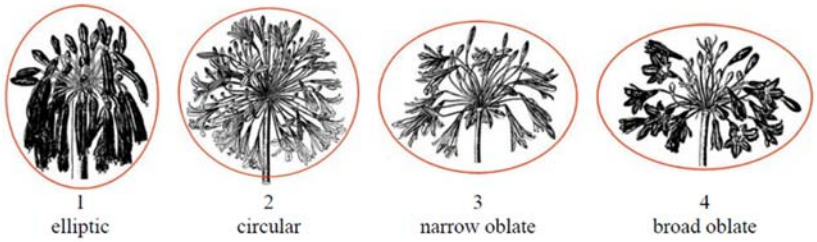
Example 2

Fruit: shape in lateral view

← width (ratio length/width →)	← broadest part →		
	below middle	at middle	above middle
narrow		2 elliptic	
	5 cordate	1 oblong; 3 circular	7 obcordate; 6 obovate
broad (compressed)		4 oblate	

Example 3

Inflorescence: shape in lateral view



1 elliptic 2 circular 3 narrow oblate 4 broad oblate

2.9 Use of composite characteristics for determining distinctness and uniformity[2]

It is possible to derive additional characteristics for comparing between varieties by calculating 'composite' characteristics that are mathematical combinations of existing independently examined characteristics. While this can facilitate assessment of important differences between varieties, certain safeguards are necessary to ensure appropriate use. Therefore, composite characteristics should:

(a) describe a definable plant characteristic. While it is possible to calculate a mathematical value for any combination of two characteristics (e.g a flowering date divided by a leaf length), only those calculations that describe an actual biological characteristic should be considered for inclusion in procedures. Permissible examples would be the calculation of a bidimensional characteristic such as area, using linear length and width measurements. Relationship characteristics in morphology can also be derived, such as differences in awn length relative to the length of ear, calculated from the independently measured awn and ear lengths. Similarly, for physiological characteristics a composite can be derived to describe a plant development period for example, by subtracting the timing of flower bud emergence and anthesis. Any other type of composite characteristics that describes a plant feature should be equally suitable.

(b) provide additional information over that of their components. It is important to understand the relationship between a composite characteristic and its components. In compliance with TGP/14 guidelines, it is necessary to ascertain whether or not the same difference is being duplicated. Evidence for this would include comparing how each component distinguishes between a range of variety-pairs and specifically whether a high similarity exists in the variety separations achieved by a composite characteristic and any of its components.

Assessment of uniformity should be conducted in the same manner as for any other characteristics, according to the requirements of TGP/10 (Examining Uniformity) for the characteristics and crop types being examined.

Adoption of any new composite characteristics should, therefore, be considered on an individual species basis and compliance with the above criteria established from evidence of independence from its components and by defining the plant characteristic being examined.

2.10 Shape: types of expression and states / notes

The type of expression (i.e. qualitative, quantitative or pseudo-qualitative) of the characteristics describing components of shape needs to be considered separately for each situation. In particular, as explained in document TGP/7 "Development of Test Guidelines", Annex 4, paragraph 1 "it should be remembered that what may appear to be very similar characteristics in different types of plant, or different organs of the same plant, may in fact be under different types of genetic control." Thus, for example, in one type of plant, or one organ, the characteristic "position of broadest part" might be a qualitative characteristic but in another type of plant, or organ, it might be a quantitative characteristic. Therefore, the following notes are only intended to indicate the most normal situations:

(a) Ratio length/width: normally a quantitative characteristic
(b) Position of broadest part: within the same lateral outline set (e.g. rounded), this is normally a quantitative characteristic. However, where varieties cover more than one lateral outline set (e.g. angular and

---

[2] Background note

Document TG/1/3: "General Introduction to the Examination of Distinctness, Uniformity and Stability and the Development of Harmonized Descriptions of New Varieties of Plants" states as follows:

"4.6.3 Combined Characteristics

"4.6.3.1 A combined characteristic is a simple combination of a small number of characteristics. Provided the combination is biologically meaningful, characteristics that are assessed separately may subsequently be combined, for example the ratio of length to width, to produce such a combined characteristic. Combined characteristics must be examined for distinctness, uniformity and stability to the same extent as other characteristics. In some cases, these combined characteristics are examined by means of techniques, such as Image Analysis. In these cases, the methods for appropriate examination of DUS are specified in document TGP/12, "Special Characteristics."

"4.6.3.2 Combined characteristics are not to be confused with the application of methods, such as "multivariate analysis." The potential for use of multivariate analysis is considered in document TGP/9, "Examining Distinctness."

hastiform), the position of the broadest part is less likely to be a quantitative characteristic and is more likely to be pseudo-qualitative or qualitative;

(c) Shape of base (see Section 2.3 Base Shape Characteristics);

(d) Shape of apex (see Section 2.4 Apex/Tip Shape Characteristics);

(e) Lateral outline: there is no "normal" situation for the lateral outline, which can be a qualitative, quantitative or pseudo-qualitative characteristic

2.11 Shape: defining the characteristic

In the same way as for any characteristic, each characteristic should be precisely defined. With respect to shape-related characteristics it is particularly important to clarify which part of the plant is to be observed. Some illustrative examples are as follows:

Leaf: ratio length/width

- to specify if any tip (e.g. aristate tip) should be included or excluded from the observation of leaf length
- to specify if the reference point for the "base" should be the point of attachment or the lowest part of the plant part (e.g. for a cordiform leaf);
- to specify how to observe length/width in the case of laterally asymmetric shapes

Leaf: position of broadest part

- to specify if any tip (e.g. aristate tip) should be included or excluded from the observation of the position of the broadest part
- to specify if the reference point for the "base" should be the point of attachment or the lowest part of the plant part (e.g. for a cordiform leaf);
- to specify how to observe position of the broadest part in the case of laterally asymmetric shapes

2.12 Shape: Technical Questionnaire Characteristics

Where the normal requirements for a Technical Questionnaire characteristic are met (see document TGP/7 Annex 3 GN 13.3), characteristics developed according to the guidance set out in this document are suitable for inclusion in the Technical Questionnaire. However, document TGP/7: Annex 3 GN 13.3.4 clarifies that "[w]here necessary, characteristics in the Test Guidelines can be simplified (e.g. color groups can be created rather than requesting an RHS Colour Chart reference) for inclusion in the Technical Questionnaire (TQ), if this would be of assistance for the breeder completing the TQ. Furthermore, the characteristics contained in the Test Guidelines can be formulated in a different way, if breeders would then be able to describe them more precisely and the information would be useful for performing the test.". Thus, in some cases, it may be appropriate to provide breeders with an opportunity to describe shape in a way which is more widely recognized. In such cases, the Technical Questionnaire may invite breeders to indicate shape on the following basis:

(a) Simple Symmetric Plane Shapes: to indicate the shape according to the Chart for Simple Symmetric Plane Shapes (see Section 1.5), e.g. narrow oblong

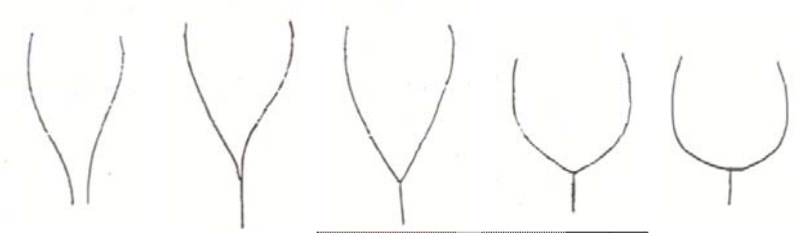
(b) Other Plane Shapes: to indicate the shape according to the other plane shapes identified in Section 1.6, with an indication of relative width where useful, e.g. narrow cordiform

3. Shape Illustrations

3.1 Full Plane Shapes

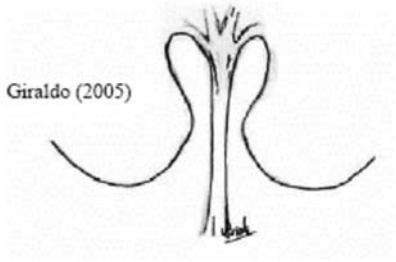
See Chart for Simple Symmetric Plane Shapes and Chart for Other Plane Shapes (Sections 1.5 and 1.6).

3.2 Base Shapes

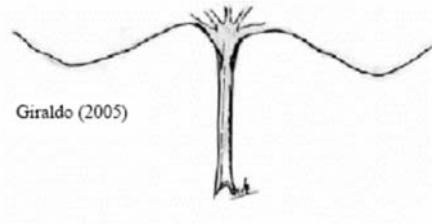


decurrent | attenuate | acute | obtuse | rounded | cuneate

truncate | cordate | sagittate | hastate | auriculate



calcarate
(calcarate: having a "spur", e.g. toadflax and larkspur)



open calcarate

3.3 Apex Shapes

3.3.1 Apex


acute


obtuse


rounded


truncate


obcordate

3.3.2 Differentiated tip

length / depth of tip =>


apiculate


acuminate


caudate


cirrhous


cuspidate


pungent


mucronate


aristate

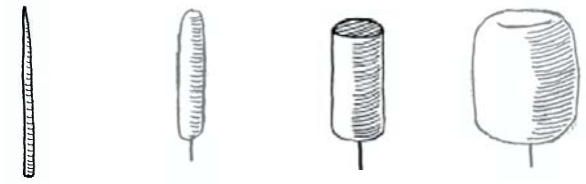

retuse


emarginate


laciniate

3.4 Three-Dimensional Shapes

Note: as explained in Section 2.6, wherever possible, three-dimensional plant parts should be described in cross-section as plane or two-dimensional shapes.



acicular linear cylindric oblong

semi-ellipsoid ovoid fusiform ellipsoid globose obloid obovoid

tetrahedronal pyramidal conic deltoid terete rhomboid obconic

clavate pyriform capitate salverform peltate rotate discoid

filiform spiral lenticular sheathing

urceolate tubular cup-shaped funnel-shaped campanulate canaliculate

3.5 Symmetry

asymmetric full shape

asymmetric base

asymmetric apex

asymmetric position

II. STRUCTURE

1. Developing Characteristics for Plant Structures

1.1 Growth habit

In general, the characteristic "Plant (or Tree): growth habit" is used to describe the overall growth habit of the plant, based on the deportment of the main branches or stems. The characteristic "Plant (or Tree): growth habit" is usually a quantitative characteristic. Whilst growth habit can be considered in terms of a pseudo-qualitative characteristic, it can be useful to develop quantitative or qualitative characteristics related to growth habit, rather than considering growth habit as a single pseudo-qualitative characteristic. In cases where qualitative characteristics exist, those are often presented in the form of "Plant (or Tree): type", rather than growth habit.

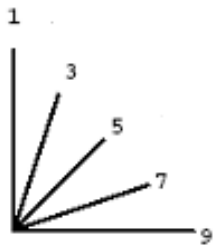
Example 1: "Plant: growth type" determinate (note 1); indeterminate (note 2)
Example 2: "Plant: type" climbing (note 1); non-climbing (note 2)

Examples of "Plant (or Tree): growth habit" are provided below:

Example 1: *quantitative characteristic*

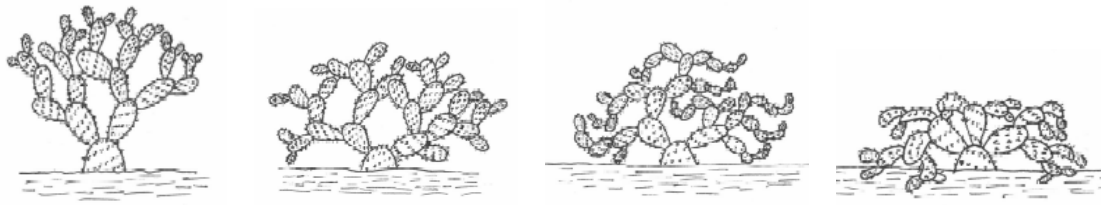
1 upright | 2 upright to spreading | 3 spreading | 4 drooping | 5 weeping

Example 2: *quantitative characteristic*



1 erect
3 semi-erect
5 intermediate
7 semi-prostrate
9 prostrate

Example 3: *pseudo-qualitative characteristic*



1 upright | 2 spreading | 3 decumbent | 4 drooping

Example 4 – case 1: *pseudo-qualitative characteristic*

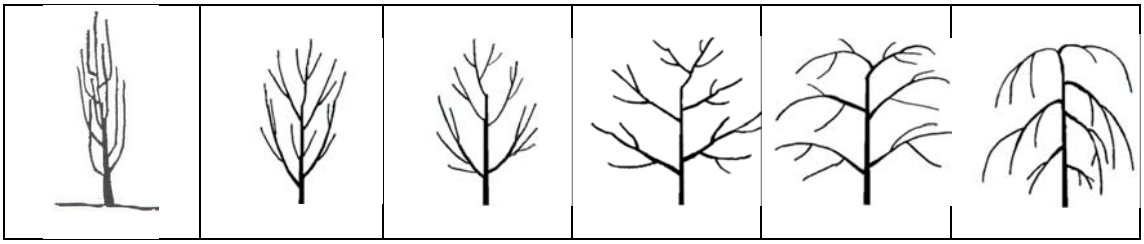
1	2	3	4	5	6
fastigiate	broad upright	broad upright to spreading	spreading	drooping	weeping

Example 4 – case 2:

(a) *qualitative characteristic* (Tree: type); and

(b) *quantitative characteristic* (Only non-fastigiate varieties: Tree: growth habit)

QL	1 fastigiate	2 non-fastigiate



QN	1 upright	2 upright to spreading	3 spreading	4 drooping	5 weeping

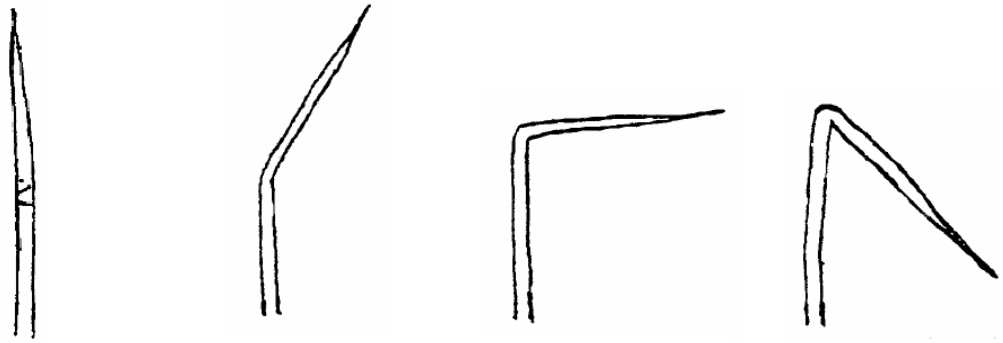
1.2 Attitude / direction (Plant parts)

In cases where individual plant parts are to be observed, the characteristics are, in general, presented as attitude, direction or angle with main axis, rather than habit. In a similar way to growth habit, it can be useful to develop quantitative or qualitative characteristics, rather than considering attitude and direction as a single pseudo-qualitative characteristic.

Examples of attitude as a quantitative characteristic are provided below:

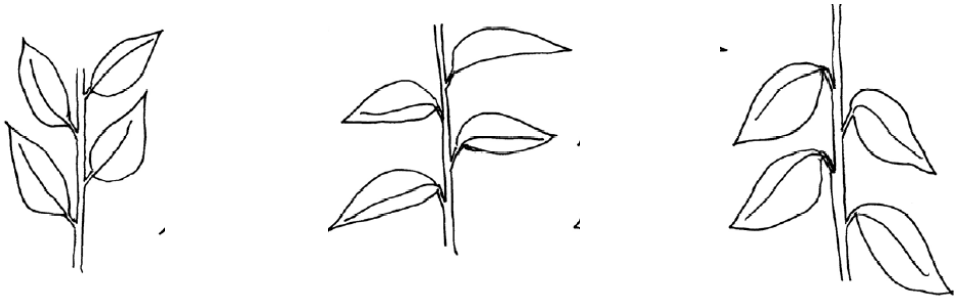
Quantitative Characteristic

Example 1:



1 erect | 2 semi-erect | 3 horizontal | 4 reflexed

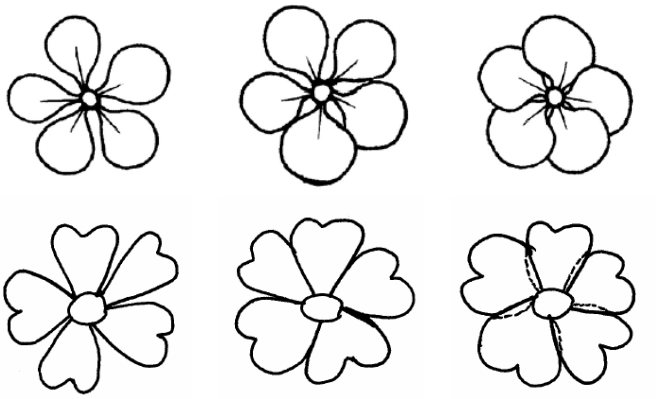
Example 2:



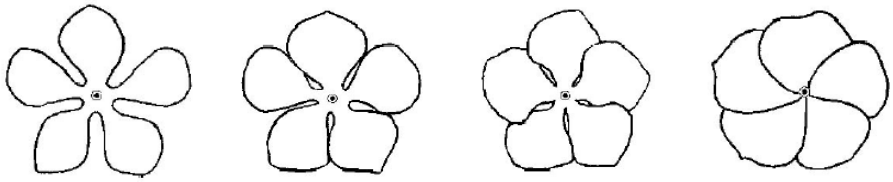
1 upwards | 2 outwards | 3 downwards

1.3 Relative position

A particular type of characteristic which commonly occurs in Test Guidelines is the relative position of leaves, petals, etc. The following examples can be used as guidance for the presentation of quantitative characteristics:



	1	2	3
Version 1	free	touching	overlapping
Version 2	free	intermediate	overlapping
Version 3	no overlapping	some (petals) overlapping	all (petals) overlapping



1	2	3	4
free	touching	slightly overlapping	strongly overlapping

1.4 Margins

1.4.1 It may be appropriate to have a quantitative characteristic, such as depth of incisions, rather than using botanical terms. In particular, it is not appropriate to use botanical terms in a way which indicates a qualitative characteristic when the characteristic is not qualitative. Thus, it would not be appropriate to have a characteristic with the states of expression serrate (Note 1) and dentate (Note 2), if there was not a clear discontinuity between those states.

1.4.2 Similarly, it may be appropriate to have a quantitative characteristic, such as depth of lobing, rather than trying to define a lobe. In particular, it is not appropriate to use lobing in a way which indicates a qualitative characteristic when the characteristic is not qualitative. Thus, it would not be appropriate to have a qualitative characteristic such as lobed (Note 1) and not lobed (Note 2) where there was not a clear discontinuity between those states. In the same way, a characteristic for the number of lobes could produce inconsistent results if the determination of lobes was not a qualitative characteristic. Quantitative characteristics such as depth of lobing or degree of lobing may be more appropriate, e.g.

absent or weak

medium

strong

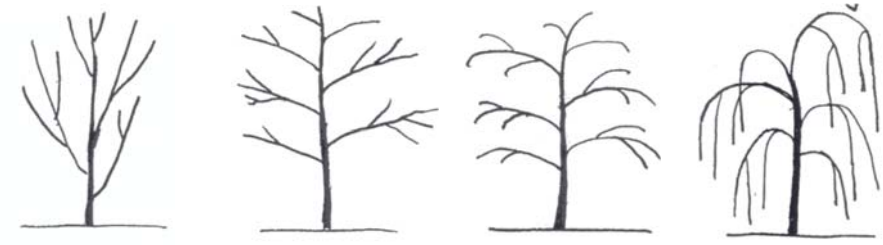
1.5 Hairs and Spines

1.5.1 In general, botanical terms for types of hair and spine (e.g. aculeate, lanate, tomentose, etc.) are not used in the Test Guidelines, since the states of expression are likely to relate to number, density or length of hairs, spines, etc.

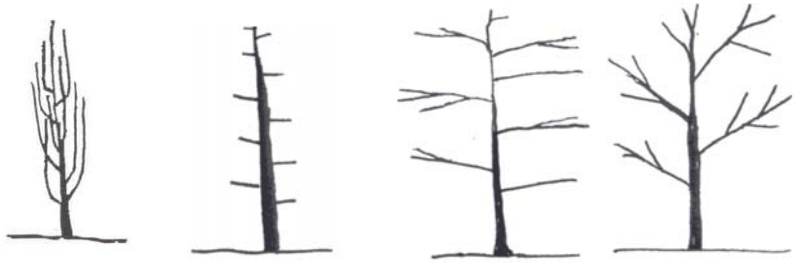
1.5.2 In the case of hair, the term “pubescence” is synonymous with “hairiness” for the purposes of Test Guidelines.

2. Illustrations Of Plant Structures

2.1 Habit



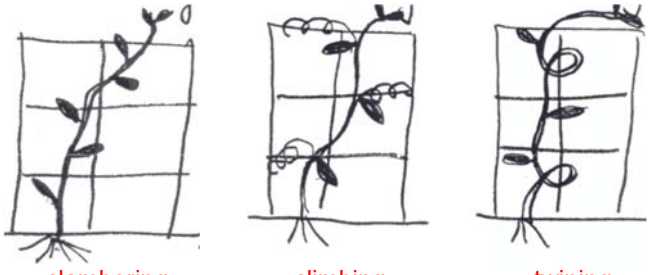
upright spreading drooping weeping



fastigiate columnar divaricate ramified

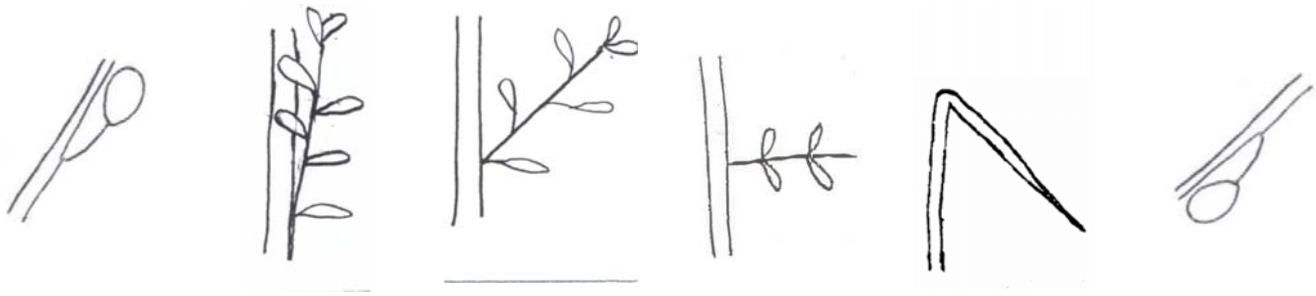
decumbent procumbent (not rooting) stoloniferous (rooting) reclining

PROSTRATE

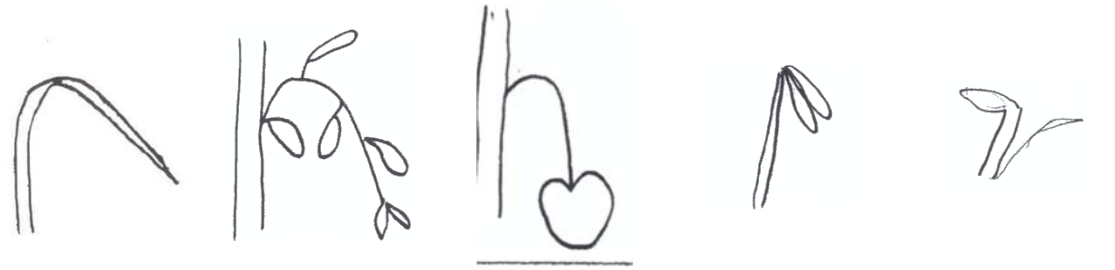


clambering climbing twining

2.2 Attitude / direction (Plant parts)

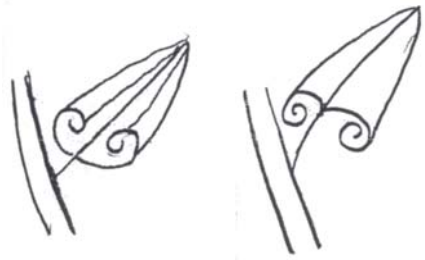


adpressed erect semi-erect horizontal reflexed adpressed



recurved arched pendulous pendent inflexed

incurved inwards outwards convolute zig-zag



involute revolute

2.3 Relative position

exserted

included

oblique

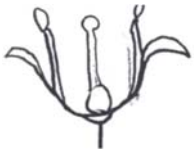
free

contiguous
(touching – not joined)

coherent
(like parts superficially joined)

connate
(like parts histologically joined)

adherent
(unlike parts superficially joined e.g. anthers to style)



adnate
(unlike parts histologically joined e.g. anthers and style)

adpressed

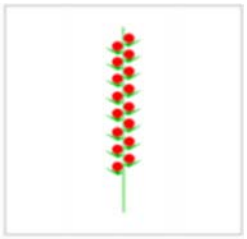
sessile

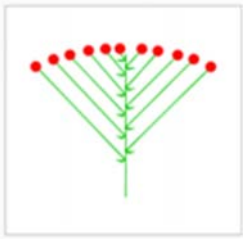
stipitate (stalked)

2.4 *Types of Inflorescence*[3]

2.4.1 *Simple inflorescences*


raceme

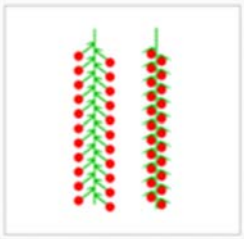

spike


racemose corymb


umbel


spadix


capitulum
(flower head)

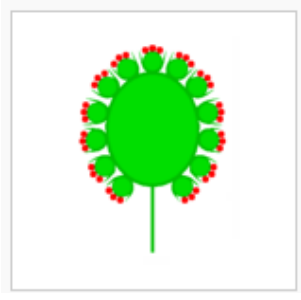

catkin

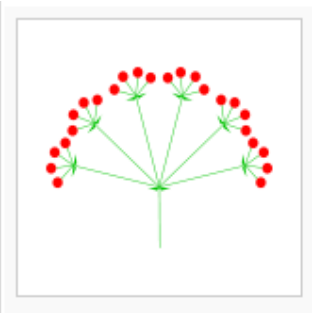
2.4.2 *Compound inflorescences*

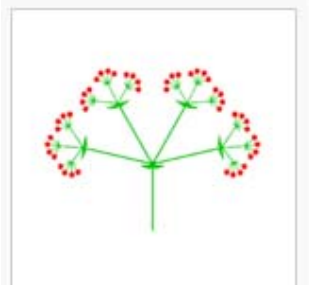

homeothetic compound raceme


heterothetic compound raceme

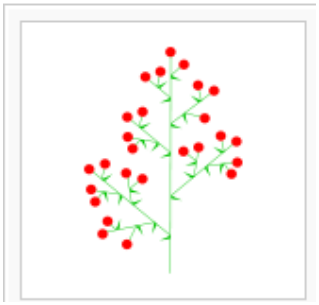

compound spike

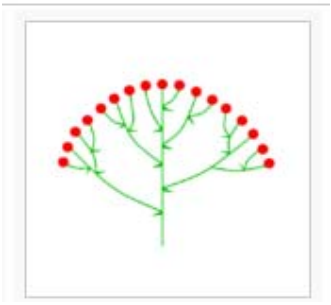

compound capitulum

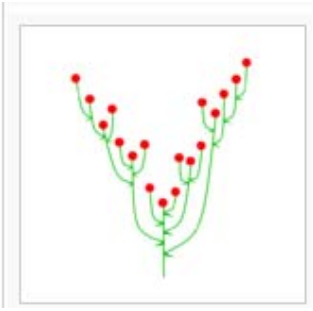

compound (double) umbel

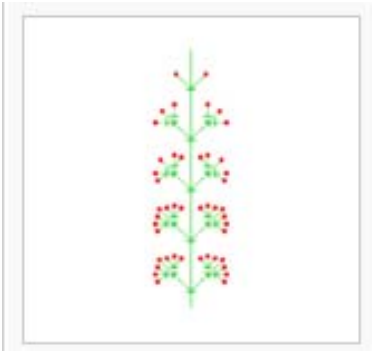

compound (triple) umbel

[3] Illustrations and explanations reproduced from Wikipedia, The Free Encyclopedia: *http://en.wikipedia.org/wiki/Inflorescence*


panicle


cymose corymb


anthela

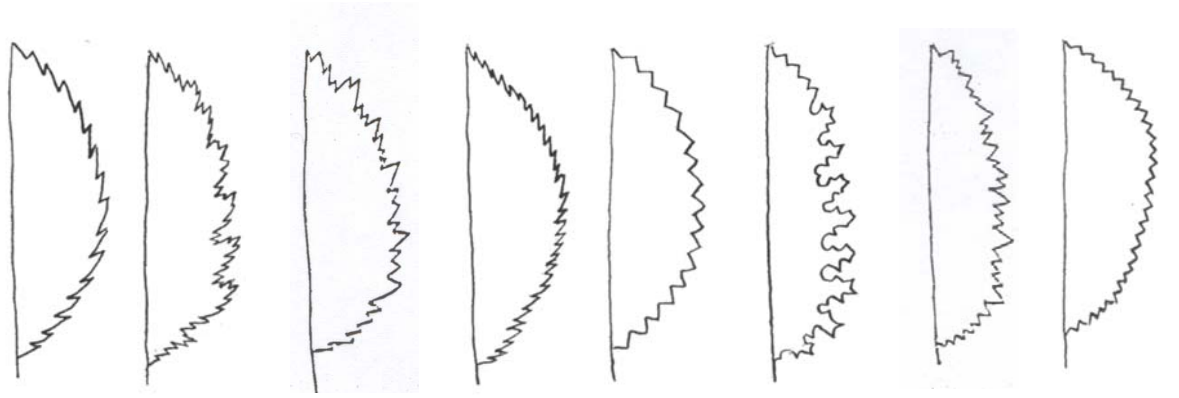

thyrse


thyrsoid

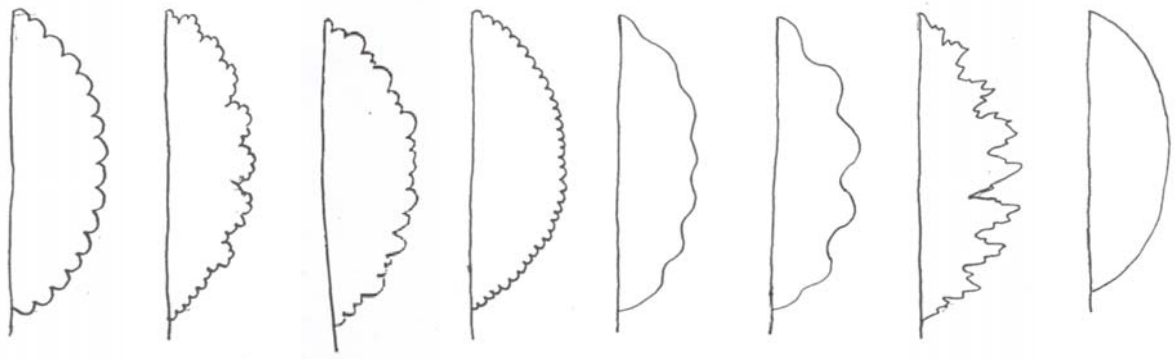
Other

The family *Asteraceae* is characterized by a highly specialized head technically called a calathid (but usually referred to as 'capitulum' or 'head'). The family *Poaceae* has a peculiar inflorescence of small spikes (spikelets) organized in panicles or spikes that are usually simply and improperly referred to as spike and panicle. The genus *Ficus* (*Moraceae*) has an inflorescence called syconium and the genus *Euphorbia* has cyathia (sing. cyathium), usually organized in umbels.

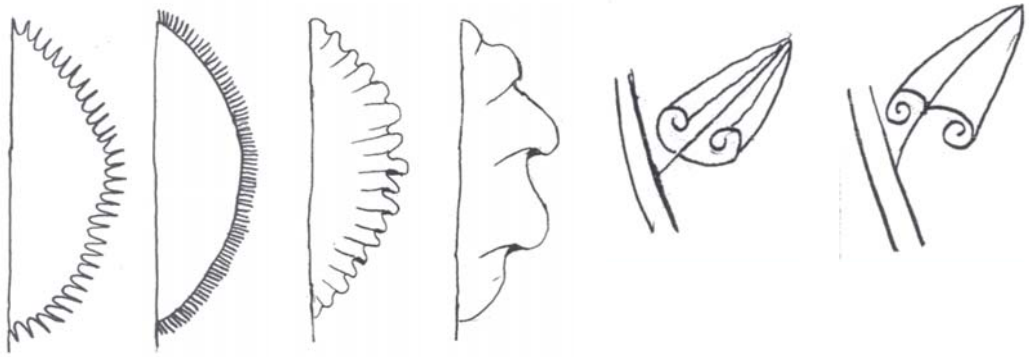
2.4.3 Margins



serrate | biserrate (1) | biserrate (2) | serrulate | dentate | bidentate (1) | bidentate (2) | denticulate

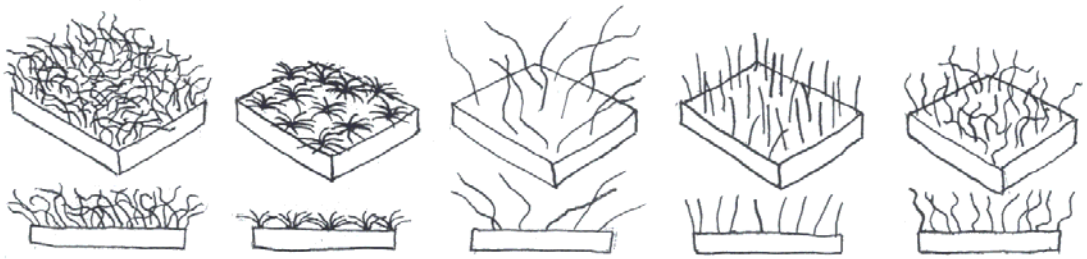


crenate | bicrenate (1) | bicrenate (2) | crenulate | repand | sinuate | erose | entire

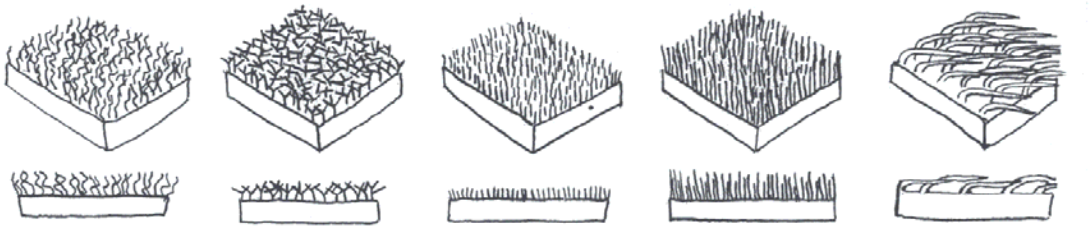


fimbriate | ciliate | crispate | undulate | involute | revolute

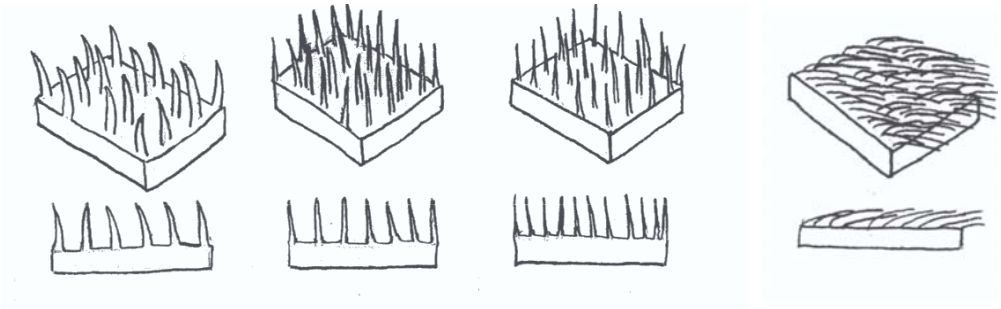
2.4.4 Hairiness (Types of appendage covered by the general term "hair" in the Test Guidelines)



lanate floccose arachnoid pilose villous



tomentose pannose pubescent velutinous strigose

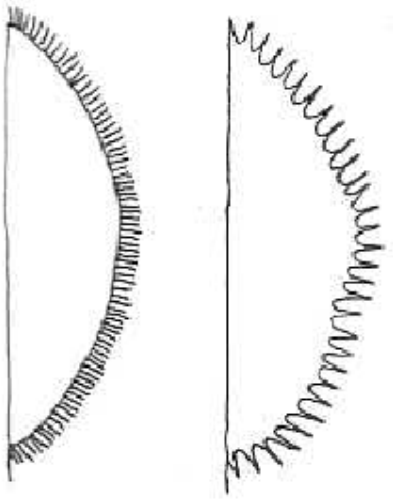


setose hispid hirsute sericeous

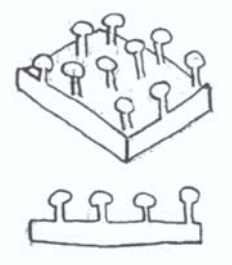
2.4.5 Spines (Types of appendage covered by the general term "spine" in the Test Guidelines)

aculeate spinose barbed; barbate

2.4.6 Other appendages

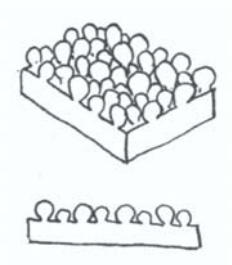


ciliate fimbriate



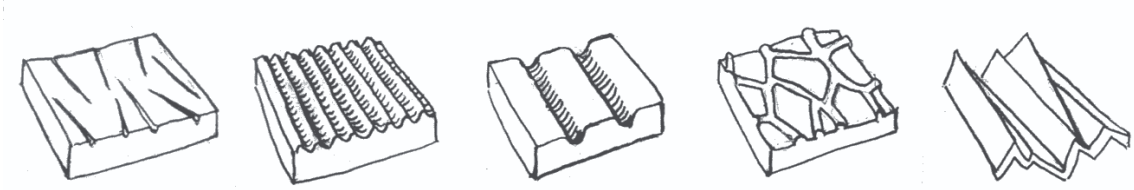
glandular

lepidote

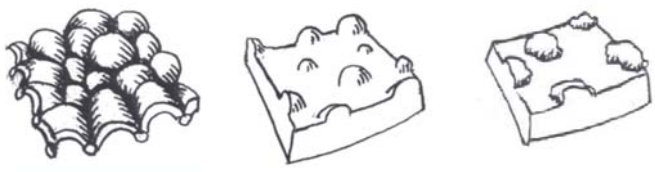


papillose

2.4.7 Texture



aciculate striate grooved reticulate corrugated



rugose bullate verrucose

SUBSECTION 3. COLOR

1. INTRODUCTION

The purpose of Subsection 3: Color is:

(a) to provide guidance on the development of characteristics related to colors and color patterns;

(b) to provide standard illustrations and examples in relation to colors and color patterns which may be useful for inclusion in the Test Guidelines, whilst noting that illustrations for specific characteristics can be found in the relevant Test Guidelines and noting that searches for relevant individual characteristics can be made through TGP/7 “Collection of Approved Characteristics”; and

(c) to provide definitions of botanical terms with an indication of whether those terms are generally used in Test Guidelines, or whether alternative terms might be more appropriate for use in Test Guidelines.

Color is complex and can be defined in terms of three main elements: HUE (distinguishes the different colors), SATURATION (the element of color that indicates the purity or grayness of the color) and INTENSITY (distinguishes the total amount of light that is reflected by the color, how the color is perceived by the eye on the dark to light scale).

For describing colors of plants in Test Guidelines, it is generally the practice to look at one or more of the three elements of color, separately or in combination.

2. COLOR

2.1 Terms used for color

The terms used to describe color can be a single color, a color range, the intensity of a color and the RHS Colour Chart Number. These terms have different levels of precision:

	state of expression	example
level of precision: low	single color	yellow, orange, red
	color range	(a) yellow, yellow orange, orange, orange red, red (b) white, yellowish white, yellow, yellowish orange
	intensity	light yellow, medium yellow, dark yellow
high	RHS Colour Chart No.	RHS 41 B

According to the plant species, the organ observed and the level of variation within and between the varieties the drafter of a Test Guidelines has to decide which level of precision is useful for the characteristic. In species where only a limited number of clearly different colors of an organ are feasible, a description of the single color would be appropriate (see 2.2.1).

In species where many similar colors are possible the use of the RHS Colour Chart would be appropiate (see 2.2.4). However, if the size of the colored surface or the amount of color is very small, where other surface elements influence the observation, colors are blended or not well represented on the chart, the use of a color chart might not be possible or sensible. The same is true when an overall impression of the color is required.

2.2 States of expression for color characteristics

2.2.1 Single color

A single color has the lowest precision to describe the state of expression.

Example: Flower: color: white (1); yellow (2); orange (3); red (4)

2.2.2 Color range

By using color combinations together with single colors (= color range) the state of expression can be described more precisely than with single colors only.

(a) In color combinations the second color indicates the predominant color with blending of both colors, resulting in what can look like a single color. For example in “green red” the predominant color is red and in “red green” the predominant color is green.

Example: Flower: color: white (1); yellow white (2); yellow (3); yellow orange (4); orange (5)

(b) The use of "ish" in color combinations indicates that there is a predominant color (e.g. yellow) together with another minor color. For example,

yellowish,	covers all colors which are predominantly yellow (would include, for example, white yellow; brown yellow; orange yellow; etc.)
yellowish green	covers all colors which are predominantly green with some yellow (would include, for example, white yellow green; brown yellow green; orange yellow green etc.)

Example: Flower: color: whitish (1); yellowish (2); greenish (3)

2.2.3 Intensity

Depending on the organ described, the intensity can be presented either in relation to a single color or in combination with different colors (example 2).

Example 1: Leaf: green color of upper side: light (3); medium (5); dark (9)
Example 2: Flower: color: white (1); light yellow (2); medium yellow (3); dark yellow (4); orange (5)

2.2.4 Color Chart

If it is necessary to describe a color with a color chart, UPOV uses the color chart from the Royal Horticultural Society (RHS), the "RHS Colour Chart" because of its worldwide availability. There are 5 editions of this color chart, dating from 1966, 1986, 1995, 2001 and 2007. Since 2005, the "RHS Mini Colour Chart" has been published by the Flower Council Holland and is also frequently used by breeders. Other color charts might also be appropriate.

Document TGP/7 "Development of Test Guidelines" (see ASW 4(2)(d)) explains that "Because daylight varies, color determinations made against a color chart should be made either in a suitable cabinet providing artificial daylight or in the middle of the day in a room without direct sunlight. The spectral distribution of the illuminant for artificial daylight should conform with the CIE Standard of Preferred Daylight D 6500 and should fall within the tolerances set out in the British Standard 950, Part I. These determinations should be made with the plant part placed against a white background". When it is not possible to make observations under artificial daylight, for example when observations have to be made in the open, observations should not be made in direct sunlight. The observations should be made on a cloudy day with sufficient light intensity, or in a shaded area. When artificial shading is needed in the open, it should be ensured that the color of the shading cloth does not interfere with the observations.

When using the RHS Colour Chart, the reference number of the RHS color, the color name and the edition of the chart should be mentioned in the variety description. A proposal for naming the colors has been made in the ANNEX of this document.

2.3 Developing characteristics

2.3.1 Type of expression

For describing colors of plants in Test Guidelines, it is generally the practice to look at one or more of the three elements of color, separately or in combination. Any characteristic which combines more than one of those elements is likely to constitute a pseudo-qualitative characteristic. In those cases in which only the intensity of a color varies, the type of expression would be quantitative. In those cases where there is a clear discontinuity between the colors (e.g. white and red), the type of expression would be qualitative.

Examples

(a) Qualitative characteristics
Seed color: white (1); yellow (2); black (3)

(b) Quantitative characteristics
Leaf: intensity of green color: light (3); medium (5); dark (7)

(c) Pseudo-qualitative characteristics
(i) Single colors
Flower: color: white (1); yellow (2); orange (3); red (4)

(ii) Single colors and intensity
Flower: color: white (1); light yellow (2); medium yellow (3); dark yellow (4); orange (5)

(iii) Color range
Flower: color: white (1); yellow white (2); yellow (3); yellow orange(4); orange (5)
Spathe: color of apex: whitish (1); yellowish (2); greenish (3)

(iv) Color chart
Flower: color: RHS Colour Chart (indicate reference number)
→ variety description: RHS 11D – light yellow orange

2.3.2 Order of states of expression

In the Test Guidelines, the states of expression for colors are normally presented in the following order: white, green, yellow, orange, pink, red, purple, violet, blue, brown, black (note: it is quite common to have the order white, yellow, green where only those colors occur). However, the chronological appearance of the color (e.g. as the fruit ripens) may also be used (see also document TGP/14/1 "Glossary of Terms Used in UPOV Documents" *[cross ref.]*) where appropriate. The same sequence should normally be used for organs with similar states within the same Test Guidelines (e.g. color of leaf and color of the stem).

2.3.3 Factors to be considered for creating color groups

When using the color of a plant part for grouping of varieties, a very clear and large difference between the colors is required. However, the color groups are also used in the Technical Questionnaire for applicants who have no RHS Colour Chart. Therefore the groups need to be small enough so that applicants are able to give an adequate state of expression for the characteristic.

The following factors have to be considered when creating color groups for grouping:

(a) range of variation of the color of the plant part within the species;
(b) difference between colors for varieties to be considered clearly distinguishable;
(c) possible influence of the environment on the color of the plant part.

Depending on the species and the plant part observed the color groups for grouping can be different. Examples for color groups in grouping characteristics of different Test Guidelines are listed in the following table.

Test Guidelines	Campanula (TG/305/1)	Hosta (TG/299/1)	Cordyline (TG/317/1)	Osteospermum (TG/175/5)
Characteristic	Corolla: main color of inner side	Leaf blade: color covering the largest surface area	Leaf: secondary color	Ray floret: main color of middle part
Color groups for grouping	white pink red purple purple blue	white light yellow medium yellow dark yellow light green medium green dark green blue green	white yellow green red purple brown blackish	white yellow orange pink red purple violet

It should be emphasized that not all groups are necessarily clearly distinct from each other when information is used that does not come from the same source (same location, same observer) and cannot always be used to exclude varieties from the trial. E.g. in Cordyline for the characteristic "Leaf: secondary color" it might not be possible to clearly distinguish between "brown" and "blackish" when looking at photos on the internet or in a plant catalogue.

2.4 Unsuitable color names

Color terms such as "bronze", "fuchsia", "gold", "ochre", "salmon", "silver", etc. should not be used as states of expression in the Test Guidelines because they could cause confusion concerning the intended color. Therefore, these terms should be replaced by standard colors (e.g. orange brown instead of bronze).

2.5 Timing of observations

2.5.1 All color observations on the different organs of the plant should be made at a clearly defined stage of development of the organ. Color expression of the organ might change, for example, during development or aging of the plant/organ or the time of the day.

2.5.2 In cases where the color of an organ changes during the development of the plant, it may be appropriate to have separate characteristics for the color at appropriate, clearly defined stages of development. In some cases, it may also be appropriate to have a characteristic which describes the rate at which the color changes.

2.6 Organ elements that may distort color

The observation of color on a surface or whole organ can be distorted by the presence of glaucosity or hair. The characteristic should make it clear whether or not the overall color is observed or the color surface after the glaucosity or hair has been removed.

Example: *Fruit: color of skin (hair removed)*
Leaf: color of upper side (wax removed)

3. APPROACHES TO DESCRIBE COLORS AND COLOR PATTERNS

The decision on which approach to use when describing the colors of a plant part depends on the number of colors, the types of color distribution and the number of color patterns which are possible for the species concerned.

(a) In situations where only a few colors, a few types of color distribution and a few patterns need to be described, it would be appropriate to use an approach in which the colors are described according to the size of the surface area they cover (see 3.1). An example of the use of this approach can be found in the Alstroemeria Test Guidelines (TG/29/7).

(b) In cases where certain organs have two layers of tissue containing color pigmentation, and one layer is covering the other, it may be appropriate to use an approach in which the ground color and the over color are described (see 3.2). An example can be found in the Apple Test Guideline (TG/14/9) and the Phalaenopsis Test Guidelines (TG/213/2(proj.7)).

(c) In cases where the different parts of an organ can have different colors, it could be appropriate to describe the color of these parts separately (see 3.3). An example for this approach can be found in the Torenia Test Guidelines (TG/272/1).

(d) For complex situations where several different colors and/or several different types of color distribution and color patterns are possible, it would be more appropriate to use an approach in which the different colors are described according to their order in the RHS Colour Chart ("Lisbon" approach (see 3.4)). An example for this approach can be found in the Heuchera and Heucherella Test Guidelines (TG/280/1).

3.1 Approach according to the size of the surface area

In this approach all colors of a plant part are determined according to the size of the surface area they occupy. The color with the largest surface area is the main color; the one with the second largest area is the secondary color and so on.

The following standard explanation should be included in the Test Guidelines when using this approach for describing color:

> "The main color is the color with the largest surface area. In cases where the areas of the main and secondary color are too similar to reliably decide which color has the largest area, [the darkest color] / [the color...[location]…] is considered to be the main color."

3.2 Approach according to tissue layers

When an organ has two layers of tissue containing color pigmentation and one layer is covering the other, the colors of the two layers can be described as ground color and over color. The term ground color can be used in different ways:

(a) Ground color:

(i) The ground color is the first color to appear chronologically during the development of the plant part. Other colors may develop in time in the form of spots, blotches, or a flush.

(ii) The ground color is the color which has a continuous dispersion across the surface of the plant part.

The ground color is not always the color occupying the largest surface area of the plant part concerned. For certain organs having two layers of tissue containing color pigmentation, and one layer is covering the other on the upper side of the organ it may be appropriate to determine the ground color by observing the main color of the lower side of the organ (see example Phalaenopsis).

Example: Phalaenopsis (TG/213/2(proj.7))

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

(b) Over color:
In the case of a plant part which has a ground color upon which a second color such as a flush develops over time, the flush is considered the over color. The over color is not always the color occupying the smallest surface area of the plant part concerned.

Example: Apple (TG/14/9)

Fruit: ground color:
not visible (1), whitish yellow (2), yellow (3), whitish green (4), yellow green (5), green (6)

Fruit: hue of over color - with bloom removed
orange red (1), pink red (2), red (3), purple red (4), brown red (5)

3.3 Approach according to defined parts of an organ

(a) If the different parts of a plant organ can have different colors, the color of these different parts can be described separately. If for example the petals can have a differently colored margin and a differently colored base, the color of the margin and the color of the base should be described in separate characteristics.

Example: *Petal: color of margin*
Petal: color of middle zone
Petal: color of base

(b) When an organ has one color with different intensities, the parts of the organ which are lighter or darker could be described as follows:

Example: *Ray floret: color distribution on upper side:*
lighter towards base (1); even (2); lighter towards apex (3)

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

In this approach all colors of the plant part concerned are assessed using the RHS Colour Charts first. The colors are then ordered from the lowest to highest number according to the color number from the Colour Chart, with the lowest number being RHS 1 A and the highest number being RHS 203 D. Additional cards in new editions of the RHS Colour charts may increase the highest number. In this approach the determination of color is made without consideration of the surface area occupied by that color.

The following standard explanation should be included in the Test Guidelines when using this approach for describing color:

> The order of colors follows the RHS Colour Chart order. For example, in the RHS Colour Chart 2007 edition, the lowest number is RHS 1A and the highest RHS 203D.

The color should first be described, followed by characteristics explaining the area, distribution, pattern and if necessary the conspicuousness of the color.

The same sequence should be followed for color two, color three and so on. In order to make it clear that a variety does not show color two, color three and so on, the state of expression 'none' (1) should be added as an option to the characteristic.

Example: Heuchera and Heucherella (TG/280/1).

In *Heuchera* and x*Heucherella* leaf color is very significant to the overall appearance of the variety. Leaves often have several colors in different patterns and the expression of these colors and patterns can change from the young leaves to the fully expanded leaves.

Although the colors are referred to as "color one", "color two", "color three" and "color four" in the headings, this does not indicate a ranking according to prominence or area covered. The order in which the colors should be observed is dictated by the order the colors appear in the RHS Colour Chart.

In order to provide an illustration of the recording method, two worked examples are provided below. The first describes a leaf with only one color, the second a leaf with several colors.

Worked Example One – 'Pistache' (variety with only one leaf color)

36. Leaf blade: color one – RHS Colour Chart – Yellow-Green 151C
37. Leaf blade: color one: distribution – throughout (8)
38. Leaf blade: color one: pattern – solid or nearly solid (5)
39. Leaf blade: color one: total area – very large (9)
40. Leaf blade: color two – RHS Colour Chart – not applicable
41: Leaf blade: color two: distribution – none (1)
42: Leaf blade: color two: pattern – not applicable
43: Leaf blade: color two: total area – not applicable
44: Leaf blade: color three – RHS Colour Chart – not applicable
45: Leaf blade: color three: distribution – none (1)
46: Leaf blade: color three: pattern – not applicable
47: Leaf blade: color three: total area – not applicable
48: Leaf blade: color four – RHS Colour Chart – not applicable
49: Leaf blade: color four: distribution – none (1)
50: Leaf blade: color four: pattern – not applicable
51: Leaf blade: color four: total area – not applicable

Worked Example Two – 'Venus' (variety with several leaf colors)

36. Leaf blade: color one – RHS Colour Chart – Yellow-Green 144C
37. Leaf blade: color one: distribution – marginal zone (7)
38. Leaf blade: color one: pattern – solid or nearly solid (5)
39. Leaf blade: color one: total area – very small to small (2)
40. Leaf blade: color two – RHS Colour Chart – Greyed-Orange 176B
41: Leaf blade: color two: distribution – along veins (2)
42: Leaf blade: color two: pattern – solid or nearly solid (5)
43: Leaf blade: color two: total area – small (3)
44: Leaf blade: color three – RHS Colour Chart – Greyed-Orange 177D but more grey
45: Leaf blade: color three: distribution – between veins in intermediate zone (6)
46: Leaf blade: color three: pattern – solid or nearly solid (5)
47: Leaf blade: color three: total area – large (7)
48: Leaf blade: color four – RHS Colour Chart – not applicable
49: Leaf blade: color four: distribution – none (1)
50: Leaf blade: color four: pattern – not applicable
51: Leaf blade: color four: total area – not applicable

3.5 Special terms used for color characteristics

3.5.1 Variegation

Variegation: Well defined areas of different colors or intensities, with less or no chlorophyll, especially as very light green, yellow or white longitudinal stripes or irregular shaped areas or marginal zone combined with a green color on leaves. Variegation consists of color, color distribution and pattern. Depending on the species concerned, it may not be necessary for all components to be described.

Examples of variegated leaves:

at margin

along midrib

irregular

3.5.2 Pigments (anthocyanin, carotenoid)

Color pigments like anthocyanin usually can be found on a plant organ or part of an organ in the form of an over color. Depending on the amount and intensity of the pigments it could be useful to describe the color of the organ with or without the pigments. If the pigments should be excluded from the observation it should be indicated in the characteristic (e.g. Leaf blade: color (excluding anthocyanin)).

When the name of the pigment is known, reference should be made to the name, e.g. "anthocyanin coloration". Where the name of the pigment is not known, the color should be mentioned, e.g. "red coloration".

Pigments can be described using intensity and /or size of their distribution.

Example: Leaf blade: anthocyanin coloration (QN):
weak (3); medium (5); strong (7)

Example: Leaf blade distribution of anthocyanin coloration (PQ):
at margin (1); along veins (2); at base (3)

3.5.3 Conspicuousness

CONSPICUOUS: clearly visible, evident.
INCONSPICUOUS: not clearly visible, obscure.

To make clear what is meant with the term conspicuousness the following standard wording could be used in the Test Guidelines:

(a) The conspicuousness is determined by the color contrast
(b) The conspicuousness is determined by the color contrast combined with size.

3.6 Color change over time

When a plant organ changes the color over time it might be necessary to observe the same organ at different times of its development.

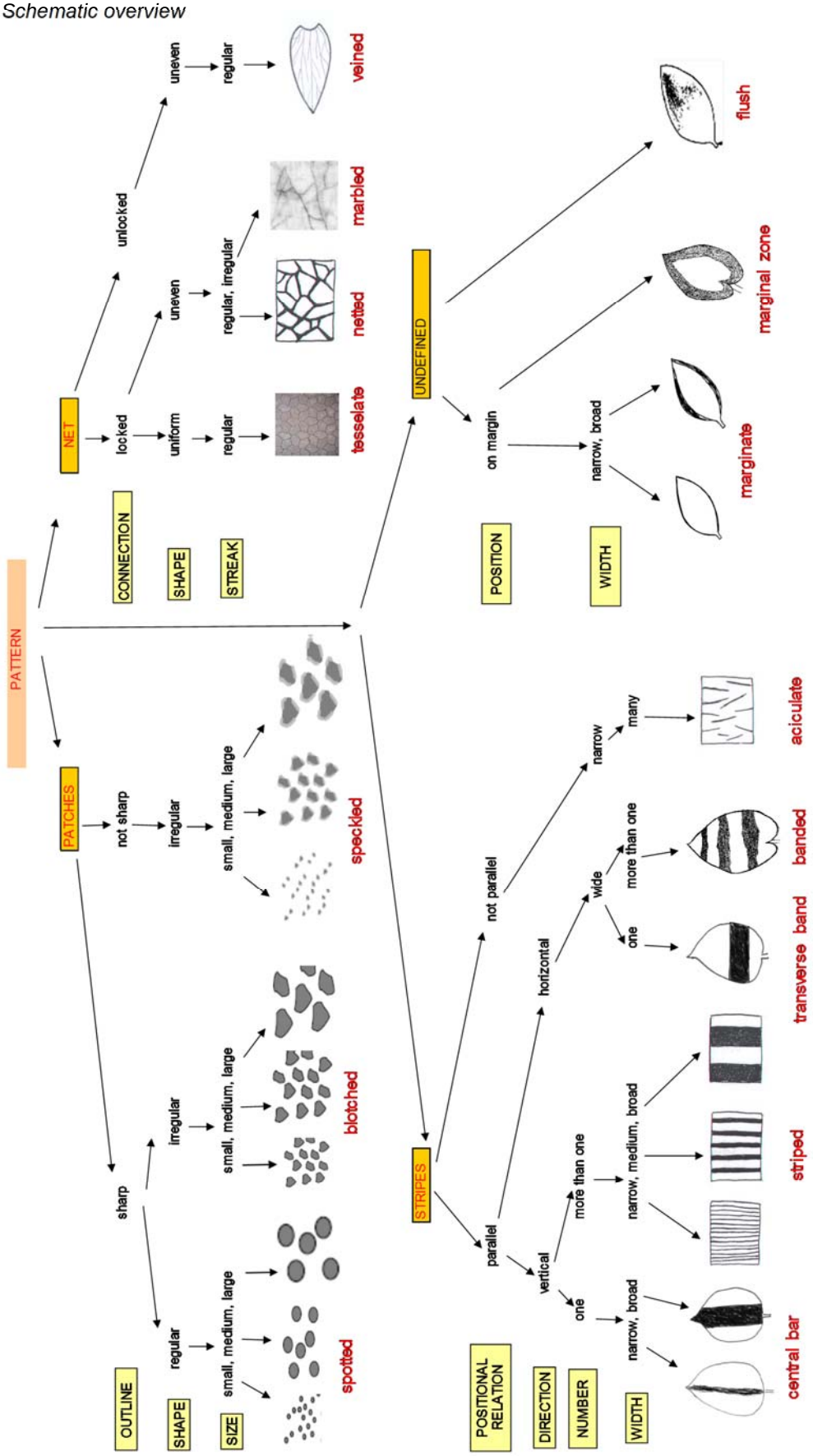
Example:

Fruit: color (before maturity)
greenish white (1), yellow (2), green (3), purple (4)

Fruit: color (at maturity)
yellow (1), orange (2), red (3), brown (4), green (5)

4. COLOR DISTRIBUTION AND COLOR PATTERNS

4.1 Schematic overview



4.2 Illustrations

4.2.1 Color Patterns

4.2.1.1 Flush

flush

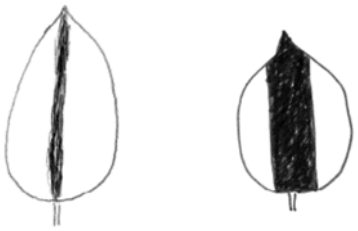
4.2.1.2 Spotted / Blotched / Speckled

Spot: sharp, clear outlined round or nearly round shaped colored area.
Blotch: sharp, clear outlined irregular shaped colored area.
Speckle: diffuse outlined irregular shaped colored area.

According to the outline of the pattern it can be named as seen in the following table:

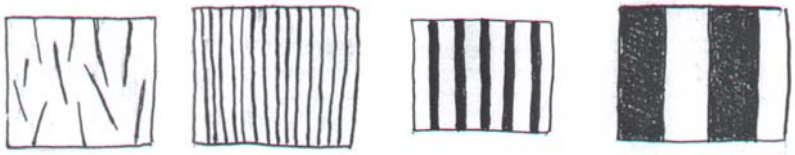
Outline/ size	clear regular	clear irregular	diffuse irregular
small	 small spots	 small blotches	 small speckles
medium	 medium spots	 medium blotches	 medium speckles
large	 large spots	 large blotches	 large speckles

4.2.1.3 Central Bar



narrow central bar broad central bar

4.2.1.4 Aciculate / Striped



aciculate narrow stripes medium stripes broad stripes

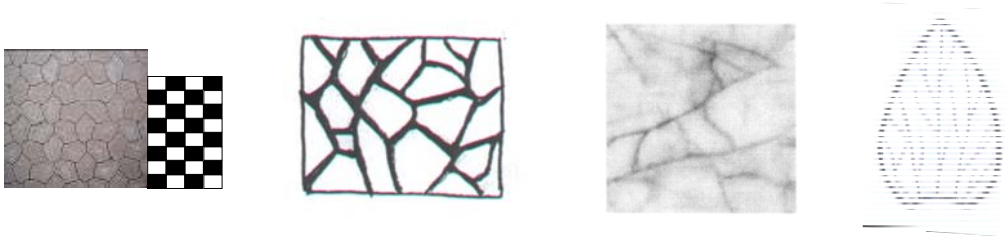
4.2.1.5 Transverse Band / Banded

transverse band banded

4.2.1.6 Marginate / Marginal Zone

narrow marginate broad marginate on marginal zone

4.2.1.7 Tesselate / Netted / Marbled / Veined



tesselate netted marbled veined

4.2.2 Color distribution

Note: distribution could be described by a combination of terms from the different sets using the words “and” or “excluding”; e. g. (a) distal quarter, excluding marginal zone, (b) distal half, excluding tip.

at base

basal quarter

basal half

basal three quarters

at tip

distal quarter

distal half

distal three quarters

central

transverse

at margin

throughout

4.3 The use of photographs to illustrate color distribution and color patterns

For all mentioned approaches it could be useful to recommend that a photograph be taken to illustrate certain color characteristics. It is recommended that a disclaimer be included in the Test Guideline to clarify the purpose for which the photograph is to be used; i.e. to illustrate the types of color distribution and/or color patterns, rather than the actual colors of the plant part concerned.

> “A photograph of the [relevant plant part] could be provided in conjunction with the description in order to clarify the color distribution and/or color pattern. However, a warning should be added to this photograph, explaining that the primary intent of the photograph is to show the distribution and/or pattern of colors on the plant part rather than the actual colors. Color on photographs can be affected by the technology of the camera and the facilities used to display the photograph (printer, overhead projector, etc.).”

5. LITERATURE

RHS Colour Chart, 2007, Royal Horticultural Society, London, UK (www.rhs.org.uk)

RHS Mini Colour Chart, 2005, Royal Horticultural Society, London, UK, published together with the Flower Council Holland, Leiden, NL.

Horticultural Colour Chart (HCC Chart), 1942, R.F. Wilson, Published by the British Colour Council in collaboration with the Royal Horticultural Society.

International Commission on Illumination C.I.E./USA: ISO 15469:2004/CIE S 011/E:2003,
Spatial distribution of daylight – CIE standard general sky

Rochester Institute of Technology: Munsell Color Science Laboratory; website: http://mcsl.rit.edu

[Annex follows]

ANNEX

COLOR NAMES FOR THE RHS COLOUR CHART

1. Introduction

1.1 When using the RHS Colour Chart, the variety description should contain both the RHS Colour Chart reference number and a name for the color. The purpose of this document is to harmonize color names for variety descriptions.

1.2 The RHS Colour Chart contains up to 896 colors, which are divided into 23 “groups” to name the colors. However, for UPOV purposes, this initial grouping seemed unable to name the colors in variety descriptions in a sufficiently precise way. Therefore, UPOV has identified 50 color “groups” which are presented in this document. It is important to note that these color “groups” were not created for the purpose of grouping varieties for DUS trials and should not be used for that purpose. Information on the grouping of varieties for DUS trials can be found in document TGP/9/1 "Examining Distinctness" [*cross ref.*].

1.3 The names used for the 50 UPOV Color Groups consist of either the [pure color] / [color hue] (e.g. yellow, orange, red), a combination of two [pure colors] / [color hues] (e.g. yellow orange, orange pink, purple red), or a combination of the [pure color(s)] / [color hue(s)] with “light” or “dark” (e.g. light yellow, dark pink red).

1.4 The color names in this document can be used with different editions of the RHS Colour Chart. The 1986 version of the RHS Colour Chart was used for the initial grouping and naming. In the 1995 edition no new charts were added. The additional charts in the 2001 edition (marked with "N") and in the 2007 edition (marked with "NN") have been integrated into the existing groups.

2. Example for the use of the UPOV Color Names in a variety description

2.1 If in Test Guidelines a characteristic is described by using the RHS colour chart, it is not obvious which color the plant part has, because it is only asked to indicate the RHS colour chart reference number, e.g.

Flower: main color of upper side
RHS colour chart (indicate reference number)

2.2 For the variety description, it is useful to translate the RHS colour chart number into a color name and to fill this name into the column “state of expression”. The color name can be found in the appendix to this document, in which the RHS Colors are listed according to the UPOV Color Group to which they belong: e.g. RHS 46C belongs to group 21 “red”, RHS N 74B belongs to group 27 “purple” and RHS N 57A belongs to group 23 “purple red”.

Example:

2.3 Part of a variety description for New Guinea Impatiens (TG/196/2 Rev.)

No.	Characteristic	State of expression		Note
20	Flower: main color of upper side	red	RHS 46C	
21	Varieties with bi- or multicolored flowers only: Flower: secondary color of upper side	purple	RHS N 74B	
22	Varieties with bi- or multicolored flowers only: Flower: distribution of secondary color	mainly on upper petal		1
23	Flower: eye zone	present		9
24	Flower: size of eye zone	large		7
25	Flower: main color of eye zone	purple red	RHS N 57A	

3. UPOV Color Groups

3.1 The 50 UPOV Color Groups are as follows:

UPOV Group No.	English	français	deutsch	español
1	white	blanc	weiss	blanco
2	light green	vert clair	hellgrün	verde claro
3	medium green	vertmoyen	mittel grün	verde medio
4	dark green	vert foncé	dunkelgrün	verde oscuro
5	yellow green	vert-jaune	gelbgrün	verde amarillento
6	grey green	vert-gris	graugrün	verde grisáceo
7	light blue green	vert-bleu clair	hellblaugrün	verde azulado claro
8	blue green	vert-bleu	blaugrün	verde azulado
9	brown green	vert-brun	braungrün	verde amarronado
10	light yellow	jaune clair	hellgelb	amarillo claro
11	yellow	jaune	gelb	amarillo
12	light yellow orange	orangé-jaune clair	hellgelborange	naranja amarillento claro
13	yellow orange	orangé-jaune	gelborange	naranja amarillento
14	orange	orange	orange	naranja
15	orange pink	rose-orangé	orangerosa	rosa anaranjado
16	light red pink	rose-rouge clair	hellrotrosa	rosa rojizo claro
17	red pink	rose-rouge	rotrosa	rosa rojizo
18	light blue pink	rose-bleu clair	hellblaurosa	rosa azulado claro
19	blue pink	rose-bleu	blaurosa	rosa azulado
20	orange red	rouge-orangé	orangerot	rojo anaranjado
21	red	rouge	rot	rojo
22	dark pink red	rouge-rose foncé	dunkelrosarot	rojo rosado oscuro
23	purple red	rouge-pourpre	purpurrot	rojo púrpura
24	dark purple red	rouge-pourpre foncé	dunkelpurpurrot	rojo púrpura oscuro
25	brown red	rouge-brun	braunrot	rojo amarronado
26	brown purple	pourpre-brun	braunpurpur	púrpura amarronado
27	purple	pourpre	purpurn	púrpura
28	violet	violet	violett	violeta
29	dark violet	violet foncé	dunkelviolett	violeta oscuro
30	light blue violet	violet-bleu clair	hellblauviolett	violeta azulado claro
31	blue violet	violet-bleu	blauviolett	violeta azulado
32	light violet blue	bleu-violet clair	hellviolettblau	azul violáceo claro
33	violet blue	bleu-violet	violettblau	azul violáceo
34	light blue	bleu clair	hellblau	azul claro
35	medium blue	bleu moyen	mittelblau	azul medio
36	dark blue	bleu foncé	dunkelblau	azul oscuro
37	light green blue	bleu-vert clair	hellgrünblau	azul verdoso claro
38	green blue	bleu-vert	grünblau	azul verdoso
39	grey blue	bleu-gris	graublau	azul grisáceo
40	light brown	brun clair	hellbraun	marrón claro
41	medium brown	brun moyen	mittelbraun	marrón medio
42	dark brown	brun foncé	dunkelbraun	marrón oscuro
43	light yellow brown	brun-jaune clair	hellgelbbraun	marrón amarillento claro
44	yellow brown	brun-jaune	gelbbraun	marrón amarillento
45	orange brown	brun-orange	orangebraun	marrón anaranjado
46	grey brown	brun-gris	graubraun	marrón grisáceo
47	green brown	brun-vert	grünbraun	marrón verdoso
48	grey	gris	grau	gris
49	green grey	gris-vert	grüngrau	gris verdoso
50	black	noir	schwarz	negro

3.2 The appendices to this document allocate the colors in the RHS Colour Chart to the appropriate UPOV Color Groups as follows:

Appendix I: Allocation of UPOV Color Groups for each RHS Color in RHS Reference order
Appendix II: RHS Colors contained in each UPOV Color Group

[Appendices to Annex follow]

Appendix I to Annex:

Allocation of UPOV Color Groups for each RHS Color in RHS Reference order

RHS COLORS (RHS COLOUR CHART, EDITIONS 1986, 1995, 2001 AND 2007)
BY UPOV COLOR GROUPS

UPOV Group No.	No. RHS	English	français	deutsch	español
11	001A	yellow	jaune	gelb	amarillo
5	001B	yellow green	vert-jaune	gelbgrün	verde amarillento
5	001C	yellow green	vert-jaune	gelbgrün	verde amarillento
5	001D	yellow green	vert-jaune	gelbgrün	verde amarillento
11	002A	yellow	jaune	gelb	amarillo
11	002B	yellow	jaune	gelb	amarillo
5	002C	yellow green	vert-jaune	gelbgrün	verde amarillento
5	002D	yellow green	vert-jaune	gelbgrün	verde amarillento
11	003A	yellow	jaune	gelb	amarillo
11	003B	yellow	jaune	gelb	amarillo
11	003C	yellow	jaune	gelb	amarillo
5	003D	yellow green	vert-jaune	gelbgrün	verde amarillento
11	004A	yellow	jaune	gelb	amarillo
11	004B	yellow	jaune	gelb	amarillo
5	004C	yellow green	vert-jaune	gelbgrün	verde amarillento
10	004D	light yellow	jaune clair	hellgelb	amarillo claro
11	005A	yellow	jaune	gelb	amarillo
11	005B	yellow	jaune	gelb	amarillo
11	005C	yellow	jaune	gelb	amarillo
10	005D	light yellow	jaune clair	hellgelb	amarillo claro
11	006A	yellow	jaune	gelb	amarillo
11	006B	yellow	jaune	gelb	amarillo
11	006C	yellow	jaune	gelb	amarillo
10	006D	light yellow	jaune clair	hellgelb	amarillo claro
11	007A	yellow	jaune	gelb	amarillo
11	007B	yellow	jaune	gelb	amarillo
11	007C	yellow	jaune	gelb	amarillo
11	007D	yellow	jaune	gelb	amarillo
11	008A	yellow	jaune	gelb	amarillo
10	008B	light yellow	jaune clair	hellgelb	amarillo claro
10	008C	light yellow	jaune clair	hellgelb	amarillo claro
10	008D	light yellow	jaune clair	hellgelb	amarillo claro
11	009A	yellow	jaune	gelb	amarillo
11	009B	yellow	jaune	gelb	amarillo
10	009C	light yellow	jaune clair	hellgelb	amarillo claro
10	009D	light yellow	jaune clair	hellgelb	amarillo claro
10	010A	light yellow	jaune clair	hellgelb	amarillo claro
10	010B	light yellow	jaune clair	hellgelb	amarillo claro
10	010C	light yellow	jaune clair	hellgelb	amarillo claro
10	010D	light yellow	jaune clair	hellgelb	amarillo claro
13	011A	yellow orange	orangé jaune	gelborange	naranja amarillento
10	011B	light yellow	jaune clair	hellgelb	amarillo claro
10	011C	light yellow	jaune clair	hellgelb	amarillo claro
12	011D	light yellow orange	orangé jaune clair	hellgelborange	naranja amarillento claro
11	012A	yellow	jaune	gelb	amarillo
11	012B	yellow	jaune	gelb	amarillo
10	012C	light yellow	jaune clair	hellgelb	amarillo claro
10	012D	light yellow	jaune clair	hellgelb	amarillo claro
13	013A	yellow orange	orangé jaune	gelborange	naranja amarillento
13	013B	yellow orange	orangé jaune	gelborange	naranja amarillento
13	013C	yellow orange	orangé jaune	gelborange	naranja amarillento
10	013D	light yellow	jaune clair	hellgelb	amarillo claro
13	014A	yellow orange	orangé jaune	gelborange	naranja amarillento
13	014B	yellow orange	orangé jaune	gelborange	naranja amarillento
13	014C	yellow orange	orangé jaune	gelborange	naranja amarillento
10	014D	light yellow	jaune clair	hellgelb	amarillo claro
13	015A	yellow orange	orangé jaune	gelborange	naranja amarillento
13	015B	yellow orange	orangé jaune	gelborange	naranja amarillento

UPOV Group No.	No. RHS	English	français	deutsch	español
13	015C	yellow orange	orangé jaune	gelborange	naranja amarillento
10	015D	light yellow	jaune clair	hellgelb	amarillo claro
13	016A	yellow orange	orangé jaune	gelborange	naranja amarillento
13	016B	yellow orange	orangé jaune	gelborange	naranja amarillento
13	016C	yellow orange	orangé jaune	gelborange	naranja amarillento
10	016D	light yellow	jaune clair	hellgelb	amarillo claro
13	017A	yellow orange	orangé jaune	gelborange	naranja amarillento
13	017B	yellow orange	orangé jaune	gelborange	naranja amarillento
13	017C	yellow orange	orangé jaune	gelborange	naranja amarillento
13	017D	yellow orange	orangé jaune	gelborange	naranja amarillento
13	018A	yellow orange	orangé jaune	gelborange	naranja amarillento
12	018B	light yellow orange	orangé jaune clair	hellgelborange	naranja amarillento claro
12	018C	light yellow orange	orangé jaune clair	hellgelborange	naranja amarillento claro
12	018D	light yellow orange	orangé jaune clair	hellgelborange	naranja amarillento claro
13	019A	yellow orange	orangé jaune	gelborange	naranja amarillento
12	019B	light yellow orange	orangé jaune clair	hellgelborange	naranja amarillento claro
12	019C	light yellow orange	orangé jaune clair	hellgelborange	naranja amarillento claro
12	019D	light yellow orange	orangé jaune clair	hellgelborange	naranja amarillento claro
13	020A	yellow orange	orangé jaune	gelborange	naranja amarillento
13	020B	yellow orange	orangé jaune	gelborange	naranja amarillento
12	020C	light yellow orange	orangé jaune clair	hellgelborange	naranja amarillento claro
12	020D	light yellow orange	orangé jaune clair	hellgelborange	naranja amarillento claro
13	021A	yellow orange	orangé jaune	gelborange	naranja amarillento
13	021B	yellow orange	orangé jaune	gelborange	naranja amarillento
13	021C	yellow orange	orangé jaune	gelborange	naranja amarillento
12	021D	light yellow orange	orangé jaune clair	hellgelborange	naranja amarillento claro
13	022A	yellow orange	orangé jaune	gelborange	naranja amarillento
12	022B	light yellow orange	orangé jaune clair	hellgelborange	naranja amarillento claro
12	022C	light yellow orange	orangé jaune clair	hellgelborange	naranja amarillento claro
12	022D	light yellow orange	orangé jaune clair	hellgelborange	naranja amarillento claro
13	023A	yellow orange	orangé jaune	gelborange	naranja amarillento
13	023B	yellow orange	orangé jaune	gelborange	naranja amarillento
12	023C	light yellow orange	orangé jaune clair	hellgelborange	naranja amarillento claro
12	023D	light yellow orange	orangé jaune clair	hellgelborange	naranja amarillento claro
14	024A	orange	orange	orange	naranja
14	024B	orange	orange	orange	naranja
14	024C	orange	orange	orange	naranja
14	024D	orange	orange	orange	naranja
14	025A	orange	orange	orange	naranja
14	025B	orange	orange	orange	naranja
14	025C	orange	orange	orange	naranja
14	025D	orange	orange	orange	naranja
14	026A	orange	orange	orange	naranja
14	026B	orange	orange	orange	naranja
14	026C	orange	orange	orange	naranja
14	026D	orange	orange	orange	naranja
15	027A	orange pink	rose orangé	orangerosa	rosa anaranjado
15	027B	orange pink	rose orangé	orangerosa	rosa anaranjado
15	027C	orange pink	rose orangé	orangerosa	rosa anaranjado
15	027D	orange pink	rose orangé	orangerosa	rosa anaranjado
20	028A	orange red	rouge orangé	orangerot	rojo anaranjado
14	028B	orange	orange	orange	naranja
14	028C	orange	orange	orange	naranja
14	028D	orange	orange	orange	naranja
14	029A	orange	orange	orange	naranja
14	029B	orange	orange	orange	naranja
15	029C	orange pink	rose orangé	orangerosa	rosa anaranjado
15	029D	orange pink	rose orangé	orangerosa	rosa anaranjado
20	030A	orange red	rouge orangé	orangerot	rojo anaranjado
20	030B	orange red	rouge orangé	orangerot	rojo anaranjado
20	030C	orange red	rouge orangé	orangerot	rojo anaranjado
14	030D	orange	orange	orange	naranja
20	031A	orange red	rouge orangé	orangerot	rojo anaranjado
45	031B	orange brown	brun-orange	orangebraun	marrón anaranjado
45	031C	orange brown	brun-orange	orangebraun	marrón anaranjado
15	031D	orange pink	rose orangé	orangerosa	rosa anaranjado

UPOV Group No.	No. RHS	English	français	deutsch	español
20	032A	orange red	rouge orangé	orangerot	rojo anaranjado
20	032B	orange red	rouge orangé	orangerot	rojo anaranjado
45	032C	orange brown	brun-orange	orangebraun	marrón anaranjado
15	032D	orange pink	rose orangé	orangerosa	rosa anaranjado
21	033A	red	rouge	rot	rojo
20	033B	orange red	rouge orangé	orangerot	rojo anaranjado
45	033C	orange brown	brun-orange	orangebraun	marrón anaranjado
15	033D	orange pink	rose orangé	orangerosa	rosa anaranjado
21	034A	red	rouge	rot	rojo
45	034B	orange brown	brun-orange	orangebraun	marrón anaranjado
45	034C	orange brown	brun-orange	orangebraun	marrón anaranjado
45	034D	orange brown	brun-orange	orangebraun	marrón anaranjado
45	035A	orange brown	brun-orange	orangebraun	marrón anaranjado
20	035B	orange red	rouge orangé	orangerot	rojo anaranjado
15	035C	orange pink	rose orangé	orangerosa	rosa anaranjado
16	035D	light red pink	rose-rouge clair	hellrotrosa	rosa rojizo claro
16	036A	light red pink	rose-rouge clair	hellrotrosa	rosa rojizo claro
16	036B	light red pink	rose-rouge clair	hellrotrosa	rosa rojizo claro
16	036C	light red pink	rose-rouge clair	hellrotrosa	rosa rojizo claro
16	036D	light red pink	rose-rouge clair	hellrotrosa	rosa rojizo claro
15	037A	orange pink	rose orangé	orangerosa	rosa anaranjado
15	037B	orange pink	rose orangé	orangerosa	rosa anaranjado
16	037C	light red pink	rose-rouge clair	hellrotrosa	rosa rojizo claro
16	037D	light red pink	rose-rouge clair	hellrotrosa	rosa rojizo claro
16	038A	light red pink	rose-rouge clair	hellrotrosa	rosa rojizo claro
16	038B	light red pink	rose-rouge clair	hellrotrosa	rosa rojizo claro
16	038C	light red pink	rose-rouge clair	hellrotrosa	rosa rojizo claro
16	038D	light red pink	rose-rouge clair	hellrotrosa	rosa rojizo claro
20	039A	orange red	rouge orangé	orangerot	rojo anaranjado
20	039B	orange red	rouge orangé	orangerot	rojo anaranjado
16	039C	light red pink	rose-rouge clair	hellrotrosa	rosa rojizo claro
16	039D	light red pink	rose-rouge clair	hellrotrosa	rosa rojizo claro
21	040A	red	rouge	rot	rojo
21	040B	red	rouge	rot	rojo
20	040C	orange red	rouge orangé	orangerot	rojo anaranjado
20	040D	orange red	rouge orangé	orangerot	rojo anaranjado
21	041A	red	rouge	rot	rojo
20	041B	orange red	rouge orangé	orangerot	rojo anaranjado
20	041C	orange red	rouge orangé	orangerot	rojo anaranjado
16	041D	light red pink	rose-rouge clair	hellrotrosa	rosa rojizo claro
21	042A	red	rouge	rot	rojo
21	042B	red	rouge	rot	rojo
21	042C	red	rouge	rot	rojo
20	042D	orange red	rouge orangé	orangerot	rojo anaranjado
21	043A	red	rouge	rot	rojo
21	043B	red	rouge	rot	rojo
17	043C	red pink	rose-rouge	rotrosa	rosa rojizo
17	043D	red pink	rose-rouge	rotrosa	rosa rojizo
21	044A	red	rouge	rot	rojo
21	044B	red	rouge	rot	rojo
21	044C	red	rouge	rot	rojo
20	044D	orange red	rouge orangé	orangerot	rojo anaranjado
21	045A	red	rouge	rot	rojo
21	045B	red	rouge	rot	rojo
21	045C	red	rouge	rot	rojo
22	045D	dark pink red	rouge-rose foncé	dunkelrosarot	rojo rosado oscuro
24	046A	dark purple red	rouge-pourpre foncé	dunkelpurpurrot	rojo púrpura oscuro
21	046B	red	rouge	rot	rojo
21	046C	red	rouge	rot	rojo
22	046D	dark pink red	rouge-rose foncé	dunkelrosarot	rojo rosado oscuro
21	047A	red	rouge	rot	rojo
21	047B	red	rouge	rot	rojo
22	047C	dark pink red	rouge-rose foncé	dunkelrosarot	rojo rosado oscuro
17	047D	red pink	rose-rouge	rotrosa	rosa rojizo
22	048A	dark pink red	rouge-rose foncé	dunkelrosarot	rojo rosado oscuro

UPOV Group No.	No. RHS	English	français	deutsch	español
17	048B	red pink	rose-rouge	rotrosa	rosa rojizo
17	048C	red pink	rose-rouge	rotrosa	rosa rojizo
17	048D	red pink	rose-rouge	rotrosa	rosa rojizo
17	049A	red pink	rose-rouge	rotrosa	rosa rojizo
16	049B	light red pink	rose-rouge clair	hellrotrosa	rosa rojizo claro
16	049C	light red pink	rose-rouge clair	hellrotrosa	rosa rojizo claro
16	049D	light red pink	rose-rouge clair	hellrotrosa	rosa rojizo claro
21	050A	red	rouge	rot	rojo
22	050B	dark pink red	rouge-rose foncé	dunkelrosarot	rojo rosado oscuro
17	050C	red pink	rose-rouge	rotrosa	rosa rojizo
16	050D	light red pink	rose-rouge clair	hellrotrosa	rosa rojizo claro
22	051A	dark pink red	rouge-rose foncé	dunkelrosarot	rojo rosado oscuro
22	051B	dark pink red	rouge-rose foncé	dunkelrosarot	rojo rosado oscuro
17	051C	red pink	rose-rouge	rotrosa	rosa rojizo
17	051D	red pink	rose-rouge	rotrosa	rosa rojizo
22	052A	dark pink red	rouge-rose foncé	dunkelrosarot	rojo rosado oscuro
17	052B	red pink	rose-rouge	rotrosa	rosa rojizo
17	052C	red pink	rose-rouge	rotrosa	rosa rojizo
17	052D	red pink	rose-rouge	rotrosa	rosa rojizo
24	053A	dark purple red	rouge-pourpre foncé	dunkelpurpurrot	rojo púrpura oscuro
24	053B	dark purple red	rouge-pourpre foncé	dunkelpurpurrot	rojo púrpura oscuro
22	053C	dark pink red	rouge-rose foncé	dunkelrosarot	rojo rosado oscuro
22	053D	dark pink red	rouge-rose foncé	dunkelrosarot	rojo rosado oscuro
23	054A	purple red	rouge pourpre	purpurrot	rojo púrpura
23	054B	purple red	rouge pourpre	purpurrot	rojo púrpura
23	054C	purple red	rouge pourpre	purpurrot	rojo púrpura
18	054D	light blue pink	rose-bleu clair	hellblaurosa	rosa azulado claro
23	055A	purple red	rouge pourpre	purpurrot	rojo púrpura
23	055B	purple red	rouge pourpre	purpurrot	rojo púrpura
18	055C	light blue pink	rose-bleu clair	hellblaurosa	rosa azulado claro
18	055D	light blue pink	rose-bleu clair	hellblaurosa	rosa azulado claro
18	056A	light blue pink	rose-bleu clair	hellblaurosa	rosa azulado claro
18	056B	light blue pink	rose-bleu clair	hellblaurosa	rosa azulado claro
18	056C	light blue pink	rose-bleu clair	hellblaurosa	rosa azulado claro
18	056D	light blue pink	rose-bleu clair	hellblaurosa	rosa azulado claro
23	057A	purple red	rouge pourpre	purpurrot	rojo púrpura
23	057B	purple red	rouge pourpre	purpurrot	rojo púrpura
23	057C	purple red	rouge pourpre	purpurrot	rojo púrpura
23	057D	purple red	rouge pourpre	purpurrot	rojo púrpura
27	058A	purple	pourpre	purpurn	púrpura
23	058B	purple red	rouge pourpre	purpurrot	rojo púrpura
23	058C	purple red	rouge pourpre	purpurrot	rojo púrpura
23	058D	purple red	rouge pourpre	purpurrot	rojo púrpura
24	059A	dark purple red	rouge-pourpre foncé	dunkelpurpurrot	rojo púrpura oscuro
24	059B	dark purple red	rouge-pourpre foncé	dunkelpurpurrot	rojo púrpura oscuro
27	059C	purple	pourpre	purpurn	púrpura
23	059D	purple red	rouge pourpre	purpurrot	rojo púrpura
24	060A	dark purple red	rouge-pourpre foncé	dunkelpurpurrot	rojo púrpura oscuro
24	060B	dark purple red	rouge-pourpre foncé	dunkelpurpurrot	rojo púrpura oscuro
27	060C	purple	pourpre	purpurn	púrpura
23	060D	purple red	rouge pourpre	purpurrot	rojo púrpura
27	061A	purple	pourpre	purpurn	púrpura
27	061B	purple	pourpre	purpurn	púrpura
23	061C	purple red	rouge pourpre	purpurrot	rojo púrpura
23	061D	purple red	rouge pourpre	purpurrot	rojo púrpura
19	062A	blue pink	rose-bleu	blaurosa	rosa azulado
18	062B	light blue pink	rose-bleu clair	hellblaurosa	rosa azulado claro
18	062C	light blue pink	rose-bleu clair	hellblaurosa	rosa azulado claro
18	062D	light blue pink	rose-bleu clair	hellblaurosa	rosa azulado claro
23	063A	purple red	rouge pourpre	purpurrot	rojo púrpura

UPOV Group No.	No. RHS	English	français	deutsch	español
19	063B	blue pink	rose-bleu	blaurosa	rosa azulado
19	063C	blue pink	rose-bleu	blaurosa	rosa azulado
18	063D	light blue pink	rose-bleu clair	hellblaurosa	rosa azulado claro
27	064A	purple	pourpre	purpurn	púrpura
27	064B	purple	pourpre	purpurn	púrpura
19	064C	blue pink	rose-bleu	blaurosa	rosa azulado
19	064D	blue pink	rose-bleu	blaurosa	rosa azulado
19	065A	blue pink	rose-bleu	blaurosa	rosa azulado
18	065B	light blue pink	rose-bleu clair	hellblaurosa	rosa azulado claro
18	065C	light blue pink	rose-bleu clair	hellblaurosa	rosa azulado claro
18	065D	light blue pink	rose-bleu clair	hellblaurosa	rosa azulado claro
23	066A	purple red	rouge pourpre	purpurrot	rojo púrpura
23	066B	purple red	rouge pourpre	purpurrot	rojo púrpura
19	066C	blue pink	rose-bleu	blaurosa	rosa azulado
19	066D	blue pink	rose-bleu	blaurosa	rosa azulado
27	067A	purple	pourpre	purpurn	púrpura
19	067B	blue pink	rose-bleu	blaurosa	rosa azulado
19	067C	blue pink	rose-bleu	blaurosa	rosa azulado
19	067D	blue pink	rose-bleu	blaurosa	rosa azulado
19	068A	blue pink	rose-bleu	blaurosa	rosa azulado
19	068B	blue pink	rose-bleu	blaurosa	rosa azulado
19	068C	blue pink	rose-bleu	blaurosa	rosa azulado
18	068D	light blue pink	rose-bleu clair	hellblaurosa	rosa azulado claro
18	069A	light blue pink	rose-bleu clair	hellblaurosa	rosa azulado claro
18	069B	light blue pink	rose-bleu clair	hellblaurosa	rosa azulado claro
30	069C	light blue violet	violet-bleu clair	hellblauviolett	violeta azulado claro
30	069D	light blue violet	violet-bleu clair	hellblauviolett	violeta azulado claro
27	070A	purple	pourpre	purpurn	púrpura
27	070B	purple	pourpre	purpurn	púrpura
19	070C	blue pink	rose-bleu	blaurosa	rosa azulado
18	070D	light blue pink	rose-bleu clair	hellblaurosa	rosa azulado claro
27	071A	purple	pourpre	purpurn	púrpura
27	071B	purple	pourpre	purpurn	púrpura
27	071C	purple	pourpre	purpurn	púrpura
19	071D	blue pink	rose-bleu	blaurosa	rosa azulado
27	072A	purple	pourpre	purpurn	púrpura
27	072B	purple	pourpre	purpurn	púrpura
19	072C	blue pink	rose-bleu	blaurosa	rosa azulado
19	072D	blue pink	rose-bleu	blaurosa	rosa azulado
19	073A	blue pink	rose-bleu	blaurosa	rosa azulado
19	073B	blue pink	rose-bleu	blaurosa	rosa azulado
18	073C	light blue pink	rose-bleu clair	hellblaurosa	rosa azulado claro
18	073D	light blue pink	rose-bleu clair	hellblaurosa	rosa azulado claro
27	074A	purple	pourpre	purpurn	púrpura
27	074B	purple	pourpre	purpurn	púrpura
27	074C	purple	pourpre	purpurn	púrpura
19	074D	blue pink	rose-bleu	blaurosa	rosa azulado
28	075A	violet	violet	violett	violeta
28	075B	violet	violet	violett	violeta
28	075C	violet	violet	violett	violeta
18	075D	light blue pink	rose-bleu clair	hellblaurosa	rosa azulado claro
30	076A	light blue violet	violet-bleu clair	hellblauviolett	violeta azulado claro
30	076B	light blue violet	violet-bleu clair	hellblauviolett	violeta azulado claro
30	076C	light blue violet	violet-bleu clair	hellblauviolett	violeta azulado claro
30	076D	light blue violet	violet-bleu clair	hellblauviolett	violeta azulado claro
28	077A	violet	violet	violett	violeta
28	077B	violet	violet	violett	violeta
28	077C	violet	violet	violett	violeta
28	077D	violet	violet	violett	violeta
28	078A	violet	violet	violett	violeta
28	078B	violet	violet	violett	violeta
28	078C	violet	violet	violett	violeta
28	078D	violet	violet	violett	violeta
29	079A	dark violet	violet foncé	dunkelviolett	violeta oscuro
29	079B	dark violet	violet foncé	dunkelviolett	violeta oscuro
29	079C	dark violet	violet foncé	dunkelviolett	violeta oscuro

UPOV Group No.	No. RHS	English	français	deutsch	español
29	079D	dark violet	violet foncé	dunkelviolett	violeta oscuro
28	080A	violet	violet	violett	violeta
28	080B	violet	violet	violett	violeta
28	080C	violet	violet	violett	violeta
28	080D	violet	violet	violett	violeta
28	081A	violet	violet	violett	violeta
28	081B	violet	violet	violett	violeta
28	081C	violet	violet	violett	violeta
28	081D	violet	violet	violett	violeta
28	082A	violet	violet	violett	violeta
28	082B	violet	violet	violett	violeta
28	082C	violet	violet	violett	violeta
28	082D	violet	violet	violett	violeta
29	083A	dark violet	violet foncé	dunkelviolett	violeta oscuro
29	083B	dark violet	violet foncé	dunkelviolett	violeta oscuro
31	083C	blue violet	violet-bleu	blauviolett	violeta azulado
31	083D	blue violet	violet-bleu	blauviolett	violeta azulado
28	084A	violet	violet	violett	violeta
28	084B	violet	violet	violett	violeta
30	084C	light blue violet	violet-bleu clair	hellblauviolett	violeta azulado claro
30	084D	light blue violet	violet-bleu clair	hellblauviolett	violeta azulado claro
30	085A	light blue violet	violet-bleu clair	hellblauviolett	violeta azulado claro
30	085B	light blue violet	violet-bleu clair	hellblauviolett	violeta azulado claro
30	085C	light blue violet	violet-bleu clair	hellblauviolett	violeta azulado claro
30	085D	light blue violet	violet-bleu clair	hellblauviolett	violeta azulado claro
29	086A	dark violet	violet foncé	dunkelviolett	violeta oscuro
31	086B	blue violet	violet-bleu	blauviolett	violeta azulado
31	086C	blue violet	violet-bleu	blauviolett	violeta azulado
31	086D	blue violet	violet-bleu	blauviolett	violeta azulado
28	087A	violet	violet	violett	violeta
28	087B	violet	violet	violett	violeta
28	087C	violet	violet	violett	violeta
28	087D	violet	violet	violett	violeta
31	088A	blue violet	violet-bleu	blauviolett	violeta azulado
31	088B	blue violet	violet-bleu	blauviolett	violeta azulado
31	088C	blue violet	violet-bleu	blauviolett	violeta azulado
28	088D	violet	violet	violett	violeta
33	089A	violet blue	bleu-violet	violettblau	azul violáceo
33	089B	violet blue	bleu-violet	violettblau	azul violáceo
33	089C	violet blue	bleu-violet	violettblau	azul violáceo
33	089D	violet blue	bleu-violet	violettblau	azul violáceo
31	090A	blue violet	violet-bleu	blauviolett	violeta azulado
31	090B	blue violet	violet-bleu	blauviolett	violeta azulado
31	090C	blue violet	violet-bleu	blauviolett	violeta azulado
31	090D	blue violet	violet-bleu	blauviolett	violeta azulado
33	091A	violet blue	bleu-violet	violettblau	azul violáceo
32	091B	light violet blue	bleu-violet clair	hellviolettblau	azul violáceo claro
32	091C	light violet blue	bleu-violet clair	hellviolettblau	azul violáceo claro
32	091D	light violet blue	bleu-violet clair	hellviolettblau	azul violáceo claro
33	092A	violet blue	bleu-violet	violettblau	azul violáceo
32	092B	light violet blue	bleu-violet clair	hellviolettblau	azul violáceo claro
32	092C	light violet blue	bleu-violet clair	hellviolettblau	azul violáceo claro
32	092D	light violet blue	bleu-violet clair	hellviolettblau	azul violáceo claro
33	093A	violet blue	bleu-violet	violettblau	azul violáceo
33	093B	violet blue	bleu-violet	violettblau	azul violáceo
33	093C	violet blue	bleu-violet	violettblau	azul violáceo
32	093D	light violet blue	bleu-violet clair	hellviolettblau	azul violáceo claro
33	094A	violet blue	bleu-violet	violettblau	azul violáceo
33	094B	violet blue	bleu-violet	violettblau	azul violáceo
33	094C	violet blue	bleu-violet	violettblau	azul violáceo
32	094D	light violet blue	bleu-violet clair	hellviolettblau	azul violáceo claro
33	095A	violet blue	bleu-violet	violettblau	azul violáceo
33	095B	violet blue	bleu-violet	violettblau	azul violáceo
33	095C	violet blue	bleu-violet	violettblau	azul violáceo
32	095D	light violet blue	bleu-violet clair	hellviolettblau	azul violáceo claro
33	096A	violet blue	bleu-violet	violettblau	azul violáceo

UPOV Group No.	No. RHS	English	français	deutsch	español
33	096B	violet blue	bleu-violet	violettblau	azul violáceo
33	096C	violet blue	bleu-violet	violettblau	azul violáceo
33	096D	violet blue	bleu-violet	violettblau	azul violáceo
33	097A	violet blue	bleu-violet	violettblau	azul violáceo
32	097B	light violet blue	bleu-violet clair	hellviolettblau	azul violáceo claro
32	097C	light violet blue	bleu-violet clair	hellviolettblau	azul violáceo claro
32	097D	light violet blue	bleu-violet clair	hellviolettblau	azul violáceo claro
35	098A	medium blue	bleu moyen	mittelblau	azulmedio
35	098B	medium blue	bleu moyen	mittelblau	azulmedio
35	098C	medium blue	bleu moyen	mittelblau	azul medio
35	098D	medium blue	bleu moyen	mittelblau	azul medio
36	099A	dark blue	bleu foncé	dunkelblau	azul oscuro
36	099B	dark blue	bleu foncé	dunkelblau	azul oscuro
35	099C	medium blue	bleu moyen	mittelblau	azul medio
35	099D	medium blue	bleu moyen	mittelblau	azul medio
35	100A	medium blue	bleu moyen	mittelblau	azul medio
35	100B	medium blue	bleu moyen	mittelblau	azul medio
35	100C	medium blue	bleu moyen	mittelblau	azul medio
32	100D	light violet blue	bleu-violet clair	hellviolettblau	azul violáceo claro
35	101A	medium blue	bleu moyen	mittelblau	azul medio
35	101B	medium blue	bleu moyen	mittelblau	azul medio
35	101C	medium blue	bleu moyen	mittelblau	azul medio
34	101D	light blue	bleu clair	hellblau	azul claro
36	102A	dark blue	bleu foncé	dunkelblau	azul oscuro
35	102B	medium blue	bleu moyen	mittelblau	azul medio
35	102C	medium blue	bleu moyen	mittelblau	azul medio
35	102D	medium blue	bleu moyen	mittelblau	azul medio
36	103A	dark blue	bleu foncé	dunkelblau	azul oscuro
36	103B	dark blue	bleu foncé	dunkelblau	azul oscuro
36	103C	dark blue	bleu foncé	dunkelblau	azul oscuro
35	103D	medium blue	bleu moyen	mittelblau	azul medio
35	104A	medium blue	bleu moyen	mittelblau	azul medio
35	104B	medium blue	bleu moyen	mittelblau	azul medio
35	104C	medium blue	bleu moyen	mittelblau	azul medio
34	104D	light blue	bleu clair	hellblau	azul claro
35	105A	medium blue	bleu moyen	mittelblau	azul medio
35	105B	medium blue	bleu moyen	mittelblau	azul medio
35	105C	medium blue	bleu moyen	mittelblau	azul medio
35	105D	medium blue	bleu moyen	mittelblau	azul medio
35	106A	medium blue	bleu moyen	mittelblau	azul medio
34	106B	light blue	bleu clair	hellblau	azul claro
34	106C	light blue	bleu clair	hellblau	azul claro
34	106D	light blue	bleu clair	hellblau	azul claro
35	107A	medium blue	bleu moyen	mittelblau	azul medio
35	107B	medium blue	bleu moyen	mittelblau	azul medio
34	107C	light blue	bleu clair	hellblau	azul claro
34	107D	light blue	bleu clair	hellblau	azul claro
34	108A	light blue	bleu clair	hellblau	azul claro
34	108B	light blue	bleu clair	hellblau	azul claro
34	108C	light blue	bleu clair	hellblau	azul claro
34	108D	light blue	bleu clair	hellblau	azul claro
35	109A	medium blue	bleu moyen	mittelblau	azul medio
35	109B	medium blue	bleu moyen	mittelblau	azul medio
35	109C	medium blue	bleu moyen	mittelblau	azul medio
34	109D	light blue	bleu clair	hellblau	azul claro
35	110A	medium blue	bleu moyen	mittelblau	azul medio
35	110B	medium blue	bleu moyen	mittelblau	azul medio
37	110C	light green blue	bleu-vert clair	hellgrünblau	azul verdoso claro
37	110D	light green blue	bleu-vert clair	hellgrünblau	azul verdoso claro
38	111A	green blue	bleu-vert	grünblau	azul verdoso
38	111B	green blue	bleu-vert	grünblau	azul verdoso
37	111C	light green blue	bleu-vert clair	hellgrünblau	azul verdoso claro
37	111D	light green blue	bleu-vert clair	hellgrünblau	azul verdoso claro
34	112A	light blue	bleu clair	hellblau	azul claro
34	112B	light blue	bleu clair	hellblau	azul claro
37	112C	light green blue	bleu-vert clair	hellgrünblau	azul verdoso claro

UPOV Group No.	No. RHS	English	français	deutsch	español
37	112D	light green blue	bleu-vert clair	hellgrünblau	azul verdoso claro
38	113A	green blue	bleu-vert	grünblau	azul verdoso
38	113B	green blue	bleu-vert	grünblau	azul verdoso
37	113C	light green blue	bleu-vert clair	hellgrünblau	azul verdoso claro
37	113D	light green blue	bleu-vert clair	hellgrünblau	azul verdoso claro
38	114A	green blue	bleu-vert	grünblau	azul verdoso
38	114B	green blue	bleu-vert	grünblau	azul verdoso
38	114C	green blue	bleu-vert	grünblau	azul verdoso
38	114D	green blue	bleu-vert	grünblau	azul verdoso
38	115A	green blue	bleu-vert	grünblau	azul verdoso
38	115B	green blue	bleu-vert	grünblau	azul verdoso
39	115C	grey blue	bleu-gris	graublau	azul grisáceo
39	115D	grey blue	bleu-gris	graublau	azul grisáceo
38	116A	green blue	bleu-vert	grünblau	azul verdoso
38	116B	green blue	bleu-vert	grünblau	azul verdoso
38	116C	green blue	bleu-vert	grünblau	azul verdoso
38	116D	green blue	bleu-vert	grünblau	azul verdoso
37	117A	light green blue	bleu-vert clair	hellgrünblau	azul verdoso claro
37	117B	light green blue	bleu-vert clair	hellgrünblau	azul verdoso claro
37	117C	light green blue	bleu-vert clair	hellgrünblau	azul verdoso claro
37	117D	light green blue	bleu-vert clair	hellgrünblau	azul verdoso claro
38	118A	green blue	bleu-vert	grünblau	azul verdoso
38	118B	green blue	bleu-vert	grünblau	azul verdoso
37	118C	light green blue	bleu-vert clair	hellgrünblau	azul verdoso claro
37	118D	light green blue	bleu-vert clair	hellgrünblau	azul verdoso claro
38	119A	green blue	bleu-vert	grünblau	azul verdoso
39	119B	grey blue	bleu-gris	graublau	azul grisáceo
39	119C	grey blue	bleu-gris	graublau	azul grisáceo
37	119D	light green blue	bleu-vert clair	hellgrünblau	azul verdoso claro
7	120A	light blue green	vert-bleu clair	hellblaugrün	verde azulado claro
7	120B	light blue green	vert-bleu clair	hellblaugrün	verde azulado claro
7	120C	light blue green	vert-bleu clair	hellblaugrün	verde azulado claro
37	120D	light green blue	bleu-vert clair	hellgrünblau	azul verdoso claro
38	121A	green blue	bleu-vert	grünblau	azul verdoso
7	121B	light blue green	vert-bleu clair	hellblaugrün	verde azulado claro
37	121C	light green blue	bleu-vert clair	hellgrünblau	azul verdoso claro
37	121D	light green blue	bleu-vert clair	hellgrünblau	azul verdoso claro
39	122A	grey blue	bleu-gris	graublau	azul grisáceo
39	122B	grey blue	bleu-gris	graublau	azul grisáceo
39	122C	grey blue	bleu-gris	graublau	azul grisáceo
37	122D	light green blue	bleu-vert clair	hellgrünblau	azul verdoso claro
7	123A	light blue green	vert-bleu clair	hellblaugrün	verde azulado claro
7	123B	light blue green	vert-bleu clair	hellblaugrün	verde azulado claro
7	123C	light blue green	vert-bleu clair	hellblaugrün	verde azulado claro
7	123D	light blue green	vert-bleu clair	hellblaugrün	verde azulado claro
3	124A	medium green	vert moyen	mittel grün	verde medio
8	124B	blue green	vert-bleu	blaugrün	verde azulado
7	124C	light blue green	vert-bleu clair	hellblaugrün	verde azulado claro
7	124D	light blue green	vert-bleu clair	hellblaugrün	verde azulado claro
3	125A	medium green	vert moyen	mittel grün	verdemedio
3	125B	medium green	vert moyen	mittel grün	verde medio
8	125C	blue green	vert-bleu	blaugrün	verde azulado
8	125D	blue green	vert-bleu	blaugrün	verde azulado
6	126A	grey green	vert-gris	graugrün	verde grisáceo
6	126B	grey green	vert-gris	graugrün	verde grisáceo
6	126C	grey green	vert-gris	graugrün	verde grisáceo
8	126D	blue green	vert-bleu	blaugrün	verde azulado
6	127A	grey green	vert-gris	graugrün	verde grisáceo
3	127B	medium green	vert moyen	mittel grün	verde medio
3	127C	medium green	vert moyen	mittel grün	verde medio
8	127D	blue green	vert-bleu	blaugrün	verde azulado
3	128A	medium green	vert moyen	mittel grün	verde medio
8	128B	blue green	vert-bleu	blaugrün	verde azulado
8	128C	blue green	vert-bleu	blaugrün	verde azulado
8	128D	blue green	vert-bleu	blaugrün	verde azulado
3	129A	medium green	vert moyen	mittel grün	verde medio

UPOV Group No.	No. RHS	English	français	deutsch	español
8	129B	blue green	vert-bleu	blaugrün	verde azulado
8	129C	blue green	vert-bleu	blaugrün	verde azulado
8	129D	blue green	vert-bleu	blaugrün	verde azulado
3	130A	medium green	vert moyen	mittel grün	verde medio
3	130B	medium green	vert moyen	mittel grün	verde medio
8	130C	blue green	vert-bleu	blaugrün	verde azulado
8	130D	blue green	vert-bleu	blaugrün	verde azulado
4	131A	dark green	vert foncé	dunkelgrün	verde oscuro
4	131B	dark green	vert foncé	dunkelgrün	verde oscuro
4	131C	dark green	vert foncé	dunkelgrün	verde oscuro
3	131D	medium green	vert moyen	mittel grün	verde medio
4	132A	dark green	vert foncé	dunkelgrün	verde oscuro
4	132B	dark green	vert foncé	dunkelgrün	verde oscuro
3	132C	medium green	vert moyen	mittel grün	verde medio
3	132D	medium green	vert moyen	mittel grün	verde medio
4	133A	dark green	vert foncé	dunkelgrün	verde oscuro
6	133B	grey green	vert-gris	graugrün	verde grisáceo
6	133C	grey green	vert-gris	graugrün	verde grisáceo
6	133D	grey green	vert-gris	graugrün	verde grisáceo
3	134A	medium green	vert moyen	mittel grün	verde medio
3	134B	medium green	vert moyen	mittel grün	verde medio
3	134C	medium green	vert moyen	mittel grün	verde medio
2	134D	light green	vert clair	hellgrün	verde claro
4	135A	dark green	vert foncé	dunkelgrün	verde oscuro
4	135B	dark green	vert foncé	dunkelgrün	verde oscuro
3	135C	medium green	vert moyen	mittel grün	verde medio
2	135D	light green	vert clair	hellgrün	verde claro
4	136A	dark green	vert foncé	dunkelgrün	verde oscuro
4	136B	dark green	vert foncé	dunkelgrün	verde oscuro
9	136C	brown green	vert-brun	braungrün	verde amarronado
2	136D	light green	vert clair	hellgrün	verde claro
9	137A	brown green	vert-brun	braungrün	verde amarronado
9	137B	brown green	vert-brun	braungrün	verde amarronado
9	137C	brown green	vert-brun	braungrün	verde amarronado
9	137D	brown green	vert-brun	braungrün	verde amarronado
9	138A	brown green	vert-brun	braungrün	verde amarronado
9	138B	brown green	vert-brun	braungrün	verde amarronado
2	138C	light green	vert clair	hellgrün	verde claro
2	138D	light green	vert clair	hellgrün	verde claro
4	139A	dark green	vert foncé	dunkelgrün	verde oscuro
9	139B	brown green	vert-brun	braungrün	verde amarronado
9	139C	brown green	vert-brun	braungrün	verde amarronado
2	139D	light green	vert clair	hellgrün	verde claro
3	140A	medium green	vert moyen	mittel grün	verde medio
3	140B	medium green	vert moyen	mittel grün	verde medio
2	140C	light green	vert clair	hellgrün	verde claro
2	140D	light green	vert clair	hellgrün	verde claro
4	141A	dark green	vert foncé	dunkelgrün	verde oscuro
4	141B	dark green	vert foncé	dunkelgrün	verde oscuro
4	141C	dark green	vert foncé	dunkelgrün	verde oscuro
2	141D	light green	vert clair	hellgrün	verde claro
3	142A	medium green	vert moyen	mittel grün	verde medio
2	142B	light green	vert clair	hellgrün	verde claro
2	142C	light green	vert clair	hellgrün	verde claro
2	142D	light green	vert clair	hellgrün	verde claro
4	143A	dark green	vert foncé	dunkelgrün	verde oscuro
4	143B	dark green	vert foncé	dunkelgrün	verde oscuro
4	143C	dark green	vert foncé	dunkelgrün	verde oscuro
2	143D	light green	vert clair	hellgrün	verde claro
4	144A	dark green	vert foncé	dunkelgrün	verde oscuro
2	144B	light green	vert clair	hellgrün	verde claro
2	144C	light green	vert clair	hellgrün	verde claro
2	144D	light green	vert clair	hellgrün	verde claro
2	145A	light green	vert clair	hellgrün	verde claro
2	145B	light green	vert clair	hellgrün	verde claro
2	145C	light green	vert clair	hellgrün	verde claro

UPOV Group No.	No. RHS	English	français	deutsch	español
2	145D	light green	vert clair	hellgrün	verde claro
9	146A	brown green	vert-brun	braungrün	verde amarronado
9	146B	brown green	vert-brun	braungrün	verde amarronado
9	146C	brown green	vert-brun	braungrün	verde amarronado
9	146D	brown green	vert-brun	braungrün	verde amarronado
9	147A	brown green	vert-brun	braungrün	verde amarronado
9	147B	brown green	vert-brun	braungrün	verde amarronado
9	147C	brown green	vert-brun	braungrün	verde amarronado
9	147D	brown green	vert-brun	braungrün	verde amarronado
9	148A	brown green	vert-brun	braungrün	verde amarronado
9	148B	brown green	vert-brun	braungrün	verde amarronado
9	148C	brown green	vert-brun	braungrün	verde amarronado
9	148D	brown green	vert-brun	braungrün	verde amarronado
5	149A	yellow green	vert-jaune	gelbgrün	verde amarillento
2	149B	light green	vert clair	hellgrün	verde claro
2	149C	light green	vert clair	hellgrün	verde claro
2	149D	light green	vert clair	hellgrün	verde claro
5	150A	yellow green	vert-jaune	gelbgrün	verde amarillento
5	150B	yellow green	vert-jaune	gelbgrün	verde amarillento
5	150C	yellow green	vert-jaune	gelbgrün	verde amarillento
5	150D	yellow green	vert-jaune	gelbgrün	verde amarillento
47	151A	green brown	brun-vert	grünbraun	marrón verdoso
47	151B	green brown	brun-vert	grünbraun	marrón verdoso
47	151C	green brown	brun-vert	grünbraun	marrón verdoso
47	151D	green brown	brun-vert	grünbraun	marrón verdoso
47	152A	green brown	brun-vert	grünbraun	marrón verdoso
47	152B	green brown	brun-vert	grünbraun	marrón verdoso
47	152C	green brown	brun-vert	grünbraun	marrón verdoso
47	152D	green brown	brun-vert	grünbraun	marrón verdoso
47	153A	green brown	brun-vert	grünbraun	marrón verdoso
47	153B	green brown	brun-vert	grünbraun	marrón verdoso
47	153C	green brown	brun-vert	grünbraun	marrón verdoso
47	153D	green brown	brun-vert	grünbraun	marrón verdoso
5	154A	yellow green	vert-jaune	gelbgrün	verde amarillento
5	154B	yellow green	vert-jaune	gelbgrün	verde amarillento
5	154C	yellow green	vert-jaune	gelbgrün	verde amarillento
5	154D	yellow green	vert-jaune	gelbgrün	verde amarillento
1	155A	white	blanc	weiss	blanco
1	155B	white	blanc	weiss	blanco
1	155C	white	blanc	weiss	blanco
1	155D	white	blanc	weiss	blanco
48	156A	grey	gris	grau	gris
48	156B	grey	gris	grau	gris
48	156C	grey	gris	grau	gris
48	156D	grey	gris	grau	gris
48	157A	grey	gris	grau	gris
48	157B	grey	gris	grau	gris
48	157C	grey	gris	grau	gris
1	157D	white	blanc	weiss	blanco
43	158A	light yellow brown	brun-jaune clair	hellgelbbraun	marrón amarillento claro
43	158B	light yellow brown	brun-jaune clair	hellgelbbraun	marrón amarillento claro
43	158C	light yellow brown	brun-jaune clair	hellgelbbraun	marrón amarillento claro
43	158D	light yellow brown	brun-jaune clair	hellgelbbraun	marrón amarillento claro
43	159A	light yellow brown	brun-jaune clair	hellgelbbraun	marrón amarillento claro
43	159B	light yellow brown	brun-jaune clair	hellgelbbraun	marrón amarillento claro
43	159C	light yellow brown	brun-jaune clair	hellgelbbraun	marrón amarillento claro
43	159D	light yellow brown	brun-jaune clair	hellgelbbraun	marrón amarillento claro
43	160A	light yellow brown	brun-jaune clair	hellgelbbraun	marrón amarillento claro
43	160B	light yellow brown	brun-jaune clair	hellgelbbraun	marrón amarillento claro
43	160C	light yellow brown	brun-jaune clair	hellgelbbraun	marrón amarillento claro
43	160D	light yellow brown	brun-jaune clair	hellgelbbraun	marrón amarillento claro
43	161A	light yellow brown	brun-jaune clair	hellgelbbraun	marrón amarillento claro
43	161B	light yellow brown	brun-jaune clair	hellgelbbraun	marrón amarillento claro
43	161C	light yellow brown	brun-jaune clair	hellgelbbraun	marrón amarillento claro
43	161D	light yellow brown	brun-jaune clair	hellgelbbraun	marrón amarillento claro
43	162A	light yellow brown	brun-jaune clair	hellgelbbraun	marrón amarillento claro

UPOV Group No.	No. RHS	English	français	deutsch	español
43	162B	light yellow brown	brun-jaune clair	hellgelbbraun	marrón amarillento claro
43	162C	light yellow brown	brun-jaune clair	hellgelbbraun	marrón amarillento claro
43	162D	light yellow brown	brun-jaune clair	hellgelbbraun	marrón amarillento claro
44	163A	yellow brown	brun-jaune	gelbbraun	marrón amarillento
43	163B	light yellow brown	brun-jaune clair	hellgelbbraun	marrón amarillento claro
43	163C	light yellow brown	brun-jaune clair	hellgelbbraun	marrón amarillento claro
43	163D	light yellow brown	brun-jaune clair	hellgelbbraun	marrón amarillento claro
44	164A	yellow brown	brun-jaune	gelbbraun	marrón amarillento
44	164B	yellow brown	brun-jaune	gelbbraun	marrón amarillento
44	164C	yellow brown	brun-jaune	gelbbraun	marrón amarillento
43	164D	light yellow brown	brun-jaune clair	hellgelbbraun	marrón amarillento claro
41	165A	medium brown	brun moyen	mittelbraun	marrón medio
44	165B	yellow brown	brun-jaune	gelbbraun	marrón amarillento
44	165C	yellow brown	brun-jaune	gelbbraun	marrón amarillento
43	165D	light yellow brown	brun-jaune clair	hellgelbbraun	marrón amarillento claro
41	166A	medium brown	brun moyen	mittelbraun	marrón medio
41	166B	medium brown	brun moyen	mittelbraun	marrón medio
40	166C	light brown	brun clair	hellbraun	marrón claro
40	166D	light brown	brun clair	hellbraun	marrón claro
44	167A	yellow brown	brun-jaune	gelbbraun	marrón amarillento
44	167B	yellow brown	brun-jaune	gelbbraun	marrón amarillento
44	167C	yellow brown	brun-jaune	gelbbraun	marrón amarillento
44	167D	yellow brown	brun-jaune	gelbbraun	marrón amarillento
45	168A	orange brown	brun-orange	orangebraun	marrón anaranjado
45	168B	orange brown	brun-orange	orangebraun	marrón anaranjado
44	168C	yellow brown	brun-jaune	gelbbraun	marrón amarillento
44	168D	yellow brown	brun-jaune	gelbbraun	marrón amarillento
45	169A	orange brown	brun-orange	orangebraun	marrón anaranjado
45	169B	orange brown	brun-orange	orangebraun	marrón anaranjado
45	169C	orange brown	brun-orange	orangebraun	marrón anaranjado
45	169D	orange brown	brun-orange	orangebraun	marrón anaranjado
45	170A	orange brown	brun-orange	orangebraun	marrón anaranjado
45	170B	orange brown	brun-orange	orangebraun	marrón anaranjado
45	170C	orange brown	brun-orange	orangebraun	marrón anaranjado
45	170D	orange brown	brun-orange	orangebraun	marrón anaranjado
41	171A	medium brown	brun moyen	mittelbraun	marrón medio
45	171B	orange brown	brun-orange	orangebraun	marrón anaranjado
45	171C	orange brown	brun-orange	orangebraun	marrón anaranjado
45	171D	orange brown	brun-orange	orangebraun	marrón anaranjado
41	172A	medium brown	brun moyen	mittelbraun	marrón medio
41	172B	medium brown	brun moyen	mittelbraun	marrón medio
45	172C	orange brown	brun-orange	orangebraun	marrón anaranjado
45	172D	orange brown	brun-orange	orangebraun	marrón anaranjado
41	173A	medium brown	brun moyen	mittelbraun	marrón medio
45	173B	orange brown	brun-orange	orangebraun	marrón anaranjado
40	173C	light brown	brun clair	hellbraun	marrón claro
40	173D	light brown	brun clair	hellbraun	marrón claro
41	174A	medium brown	brun moyen	mittelbraun	marrón medio
40	174B	light brown	brun clair	hellbraun	marrón claro
40	174C	light brown	brun clair	hellbraun	marrón claro
40	174D	light brown	brun clair	hellbraun	marrón claro
41	175A	medium brown	brun moyen	mittelbraun	marrón medio
41	175B	medium brown	brun moyen	mittelbraun	marrón medio
41	175C	medium brown	brun moyen	mittelbraun	marrón medio
41	175D	medium brown	brun moyen	mittelbraun	marrón medio
41	176A	medium brown	brun moyen	mittelbraun	marrón medio
41	176B	medium brown	brun moyen	mittelbraun	marrón medio
41	176C	medium brown	brun moyen	mittelbraun	marrón medio
40	176D	light brown	brun clair	hellbraun	marrón claro
41	177A	medium brown	brun moyen	mittelbraun	marrón medio
41	177B	medium brown	brun moyen	mittelbraun	marrón medio
40	177C	light brown	brun clair	hellbraun	marrón claro
40	177D	light brown	brun clair	hellbraun	marrón claro
26	178A	brown purple	pourpre brun	braunpurpur	púrpura amarronado
26	178B	brown purple	pourpre brun	braunpurpur	púrpura amarronado
25	178C	brown red	rouge-brun	braunrot	rojo amarronado

UPOV Group No.	No. RHS	English	français	deutsch	español
25	178D	brown red	rouge-brun	braunrot	rojo amarronado
25	179A	brown red	rouge-brun	braunrot	rojo amarronado
25	179B	brown red	rouge-brun	braunrot	rojo amarronado
45	179C	orange brown	brun-orange	orangebraun	marrón anaranjado
15	179D	orange pink	rose orangé	orangerosa	rosa anaranjado
25	180A	brown red	rouge-brun	braunrot	rojo amarronado
25	180B	brown red	rouge-brun	braunrot	rojo amarronado
25	180C	brown red	rouge-brun	braunrot	rojo amarronado
25	180D	brown red	rouge-brun	braunrot	rojo amarronado
25	181A	brown red	rouge-brun	braunrot	rojo amarronado
25	181B	brown red	rouge-brun	braunrot	rojo amarronado
25	181C	brown red	rouge-brun	braunrot	rojo amarronado
25	181D	brown red	rouge-brun	braunrot	rojo amarronado
25	182A	brown red	rouge-brun	braunrot	rojo amarronado
25	182B	brown red	rouge-brun	braunrot	rojo amarronado
25	182C	brown red	rouge-brun	braunrot	rojo amarronado
25	182D	brown red	rouge-brun	braunrot	rojo amarronado
26	183A	brown purple	pourpre brun	braunpurpur	púrpura amarronado
26	183B	brown purple	pourpre brun	braunpurpur	púrpura amarronado
26	183C	brown purple	pourpre brun	braunpurpur	púrpura amarronado
26	183D	brown purple	pourpre brun	braunpurpur	púrpura amarronado
26	184A	brown purple	pourpre brun	braunpurpur	púrpura amarronado
26	184B	brown purple	pourpre brun	braunpurpur	púrpura amarronado
26	184C	brown purple	pourpre brun	braunpurpur	púrpura amarronado
26	184D	brown purple	pourpre brun	braunpurpur	púrpura amarronado
24	185A	dark purple red	rouge-pourpre foncé	dunkelpurpurrot	rojo púrpura oscuro
26	185B	brown purple	pourpre brun	braunpurpur	púrpura amarronado
26	185C	brown purple	pourpre brun	braunpurpur	púrpura amarronado
26	185D	brown purple	pourpre brun	braunpurpur	púrpura amarronado
26	186A	brown purple	pourpre brun	braunpurpur	púrpura amarronado
26	186B	brown purple	pourpre brun	braunpurpur	púrpura amarronado
19	186C	blue pink	rose-bleu	blaurosa	rosa azulado
19	186D	blue pink	rose-bleu	blaurosa	rosa azulado
26	187A	brown purple	pourpre brun	braunpurpur	púrpura amarronado
24	187B	dark purple red	rouge-pourpre foncé	dunkelpurpurrot	rojo púrpura oscuro
24	187C	dark purple red	rouge-pourpre foncé	dunkelpurpurrot	rojo púrpura oscuro
24	187D	dark purple red	rouge-pourpre foncé	dunkelpurpurrot	rojo púrpura oscuro
49	188A	green grey	gris-vert	grüngrau	gris verdoso
49	188B	green grey	gris-vert	grüngrau	gris verdoso
49	188C	green grey	gris-vert	grüngrau	gris verdoso
49	188D	green grey	gris-vert	grüngrau	gris verdoso
9	189A	brown green	vert-brun	braungrün	verde amarronado
49	189B	green grey	gris-vert	grüngrau	gris verdoso
49	189C	green grey	gris-vert	grüngrau	gris verdoso
49	189D	green grey	gris-vert	grüngrau	gris verdoso
49	190A	green grey	gris-vert	grüngrau	gris verdoso
49	190B	green grey	gris-vert	grüngrau	gris verdoso
49	190C	green grey	gris-vert	grüngrau	gris verdoso
49	190D	green grey	gris-vert	grüngrau	gris verdoso
9	191A	brown green	vert-brun	braungrün	verde amarronado
9	191B	brown green	vert-brun	braungrün	verde amarronado
49	191C	green grey	gris-vert	grüngrau	gris verdoso
49	191D	green grey	gris-vert	grüngrau	gris verdoso
49	192A	green grey	gris-vert	grüngrau	gris verdoso
49	192B	green grey	gris-vert	grüngrau	gris verdoso
49	192C	green grey	gris-vert	grüngrau	gris verdoso
49	192D	green grey	gris-vert	grüngrau	gris verdoso
9	193A	brown green	vert-brun	braungrün	verde amarronado
9	193B	brown green	vert-brun	braungrün	verde amarronado
49	193C	green grey	gris-vert	grüngrau	gris verdoso
49	193D	green grey	gris-vert	grüngrau	gris verdoso
9	194A	brown green	vert-brun	braungrün	verde amarronado

UPOV Group No.	No. RHS	English	français	deutsch	español
9	194B	brown green	vert-brun	braungrün	verde amarronado
9	194C	brown green	vert-brun	braungrün	verde amarronado
48	194D	grey	gris	grau	gris
48	195A	grey	gris	grau	gris
48	195B	grey	gris	grau	gris
48	195C	grey	gris	grau	gris
48	195D	grey	gris	grau	gris
48	196A	grey	gris	grau	gris
48	196B	grey	gris	grau	gris
48	196C	grey	gris	grau	gris
48	196D	grey	gris	grau	gris
48	197A	grey	gris	grau	gris
48	197B	grey	gris	grau	gris
48	197C	grey	gris	grau	gris
48	197D	grey	gris	grau	gris
48	198A	grey	gris	grau	gris
48	198B	grey	gris	grau	gris
48	198C	grey	gris	grau	gris
48	198D	grey	gris	grau	gris
46	199A	grey brown	brun-gris	graubraun	marrón grisáceo
46	199B	grey brown	brun-gris	graubraun	marrón grisáceo
46	199C	grey brown	brun-gris	graubraun	marrón grisáceo
46	199D	grey brown	brun-gris	graubraun	marrón grisáceo
42	200A	dark brown	brun foncé	dunkelbraun	marrón oscuro
42	200B	dark brown	brun foncé	dunkelbraun	marrón oscuro
42	200C	dark brown	brun foncé	dunkelbraun	marrón oscuro
41	200D	medium brown	brun moyen	mittelbraun	marrón medio
48	201A	grey	gris	grau	gris
48	201B	grey	gris	grau	gris
48	201C	grey	gris	grau	gris
48	201D	grey	gris	grau	gris
50	202A	black	noir	schwarz	negro
48	202B	grey	gris	grau	gris
48	202C	grey	gris	grau	gris
48	202D	grey	gris	grau	gris
50	203 A	black	noir	schwarz	negro
50	203 B	black	noir	schwarz	negro
50	203 C	black	noir	schwarz	negro
50	203 D	black	noir	schwarz	negro
20	N 025A	orange red	rouge orangé	orangerot	rojo anaranjado
14	N 025B	orange	orange	orange	naranja
14	N 025C	orange	orange	orange	naranja
13	N 025D	yellow orange	orangé jaune	gelborange	naranja amarillento
21	N 030A	red	rouge	rot	rojo
20	N 030B	orange red	rouge orangé	orangerot	rojo anaranjado
20	N 030C	orange red	rouge orangé	orangerot	rojo anaranjado
14	N 030D	orange	orange	orange	naranja
24	N 034A	dark purple red	rouge-pourpre foncé	dunkelpurpurrot	rojo púrpura oscuro
21	N 034B	red	rouge	rot	rojo
22	N 034C	dark pink red	rouge-rose foncé	dunkelrosarot	rojo rosado oscuro
45	N 034D	orange brown	brun-orange	orangebraun	marrón anaranjado
23	N 057A	purple red	rouge pourpre	purpurrot	rojo púrpura
23	N 057B	purple red	rouge pourpre	purpurrot	rojo púrpura
23	N 057C	purple red	rouge pourpre	purpurrot	rojo púrpura
23	N 057D	purple red	rouge pourpre	purpurrot	rojo púrpura
23	N 066A	purple red	rouge pourpre	purpurrot	rojo púrpura
23	N 066B	purple red	rouge pourpre	purpurrot	rojo púrpura
19	N 066C	blue pink	rose-bleu	blaurosa	rosa azulado
19	N 066D	blue pink	rose-bleu	blaurosa	rosa azulado
27	N 074A	purple	pourpre	purpurn	púrpura
27	N 074B	purple	pourpre	purpurn	púrpura
19	N 074C	blue pink	rose-bleu	blaurosa	rosa azulado
19	N 074D	blue pink	rose-bleu	blaurosa	rosa azulado
26	N 077A	brown purple	pourpre brun	braunpurpur	púrpura amarronado
28	N 077B	violet	violet	violett	violeta

UPOV Group No.	No. RHS	English	français	deutsch	español
29	N 077C	dark violet	violet foncé	dunkelviolett	violeta oscuro
28	N 077D	violet	violet	violett	violeta
28	N 078A	violet	violet	violett	violeta
28	N 078B	violet	violet	violett	violeta
28	N 078C	violet	violet	violett	violeta
28	N 078D	violet	violet	violett	violeta
29	N 079A	dark violet	violet foncé	dunkelviolett	violeta oscuro
29	N 079B	dark violet	violet foncé	dunkelviolett	violeta oscuro
27	N 079C	purple	pourpre	purpurn	púrpura
28	N 079D	violet	violet	violett	violeta
28	N 080A	violet	violet	violett	violeta
28	N 080B	violet	violet	violett	violeta
28	N 080C	violet	violet	violett	violeta
28	N 080D	violet	violet	violett	violeta
28	N 081A	violet	violet	violett	violeta
28	N 081B	violet	violet	violett	violeta
28	N 081C	violet	violet	violett	violeta
28	N 081D	violet	violet	violett	violeta
28	N 082A	violet	violet	violett	violeta
31	N 082B	blue violet	violet-bleu	blauviolett	violeta azulado
31	N 082C	blue violet	violet-bleu	blauviolett	violeta azulado
31	N 082D	blue violet	violet-bleu	blauviolett	violeta azulado
31	N 087A	blue violet	violet-bleu	blauviolett	violeta azulado
31	N 087B	blue violet	violet-bleu	blauviolett	violeta azulado
31	N 087C	blue violet	violet-bleu	blauviolett	violeta azulado
31	N 087D	blue violet	violet-bleu	blauviolett	violeta azulado
31	N 088A	blue violet	violet-bleu	blauviolett	violeta azulado
31	N 088B	blue violet	violet-bleu	blauviolett	violeta azulado
31	N 088C	blue violet	violet-bleu	blauviolett	violeta azulado
31	N 088D	blue violet	violet-bleu	blauviolett	violeta azulado
33	N 089A	violet blue	bleu-violet	violettblau	azul violáceo
33	N 089B	violet blue	bleu-violet	violettblau	azul violáceo
31	N 089C	blue violet	violet-bleu	blauviolett	violeta azulado
31	N 089D	blue violet	violet-bleu	blauviolett	violeta azulado
29	N 092A	dark violet	violet foncé	dunkelviolett	violeta oscuro
33	N 092B	violet blue	bleu-violet	violettblau	azul violáceo
33	N 092C	violet blue	bleu-violet	violettblau	azul violáceo
29	N 092D	dark violet	violet foncé	dunkelviolett	violeta oscuro
35	N 109A	medium blue	bleu moyen	mittelblau	azul medio
35	N 109B	medium blue	bleu moyen	mittelblau	azul medio
35	N 109C	medium blue	bleu moyen	mittelblau	azul medio
34	N 109D	light blue	bleu clair	hellblau	azul claro
4	N 134A	dark green	vert foncé	dunkelgrün	verde oscuro
4	N 134B	dark green	vert foncé	dunekgrün	verde oscuro
3	N 134C	medium green	vert moyen	mittel grün	verde medio
3	N 134D	medium green	vert moyen	mittel grün	verde medio
9	N 137A	brown green	vert-brun	braungrün	verde amarronado
9	N 137B	brown green	vert-brun	braungrün	verde amarronado
9	N 137C	brown green	vert-brun	braungrün	verde amarronado
9	N 137D	brown green	vert-brun	braungrün	verde amarronado
4	N 138A	dark green	vert foncé	dunkelgrün	verde oscuro
9	N 138B	brown green	vert-brun	braungrün	verde amarronado
9	N 138C	brown green	vert-brun	braungrün	verde amarronado
9	N 138D	brown green	vert-brun	braungrün	verde amarronado
2	N 144A	light green	vert clair	hellgrün	verde claro
2	N 144B	light green	vert clair	hellgrün	verde claro
2	N 144C	light green	vert clair	hellgrün	verde claro
2	N 144D	light green	vert clair	hellgrün	verde claro
1	N 155A	white	blanc	weiss	blanco
1	N 155B	white	blanc	weiss	blanco
1	N 155C	white	blanc	weiss	blanco
1	N 155D	white	blanc	weiss	blanco
45	N 163A	orange brown	brun-orange	orangebraun	marrón anaranjado
45	N 163B	orange brown	brun-orange	orangebraun	marrón anaranjado
44	N 163C	yellow brown	brun-jaune	gelbbraun	marrón amarillento
44	N 163D	yellow brown	brun-jaune	gelbbraun	marrón amarillento

UPOV Group No.	No. RHS	English	français	deutsch	español
44	N 167A	yellow brown	brun-jaune	gelbbraun	marrón amarillento
44	N 167B	yellow brown	brun-jaune	gelbbraun	marrón amarillento
44	N 167C	yellow brown	brun-jaune	gelbbraun	marrón amarillento
44	N 167D	yellow brown	brun-jaune	gelbbraun	marrón amarillento
40	N 170A	light brown	brun clair	hellbraun	marrón claro
40	N 170B	light brown	brun clair	hellbraun	marrón claro
40	N 170C	light brown	brun clair	hellbraun	marrón claro
45	N 170D	orange brown	brun-orange	orangebraun	marrón anaranjado
45	N 172A	orange brown	brun-orange	orangebraun	marrón anaranjado
45	N 172B	orange brown	brun-orange	orangebraun	marrón anaranjado
45	N 172C	orange brown	brun-orange	orangebraun	marrón anaranjado
44	N 172D	yellow brown	brun-jaune	gelbbraun	marrón amarillento
50	N 186A	black	noir	schwarz	negro
50	N 186B	black	noir	schwarz	negro
26	N 186C	brown purple	pourpre brun	braunpurpur	púrpura amarronado
26	N 186D	brown purple	pourpre brun	braunpurpur	púrpura amarronado
50	N 187A	black	noir	schwarz	negro
48	N 187B	grey	gris	grau	gris
48	N 187C	grey	gris	grau	gris
48	N 187D	grey	gris	grau	gris
49	N 189A	green grey	gris-vert	grüngrau	gris verdoso
49	N 189B	green grey	gris-vert	grüngrau	gris verdoso
49	N 189C	green grey	gris-vert	grüngrau	gris verdoso
49	N 189D	green grey	gris-vert	grüngrau	gris verdoso
46	N 199A	grey brown	brun-gris	graubraun	marrón grisáceo
42	N 199B	dark brown	brun foncé	dunkelbraun	marrón oscuro
46	N 199C	grey brown	brun-gris	graubraun	marrón grisáceo
46	N 199D	grey brown	brun-gris	graubraun	marrón grisáceo
42	N 200A	dark brown	brun foncé	dunkelbraun	marrón oscuro
48	N 200B	grey	gris	grau	gris
48	N 200C	grey	gris	grau	gris
48	N 200D	grey	gris	grau	gris
1	NN 155A	white	blanc	weiss	blanco
1	NN 155B	white	blanc	weiss	blanco
1	NN 155C	white	blanc	weiss	blanco
1	NN 155D	white	blanc	weiss	blanco

[Appendix II follows]

Appendix II to Annex:

RHS Colors contained in each UPOV Color Group

UPOV COLOR GROUPS ACCORDING TO RHS COLOUR CHART REFERENCE
(1986, 1995, 2001, AND 2007 EDITIONS)

UPOV Group No.	No. RHS	English	français	deutsch	español
1	155A	white	blanc	weiss	blanco
1	155B	white	blanc	weiss	blanco
1	155C	white	blanc	weiss	blanco
1	155D	white	blanc	weiss	blanco
1	N 155A	white	blanc	weiss	blanco
1	N 155B	white	blanc	weiss	blanco
1	N 155C	white	blanc	weiss	blanco
1	N 155D	white	blanc	weiss	blanco
1	NN 155A	white	blanc	weiss	blanco
1	NN 155B	white	blanc	weiss	blanco
1	NN 155C	white	blanc	weiss	blanco
1	NN 155D	white	blanc	weiss	blanco
1	157D	white	blanc	weiss	blanco
2	134D	light green	vert clair	hellgrün	verde claro
2	135D	light green	vert clair	hellgrün	verde claro
2	136D	light green	vert clair	hellgrün	verde claro
2	138C	light green	vert clair	hellgrün	verde claro
2	138D	light green	vert clair	hellgrün	verde claro
2	139D	light green	vert clair	hellgrün	verde claro
2	140C	light green	vert clair	hellgrün	verde claro
2	140D	light green	vert clair	hellgrün	verde claro
2	141D	light green	vert clair	hellgrün	verde claro
2	142B	light green	vert clair	hellgrün	verde claro
2	142C	light green	vert clair	hellgrün	verde claro
2	142D	light green	vert clair	hellgrün	verde claro
2	143D	light green	vert clair	hellgrün	verde claro
2	144B	light green	vert clair	hellgrün	verde claro
2	144C	light green	vert clair	hellgrün	verde claro
2	144D	light green	vert clair	hellgrün	verde claro
2	N 144A	light green	vert clair	hellgrün	verde claro
2	N 144B	light green	vert clair	hellgrün	verde claro
2	N 144C	light green	vert clair	hellgrün	verde claro
2	N 144D	light green	vert clair	hellgrün	verde claro
2	145A	light green	vert clair	hellgrün	verde claro
2	145B	light green	vert clair	hellgrün	verde claro
2	145C	light green	vert clair	hellgrün	verde claro
2	145D	light green	vert clair	hellgrün	verde claro
2	149B	light green	vert clair	hellgrün	verde claro
2	149C	light green	vert clair	hellgrün	verde claro
2	149D	light green	vert clair	hellgrün	verde claro
3	124A	medium green	vert moyen	mittel grün	verde medio
3	125A	medium green	vert moyen	mittel grün	verdemedio
3	125B	medium green	vert moyen	mittel grün	verde medio
3	127B	medium green	vert moyen	mittel grün	verde medio
3	127C	medium green	vert moyen	mittel grün	verde medio
3	128A	medium green	vert moyen	mittel grün	verde medio
3	129A	medium green	vert moyen	mittel grün	verde medio
3	130A	medium green	vert moyen	mittel grün	verde medio
3	130B	medium green	vert moyen	mittel grün	verde medio
3	131D	medium green	vert moyen	mittel grün	verde medio
3	132C	medium green	vert moyen	mittel grün	verde medio
3	132D	medium green	vert moyen	mittel grün	verde medio
3	134A	medium green	vert moyen	mittel grün	verde medio
3	134B	medium green	vert moyen	mittel grün	verde medio
3	134C	medium green	vert moyen	mittel grün	verde medio
3	N 134C	medium green	vert moyen	mittel grün	verde medio
3	N 134D	medium green	vert moyen	mittel grün	verde medio
3	135C	medium green	vert moyen	mittel grün	verde medio

UPOV Group No.	No. RHS	English	français	deutsch	español
3	140A	medium green	vert moyen	mittel grün	verde medio
3	140B	medium green	vert moyen	mittel grün	verde medio
3	142A	medium green	vert moyen	mittel grün	verde medio
4	131A	dark green	vert foncé	dunkelgrün	verde oscuro
4	131B	dark green	vert foncé	dunkelgrün	verde oscuro
4	131C	dark green	vert foncé	dunkelgrün	verde oscuro
4	132A	dark green	vert foncé	dunkelgrün	verde oscuro
4	132B	dark green	vert foncé	dunkelgrün	verde oscuro
4	133A	dark green	vert foncé	dunkelgrün	verde oscuro
4	N 134A	dark green	vert foncé	dunkelgrün	verde oscuro
4	N 134B	dark green	vert foncé	dunekgrün	verde oscuro
4	135A	dark green	vert foncé	dunkelgrün	verde oscuro
4	135B	dark green	vert foncé	dunkelgrün	verde oscuro
4	136A	dark green	vert foncé	dunkelgrün	verde oscuro
4	136B	dark green	vert foncé	dunkelgrün	verde oscuro
4	N 138A	dark green	vert foncé	dunkelgrün	verde oscuro
4	139A	dark green	vert foncé	dunkelgrün	verde oscuro
4	141A	dark green	vert foncé	dunkelgrün	verde oscuro
4	141B	dark green	vert foncé	dunkelgrün	verde oscuro
4	141C	dark green	vert foncé	dunkelgrün	verde oscuro
4	143A	dark green	vert foncé	dunkelgrün	verde oscuro
4	143B	dark green	vert foncé	dunkelgrün	verde oscuro
4	143C	dark green	vert foncé	dunkelgrün	verde oscuro
4	144A	dark green	vert foncé	dunkelgrün	verde oscuro
5	001B	yellow green	vert-jaune	gelbgrün	verde amarillento
5	001C	yellow green	vert-jaune	gelbgrün	verde amarillento
5	001D	yellow green	vert-jaune	gelbgrün	verde amarillento
5	002C	yellow green	vert-jaune	gelbgrün	verde amarillento
5	002D	yellow green	vert-jaune	gelbgrün	verde amarillento
5	003D	yellow green	vert-jaune	gelbgrün	verde amarillento
5	004C	yellow green	vert-jaune	gelbgrün	verde amarillento
5	149A	yellow green	vert-jaune	gelbgrün	verde amarillento
5	150A	yellow green	vert-jaune	gelbgrün	verde amarillento
5	150B	yellow green	vert-jaune	gelbgrün	verde amarillento
5	150C	yellow green	vert-jaune	gelbgrün	verde amarillento
5	150D	yellow green	vert-jaune	gelbgrün	verde amarillento
5	154A	yellow green	vert-jaune	gelbgrün	verde amarillento
5	154B	yellow green	vert-jaune	gelbgrün	verde amarillento
5	154C	yellow green	vert-jaune	gelbgrün	verde amarillento
5	154D	yellow green	vert-jaune	gelbgrün	verde amarillento
6	126A	grey green	vert-gris	graugrün	verde grisáceo
6	126B	grey green	vert-gris	graugrün	verde grisáceo
6	126C	grey green	vert-gris	graugrün	verde grisáceo
6	127A	grey green	vert-gris	graugrün	verde grisáceo
6	133B	grey green	vert-gris	graugrün	verde grisáceo
6	133C	grey green	vert-gris	graugrün	verde grisáceo
6	133D	grey green	vert-gris	graugrün	verde grisáceo
7	120A	light blue green	vert-bleu clair	hellblaugrün	verde azulado claro
7	120B	light blue green	vert-bleu clair	hellblaugrün	verde azulado claro
7	120C	light blue green	vert-bleu clair	hellblaugrün	verde azulado claro
7	121B	light blue green	vert-bleu clair	hellblaugrün	verde azulado claro
7	123A	light blue green	vert-bleu clair	hellblaugrün	verde azulado claro
7	123B	light blue green	vert-bleu clair	hellblaugrün	verde azulado claro
7	123C	light blue green	vert-bleu clair	hellblaugrün	verde azulado claro
7	123D	light blue green	vert-bleu clair	hellblaugrün	verde azulado claro
7	124C	light blue green	vert-bleu clair	hellblaugrün	verde azulado claro
7	124D	light blue green	vert-bleu clair	hellblaugrün	verde azulado claro
8	124B	blue green	vert-bleu	blaugrün	verde azulado
8	125C	blue green	vert-bleu	blaugrün	verde azulado
8	125D	blue green	vert-bleu	blaugrün	verde azulado
8	126D	blue green	vert-bleu	blaugrün	verde azulado
8	127D	blue green	vert-bleu	blaugrün	verde azulado
8	128B	blue green	vert-bleu	blaugrün	verde azulado
8	128C	blue green	vert-bleu	blaugrün	verde azulado
8	128D	blue green	vert-bleu	blaugrün	verde azulado

UPOV Group No.	No. RHS	English	français	deutsch	español
8	129B	blue green	vert-bleu	blaugrün	verde azulado
8	129C	blue green	vert-bleu	blaugrün	verde azulado
8	129D	blue green	vert-bleu	blaugrün	verde azulado
8	130C	blue green	vert-bleu	blaugrün	verde azulado
8	130D	blue green	vert-bleu	blaugrün	verde azulado
9	136C	brown green	vert-brun	braungrün	verde amarronado
9	137A	brown green	vert-brun	braungrün	verde amarronado
9	137B	brown green	vert-brun	braungrün	verde amarronado
9	137C	brown green	vert-brun	braungrün	verde amarronado
9	137D	brown green	vert-brun	braungrün	verde amarronado
9	N 137A	brown green	vert-brun	braungrün	verde amarronado
9	N 137B	brown green	vert-brun	braungrün	verde amarronado
9	N 137C	brown green	vert-brun	braungrün	verde amarronado
9	N 137D	brown green	vert-brun	braungrün	verde amarronado
9	138A	brown green	vert-brun	braungrün	verde amarronado
9	138B	brown green	vert-brun	braungrün	verde amarronado
9	N 138B	brown green	vert-brun	braungrün	verde amarronado
9	N 138C	brown green	vert-brun	braungrün	verde amarronado
9	N 138D	brown green	vert-brun	braungrün	verde amarronado
9	139B	brown green	vert-brun	braungrün	verde amarronado
9	139C	brown green	vert-brun	braungrün	verde amarronado
9	146A	brown green	vert-brun	braungrün	verde amarronado
9	146B	brown green	vert-brun	braungrün	verde amarronado
9	146C	brown green	vert-brun	braungrün	verde amarronado
9	146D	brown green	vert-brun	braungrün	verde amarronado
9	147A	brown green	vert-brun	braungrün	verde amarronado
9	147B	brown green	vert-brun	braungrün	verde amarronado
9	147C	brown green	vert-brun	braungrün	verde amarronado
9	147D	brown green	vert-brun	braungrün	verde amarronado
9	148A	brown green	vert-brun	braungrün	verde amarronado
9	148B	brown green	vert-brun	braungrün	verde amarronado
9	148C	brown green	vert-brun	braungrün	verde amarronado
9	148D	brown green	vert-brun	braungrün	verde amarronado
9	189A	brown green	vert-brun	braungrün	verde amarronado
9	191A	brown green	vert-brun	braungrün	verde amarronado
9	191B	brown green	vert-brun	braungrün	verde amarronado
9	193A	brown green	vert-brun	braungrün	verde amarronado
9	193B	brown green	vert-brun	braungrün	verde amarronado
9	194A	brown green	vert-brun	braungrün	verde amarronado
9	194B	brown green	vert-brun	braungrün	verde amarronado
9	194C	brown green	vert-brun	braungrün	verde amarronado
10	004D	light yellow	jaune clair	hellgelb	amarillo claro
10	005D	light yellow	jaune clair	hellgelb	amarillo claro
10	006D	light yellow	jaune clair	hellgelb	amarillo claro
10	008B	light yellow	jaune clair	hellgelb	amarillo claro
10	008C	light yellow	jaune clair	hellgelb	amarillo claro
10	008D	light yellow	jaune clair	hellgelb	amarillo claro
10	009C	light yellow	jaune clair	hellgelb	amarillo claro
10	009D	light yellow	jaune clair	hellgelb	amarillo claro
10	010A	light yellow	jaune clair	hellgelb	amarillo claro
10	010B	light yellow	jaune clair	hellgelb	amarillo claro
10	010C	light yellow	jaune clair	hellgelb	amarillo claro
10	010D	light yellow	jaune clair	hellgelb	amarillo claro
10	011B	light yellow	jaune clair	hellgelb	amarillo claro
10	011C	light yellow	jaune clair	hellgelb	amarillo claro
10	012C	light yellow	jaune clair	hellgelb	amarillo claro
10	012D	light yellow	jaune clair	hellgelb	amarillo claro
10	013D	light yellow	jaune clair	hellgelb	amarillo claro
10	014D	light yellow	jaune clair	hellgelb	amarillo claro
10	015D	light yellow	jaune clair	hellgelb	amarillo claro
10	016D	light yellow	jaune clair	hellgelb	amarillo claro
11	001A	yellow	jaune	gelb	amarillo
11	002A	yellow	jaune	gelb	amarillo
11	002B	yellow	jaune	gelb	amarillo
11	003A	yellow	jaune	gelb	amarillo

UPOV Group No.	No. RHS	English	français	deutsch	español
11	003B	yellow	jaune	gelb	amarillo
11	003C	yellow	jaune	gelb	amarillo
11	004A	yellow	jaune	gelb	amarillo
11	004B	yellow	jaune	gelb	amarillo
11	005A	yellow	jaune	gelb	amarillo
11	005B	yellow	jaune	gelb	amarillo
11	005C	yellow	jaune	gelb	amarillo
11	006A	yellow	jaune	gelb	amarillo
11	006B	yellow	jaune	gelb	amarillo
11	006C	yellow	jaune	gelb	amarillo
11	007A	yellow	jaune	gelb	amarillo
11	007B	yellow	jaune	gelb	amarillo
11	007C	yellow	jaune	gelb	amarillo
11	007D	yellow	jaune	gelb	amarillo
11	008A	yellow	jaune	gelb	amarillo
11	009A	yellow	jaune	gelb	amarillo
11	009B	yellow	jaune	gelb	amarillo
11	012A	yellow	jaune	gelb	amarillo
11	012B	yellow	jaune	gelb	amarillo
12	011D	light yellow orange	orangé jaune clair	hellgelborange	naranja amarillento claro
12	018B	light yellow orange	orangé jaune clair	hellgelborange	naranja amarillento claro
12	018C	light yellow orange	orangé jaune clair	hellgelborange	naranja amarillento claro
12	018D	light yellow orange	orangé jaune clair	hellgelborange	naranja amarillento claro
12	019B	light yellow orange	orangé jaune clair	hellgelborange	naranja amarillento claro
12	019C	light yellow orange	orangé jaune clair	hellgelborange	naranja amarillento claro
12	019D	light yellow orange	orangé jaune clair	hellgelborange	naranja amarillento claro
12	020C	light yellow orange	orangé jaune clair	hellgelborange	naranja amarillento claro
12	020D	light yellow orange	orangé jaune clair	hellgelborange	naranja amarillento claro
12	021D	light yellow orange	orangé jaune clair	hellgelborange	naranja amarillento claro
12	022B	light yellow orange	orangé jaune clair	hellgelborange	naranja amarillento claro
12	022C	light yellow orange	orangé jaune clair	hellgelborange	naranja amarillento claro
12	022D	light yellow orange	orangé jaune clair	hellgelborange	naranja amarillento claro
12	023C	light yellow orange	orangé jaune clair	hellgelborange	naranja amarillento claro
12	023D	light yellow orange	orangé jaune clair	hellgelborange	naranja amarillento claro
13	011A	yellow orange	orangé jaune	gelborange	naranja amarillento
13	013A	yellow orange	orangé jaune	gelborange	naranja amarillento
13	013B	yellow orange	orangé jaune	gelborange	naranja amarillento
13	013C	yellow orange	orangé jaune	gelborange	naranja amarillento
13	014A	yellow orange	orangé jaune	gelborange	naranja amarillento
13	014B	yellow orange	orangé jaune	gelborange	naranja amarillento
13	014C	yellow orange	orangé jaune	gelborange	naranja amarillento
13	015A	yellow orange	orangé jaune	gelborange	naranja amarillento
13	015B	yellow orange	orangé jaune	gelborange	naranja amarillento
13	015C	yellow orange	orangé jaune	gelborange	naranja amarillento
13	016A	yellow orange	orangé jaune	gelborange	naranja amarillento
13	016B	yellow orange	orangé jaune	gelborange	naranja amarillento
13	016C	yellow orange	orangé jaune	gelborange	naranja amarillento
13	017A	yellow orange	orangé jaune	gelborange	naranja amarillento
13	017B	yellow orange	orangé jaune	gelborange	naranja amarillento
13	017C	yellow orange	orangé jaune	gelborange	naranja amarillento
13	017D	yellow orange	orangé jaune	gelborange	naranja amarillento
13	018A	yellow orange	orangé jaune	gelborange	naranja amarillento
13	019A	yellow orange	orangé jaune	gelborange	naranja amarillento
13	020A	yellow orange	orangé jaune	gelborange	naranja amarillento
13	020B	yellow orange	orangé jaune	gelborange	naranja amarillento
13	021A	yellow orange	orangé jaune	gelborange	naranja amarillento
13	021B	yellow orange	orangé jaune	gelborange	naranja amarillento
13	021C	yellow orange	orangé jaune	gelborange	naranja amarillento
13	022A	yellow orange	orangé jaune	gelborange	naranja amarillento
13	023A	yellow orange	orangé jaune	gelborange	naranja amarillento
13	023B	yellow orange	orangé jaune	gelborange	naranja amarillento
13	N 025D	yellow orange	orangé jaune	gelborange	naranja amarillento
14	024A	orange	orange	orange	naranja
14	024B	orange	orange	orange	naranja
14	024C	orange	orange	orange	naranja

UPOV Group No.	No. RHS	English	français	deutsch	español
14	024D	orange	orange	orange	naranja
14	025A	orange	orange	orange	naranja
14	025B	orange	orange	orange	naranja
14	025C	orange	orange	orange	naranja
14	025D	orange	orange	orange	naranja
14	N 025B	orange	orange	orange	naranja
14	N 025C	orange	orange	orange	naranja
14	026A	orange	orange	orange	naranja
14	026B	orange	orange	orange	naranja
14	026C	orange	orange	orange	naranja
14	026D	orange	orange	orange	naranja
14	028B	orange	orange	orange	naranja
14	028C	orange	orange	orange	naranja
14	028D	orange	orange	orange	naranja
14	029A	orange	orange	orange	naranja
14	029B	orange	orange	orange	naranja
14	030D	orange	orange	orange	naranja
14	N 030D	orange	orange	orange	naranja
15	027A	orange pink	rose orangé	orangerosa	rosa anaranjado
15	027B	orange pink	rose orangé	orangerosa	rosa anaranjado
15	027C	orange pink	rose orangé	orangerosa	rosa anaranjado
15	027D	orange pink	rose orangé	orangerosa	rosa anaranjado
15	029C	orange pink	rose orangé	orangerosa	rosa anaranjado
15	029D	orange pink	rose orangé	orangerosa	rosa anaranjado
15	031D	orange pink	rose orangé	orangerosa	rosa anaranjado
15	032D	orange pink	rose orangé	orangerosa	rosa anaranjado
15	033D	orange pink	rose orangé	orangerosa	rosa anaranjado
15	035C	orange pink	rose orangé	orangerosa	rosa anaranjado
15	037A	orange pink	rose orangé	orangerosa	rosa anaranjado
15	037B	orange pink	rose orangé	orangerosa	rosa anaranjado
15	179D	orange pink	rose orangé	orangerosa	rosa anaranjado
16	035D	light red pink	rose-rouge clair	hellrotrosa	rosa rojizo claro
16	036A	light red pink	rose-rouge clair	hellrotrosa	rosa rojizo claro
16	036B	light red pink	rose-rouge clair	hellrotrosa	rosa rojizo claro
16	036C	light red pink	rose-rouge clair	hellrotrosa	rosa rojizo claro
16	036D	light red pink	rose-rouge clair	hellrotrosa	rosa rojizo claro
16	037C	light red pink	rose-rouge clair	hellrotrosa	rosa rojizo claro
16	037D	light red pink	rose-rouge clair	hellrotrosa	rosa rojizo claro
16	038A	light red pink	rose-rouge clair	hellrotrosa	rosa rojizo claro
16	038B	light red pink	rose-rouge clair	hellrotrosa	rosa rojizo claro
16	038C	light red pink	rose-rouge clair	hellrotrosa	rosa rojizo claro
16	038D	light red pink	rose-rouge clair	hellrotrosa	rosa rojizo claro
16	039C	light red pink	rose-rouge clair	hellrotrosa	rosa rojizo claro
16	039D	light red pink	rose-rouge clair	hellrotrosa	rosa rojizo claro
16	041D	light red pink	rose-rouge clair	hellrotrosa	rosa rojizo claro
16	049B	light red pink	rose-rouge clair	hellrotrosa	rosa rojizo claro
16	049C	light red pink	rose-rouge clair	hellrotrosa	rosa rojizo claro
16	049D	light red pink	rose-rouge clair	hellrotrosa	rosa rojizo claro
16	050D	light red pink	rose-rouge clair	hellrotrosa	rosa rojizo claro
17	043C	red pink	rose-rouge	rotrosa	rosa rojizo
17	043D	red pink	rose-rouge	rotrosa	rosa rojizo
17	047D	red pink	rose-rouge	rotrosa	rosa rojizo
17	048B	red pink	rose-rouge	rotrosa	rosa rojizo
17	048C	red pink	rose-rouge	rotrosa	rosa rojizo
17	048D	red pink	rose-rouge	rotrosa	rosa rojizo
17	049A	red pink	rose-rouge	rotrosa	rosa rojizo
17	050C	red pink	rose-rouge	rotrosa	rosa rojizo
17	051C	red pink	rose-rouge	rotrosa	rosa rojizo
17	051D	red pink	rose-rouge	rotrosa	rosa rojizo
17	052B	red pink	rose-rouge	rotrosa	rosa rojizo
17	052C	red pink	rose-rouge	rotrosa	rosa rojizo
17	052D	red pink	rose-rouge	rotrosa	rosa rojizo
18	054D	light blue pink	rose-bleu clair	hellblaurosa	rosa azulado claro
18	055C	light blue pink	rose-bleu clair	hellblaurosa	rosa azulado claro
18	055D	light blue pink	rose-bleu clair	hellblaurosa	rosa azulado claro

UPOV Group No.	No. RHS	English	français	deutsch	español
18	056A	light blue pink	rose-bleu clair	hellblaurosa	rosa azulado claro
18	056B	light blue pink	rose-bleu clair	hellblaurosa	rosa azulado claro
18	056C	light blue pink	rose-bleu clair	hellblaurosa	rosa azulado claro
18	056D	light blue pink	rose-bleu clair	hellblaurosa	rosa azulado claro
18	062B	light blue pink	rose-bleu clair	hellblaurosa	rosa azulado claro
18	062C	light blue pink	rose-bleu clair	hellblaurosa	rosa azulado claro
18	062D	light blue pink	rose-bleu clair	hellblaurosa	rosa azulado claro
18	063D	light blue pink	rose-bleu clair	hellblaurosa	rosa azulado claro
18	065B	light blue pink	rose-bleu clair	hellblaurosa	rosa azulado claro
18	065C	light blue pink	rose-bleu clair	hellblaurosa	rosa azulado claro
18	065D	light blue pink	rose-bleu clair	hellblaurosa	rosa azulado claro
18	068D	light blue pink	rose-bleu clair	hellblaurosa	rosa azulado claro
18	069A	light blue pink	rose-bleu clair	hellblaurosa	rosa azulado claro
18	069B	light blue pink	rose-bleu clair	hellblaurosa	rosa azulado claro
18	070D	light blue pink	rose-bleu clair	hellblaurosa	rosa azulado claro
18	073C	light blue pink	rose-bleu clair	hellblaurosa	rosa azulado claro
18	073D	light blue pink	rose-bleu clair	hellblaurosa	rosa azulado claro
18	075D	light blue pink	rose-bleu clair	hellblaurosa	rosa azulado claro
19	062A	blue pink	rose-bleu	blaurosa	rosa azulado
19	063B	blue pink	rose-bleu	blaurosa	rosa azulado
19	063C	blue pink	rose-bleu	blaurosa	rosa azulado
19	064C	blue pink	rose-bleu	blaurosa	rosa azulado
19	064D	blue pink	rose-bleu	blaurosa	rosa azulado
19	065A	blue pink	rose-bleu	blaurosa	rosa azulado
19	066C	blue pink	rose-bleu	blaurosa	rosa azulado
19	066D	blue pink	rose-bleu	blaurosa	rosa azulado
19	N 066C	blue pink	rose-bleu	blaurosa	rosa azulado
19	N 066D	blue pink	rose-bleu	blaurosa	rosa azulado
19	067B	blue pink	rose-bleu	blaurosa	rosa azulado
19	067C	blue pink	rose-bleu	blaurosa	rosa azulado
19	067D	blue pink	rose-bleu	blaurosa	rosa azulado
19	068A	blue pink	rose-bleu	blaurosa	rosa azulado
19	068B	blue pink	rose-bleu	blaurosa	rosa azulado
19	068C	blue pink	rose-bleu	blaurosa	rosa azulado
19	070C	blue pink	rose-bleu	blaurosa	rosa azulado
19	071D	blue pink	rose-bleu	blaurosa	rosa azulado
19	072C	blue pink	rose-bleu	blaurosa	rosa azulado
19	072D	blue pink	rose-bleu	blaurosa	rosa azulado
19	073A	blue pink	rose-bleu	blaurosa	rosa azulado
19	073B	blue pink	rose-bleu	blaurosa	rosa azulado
19	074D	blue pink	rose-bleu	blaurosa	rosa azulado
19	N 074C	blue pink	rose-bleu	blaurosa	rosa azulado
19	N 074D	blue pink	rose-bleu	blaurosa	rosa azulado
19	186C	blue pink	rose-bleu	blaurosa	rosa azulado
19	186D	blue pink	rose-bleu	blaurosa	rosa azulado
20	N 025A	orange red	rouge orangé	orangerot	rojo anaranjado
20	028A	orange red	rouge orangé	orangerot	rojo anaranjado
20	030A	orange red	rouge orangé	orangerot	rojo anaranjado
20	030B	orange red	rouge orangé	orangerot	rojo anaranjado
20	030C	orange red	rouge orangé	orangerot	rojo anaranjado
20	N 030B	orange red	rouge orangé	orangerot	rojo anaranjado
20	N 030C	orange red	rouge orangé	orangerot	rojo anaranjado
20	031A	orange red	rouge orangé	orangerot	rojo anaranjado
20	032A	orange red	rouge orangé	orangerot	rojo anaranjado
20	032B	orange red	rouge orangé	orangerot	rojo anaranjado
20	033B	orange red	rouge orangé	orangerot	rojo anaranjado
20	035B	orange red	rouge orangé	orangerot	rojo anaranjado
20	039A	orange red	rouge orangé	orangerot	rojo anaranjado
20	039B	orange red	rouge orangé	orangerot	rojo anaranjado
20	040C	orange red	rouge orangé	orangerot	rojo anaranjado
20	040D	orange red	rouge orangé	orangerot	rojo anaranjado
20	041B	orange red	rouge orangé	orangerot	rojo anaranjado
20	041C	orange red	rouge orangé	orangerot	rojo anaranjado
20	042D	orange red	rouge orangé	orangerot	rojo anaranjado
20	044D	orange red	rouge orangé	orangerot	rojo anaranjado

UPOV Group No.	No. RHS	English	français	deutsch	español
21	N 030A	red	rouge	rot	rojo
21	033A	red	rouge	rot	rojo
21	034A	red	rouge	rot	rojo
21	N 034B	red	rouge	rot	rojo
21	040A	red	rouge	rot	rojo
21	040B	red	rouge	rot	rojo
21	041A	red	rouge	rot	rojo
21	042A	red	rouge	rot	rojo
21	042B	red	rouge	rot	rojo
21	042C	red	rouge	rot	rojo
21	043A	red	rouge	rot	rojo
21	043B	red	rouge	rot	rojo
21	044A	red	rouge	rot	rojo
21	044B	red	rouge	rot	rojo
21	044C	red	rouge	rot	rojo
21	045A	red	rouge	rot	rojo
21	045B	red	rouge	rot	rojo
21	045C	red	rouge	rot	rojo
21	046B	red	rouge	rot	rojo
21	046C	red	rouge	rot	rojo
21	047A	red	rouge	rot	rojo
21	047B	red	rouge	rot	rojo
21	050A	red	rouge	rot	rojo
22	N 034C	dark pink red	rouge-rose foncé	dunkelrosarot	rojo rosado oscuro
22	045D	dark pink red	rouge-rose foncé	dunkelrosarot	rojo rosado oscuro
22	046D	dark pink red	rouge-rose foncé	dunkelrosarot	rojo rosado oscuro
22	047C	dark pink red	rouge-rose foncé	dunkelrosarot	rojo rosado oscuro
22	048A	dark pink red	rouge-rose foncé	dunkelrosarot	rojo rosado oscuro
22	050B	dark pink red	rouge-rose foncé	dunkelrosarot	rojo rosado oscuro
22	051A	dark pink red	rouge-rose foncé	dunkelrosarot	rojo rosado oscuro
22	051B	dark pink red	rouge-rose foncé	dunkelrosarot	rojo rosado oscuro
22	052A	dark pink red	rouge-rose foncé	dunkelrosarot	rojo rosado oscuro
22	053C	dark pink red	rouge-rose foncé	dunkelrosarot	rojo rosado oscuro
22	053D	dark pink red	rouge-rose foncé	dunkelrosarot	rojo rosado oscuro
23	054A	purple red	rouge pourpre	purpurrot	rojo púrpura
23	054B	purple red	rouge pourpre	purpurrot	rojo púrpura
23	054C	purple red	rouge pourpre	purpurrot	rojo púrpura
23	055A	purple red	rouge pourpre	purpurrot	rojo púrpura
23	055B	purple red	rouge pourpre	purpurrot	rojo púrpura
23	057A	purple red	rouge pourpre	purpurrot	rojo púrpura
23	057B	purple red	rouge pourpre	purpurrot	rojo púrpura
23	057C	purple red	rouge pourpre	purpurrot	rojo púrpura
23	057D	purple red	rouge pourpre	purpurrot	rojo púrpura
23	N 057A	purple red	rouge pourpre	purpurrot	rojo púrpura
23	N 057B	purple red	rouge pourpre	purpurrot	rojo púrpura
23	N 057C	purple red	rouge pourpre	purpurrot	rojo púrpura
23	N 057D	purple red	rouge pourpre	purpurrot	rojo púrpura
23	058B	purple red	rouge pourpre	purpurrot	rojo púrpura
23	058C	purple red	rouge pourpre	purpurrot	rojo púrpura
23	058D	purple red	rouge pourpre	purpurrot	rojo púrpura
23	059D	purple red	rouge pourpre	purpurrot	rojo púrpura
23	060D	purple red	rouge pourpre	purpurrot	rojo púrpura
23	061C	purple red	rouge pourpre	purpurrot	rojo púrpura
23	061D	purple red	rouge pourpre	purpurrot	rojo púrpura
23	063A	purple red	rouge pourpre	purpurrot	rojo púrpura
23	066A	purple red	rouge pourpre	purpurrot	rojo púrpura
23	066B	purple red	rouge pourpre	purpurrot	rojo púrpura
23	N 066A	purple red	rouge pourpre	purpurrot	rojo púrpura
23	N 066B	purple red	rouge pourpre	purpurrot	rojo púrpura
24	N 034A	dark purple red	rouge-pourpre foncé	dunkelpurpurrot	rojo púrpura oscuro
24	046A	dark purple red	rouge-pourpre foncé	dunkelpurpurrot	rojo púrpura oscuro
24	053A	dark purple red	rouge-pourpre foncé	dunkelpurpurrot	rojo púrpura oscuro
24	053B	dark purple red	rouge-pourpre foncé	dunkelpurpurrot	rojo púrpura oscuro
24	059A	dark purple red	rouge-pourpre foncé	dunkelpurpurrot	rojo púrpura oscuro
24	059B	dark purple red	rouge-pourpre foncé	dunkelpurpurrot	rojo púrpura oscuro

UPOV Group No.	No. RHS	English	français	deutsch	español
24	060A	dark purple red	rouge-pourpre foncé	dunkelpurpurrot	rojo púrpura oscuro
24	060B	dark purple red	rouge-pourpre foncé	dunkelpurpurrot	rojo púrpura oscuro
24	185A	dark purple red	rouge-pourpre foncé	dunkelpurpurrot	rojo púrpura oscuro
24	187B	dark purple red	rouge-pourpre foncé	dunkelpurpurrot	rojo púrpura oscuro
24	187C	dark purple red	rouge-pourpre foncé	dunkelpurpurrot	rojo púrpura oscuro
24	187D	dark purple red	rouge-pourpre foncé	dunkelpurpurrot	rojo púrpura oscuro
25	178C	brown red	rouge-brun	braunrot	rojo amarronado
25	178D	brown red	rouge-brun	braunrot	rojo amarronado
25	179A	brown red	rouge-brun	braunrot	rojo amarronado
25	179B	brown red	rouge-brun	braunrot	rojo amarronado
25	180A	brown red	rouge-brun	braunrot	rojo amarronado
25	180B	brown red	rouge-brun	braunrot	rojo amarronado
25	180C	brown red	rouge-brun	braunrot	rojo amarronado
25	180D	brown red	rouge-brun	braunrot	rojo amarronado
25	181A	brown red	rouge-brun	braunrot	rojo amarronado
25	181B	brown red	rouge-brun	braunrot	rojo amarronado
25	181C	brown red	rouge-brun	braunrot	rojo amarronado
25	181D	brown red	rouge-brun	braunrot	rojo amarronado
25	182A	brown red	rouge-brun	braunrot	rojo amarronado
25	182B	brown red	rouge-brun	braunrot	rojo amarronado
25	182C	brown red	rouge-brun	braunrot	rojo amarronado
25	182D	brown red	rouge-brun	braunrot	rojo amarronado
26	N 077A	brown purple	pourpre brun	braunpurpur	púrpura amarronado
26	178A	brown purple	pourpre brun	braunpurpur	púrpura amarronado
26	178B	brown purple	pourpre brun	braunpurpur	púrpura amarronado
26	183A	brown purple	pourpre brun	braunpurpur	púrpura amarronado
26	183B	brown purple	pourpre brun	braunpurpur	púrpura amarronado
26	183C	brown purple	pourpre brun	braunpurpur	púrpura amarronado
26	183D	brown purple	pourpre brun	braunpurpur	púrpura amarronado
26	184A	brown purple	pourpre brun	braunpurpur	púrpura amarronado
26	184B	brown purple	pourpre brun	braunpurpur	púrpura amarronado
26	184C	brown purple	pourpre brun	braunpurpur	púrpura amarronado
26	184D	brown purple	pourpre brun	braunpurpur	púrpura amarronado
26	185B	brown purple	pourpre brun	braunpurpur	púrpura amarronado
26	185C	brown purple	pourpre brun	braunpurpur	púrpura amarronado
26	185D	brown purple	pourpre brun	braunpurpur	púrpura amarronado
26	186A	brown purple	pourpre brun	braunpurpur	púrpura amarronado
26	186B	brown purple	pourpre brun	braunpurpur	púrpura amarronado
26	N 186C	brown purple	pourpre brun	braunpurpur	púrpura amarronado
26	N 186D	brown purple	pourpre brun	braunpurpur	púrpura amarronado
26	187A	brown purple	pourpre brun	braunpurpur	púrpura amarronado
27	058A	purple	pourpre	purpurn	púrpura
27	059C	purple	pourpre	purpurn	púrpura
27	060C	purple	pourpre	purpurn	púrpura
27	061A	purple	pourpre	purpurn	púrpura
27	061B	purple	pourpre	purpurn	púrpura
27	064A	purple	pourpre	purpurn	púrpura
27	064B	purple	pourpre	purpurn	púrpura
27	067A	purple	pourpre	purpurn	púrpura
27	070A	purple	pourpre	purpurn	púrpura
27	070B	purple	pourpre	purpurn	púrpura
27	071A	purple	pourpre	purpurn	púrpura
27	071B	purple	pourpre	purpurn	púrpura
27	071C	purple	pourpre	purpurn	púrpura
27	072A	purple	pourpre	purpurn	púrpura
27	072B	purple	pourpre	purpurn	púrpura
27	074A	purple	pourpre	purpurn	púrpura
27	074B	purple	pourpre	purpurn	púrpura
27	074C	purple	pourpre	purpurn	púrpura
27	N 074A	purple	pourpre	purpurn	púrpura
27	N 074B	purple	pourpre	purpurn	púrpura
27	N 079C	purple	pourpre	purpurn	púrpura
28	075A	violet	violet	violett	violeta
28	075B	violet	violet	violett	violeta
28	075C	violet	violet	violett	violeta

UPOV Group No.	No. RHS	English	français	deutsch	español
28	077A	violet	violet	violett	violeta
28	077B	violet	violet	violett	violeta
28	077C	violet	violet	violett	violeta
28	077D	violet	violet	violett	violeta
28	N 077B	violet	violet	violett	violeta
28	N 077D	violet	violet	violett	violeta
28	078A	violet	violet	violett	violeta
28	078B	violet	violet	violett	violeta
28	078C	violet	violet	violett	violeta
28	078D	violet	violet	violett	violeta
28	N 078A	violet	violet	violett	violeta
28	N 078B	violet	violet	violett	violeta
28	N 078C	violet	violet	violett	violeta
28	N 078D	violet	violet	violett	violeta
28	N 079D	violet	violet	violett	violeta
28	080A	violet	violet	violett	violeta
28	080B	violet	violet	violett	violeta
28	080C	violet	violet	violett	violeta
28	080D	violet	violet	violett	violeta
28	N 080A	violet	violet	violett	violeta
28	N 080B	violet	violet	violett	violeta
28	N 080C	violet	violet	violett	violeta
28	N 080D	violet	violet	violett	violeta
28	081A	violet	violet	violett	violeta
28	081B	violet	violet	violett	violeta
28	081C	violet	violet	violett	violeta
28	081D	violet	violet	violett	violeta
28	N 081A	violet	violet	violett	violeta
28	N 081B	violet	violet	violett	violeta
28	N 081C	violet	violet	violett	violeta
28	N 081D	violet	violet	violett	violeta
28	082A	violet	violet	violett	violeta
28	082B	violet	violet	violett	violeta
28	082C	violet	violet	violett	violeta
28	082D	violet	violet	violett	violeta
28	N 082A	violet	violet	violett	violeta
28	084A	violet	violet	violett	violeta
28	084B	violet	violet	violett	violeta
28	087A	violet	violet	violett	violeta
28	087B	violet	violet	violett	violeta
28	087C	violet	violet	violett	violeta
28	087D	violet	violet	violett	violeta
28	088D	violet	violet	violett	violeta
29	N 077C	dark violet	violet foncé	dunkelviolett	violeta oscuro
29	079A	dark violet	violet foncé	dunkelviolett	violeta oscuro
29	079B	dark violet	violet foncé	dunkelviolett	violeta oscuro
29	079C	dark violet	violet foncé	dunkelviolett	violeta oscuro
29	079D	dark violet	violet foncé	dunkelviolett	violeta oscuro
29	N 079A	dark violet	violet foncé	dunkelviolett	violeta oscuro
29	N 079B	dark violet	violet foncé	dunkelviolett	violeta oscuro
29	083A	dark violet	violet foncé	dunkelviolett	violeta oscuro
29	083B	dark violet	violet foncé	dunkelviolett	violeta oscuro
29	086A	dark violet	violet foncé	dunkelviolett	violeta oscuro
29	N 092A	dark violet	violet foncé	dunkelviolett	violeta oscuro
29	N 092D	dark violet	violet foncé	dunkelviolett	violeta oscuro
30	069C	light blue violet	violet-bleu clair	hellblauviolett	violeta azulado claro
30	069D	light blue violet	violet-bleu clair	hellblauviolett	violeta azulado claro
30	076A	light blue violet	violet-bleu clair	hellblauviolett	violeta azulado claro
30	076B	light blue violet	violet-bleu clair	hellblauviolett	violeta azulado claro
30	076C	light blue violet	violet-bleu clair	hellblauviolett	violeta azulado claro
30	076D	light blue violet	violet-bleu clair	hellblauviolett	violeta azulado claro
30	084C	light blue violet	violet-bleu clair	hellblauviolett	violeta azulado claro
30	084D	light blue violet	violet-bleu clair	hellblauviolett	violeta azulado claro
30	085A	light blue violet	violet-bleu clair	hellblauviolett	violeta azulado claro
30	085B	light blue violet	violet-bleu clair	hellblauviolett	violeta azulado claro
30	085C	light blue violet	violet-bleu clair	hellblauviolett	violeta azulado claro

UPOV Group No.	No. RHS	English	français	deutsch	español
30	085D	light blue violet	violet-bleu clair	hellblauviolett	violeta azulado claro
31	N 082B	blue violet	violet-bleu	blauviolett	violeta azulado
31	N 082C	blue violet	violet-bleu	blauviolett	violeta azulado
31	N 082D	blue violet	violet-bleu	blauviolett	violeta azulado
31	083C	blue violet	violet-bleu	blauviolett	violeta azulado
31	083D	blue violet	violet-bleu	blauviolett	violeta azulado
31	086B	blue violet	violet-bleu	blauviolett	violeta azulado
31	086C	blue violet	violet-bleu	blauviolett	violeta azulado
31	086D	blue violet	violet-bleu	blauviolett	violeta azulado
31	N 087A	blue violet	violet-bleu	blauviolett	violeta azulado
31	N 087B	blue violet	violet-bleu	blauviolett	violeta azulado
31	N 087C	blue violet	violet-bleu	blauviolett	violeta azulado
31	N 087D	blue violet	violet-bleu	blauviolett	violeta azulado
31	088A	blue violet	violet-bleu	blauviolett	violeta azulado
31	088B	blue violet	violet-bleu	blauviolett	violeta azulado
31	088C	blue violet	violet-bleu	blauviolett	violeta azulado
31	N 088A	blue violet	violet-bleu	blauviolett	violeta azulado
31	N 088B	blue violet	violet-bleu	blauviolett	violeta azulado
31	N 088C	blue violet	violet-bleu	blauviolett	violeta azulado
31	N 088D	blue violet	violet-bleu	blauviolett	violeta azulado
31	N 089C	blue violet	violet-bleu	blauviolett	violeta azulado
31	N 089D	blue violet	violet-bleu	blauviolett	violeta azulado
31	090A	blue violet	violet-bleu	blauviolett	violeta azulado
31	090B	blue violet	violet-bleu	blauviolett	violeta azulado
31	090C	blue violet	violet-bleu	blauviolett	violeta azulado
31	090D	blue violet	violet-bleu	blauviolett	violeta azulado
32	091B	light violet blue	bleu-violet clair	hellviolettblau	azul violáceo claro
32	091C	light violet blue	bleu-violet clair	hellviolettblau	azul violáceo claro
32	091D	light violet blue	bleu-violet clair	hellviolettblau	azul violáceo claro
32	092B	light violet blue	bleu-violet clair	hellviolettblau	azul violáceo claro
32	092C	light violet blue	bleu-violet clair	hellviolettblau	azul violáceo claro
32	092D	light violet blue	bleu-violet clair	hellviolettblau	azul violáceo claro
32	093D	light violet blue	bleu-violet clair	hellviolettblau	azul violáceo claro
32	094D	light violet blue	bleu-violet clair	hellviolettblau	azul violáceo claro
32	095D	light violet blue	bleu-violet clair	hellviolettblau	azul violáceo claro
32	097B	light violet blue	bleu-violet clair	hellviolettblau	azul violáceo claro
32	097C	light violet blue	bleu-violet clair	hellviolettblau	azul violáceo claro
32	097D	light violet blue	bleu-violet clair	hellviolettblau	azul violáceo claro
32	100D	light violet blue	bleu-violet clair	hellviolettblau	azul violáceo claro
33	089A	violet blue	bleu-violet	violettblau	azul violáceo
33	089B	violet blue	bleu-violet	violettblau	azul violáceo
33	089C	violet blue	bleu-violet	violettblau	azul violáceo
33	089D	violet blue	bleu-violet	violettblau	azul violáceo
33	N 089A	violet blue	bleu-violet	violettblau	azul violáceo
33	N 089B	violet blue	bleu-violet	violettblau	azul violáceo
33	091A	violet blue	bleu-violet	violettblau	azul violáceo
33	092A	violet blue	bleu-violet	violettblau	azul violáceo
33	N 092B	violet blue	bleu-violet	violettblau	azul violáceo
33	N 092C	violet blue	bleu-violet	violettblau	azul violáceo
33	093A	violet blue	bleu-violet	violettblau	azul violáceo
33	093B	violet blue	bleu-violet	violettblau	azul violáceo
33	093C	violet blue	bleu-violet	violettblau	azul violáceo
33	094A	violet blue	bleu-violet	violettblau	azul violáceo
33	094B	violet blue	bleu-violet	violettblau	azul violáceo
33	094C	violet blue	bleu-violet	violettblau	azul violáceo
33	095A	violet blue	bleu-violet	violettblau	azul violáceo
33	095B	violet blue	bleu-violet	violettblau	azul violáceo
33	095C	violet blue	bleu-violet	violettblau	azul violáceo
33	096A	violet blue	bleu-violet	violettblau	azul violáceo
33	096B	violet blue	bleu-violet	violettblau	azul violáceo
33	096C	violet blue	bleu-violet	violettblau	azul violáceo
33	096D	violet blue	bleu-violet	violettblau	azul violáceo
33	097A	violet blue	bleu-violet	violettblau	azul violáceo
34	101D	light blue	bleu clair	hellblau	azul claro
34	104D	light blue	bleu clair	hellblau	azul claro

UPOV Group No.	No. RHS	English	français	deutsch	español
34	106B	light blue	bleu clair	hellblau	azul claro
34	106C	light blue	bleu clair	hellblau	azul claro
34	106D	light blue	bleu clair	hellblau	azul claro
34	107C	light blue	bleu clair	hellblau	azul claro
34	107D	light blue	bleu clair	hellblau	azul claro
34	108A	light blue	bleu clair	hellblau	azul claro
34	108B	light blue	bleu clair	hellblau	azul claro
34	108C	light blue	bleu clair	hellblau	azul claro
34	108D	light blue	bleu clair	hellblau	azul claro
34	109D	light blue	bleu clair	hellblau	azul claro
34	N 109D	light blue	bleu clair	hellblau	azul claro
34	112A	light blue	bleu clair	hellblau	azul claro
34	112B	light blue	bleu clair	hellblau	azul claro
35	098A	medium blue	bleumoyen	mittelblau	azulmedio
35	098B	medium blue	bleu moyen	mittelblau	azulmedio
35	098C	medium blue	bleu moyen	mittelblau	azul medio
35	098D	medium blue	bleu moyen	mittelblau	azul medio
35	099C	medium blue	bleu moyen	mittelblau	azul medio
35	099D	medium blue	bleu moyen	mittelblau	azul medio
35	100A	medium blue	bleu moyen	mittelblau	azul medio
35	100B	medium blue	bleu moyen	mittelblau	azul medio
35	100C	medium blue	bleu moyen	mittelblau	azul medio
35	101A	medium blue	bleu moyen	mittelblau	azul medio
35	101B	medium blue	bleu moyen	mittelblau	azul medio
35	101C	medium blue	bleu moyen	mittelblau	azul medio
35	102B	medium blue	bleu moyen	mittelblau	azul medio
35	102C	medium blue	bleu moyen	mittelblau	azul medio
35	102D	medium blue	bleu moyen	mittelblau	azul medio
35	103D	medium blue	bleu moyen	mittelblau	azul medio
35	104A	medium blue	bleu moyen	mittelblau	azul medio
35	104B	medium blue	bleu moyen	mittelblau	azul medio
35	104C	medium blue	bleu moyen	mittelblau	azul medio
35	105A	medium blue	bleu moyen	mittelblau	azul medio
35	105B	medium blue	bleu moyen	mittelblau	azul medio
35	105C	medium blue	bleu moyen	mittelblau	azul medio
35	105D	medium blue	bleu moyen	mittelblau	azul medio
35	106A	medium blue	bleu moyen	mittelblau	azul medio
35	107A	medium blue	bleu moyen	mittelblau	azul medio
35	107B	medium blue	bleu moyen	mittelblau	azul medio
35	109A	medium blue	bleu moyen	mittelblau	azul medio
35	109B	medium blue	bleu moyen	mittelblau	azul medio
35	109C	medium blue	bleu moyen	mittelblau	azul medio
35	N 109A	medium blue	bleu moyen	mittelblau	azul medio
35	N 109B	medium blue	bleu moyen	mittelblau	azul medio
35	N 109C	medium blue	bleu moyen	mittelblau	azul medio
35	110A	medium blue	bleu moyen	mittelblau	azul medio
35	110B	medium blue	bleu moyen	mittelblau	azul medio
36	099A	dark blue	bleu foncé	dunkelblau	azul oscuro
36	099B	dark blue	bleu foncé	dunkelblau	azul oscuro
36	102A	dark blue	bleu foncé	dunkelblau	azul oscuro
36	103A	dark blue	bleu foncé	dunkelblau	azul oscuro
36	103B	dark blue	bleu foncé	dunkelblau	azul oscuro
36	103C	dark blue	bleu foncé	dunkelblau	azul oscuro
37	110C	light green blue	bleu-vert clair	hellgrünblau	azul verdoso claro
37	110D	light green blue	bleu-vert clair	hellgrünblau	azul verdoso claro
37	111C	light green blue	bleu-vert clair	hellgrünblau	azul verdoso claro
37	111D	light green blue	bleu-vert clair	hellgrünblau	azul verdoso claro
37	112C	light green blue	bleu-vert clair	hellgrünblau	azul verdoso claro
37	112D	light green blue	bleu-vert clair	hellgrünblau	azul verdoso claro
37	113C	light green blue	bleu-vert clair	hellgrünblau	azul verdoso claro
37	113D	light green blue	bleu-vert clair	hellgrünblau	azul verdoso claro
37	117A	light green blue	bleu-vert clair	hellgrünblau	azul verdoso claro
37	117B	light green blue	bleu-vert clair	hellgrünblau	azul verdoso claro
37	117C	light green blue	bleu-vert clair	hellgrünblau	azul verdoso claro
37	117D	light green blue	bleu-vert clair	hellgrünblau	azul verdoso claro

UPOV Group No.	No. RHS	English	français	deutsch	español
37	118C	light green blue	bleu-vert clair	hellgrünblau	azul verdoso claro
37	118D	light green blue	bleu-vert clair	hellgrünblau	azul verdoso claro
37	119D	light green blue	bleu-vert clair	hellgrünblau	azul verdoso claro
37	120D	light green blue	bleu-vert clair	hellgrünblau	azul verdoso claro
37	121C	light green blue	bleu-vert clair	hellgrünblau	azul verdoso claro
37	121D	light green blue	bleu-vert clair	hellgrünblau	azul verdoso claro
37	122D	light green blue	bleu-vert clair	hellgrünblau	azul verdoso claro
38	111A	green blue	bleu-vert	grünblau	azul verdoso
38	111B	green blue	bleu-vert	grünblau	azul verdoso
38	113A	green blue	bleu-vert	grünblau	azul verdoso
38	113B	green blue	bleu-vert	grünblau	azul verdoso
38	114A	green blue	bleu-vert	grünblau	azul verdoso
38	114B	green blue	bleu-vert	grünblau	azul verdoso
38	114C	green blue	bleu-vert	grünblau	azul verdoso
38	114D	green blue	bleu-vert	grünblau	azul verdoso
38	115A	green blue	bleu-vert	grünblau	azul verdoso
38	115B	green blue	bleu-vert	grünblau	azul verdoso
38	116A	green blue	bleu-vert	grünblau	azul verdoso
38	116B	green blue	bleu-vert	grünblau	azul verdoso
38	116C	green blue	bleu-vert	grünblau	azul verdoso
38	116D	green blue	bleu-vert	grünblau	azul verdoso
38	118A	green blue	bleu-vert	grünblau	azul verdoso
38	118B	green blue	bleu-vert	grünblau	azul verdoso
38	119A	green blue	bleu-vert	grünblau	azul verdoso
38	121A	green blue	bleu-vert	grünblau	azul verdoso
39	115C	grey blue	bleu-gris	graublau	azul grisáceo
39	115D	grey blue	bleu-gris	graublau	azul grisáceo
39	119B	grey blue	bleu-gris	graublau	azul grisáceo
39	119C	grey blue	bleu-gris	graublau	azul grisáceo
39	122A	grey blue	bleu-gris	graublau	azul grisáceo
39	122B	grey blue	bleu-gris	graublau	azul grisáceo
39	122C	grey blue	bleu-gris	graublau	azul grisáceo
40	166C	light brown	brun clair	hellbraun	marrón claro
40	166D	light brown	brun clair	hellbraun	marrón claro
40	N 170A	light brown	brun clair	hellbraun	marrón claro
40	N 170B	light brown	brun clair	hellbraun	marrón claro
40	N 170C	light brown	brun clair	hellbraun	marrón claro
40	173C	light brown	brun clair	hellbraun	marrón claro
40	173D	light brown	brun clair	hellbraun	marrón claro
40	174B	light brown	brun clair	hellbraun	marrón claro
40	174C	light brown	brun clair	hellbraun	marrón claro
40	174D	light brown	brun clair	hellbraun	marrón claro
40	176D	light brown	brun clair	hellbraun	marrón claro
40	177C	light brown	brun clair	hellbraun	marrón claro
40	177D	light brown	brun clair	hellbraun	marrón claro
41	165A	medium brown	brun moyen	mittelbraun	marrón medio
41	166A	medium brown	brun moyen	mittelbraun	marrón medio
41	166B	medium brown	brun moyen	mittelbraun	marrón medio
41	171A	medium brown	brun moyen	mittelbraun	marrón medio
41	172A	medium brown	brun moyen	mittelbraun	marrón medio
41	172B	medium brown	brun moyen	mittelbraun	marrón medio
41	173A	medium brown	brun moyen	mittelbraun	marrón medio
41	174A	medium brown	brun moyen	mittelbraun	marrón medio
41	175A	medium brown	brun moyen	mittelbraun	marrón medio
41	175B	medium brown	brun moyen	mittelbraun	marrón medio
41	175C	medium brown	brun moyen	mittelbraun	marrón medio
41	175D	medium brown	brun moyen	mittelbraun	marrón medio
41	176A	medium brown	brun moyen	mittelbraun	marrón medio
41	176B	medium brown	brun moyen	mittelbraun	marrón medio
41	176C	medium brown	brun moyen	mittelbraun	marrón medio
41	177A	medium brown	brun moyen	mittelbraun	marrón medio
41	177B	medium brown	brun moyen	mittelbraun	marrón medio
41	200D	medium brown	brun moyen	mittelbraun	marrón medio
42	N 199B	dark brown	brun foncé	dunkelbraun	marrón oscuro
42	200A	dark brown	brun foncé	dunkelbraun	marrón oscuro

UPOV Group No.	No. RHS	English	français	deutsch	español
42	200B	dark brown	brun foncé	dunkelbraun	marrón oscuro
42	200C	dark brown	brun foncé	dunkelbraun	marrón oscuro
42	N 200A	dark brown	brun foncé	dunkelbraun	marrón oscuro
43	158A	light yellow brown	brun-jaune clair	hellgelbbraun	marrón amarillento claro
43	158B	light yellow brown	brun-jaune clair	hellgelbbraun	marrón amarillento claro
43	158C	light yellow brown	brun-jaune clair	hellgelbbraun	marrón amarillento claro
43	158D	light yellow brown	brun-jaune clair	hellgelbbraun	marrón amarillento claro
43	159A	light yellow brown	brun-jaune clair	hellgelbbraun	marrón amarillento claro
43	159B	light yellow brown	brun-jaune clair	hellgelbbraun	marrón amarillento claro
43	159C	light yellow brown	brun-jaune clair	hellgelbbraun	marrón amarillento claro
43	159D	light yellow brown	brun-jaune clair	hellgelbbraun	marrón amarillento claro
43	160A	light yellow brown	brun-jaune clair	hellgelbbraun	marrón amarillento claro
43	160B	light yellow brown	brun-jaune clair	hellgelbbraun	marrón amarillento claro
43	160C	light yellow brown	brun-jaune clair	hellgelbbraun	marrón amarillento claro
43	160D	light yellow brown	brun-jaune clair	hellgelbbraun	marrón amarillento claro
43	161A	light yellow brown	brun-jaune clair	hellgelbbraun	marrón amarillento claro
43	161B	light yellow brown	brun-jaune clair	hellgelbbraun	marrón amarillento claro
43	161C	light yellow brown	brun-jaune clair	hellgelbbraun	marrón amarillento claro
43	161D	light yellow brown	brun-jaune clair	hellgelbbraun	marrón amarillento claro
43	162A	light yellow brown	brun-jaune clair	hellgelbbraun	marrón amarillento claro
43	162B	light yellow brown	brun-jaune clair	hellgelbbraun	marrón amarillento claro
43	162C	light yellow brown	brun-jaune clair	hellgelbbraun	marrón amarillento claro
43	162D	light yellow brown	brun-jaune clair	hellgelbbraun	marrón amarillento claro
43	163B	light yellow brown	brun-jaune clair	hellgelbbraun	marrón amarillento claro
43	163C	light yellow brown	brun-jaune clair	hellgelbbraun	marrón amarillento claro
43	163D	light yellow brown	brun-jaune clair	hellgelbbraun	marrón amarillento claro
43	164D	light yellow brown	brun-jaune clair	hellgelbbraun	marrón amarillento claro
43	165D	light yellow brown	brun-jaune clair	hellgelbbraun	marrón amarillento claro
44	163A	yellow brown	brun-jaune	gelbbraun	marrón amarillento
44	N 163C	yellow brown	brun-jaune	gelbbraun	marrón amarillento
44	N 163D	yellow brown	brun-jaune	gelbbraun	marrón amarillento
44	164A	yellow brown	brun-jaune	gelbbraun	marrón amarillento
44	164B	yellow brown	brun-jaune	gelbbraun	marrón amarillento
44	164C	yellow brown	brun-jaune	gelbbraun	marrón amarillento
44	165B	yellow brown	brun-jaune	gelbbraun	marrón amarillento
44	165C	yellow brown	brun-jaune	gelbbraun	marrón amarillento
44	167A	yellow brown	brun-jaune	gelbbraun	marrón amarillento
44	167B	yellow brown	brun-jaune	gelbbraun	marrón amarillento
44	167C	yellow brown	brun-jaune	gelbbraun	marrón amarillento
44	167D	yellow brown	brun-jaune	gelbbraun	marrón amarillento
44	N 167A	yellow brown	brun-jaune	gelbbraun	marrón amarillento
44	N 167B	yellow brown	brun-jaune	gelbbraun	marrón amarillento
44	N 167C	yellow brown	brun-jaune	gelbbraun	marrón amarillento
44	N 167D	yellow brown	brun-jaune	gelbbraun	marrón amarillento
44	168C	yellow brown	brun-jaune	gelbbraun	marrón amarillento
44	168D	yellow brown	brun-jaune	gelbbraun	marrón amarillento
44	N 172D	yellow brown	brun-jaune	gelbbraun	marrón amarillento
45	031B	orange brown	brun-orange	orangebraun	marrón anaranjado
45	031C	orange brown	brun-orange	orangebraun	marrón anaranjado
45	032C	orange brown	brun-orange	orangebraun	marrón anaranjado
45	033C	orange brown	brun-orange	orangebraun	marrón anaranjado
45	034B	orange brown	brun-orange	orangebraun	marrón anaranjado
45	034C	orange brown	brun-orange	orangebraun	marrón anaranjado
45	034D	orange brown	brun-orange	orangebraun	marrón anaranjado
45	N 034D	orange brown	brun-orange	orangebraun	marrón anaranjado
45	035A	orange brown	brun-orange	orangebraun	marrón anaranjado
45	N 163A	orange brown	brun-orange	orangebraun	marrón anaranjado
45	N 163B	orange brown	brun-orange	orangebraun	marrón anaranjado
45	168A	orange brown	brun-orange	orangebraun	marrón anaranjado
45	168B	orange brown	brun-orange	orangebraun	marrón anaranjado
45	169A	orange brown	brun-orange	orangebraun	marrón anaranjado
45	169B	orange brown	brun-orange	orangebraun	marrón anaranjado
45	169C	orange brown	brun-orange	orangebraun	marrón anaranjado
45	169D	orange brown	brun-orange	orangebraun	marrón anaranjado
45	N 170D	orange brown	brun-orange	orangebraun	marrón anaranjado

UPOV Group No.	No. RHS	English	français	deutsch	español
45	170A	orange brown	brun-orange	orangebraun	marrón anaranjado
45	170B	orange brown	brun-orange	orangebraun	marrón anaranjado
45	170C	orange brown	brun-orange	orangebraun	marrón anaranjado
45	170D	orange brown	brun-orange	orangebraun	marrón anaranjado
45	171B	orange brown	brun-orange	orangebraun	marrón anaranjado
45	171C	orange brown	brun-orange	orangebraun	marrón anaranjado
45	171D	orange brown	brun-orange	orangebraun	marrón anaranjado
45	172C	orange brown	brun-orange	orangebraun	marrón anaranjado
45	172D	orange brown	brun-orange	orangebraun	marrón anaranjado
45	N 172A	orange brown	brun-orange	orangebraun	marrón anaranjado
45	N 172B	orange brown	brun-orange	orangebraun	marrón anaranjado
45	N 172C	orange brown	brun-orange	orangebraun	marrón anaranjado
45	173B	orange brown	brun-orange	orangebraun	marrón anaranjado
45	179C	orange brown	brun-orange	orangebraun	marrón anaranjado
46	199A	grey brown	brun-gris	graubraun	marrón grisáceo
46	199B	grey brown	brun-gris	graubraun	marrón grisáceo
46	199C	grey brown	brun-gris	graubraun	marrón grisáceo
46	199D	grey brown	brun-gris	graubraun	marrón grisáceo
46	N 199A	grey brown	brun-gris	graubraun	marrón grisáceo
46	N 199C	grey brown	brun-gris	graubraun	marrón grisáceo
46	N 199D	grey brown	brun-gris	graubraun	marrón grisáceo
47	151A	green brown	brun-vert	grünbraun	marrón verdoso
47	151B	green brown	brun-vert	grünbraun	marrón verdoso
47	151C	green brown	brun-vert	grünbraun	marrón verdoso
47	151D	green brown	brun-vert	grünbraun	marrón verdoso
47	152A	green brown	brun-vert	grünbraun	marrón verdoso
47	152B	green brown	brun-vert	grünbraun	marrón verdoso
47	152C	green brown	brun-vert	grünbraun	marrón verdoso
47	152D	green brown	brun-vert	grünbraun	marrón verdoso
47	153A	green brown	brun-vert	grünbraun	marrón verdoso
47	153B	green brown	brun-vert	grünbraun	marrón verdoso
47	153C	green brown	brun-vert	grünbraun	marrón verdoso
47	153D	green brown	brun-vert	grünbraun	marrón verdoso
48	156A	grey	gris	grau	gris
48	156B	grey	gris	grau	gris
48	156C	grey	gris	grau	gris
48	156D	grey	gris	grau	gris
48	157A	grey	gris	grau	gris
48	157B	grey	gris	grau	gris
48	157C	grey	gris	grau	gris
48	N 187B	grey	gris	grau	gris
48	N 187C	grey	gris	grau	gris
48	N 187D	grey	gris	grau	gris
48	194D	grey	gris	grau	gris
48	195A	grey	gris	grau	gris
48	195B	grey	gris	grau	gris
48	195C	grey	gris	grau	gris
48	195D	grey	gris	grau	gris
48	196A	grey	gris	grau	gris
48	196B	grey	gris	grau	gris
48	196C	grey	gris	grau	gris
48	196D	grey	gris	grau	gris
48	197A	grey	gris	grau	gris
48	197B	grey	gris	grau	gris
48	197C	grey	gris	grau	gris
48	197D	grey	gris	grau	gris
48	198A	grey	gris	grau	gris
48	198B	grey	gris	grau	gris
48	198C	grey	gris	grau	gris
48	198D	grey	gris	grau	gris
48	N 200B	grey	gris	grau	gris
48	N 200C	grey	gris	grau	gris
48	N 200D	grey	gris	grau	gris
48	201A	grey	gris	grau	gris
48	201B	grey	gris	grau	gris

UPOV Group No.	No. RHS	English	français	deutsch	español
48	201C	grey	gris	grau	gris
48	201D	grey	gris	grau	gris
48	202B	grey	gris	grau	gris
48	202C	grey	gris	grau	gris
48	202D	grey	gris	grau	gris
49	188A	green grey	gris-vert	grüngrau	gris verdoso
49	188B	green grey	gris-vert	grüngrau	gris verdoso
49	188C	green grey	gris-vert	grüngrau	gris verdoso
49	188D	green grey	gris-vert	grüngrau	gris verdoso
49	189B	green grey	gris-vert	grüngrau	gris verdoso
49	189C	green grey	gris-vert	grüngrau	gris verdoso
49	189D	green grey	gris-vert	grüngrau	gris verdoso
49	N 189A	green grey	gris-vert	grüngrau	gris verdoso
49	N 189B	green grey	gris-vert	grüngrau	gris verdoso
49	N 189C	green grey	gris-vert	grüngrau	gris verdoso
49	N 189D	green grey	gris-vert	grüngrau	gris verdoso
49	190A	green grey	gris-vert	grüngrau	gris verdoso
49	190B	green grey	gris-vert	grüngrau	gris verdoso
49	190C	green grey	gris-vert	grüngrau	gris verdoso
49	190D	green grey	gris-vert	grüngrau	gris verdoso
49	191C	green grey	gris-vert	grüngrau	gris verdoso
49	191D	green grey	gris-vert	grüngrau	gris verdoso
49	192A	green grey	gris-vert	grüngrau	gris verdoso
49	192B	green grey	gris-vert	grüngrau	gris verdoso
49	192C	green grey	gris-vert	grüngrau	gris verdoso
49	192D	green grey	gris-vert	grüngrau	gris verdoso
49	193C	green grey	gris-vert	grüngrau	gris verdoso
49	193D	green grey	gris-vert	grüngrau	gris verdoso
50	N 186A	black	noir	schwarz	negro
50	N 186B	black	noir	schwarz	negro
50	N 187A	black	noir	schwarz	negro
50	202A	black	noir	schwarz	negro
50	203A	black	noir	schwarz	negro
50	203B	black	noir	schwarz	negro
50	203C	black	noir	schwarz	negro
50	203D	black	noir	schwarz	negro

SUBSECTION 4. DEFINITIONS FOR SHAPE, STRUCTURE AND COLOR TERMS

Term	Definition / comment
Abaxial	The lower, outer or dorsal side; the side facing away from the axis. Compare 'adaxial'.
Acicular	Needle-shaped; rigid, long and narrow and tapering to a fine point. Round or grooved in transverse section, e.g. conifers. Applies primarily to three-dimensional shape but may also be used for the outline.
Aciculate	With fine, straight stripes, like needle scratches, lying in different directions, and of a different color or texture. Compare 'striate' (parallel lines).
Aciculate	(see Section 2, Subsection 3, chapter 4 "Color distribution and color patterns")
Actinomorphic	Radially symmetric, so that median division in any direction will produce two equal halves, e.g. inflorescence of *Asteraceae*. Compare 'zygomorphic'.
Aculeate	Type of appendage covered by the general term "spine" in the Test Guidelines. Bearing prickles; with stiff, sharp projections from the superficial layers of the plant part. Compare 'spinose' (from the superficial and deeper layers).
Acuminate	Tapering gradually, with concave margins, to a sharp or blunt tip. Applies to the apex. Compare 'apiculate', tapering more abruptly and 'caudate', tapering more gradually, both applying to the tip only.
Acute	With straight or slightly convex margins, at an angle of less than 90 º. Applies to the base, apex, etc. Compare 'obtuse' where the angle is >90 º. In cases where it is useful to distinguish between 'narrow acute' and 'broad acute', one should remember that they should both still be <90 °.
Adaxial	The upper, inner or ventral side; the side facing the axis. Compare 'abaxial'.
Adherent	Dissimilar plant parts in close contact, e.g. anthers adherent to style. Compare 'adnate', 'coalesced', 'coherent', connate', 'contiguous'.
Adnate	Dissimilar plant parts fused histologically, e.g. stamens implanted onto the corolla. Compare 'adherent', 'coalesced', 'coherent', 'connate', 'contiguous'.
Adpressed	Lying close to or flat against the surface or another organ.
Anthela	a cymose corymb with the lateral flowers higher than the central ones.
Apex	The apex (apical or distal part) of an organ or plant part is the end furthest from the point of attachment. The shape of the apex is taken as the general shape, excluding any differentiated tip (if present)
Apical	Located at the apex and/or furthest from the position of attachment. Compare 'proximal', 'basal' which is closest to the position of attachment. Synonyms: Apical, Distal, Terminal (most appropriate term to be decided on a case-by-case basis)
Apiculate	Terminating abruptly in a small sharp but not rigid point which is both vascular and laminar in nature. Applies to the most distal part of the apex (tip). Compare 'acuminate' where the tapering is less abrupt and 'cuspidate' which is rigid.
Apopetalous	With separate petals; petals not fused into a corolla tube. Compare 'sympetalous'.
Arachnoid	Covered by the general term "hair" in the Test Guidelines. Cobwebby; with loosely tangled, long, fine, white hair.
Arched, Arching	Strongly curved more or less symmetrically, as an arch.
Aristate	Awned; bearing a stiff, straight, bristle-like continuation of the primary vein. Applies to the most distal part of the apex (tip) or used for other parts where bristles may occur. Compare 'mucronate' where the point is shorter.
Ascending	use "upwards"
Asymmetric	Not being capable of median division into two equal halves in any direction.
Attenuate	Tapering gradually, with lateral margins concave. Generally more tapered than 'acute'. Applies to the base. Compare 'acuminate' which applies to the apex.
Attitude	For UPOV purposes, 'attitude' is used for plant parts, while 'growth habit' is used for the whole plant. 'Attitude' is used in relation to soil level and to other plant parts. Rather to use 'attitude' instead of 'stance'.

Term	Definition / comment
Auriculate	Eared; with two rounded lobes directed outwards to either side and projecting beyond the general outline of the plant part. Applies to the base. Compare 'hastate' with triangular lobes directed outwards, and 'sagittate' with triangular lobes directed downwards. Compare 'auriculiform' which applies to full plane shape.
Auriculiform	Eared; with two rounded basal lobes directed outwards and projecting beyond the general outline of the plant part. Compare 'auriculate' which applies to the base.
Axillary	Situated within or arising from the axil, which is the upper angle between the axis and any lateral off-shoot, e.g. an axillary bud arising from the axil of a leaf.
Banded	(see Section 2, Subsection 3, chapter 4 "Color distribution and color patterns")
Barbate	Bearded; with tufts of long hairs. See also 'barbed'
Barbed	Terminating in a reflexed hook. Type of appendage covered by the general term "spine" in the Test Guidelines. With short, rigid, hooked to reflexed bristles or points, like the barb of a fish-hook.
Basal	Located at the base, closest to the position of attachment. Compare 'apical', 'distal', 'terminal'. Synonyms: Basal, Proximal (most appropriate term to be decided on a case-by-case basis)
Base	The base (proximal part) of a plant part is the end nearest to the point of attachment.
Bearded	See 'barbate'.
Bicrenate	Doubly crenate; with the crenations themselves crenate, or with alternating larger and smaller crenations.
Bidentate	Doubly dentate; with the dentations themselves dentate, or with alternating larger and smaller dentations.
Biserrate	Doubly serrate; with the serrations themselves serrate, or with alternating larger and smaller serrations.
Blistered	use 'bullate'.
Blotch	Sharp, clear outlined irregular shaped colored area.
Blotched	(see Section 2, Subsection 3, chapter 4 "Color distribution and color patterns")
Bristly	With stiff, strong trichomes. A general term including both 'hispid' (harsh to the touch) and 'setose' (spiny to the touch).
Bullate	Blistered; the surface covered with irregular blister-like convexities. Compare 'papillose' with more elevated, nipple-like projections and 'verrucose' which is warty.
Bumpy	A general term for a surface with rounded lumps or swellings.
Campanulate	Bell-shaped; with an inflated tube, gradually widening distally into a limb or lobes. Normally applies to the corolla. Compare 'funnel-shaped' which is not inflated basally and 'cup-shaped' which does not diverge distally.
Canaliculate	Channeled, gutter-shaped; long and narrow, with a longitudinal groove.
Capitate	Headed; refers to a plant part which is stalked and terminates in a knob. Also applies to an inflorescence type with crowded flowers (florets) borne in a head-like cluster, e.g. Asteraceae.
Capitulum (flower head)	A flower head or capitulum is a very contracted raceme in which the single sessile flowers share are borne on an enlarged stem. It is characteristic of *Dipsacaceae*.
Cartilaginous	Firm and tough, like cartilage. Compare 'coriaceous' which is more flexible.
Catkin (ament)	A catkin or ament is a scaly, generally drooping spike or raceme. Cymose or other complex inflorescences that are superficially similar are also generally called thus.
Caudate	Tailed; tapering to a long, narrow, pointed appendage which is both vascular and laminar in nature. Applies to the most distal part of the apex (tip). Compare 'acuminate' where the point is shorter.
Central bar	(see Section 2, Subsection 3, chapter 4 "Color distribution and color patterns")
Ciliate	Bearing a marginal fringe of fine trichomes (outgrowths from the epidermis). Compare 'fimbriate' which arises not only from the epidermis but from the deeper layers as well.
Circular	Round; length/width ratio as well as dimension in all directions 1:1. The term 'circular' is preferable to 'round' and 'orbicular' for UPOV use. Forms part of the 'elliptic' series. Also applies to arrangement. Compare 'rounded' which applies to part of an outline, not the full shape.

Term	Definition / comment
Cirrhous	With a tendril; terminating in a narrow spiralled tip which is a continuation of the primary vein. Applies to the most distal part of the apex (tip) or to other parts with tendrils.
Clambering	Climbing without the aid of special structures e.g. tendrils. Compare 'climbing'.
Clavate	Club shaped - shaped like a club; thickening towards the apex from a tapered base
Clawed	Abruptly contracted to a narrow, petiole-like basal portion. Applies to petals and sepals. Compare 'spatulate' which narrows more gradually towards the base.
Climbing (Climber)	Climbing by means of special structures e.g. tendrils. Compare 'clambering'.
Clustered	Clumped; closely grouped, arising from a common point.
Coalesced	Unlike plant parts partially and irregularly fused. Compare 'adherent', 'adnate', 'coherent', 'connate', 'contiguous'.
Coarse	use 'rough'.
Coherent	Similar plant parts in close contact, not fused, e.g. anthers clinging together. Compare 'adherent', 'adnate', 'coalesced', 'connate', 'contiguous'.
Color	Color is complex and can be defined in terms of three main elements: HUE (distinguishes the different colors), SATURATION (the element of color that indicates the purity or grayness of the color) and INTENSITY (distinguishes the total amount of light that is reflected by the color, how the color is perceived by the eye on the dark to light scale). For describing colors of plants in Test Guidelines, it is generally the practice to look at one or more of the three elements of color, separately or in combination.
Color distribution	(see Section 2, Subsection 3, chapter 4.2.2 "Color distribution")
Color names	The RHS Colour Chart contains up to 896 colors. UPOV has identified 50 color "groups". The names used for the 50 UPOV Color Groups consist of either the [pure color] / [color hue] (e.g. yellow, orange, red), a combination of two [pure colors] / [color hues] (e.g. yellow orange, orange pink, purple red), or a combination of the [pure color(s)] / [color hue(s)] with "light" or "dark" (e.g. light yellow, dark pink red).
Columnar	Upright, with a dominant main stem and suppressed branch development. Compare 'fastigiate' where the branch development is not suppressed.
Compressed	Flattened laterally or lengthwise. Compare 'depressed'.
Concave	Hollowed; curved inwards.
Congested	Densely crowded; with almost no intervening spaces. Compare 'crowded' which is less dense.
Conic	Cone-shaped; tapering evenly from a circular base to an acute apex. The conic series also includes 'deltoid', with a more specific length/diameter ratio. Compare 'triangular' which applies to two-dimensional shape and 'obconic' which narrows towards the base.
Connate	Like parts fused histologically, e.g. staminal filaments fused into a tube. Compare 'adherent', 'adnate, 'coalesced', 'coherent', 'contiguous'.
Connivent	Converging but not fused, e.g. stamens with anthers touching.
Conspicuous	Clearly visible, evident (see "conspicuousness")
Conspicuousness	CONSPICUOUS: clearly visible, evident. INCONSPICUOUS: not clearly visible, obscure. To make clear what is meant with the term conspicuousness the following standard wording could be used in the Test Guidelines: (a) The conspicuousness is determined by the color contrast (b) The conspicuousness is determined by the color contrast combined with size.
Contiguous	Touching but not fused. Not 'adnate', 'connate', 'adherent' or 'coherent'.
Continuous	In an uninterrupted arrangement. Compare 'interrupted'.
Convex	Rounded and curved outwards.
Convolute	Rolled up longitudinally with the plant parts overlapping, as petals in a bud.
Cordate	Heart-shaped; with two equal, rounded, basal lobes divided by a deep sinus. Compare 'obcordate' which has the sinus at the apex and 'cordiform' which applies to full plane shape.

Term	Definition / comment
Cordiform	Heart-shaped; with two equal, rounded, basal lobes divided by a deep sinus, and tapering fairly straightly to the apex. Compare 'cordate' which applies to the base and 'obcordate' which is broadest towards the apex.
Coriaceous	Leathery; thick, tough and flexible. Compare 'cartilaginous' which is more firm.
Corrugated	Wrinkled, crumpled or folded into alternating furrows and ridges, e.g. *Papaver* petals in the bud. Compare 'rugose'.
Crenate	Scalloped, with rounded teeth.
Crenulate	having a margin with *small* rounded teeth (minutely crenate). Compare "crenate".
Crispate	With the margin curled or crumpled and irregularly twisted.
Crowded	Grouped together but with some intervening spaces. Compare 'congested' which is more densely crowded.
Crustaceous	Thin, hard and brittle.
Cuneate	Wedge-shaped; broadest towards the apex, the lateral margins more or less straight and converging towards the base at an acute or obtuse angle. Applies to the base.
Cuneiform	use 'obconic'
Cup-Shaped	With a tube which is rounded basally and which does not diverge distally. Compare 'campanulate' which diverges distally and 'funnel-shaped' which is not rounded basally.
Cuspidate	Terminating in a short rigid point, or cusp, which is both vascular and laminar in nature. Applies to the most distal part of the apex (tip). Compare 'mucronate' which is only vascular, 'apiculate' where the point is not rigid and 'pungent' where the point is long and rigid.
Cylindric	Solid, long and narrow with an even diameter, circular in transverse section. Compare 'tubular' which is hollow.
Cymose corymb	The so called cymose corymb is similar to a racemose corymb but has a panicle-like structure.
Decumbent	Growing horizontally on the ground but with the apical parts ascending. Compare 'prostrate' where the apical parts do not ascend.
Decurrent	Running downwards
Deflexed	use 'reflexed'.
Deltate	More or less equilaterally triangular; narrowing towards the apex, that is away from the point of attachment. Forms part of the 'triangular' series. Compare 'deltoid' which applies to three-dimensional shape, also compare obtriangular' and 'obdeltate' which narrow towards the base.
Deltoid	More or less equilaterally cone-shaped; tapering evenly from a circular base to an acute apex. Forms part of the 'conic' series. Compare 'deltate' which applies to two-dimensional shape and 'obdeltoid' which narrows towards the base.
Dense (Density)	Numerous per unit area, as opposed to sparse.
Dentate	With sharp teeth pointed outwards. The two sides of a tooth are the same length. Compare 'denticulate' which is finer, 'crenate' where the teeth are rounded and 'serrate' where the teeth point towards the apex.
Denticulate	With *fine,* sharp teeth pointed outwards (finely dentate). Compare "dentate".
Depressed	Sunken, as if pressed into the middle from above or from above and below, causing a concavity. Compare 'compressed'.
Descending	Growing or orientated gradually downwards in relation to soil level or to other plant parts. Synonyms: Descending, Downwards (most appropriate term to be decided on a case-by-case basis)
Diffuse	With plant parts, e.g. petals, spread widely, or with branches spread widely and frequently branching. Compare 'divergent', spreading at almost right angles to the main axis.
Discoid	Having a flat, circular form; disk-shaped.
Distal	Located at the apex and/or furthest from the position of attachment. Compare 'proximal', 'basal' which is closest to the position of attachment. Synonyms: Apical, Distal, Terminal (most appropriate term to be decided on a case-by-case basis)
Distinct	to be used only in terms of the meaning within DUS.

Term	Definition / comment
Divaricate	With branches spreading widely, at almost right angles to the main axis. 'Divaricate' applies more specifically to the growth habit while 'divergent' applies to the direction of the branches. 'A divaricate plant would have divergent branches.
Divergent	With plant parts, specifically branches, spreading away from each other. Compare 'diffuse' and 'divaricate'. 'Divaricate' applies more specifically to the growth habit while 'divergent' applies to the direction of the branches. 'A divaricate plant would have divergent branches.
Dorsal	The lower, outer or abaxial side in relation to the axis. Compare 'ventral'.
Downwards	Growing or orientated gradually downwards in relation to soil level or to other plant parts. Synonyms: Descending, Downwards (most appropriate term to be decided on a case-by-case basis)
Drooping	Bending downwards. Compare 'weeping' where the downward bending is more pronounced and 'pendulous' which is hanging, rather than bending downwards. Also used for growth habit.
Dwarfed (Dwarf)	A plant or part of a plant of which the growth is suppressed, leading to a much reduced size compared to the average of its kind.
Ellipsoid	A three-dimensional ellipse; broadest at the middle, with margins tapering convexly and evenly to either end. The 'ellipsoid' series also includes 'spheric' and 'obloid', differing only in their length/diameter ratios. Compare 'elliptic', 'circular' and 'oblate' which apply to two-dimensional shapes.
Elliptic	Ellipse-shaped; broadest at the middle, the margins tapering convexly and evenly to either end. The elliptic series also includes 'circular' and 'oblate', differing only in their length/width ratios.
Emarginate	Notched; with an acute, deep, central sinus. Applies to the apex. Compare 'retuse' and 'obcordate'.
Entire	With an undivided margin; not toothed or lobed.
Equilateral	With sides or halves of equal shape and/or size. Compare 'inequilateral'.
Erect	Vertical in relation to the ground or perpendicular to the surface where the plant part is attached. For UPOV purposes 'erect' is used for plant parts only (attitude) and not for the whole plant (habit). The term to be used for plant habit is 'upright'.
Erose	Gnawed; with an irregularly toothed margin, as if chewed.
Even	Smooth; opposite of rough. For internal texture characteristics the term 'fine' is used.
Exserted	Extending beyond the surrounding parts, e.g. stamens protruding beyond the corolla. Compare 'included'.
Falcate	Sickle-shaped; strongly curved sideways.
Farinaceous (Farinose)	Mealy; with a whitish, powdery covering. Compare 'granular'.
Fasciated	With stems fused together and congested lengthwise, malformed and flattened; e.g. stems of pea.
Fastigiate	Strongly upright, with a narrow crown, the branches virtually erect, parallel and adpressed. Applies to trees. Compare 'columnar' of which the branch development is suppressed.
Felted	use 'pannose'.
Fibrous	With tough strands.
Filiform	'Thread-like'.
Fimbriate	Bearing a marginal fringe of hair-like appendages extending not only from the epidermis but from the deeper layers as well. Compare 'ciliate' which arises from the epidermis only.
Fine	Not textured; smooth, opposite of 'rough'. For surface characteristics the term 'smooth' or 'even' is used.
Flabellate (fan shape)	Fan shaped; rounded at the apex and flattened at the base.
Fleshy	Pulpy; succulent but firm, easy to cut.
Flexuous	(a) Resiliently bendable, like a whip / lithe or fluid in movement; or (b) Having curves, turns or bends

Term	Definition / comment
Floccose	Covered by the general term “hair” in the Test Guidelines. With tufts of long, soft hairs, usually rubbing off easily.’
Flush	(see Section 2, Subsection 3, chapter 4 “Color distribution and color patterns”)
Form	in the UPOV Test Guidelines, the term “shape” should be used in its broadest sense and the use of terms such as “form” and “profile” should be avoided to minimize discrepancies in translation
Free	Separate from one another; not joined.
Funnel-Shaped (Infundibular)	With an obconic tube gradually diverging distally. Compare ‘campanulate’ and ‘cup-shaped’ which are rounded basally.
Fusiform	Spindle-shaped; long and narrow, circular in transverse section, thick in the middle and tapering to both ends.
Glabrate	Almost hairless.
Glabrescent	Becoming hairless with age.
Glabrous	Bald; without trichomes, smooth, hairless.
Glandular	Bearing glands; with short-stalked or sessile glands or with hairs bearing glands at their tips.
Globose	Ball-shaped; round in outline when viewed from any angle.
Granular (Grainy)	Covered with small granules or grains. Compare ‘farinaceous’.
Grooved	With one or more narrow channels
Ground color	When an organ has two layers of tissue containing color pigmentation and one layer is covering the other, the colors of the two layers can be described as ground color and over color. The term ground color can be used in different ways: (i) The ground color is the first color to appear chronologically during the development of the plant part. Other colors may develop in time in the form of spots, blotches, or a flush. (ii) The ground color is the color which has a continuous dispersion across the surface of the plant part. The ground color is not always the color occupying the largest surface area of the plant part concerned. For certain organs having two layers of tissue containing color pigmentation, and one layer is covering the other on the upper side of the organ it may be appropriate to determine the ground color by observing the main color of the lower side of the organ (see example Phalaenopsis in Section 2, Subsection 3, chapter 3.2).
Hastate	Arrow-shaped; with two equal, more or less triangular lobes directed outwards to either side. Applies to the base of a leaf blade. Compare ‘auriculate’ with rounded lobes directed outwards, ‘sagittate’ with triangular lobes directed downwards and ‘hastiform’ which applies to full plane shape.
Hastiform	Arrowhead-shaped; gradually enlarged basally from an acute apex, but with two widely divergent basal lobes, directed outwards. Compare ‘hastate’ which applies to the base and ‘sagittate’ of which the lobes are directed downwards.
Herbaceous (Herb)	Plant with soft, non-woody stems, of which the above-ground parts die back after the growing season, or, more generally, any non-woody plant.
Hirsute	Covered by the general term “hair” in the Test Guidelines. With long, more or less erect, coarse, stiff trichomes. Compare ‘setose’ which is spiny to the touch and ‘hispid’ which is coarser.
Hispid	Covered by the general term “hair” in the Test Guidelines. With stiff, bristly trichomes; harsh to the touch. Compare ‘setose’ which is spiny to the touch, ‘hirsute’ which is somewhat finer and ‘scabrous’ which is also harsh to the touch.
Horizontal	Level; parallel to the ground. To be used in relation to soil level, i.e. perpendicular to ‘vertical’. To be used for plant parts and not for growth habit. ‘Prostrate’ is to be used for habit. ‘Adpressed’ is preferable for plant parts lying flat on a surface, therefore not necessarily parallel to the ground.
Hue	Distinguishes the different colors.
Included	Enclosed within; not extending beyond the surrounding parts, e.g. stamens not sticking out beyond the corolla. Compare ‘exserted’.
Inconspicuous	Not clearly visible, obscure (see “conspicuousness”)

Term	Definition / comment
Incurved	Curving inwards or upwards (adaxially). Compare 'inflexed', which is bent inwards or upwards more abruptly.
Indistinct	not to be used (see "distinctness")
Inequilateral	With sides or halves of unequal shape and/or size; oblique. Compare 'equilateral'.
Inflated	Blown up; hollow and swollen in appearance.
Inflexed	Bent inwards or upwards (adaxially) abruptly. Compare 'incurved'.
Infundibular	See 'funnel-shaped'.
Intensity	Distinguishes the total amount of light that is reflected by the color, how the color is perceived by the eye on the dark to light scale
Interrupted	Not continuous; an arrangement which is disturbed at some point/points. Compare 'continuous'.
Intricate	Entangled; irregularly intertwined.
Involute	With margins rolled towards the adaxial surface. Compare 'revolute' with margins rolled downwards.
Inwards	a plant part/plant parts facing inwards in relation to the whole plant or in relation to other relevant plant parts, e.g. stamens facing inwards in relation to the corolla. Compare 'outwards'.
Kidney-shaped	Synonyms: Reniform, Kidney-shaped (most appropriate term to be decided on a case-by-case basis)
Lanate	Covered by the general term "hair" in the Test Guidelines. Woolly; with long, somewhat matted, tangled trichomes. Compare 'tomentose' with shorter, denser hairs and 'pannose' which is even denser (felted).
Lanceolate	Lance-shaped; narrow ovate, broadest towards the base, that is towards the point of attachment. The apex may have a sharp or blunt tip. Forms part of the 'ovate' series.
Lateral	Towards or at the side of an axis or plant part.
Lax	Loose; not compact, in an open arrangement.
Lenticular	Lens-shaped; doubly convex.
Lepidote (Leprous)	Peltate-scaly; with small stalked scales.
Ligneous	Woody.
Ligulate (Lorate)	Strap-shaped; long and narrow, with the lateral margins parallel. Forms part of the 'oblong' series.
Linear	Long and narrow, with the lateral margins parallel. Forms part of the 'oblong' series.
"Lisbon" approach	In this approach all colors of the plant part concerned are assessed using the RHS Colour Charts first. The colors are then ordered from the lowest to highest number according to the color number from the Colour Chart, with the lowest number being RHS 1 A and the highest number being RHS 203 D. Additional cards in new editions of the RHS Colour charts may increase the highest number. In this approach the determination of color is made without consideration of the surface area occupied by that color.
Lobe, Lobed	See Part II "STRUCTURE", Section 1.4.2: in general, terms such as 'lobed' (cut 1/8 to ¼ of the distance to the middle), 'cleft' (cut 1/4 to ½ way to the middle), 'parted' (cut ½ to ¾ way to the middle) and 'divided' (cut ¾ way to almost all the way to the middle) are not used because they can be misleading if used as states of expression.
Longitudinal	Parallel to the axis extending through the base and the apex, whether or not this is the longest axis.
Lorate	See 'Ligulate'
Lunate	Crescent-shaped with more or less acute ends. Compare 'reniform'.
Lyrate	Lyre-shaped: pinnately lobed, with the terminal lobe much larger than the more basal (lower) lobes.
Main color	The main color is the color with the largest surface area. In cases where the areas of the main and secondary color are too similar to reliably decide which color has the largest area, [the darkest color] / [the color...[location]…] is considered to be the main color.
Marbled	(see Section 2, Subsection 3, chapter 4 "Color distribution and color patterns")

Term	Definition / comment
Marginal	Associated with the margin or edge of an organ.
Marginal zone	(see Section 2, Subsection 3, chapter 4 “Color distribution and color patterns”)
Marginate	(see Section 2, Subsection 3, chapter 4 “Color distribution and color patterns”)
Membranous	Like a membrane; thin and somewhat transparent. Compare ‘papyraceous’ which is more opaque.
Mucronate	Terminating abruptly in a short, hard point which is a continuation of the primary vein and is only vascular in nature. Applies to the most distal part of the apex (tip). Compare ‘aristate’ where the point is longer and ‘cuspidate’ which is both vascular and laminar.
Net	(see Section 2, Subsection 3, chapter 4 “Color distribution and color patterns”)
Netted	(see Section 2, Subsection 3, chapter 4 “Color distribution and color patterns”)
Obconic	Inversely conic; tapering evenly from a circular apex to an acute base. The obconic series also includes ‘obdeltoid’, with a more specific length/diameter ratio. Compare ‘obtriangular’ which applies to two-dimensional shape and ‘conic’ which narrows towards the apex.
Obcordate	Inversely heart-shaped; with two equal, rounded, apical lobes divided by a deep sinus, and tapering fairly straightly to the base. Applies to full plane shape and the general shape of the apex. Compare ‘cordate’ which has the sinus at the base and ‘obcordiform’ which applies to full plane shape. Also compare ‘emarginate’ and ‘retuse’ where the incisions are too small to affect the general shape.
Obcordiform	Inversely heart-shaped; with two equal, rounded, apical lobes divided by a deep sinus, and tapering fairly straightly to the base. Compare ‘obcordate’ which applies to the apex and ‘cordiform’ which is broadest towards the base.
Obdeltate	Inversely deltate; more or less equilaterally obtriangular, narrowing towards the base, that is towards the point of attachment. Forms part of the ‘triangular’ series. Compare ‘obdeltoid’ which applies to three-dimensional shape and ‘deltate’ which narrows towards the apex.
Oblanceolate	Inversely lanceolate; broadest towards the apex, that is furthest from the point of attachment. Forms part of the ‘obovate’ series.
Oblate	Transverse elliptic; ellipse shaped but shorter than broad, broadest at the middle, with margins tapering convexly and evenly to the base and apex, the longest dimension orientated transversely. Forms part of the ‘elliptic’ series.
Oblique	Orientation of plant part: Orientated at an angle other than 90 degrees to or parallel to the longitudinal axis. Shape of plant part: Inequilateral; bilaterally asymmetric. Applies to the base, apex, two-dimensional outline, position and attitude in relation to plant parts.
Obloid	Transverse ellipsoid; shorter than broad, broadest at the middle with margins tapering convexly and evenly to the base and apex, the longest dimension orientated transversely. Forms part of the ‘ellipsoid’ series.
Oblong	Approximately rectangular, with more or less parallel sides terminating obtusely at both ends; four-sided with opposite sides parallel and all angles approximately 90 degrees. The ‘oblong’ series also includes ‘square’ and ‘linear’, differing only in their length/width ratios, ‘square’ having the same dimension in both its length and its width.
Obovate	Inversely ovate; broadest above the middle, that is towards the apex. Compare the ‘ovate’ series which is broadest towards the base and ‘obovoid’ which applies to three-dimensional shape.
Obovoid	Inversely ovoid; broadest above the middle, that is towards the apex. Compare the ‘ovoid’ series which is broadest towards the base and ‘obovate’ which applies to two-dimensional shape.
Obtriangular	Inversely triangular; with three more or less straight sides, broadest at the apex and narrowing towards the point of attachment. The ‘obtriangular’ series also includes ‘obdeltate’, with a more specific length/width ratio. Compare ‘triangular’ which is broadest at the base and ‘obconic’ which applies to three-dimensional shape.
Obtrullate	Inversely trullate; broadest above the middle and tapering towards the basal and apical ends, the lateral margins more or less straight but angled at the position of greatest width. Compare the ‘obovate’ series which is less angular, and the ‘rhombic’ series which is broadest at the middle.

Term	Definition / comment
Obtuse	With straight or slightly convex margins, at an angle of 90 ° or more. Applies to the apex, base, etc. Compare 'acute' where the angle is <90 °. In cases where it is useful to distinguish between 'narrow obtuse' and 'broad obtuse', one should remember that they should both still be >90 °.
Open	Term used to describe plants with sparse branches or foliage.
Orbicular	use "Circular"
Outwards	a plant part/ plant parts facing outwards in relation to the whole plant or in relation to other relevant plant parts, e.g. the corolla facing outwards in relation to the longitudinal axis of the flower. Compare 'inwards'.
Ovate	Chicken-egg-shaped; broadest below the middle, that is towards the point of attachment, the margin entirely convex, although the apex may be either rounded or pointed. Compare the 'obovate' series which is broadest towards the apex and 'ovoid' which applies to three-dimensional shape.
Over color	In the case of a plant part which has a ground color upon which a second color such as a flush develops over time, the flush is considered the over color. The over color is not always the color occupying the smallest surface area of the plant part concerned.
Ovoid	Chicken-egg-shaped; broadest below the middle, that is towards the base, entirely convex, although the apex may be either rounded or pointed. Compare the 'obovoid' series which is broadest towards the apex and 'ovate' which applies to two-dimensional shape.
Panicle	a definite inflorescence that is increasingly more strongly and irregularly branched from the top to the bottom and where each branching has a terminal flower.
Pannose	Covered by the general term "hair" in the Test Guidelines. Felted; densely covered with short, matted, intertwined hairs.' Compare 'tomentose' which is less matted.
Papillose	Pimpled, with small, rounded, soft to firm, unequal bumps. Compare 'bullate' which has flatter, blister-like convexities.
Papyraceous, Papery	With the consistency of paper; thin and somewhat opaque. Compare 'membranous' which is more transparent.
Patches	(see Section 2, Subsection 3, chapter 4 "Color distribution and color patterns")
Pear-shaped	See 'pyriform'.
Pedicel	A stalk which attaches single flowers or fruits to the main stem peduncle of the inflorescence or infructescence.
Pedicelled (Pedicellate)	An individual flower or fruit borne on a stalk.
Peduncle	A stem supporting a solitary flower, solitary fruit, inflorescence, or infructescence.
Peltate	Shield-shaped; applies to a stalked plant part, normally circular in shape and with the stalk attached at or near the center of the lower surface.
Pendent	Hanging downwards due to its own weight. Compare 'pendulous'. Compare 'drooping' and 'weeping', which are 'bending downwards', 'weeping' being more pronounced than 'drooping'.
Pendulous	Hanging downwards, due to the weakness of its support. Compare 'pendent'.
Perpendicular	At right angle to another plant part.
Petiole	A stalk attaching the leaf blade to the stem.
Petiolule	A stalk of any of the leaflets making up a compound leaf.
Pilose	Covered by the general term "hair" in the Test Guidelines. With long, soft, sparse, slender trichomes. Compare 'villous' which is more shaggy.
Pointed	A general term for a base or apex, etc. with straight or slightly convex margins terminating in a sharp or blunt tip. Compare 'acute' (<90°), 'obtuse' (>90°). For the base, the term cuneate may be used instead of 'pointed'.
Prickly	See 'aculeate'.
Procumbent	Growing flat on the ground but not rooting at the nodes. Compare 'stoloniferous' rooting at the nodes.

Term	Definition / comment
Profile	In the UPOV Test Guidelines, the term “shape” should be used in its broadest sense and the use of terms such as “form” and “profile” should be avoided to minimize discrepancies in translation
Prominent	Standing out clearly from the surrounding surface, e.g. veins raised on the abaxial side of a leaf. Compare ‘conspicuous’, which is ‘clearly visible’.
Prostrate	Growing flat on the ground. Compare ‘procumbent’ (not rooting at the nodes) and ‘stoloniferous’ (rooting at the nodes or tips), both more specific types of prostrate. Also compare ‘decumbent’ of which the apical parts ascend.
Proximal	Located at the base, closest to the position of attachment. Compare ‘apical’, ‘distal’, ‘terminal’. Synonyms: Basal, Proximal (most appropriate term to be decided on a case-by-case basis)
Pubescent	The terms ‘pubescent’/’pubescence’ are synonymous with ‘hairy’/’hairiness’ for the purposes of Test Guidelines.
Pungent	Terminating in a long, rigid, sharp point which is both vascular and laminar in nature. Applies to the most distal part of the apex (tip). Compare ‘cuspidate’ where the point is shorter.
Pyramidal	Pyramid-shaped
Pyriform	Pear-shaped; obovoid with a contraction towards the base.
Quadrangular	Rectangular; four-sided with opposite sides parallel and all angles approximately 90 degrees. The term ‘oblong’ is preferred for UPOV use.
Raceme	an unbranched, indeterminate inflorescence with pedicellate (having short floral stalks) flowers along the axis
Racemose corymb	an unbranched, indeterminate inflorescence that is flat-topped or convex due to their outer pedicels which are progressively longer than inner ones.
Ramified	Branched.
Reclining	With branches gradually curving downwards from an erect position, the distal parts lying on the ground.
Rectangular	use ‘oblong’
Recurved	Curving downwards (abaxially). Compare ‘reflexed’, which is bent downwards more abruptly.
Reflexed	(a) An angle which is >180°; or (b) Bent downwards (abaxially) abruptly. Compare ‘recurved’ of which the downward curving is less abrupt.
Reniform	Kidney-shaped; thickly lunate with rounded ends. Compare ‘lunate’. Synonyms: Reniform, Kidney-shaped (most appropriate term to be decided on a case-by-case basis)
Repand	Shallowly sinuate. Compare ‘undulate’ which is wavy perpendicular to the plane of the plant part.
Resinous	Covered with or exuding resin, which may be sticky. Compare ‘viscid’.
Reticulate	Netted; with a fine network contrasting in color or texture, e.g. veins on the abaxial side of a leaf. Compare ‘rugose’ which has convex areas in between the netted venation.
Retuse	Notched; with an obtuse, shallow, central sinus. Applies to the apex. Compare ‘emarginate’ and ‘obcordate’.
Revolute	With margins rolled towards the abaxial surface. Compare ‘involute’ with margins rolled upwards.
Rhombic	Diamond-shaped; broadening towards the middle and tapering with more or less straight margins to the basal and apical end. Compare ‘trullate’ which is broadest below the middle and ‘obtrullate’ which is broadest above the middle.
Rhomboid	Diamond-shaped; square in transverse section, broadest and angled at the middle, tapering with more or less straight margins to each end.
Rigid	Stiff; not easily bendable.
Rotate	Disc-shaped; with a short tube and spreading, flattened, circular limb or lobes. Usually applies to the corolla. Compare ‘salverform’ which has a long tube.
Rough	Coarse; opposite of ‘even’, ‘fine’ and ‘smooth’.
Round	use “circular”

Term	Definition / comment
Rounded	Curved like the outline of a circle. Applies to the base, apex, lateral sides, etc. but not to be used for describing the general outline of a plane figure.
Rugose	Impressed wrinkled; as in a leaf with convex areas in between the netted venation. Compare 'corrugated' and 'reticulate'.
Sagittate	Arrowhead-shaped; with two equal, more or less triangular lobes directed downwards. Applies to the base and overall outline. Compare 'hastate' with triangular lobes directed outwards and 'auriculate' with rounded lobes directed outwards.
Salverform	Salver-shaped; with a long, narrow tube abruptly expanding to a flattened limb or lobes. Applies to the corolla. Compare 'rotate' which has a short tube.
Saturation	The element of color that indicates the purity or grayness of the color.
Scabrous	Rough to the touch
Secondary color	The color with the largest surface area is the main color; the one with the second largest area is the secondary color and so on. In cases where the areas of the main and secondary color are too similar to reliably decide which color has the largest area, [the darkest color] / [the color...[location]…] is considered to be the main color.
Semi-ellipsoid	Ellipsoid with the basal half cut off; rounded at the apex and flattened at the base.
Semi-erect	Standing up at more or less 45 degrees in relation to the ground or to the surface where the plant part is attached. For UPOV purposes 'semi-erect' is used for plant parts only (attitude) and not for the whole plant (habit). The term to be used for plant habit is 'semi-upright'.
Semi-upright	Half-upright; between 'upright' and 'spreading', not as tall and narrow as 'upright' and not as wide as 'spreading'. For UPOV purposes 'semi-upright' is used for the whole plant only (habit) and not for plant parts (attitude). The term to be used for plant parts is 'semi-erect'.
Sericeous	Silky; with fine, long, adpressed trichomes.
Serrate	With sharp teeth pointed forwards, towards the apex. The front side of a tooth is shorter than the back. Compare 'crenate' where the teeth are rounded and 'dentate' where the teeth point outwards.
Serrulate	Finely serrated. See "serrate".
Sessile	Stalkless; attached directly to the supporting plant part. Compare 'stalked' and 'pedicelled'.
Setose, Setaceous	Covered by the general term "hair" in the Test Guidelines. Bristly; with long, erect, sharply pointed, rigid trichomes. Spiny to the touch. Compare 'hispid' which is harsh to the touch and 'strigose' with adpressed trichomes.
Shape	In the UPOV Test Guidelines, the term "shape" should be used in its broadest sense and the use of terms such as "form" and "profile" should be avoided to minimize discrepancies in translation
Sheathing	Surrounding a plant part and resembling a tube; e.g. the leaf base of a grass surrounding the stem.
Single flower	A single flower is the reproductive structure found in flowering plants. A single flower could be a solitary flower or part of an inflorescence.
Sinuate	Alternatively concave and convex in the plane of the organ; wavy. Compare 'repand' which is shallowly 'sinuate' and 'undulate' which is wavy perpendicular to the plane of the plant part.
Smooth	Even; opposite of rough. For internal texture characteristics the term 'fine' is used.
Spadix	a spike of flowers densely arranged around it, enclosed or accompanied by a highly specialized bract called a spathe. It is characteristic of the *Araceae* family.
Sparse	Few per unit area, as opposed to 'dense'. The term "open" is used to describe plants with sparse branches or foliage.
Spathulate	use 'spatulate'.
Spatulate	Spoon-shaped; attenuate at the base and rounded at the apex. Compare 'clawed' ('unguiculate') which narrows more abruptly towards the base.
Speckle	Diffuse outlined irregular shaped colored area.
Speckled	(see Section 2, Subsection 3, chapter 4 "Color distribution and color patterns")
Spheric	use 'Globose'

Term	Definition / comment
Spike	An indeterminate inflorescence with sessile flowers on an unbranched axis.
Spine	A rigid, sharply pointed modified organ or part of an organ e.g. a modified stem or reduced branch, leaf, stipule, etc. Contains superficial as well as deeper layers. Compare 'prickle' which arises from the superficial layers only and 'thorn' which can be used synonymously to 'spine' but normally applies to modified stems only.
Spinose (Spiny, Thorny)	Bearing spines; with stiff, sharp projections from the superficial and deeper layers of the plant part. Compare 'aculeate' (only from the superficial layers).
Spiral	Corkscrew-shaped; the circumference even or diminishing.
Spot	Sharp, clear outlined round or nearly round shaped colored area.
Spotted	(see Section 2, Subsection 3, chapter 4 "Color distribution and color patterns")
Spreading	Directed outwards; e.g. branches diverging. Also applies to growth habit.
Spur Type	Plant habit in which the shoot internodes are very short. Found in some fruit varieties.
Squamose	Scaly; with minute adpressed scales.
Square	Equilaterally quadrangular or rectangular; with the length and the width having the same dimensions. Length/width ratio 1:1. Forms part of the 'oblong' series.
Stalked	Attached to the supporting plant by a stalk. Compare 'sessile' and 'pedicelled'.
Stance	use 'attitude'
Star-shaped	use 'stellate'
Stellate	Star-shaped: with several points radiating from the center
Stipitate	use 'stalked'.
Stoloniferous	Bearing prostrate stems rooting at the nodes or at the tips, producing new plants. Compare 'procumbent' not rooting at the nodes.
Striate	Finely striped; with more or less parallel lines of a different color, or grooves or ridges. Compare 'aciculate' (needle scratches in different directions).
Strigose	Covered by the general term "hair" in the Test Guidelines. With stiff, sharp, coarse, adpressed, bristly trichomes, often swollen at the base. Compare 'setose' with erect trichomes.
Striped	(see Section 2, Subsection 3, chapter 4 "Color distribution and color patterns")
Stripes	(see Section 2, Subsection 3, chapter 4 "Color distribution and color patterns")
Subulate	Awl-shaped; tapering from a narrow base to a fine, sharp point.
Symmetric	Being capable of median division into two equal halves, at least along the longitudinal axis. Compare 'asymmetric', 'actinomorphic'.
Sympetalous	With petals fused, at least partly, into a corolla tube. Compare 'apopetalous'.
Terete	Long and slender, tapering towards the apex, circular in transverse section.
Terminal	Located at the apex and/or furthest from the position of attachment. Compare 'proximal', 'basal' which is closest to the position of attachment. Synonyms: Apical, Distal, Terminal (most appropriate term to be decided on a case-by-case basis)
Tesselate	(see Section 2, Subsection 3, chapter 4 "Color distribution and color patterns")
Tetrahedronal	In the shape of a triangular pyramid
Thorn	A rigid, sharply pointed modified organ or part of an organ, normally a modified stem. Contains superficial as well as deeper layers. Compare 'prickle' which arises from the superficial layers only and 'spine' which can be used synonymously to 'thorn' but may apply to other modified organs as well, e.g. a leaf or stipule, etc.
Thorny	See 'spinose'.
Thyrse	A raceme in which the single flowers are replaced by cymes is called a (indefinite) thyrse. A botryoid in which the single flowers are replaced by cymes is a definite thyrse or thyrsoid. Thyrses are often confusingly called panicles.
Tip	See Part I "SHAPE", Section 2.4

Term	Definition / comment
Tomentose	Covered by the general term “hair” in the Test Guidelines. Densely woolly; with short, matted, interwoven trichomes. ‘Densely and softly matted-lanate.’ Compare ‘pannose’ which is even denser and more matted (felted) and compare ‘lanate’ with longer, less matted hairs.
Top	To be used in relation to soil level. Compare ‘tip’ and ‘apex’.
Transverse band	(see Section 2, Subsection 3, chapter 4 “Color distribution and color patterns”)
Transverse	Perpendicular to the longitudinal axis, i.e. at right angle to the axis extending through the base and the apex, whether or not this is the longest axis. Compare ‘longitudinal’.
Trapezoidal	Four-sided, with one pair of parallel sides
Triangular	With three more or less straight sides, broadening towards the base, that is towards the point of attachment. The triangular series also includes ‘deltate’, with a more specific length/width ratio. Compare ‘obtriangular’ which is broadest towards the apex and ‘conic’ which applies to three-dimensional shape.
Trichome	Unbranched hair-like outgrowth from the epidermis.
Trullate	Broadest below the middle and tapering towards the basal and apical end, the lateral margins more or less straight but angled at the position of greatest width. Compare the ‘ovate’ series which is less angular, and the ‘rhombic’ series which is broadest at the middle.
Truncate	With the base (apex) abruptly terminated in a straight, transverse, basal (distal) margin, as if cut off. Applies to the base and apex.
Tubular	Hollow, long and narrow with an even diameter, circular in transverse section. Compare ‘cylindric’, which is solid.
Twining	Climbing by coiling around a support.
Umbel	a type of raceme with a short axis and multiple floral pedicels of equal length that appear to arise from a common point.
Undulate	Wavy perpendicular to the plane of the plant part. Compare ‘repand’ and ‘sinuate’ which are wavy in the plane of the plant part.
Unguiculate	use ‘clawed’.
Unsuitable color names	Color terms such as "bronze”, “fuchsia”, “gold”, “ochre”, “salmon”, “silver”, etc. should not be used as states of expression in the Test Guidelines because they could cause confusion concerning the intended color. Therefore, these terms should be replaced by standard colors (e.g. orange brown instead of bronze).
UPOV Color Groups	(see “Color names”)
Upright	General term used for tall and narrow plants. More specifically, ‘fastigiate’ may be used if the branches are virtually erect and parallel to the main stem, and ‘columnar’ if the branch development is suppressed. For UPOV purposes ‘upright’ is used for the whole plant only (habit) and not for plant parts (attitude). The term to be used for plant parts is ‘erect’.
Upwards	Growing or orientated gradually upwards in relation to soil level or to other plant parts.
Urceolate	Pitcher-shaped; with a tube that is very wide at the base, narrowing towards the apex, and strongly constricted at or below the mouth. Applies to the corolla.
Variegation	Well defined areas of different colors or intensities, with less or no chlorophyll, especially as very light green, yellow or white longitudinal stripes or irregular shaped areas or marginal zone combined with a green color on leaves.
Veined	(see Section 2, Subsection 3, chapter 4 “Color distribution and color patterns”)
Velutinous	Covered by the general term “hair” in the Test Guidelines. Velvety; with long, dense, straight trichomes. Compare ‘tomentose’ with interwoven trichomes.
Ventral	The upper, inner or adaxial side in relation to the axis. Compare ‘dorsal’.
Verrucose	Warty; with more or less irregularly shaped wart-like elevations. Compare ‘bullate’, where the convexities are blister-like.
Vertical	Upright in relation to the ground. To be used in relation to soil level, i.e. perpendicular to ‘horizontal’.
Villous	Covered by the general term “hair” in the Test Guidelines. Shaggy; with long, slender, soft trichomes. Compare ‘pilose’ which is less shaggy.
Viscid	Sticky or gummy. Compare ‘resinous’, in which case the stickiness is due to resin.

Term	Definition / comment
Wart	See 'verrucose'
Weeping	Bending downwards, the terminal parts hanging. Compare 'drooping' where downward bending is less pronounced.
Wrinkled	With folds or creases; a general term. Compare 'corrugated' and 'rugose' where the wrinkling has a more specific nature.
Zig-zag	With regular, angular, alternating changes of direction.
Zygomorphic	Bilaterally symmetric, only along the longitudinal axis, e.g. flower of Fabaceae. Compare 'actinomorphic'.

[Section 3 follows]

SECTION 3. STATISTICAL TERMS

The definitions included in this glossary are in relation to the use of these terms in DUS examination.

Acceptance probability: "The minimum probability of accepting a variety with the population standard of off-types." (See document TGP/8: Part II, Section 8 "The Method of Uniformity Assessment on the Basis of Off-types").

Additivity: Effects, for example in an analysis of variance, are said to be additive if there is no interaction between them.

Alpha (α): Statisticians use the Greek letter alpha to indicate the probability of rejecting the statistical hypothesis tested when in fact, that hypothesis is true. α is called the significance level of a test. Before conducting any statistical test, it is important to set a value for alpha. For establishing distinctness, alpha is sometimes set at 0.01. This is the equivalent of asserting that one will reject the hypothesis tested 1 out of 100 times if the obtained test statistic is among those that would occur from random samples drawn from a population in which the hypothesis is true. If the obtained statistic leads to rejection of the tested hypothesis, it is not because the obtained statistic could not have occurred by chance, but because the probability of obtaining the statistic by chance is sufficiently low (1 in 100), and so it is reasonable to conclude that the results are not due to chance.

Alpha-design: Alpha designs are a very flexible class of resolvable incomplete block designs. Such designs are particularly useful when there are many treatments to be examined, the variability of the experimental units is such that the block size needs to be kept small, and blocks can be combined into complete replicates.

Alternative Hypothesis: In hypothesis testing, the null hypothesis and an alternative hypothesis are put forward. If the data support sufficiently strongly rejection of the null hypothesis, then the null hypothesis is rejected in favor of an alternative hypothesis. For instance, if the null hypothesis were that $\mu_1 = \mu_2$ then the alternative hypotheses would be $\mu_1 \neq \mu_2$ (two-sided), or $\mu_1 < \mu_2$ or $\mu_1 > \mu_2$ (one-sided).

ANOVA: This term is an acronym for a procedure entitled Analysis of Variance. This procedure employs the statistic (F) to test the statistical significance of the differences among the obtained means of two or more random samples from a given population. When there are one or two factors in the experiment, the analysis is called a one-way or a two-way analysis of variance respectively. See also factorial design.

Assumptions: see model assumptions.

(Balanced) Complete Block Design / Randomized complete block design : An experimental lay-out where all treatments are present once in every block. Blocking is done to make the experimental units more homogeneous within each group. All treatments are randomly assigned within each block to minimize the confounding effect of the heterogeneous experimental units. This is a common design for field trials of agricultural crops.

Balanced Incomplete Block Design: This differs from a balanced complete block design in that the block size is less than the total number of treatments. Each treatment is replicated equally and the assignment of the treatments over the blocks is such that the SED of each pair of treatment means has the same value.

Bar graph: A bar graph is much like a histogram, differing in that the columns are separated from each other by a small distance. Bar graphs are commonly used for qualitative variables.

Beta (β): Statisticians use the Greek letter beta to indicate the probability of failing to reject the null hypothesis when it is false and a specific alternative hypothesis is true. For a given test, the value of beta is determined by the value of alpha, features of the statistic that is being calculated (particularly the sample size) and the specific alternative hypothesis that is being entertained. While it is possible to carry out a statistical test without defining a specific alternative hypothesis, neither beta nor power can be calculated. It is relevant to note here that power (the probability that the test will reject the hypothesis tested when a specific alternative hypothesis is true) is equal to one minus beta (i.e. power = 1 - beta). See Power.

Between plot standard deviation: When speaking about variance components this term is commonly used for the variability between experimental units, like plots.

Bias: Bias is the difference between the true value of the parameter and the expected value of the estimator. An estimator is biased if the expected value of the estimator doesn't equal the parameter it is estimating.

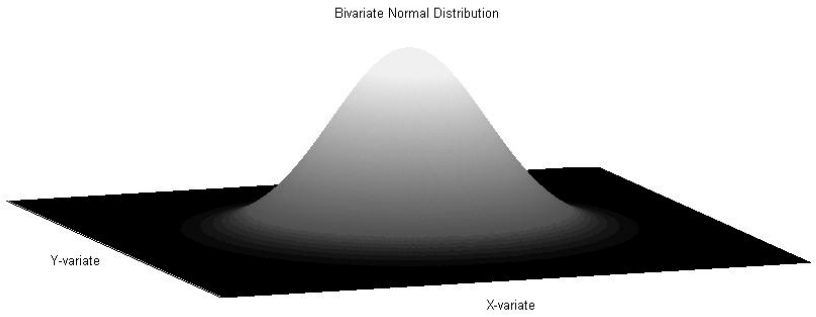
Binomial Distribution: When a coin is flipped, the outcome is either a head or a tail. In this example, the event has two mutually exclusive possible outcomes. For convenience, one of the outcomes can be labeled "success" and the other outcome "failure." If an event occurs N times (for example, a coin is flipped N times), then the binomial distribution can be used to determine the probability of obtaining exactly r successes in the N outcomes. The binomial probability for obtaining r successes in N trials is:

$$P(r) = \binom{N}{r} \pi^r (1-\pi)^{N-r}, \quad r = 0,1\ldots N$$

where P(r) is the probability of exactly r successes, N is the number of events, and □ is the probability of success on any one trial. This formula assumes that the events:

(a) are dichotomous (fall into only two categories)
(b) are mutually exclusive
(c) are independent and
(d) are randomly selected

Bivariate Normality: A particular form of distribution of two variables that has the traditional 'bell' shape (but not all bell-shaped distributions are normal). If plotted in three-dimensional space, with the vertical axis showing the number of cases, the shape would be that of a three-dimensional bell (if the variances on both variables were equal) or a flattened three-dimensional bell (if the variances were unequal). When perfect bivariate normality obtains, the distribution of one variable is normal for each and every value of the other variable. See also Normal Distribution.



Blocking: A method in the design of experiments used to reduce the variability of residuals. Types of designs that use this method are generally called block designs. A great number of types exist but only a few one are considered in this document. See also Block Design.

Block Design: see Balanced Complete Block Design, (Balanced) Incomplete Block Design, Randomized Complete Block Design, Alpha Design.

Box plot – also called box-and-whisker diagram: A schematic plot to display the distribution of a variable. The box spans the interquartile range of the values in the variable, so that the middle 50% of the data lie within the box, with a line indicating the median. Whiskers can extend beyond the ends of the box as far as the minimum and maximum values.

Categorical variables: see Variables

Central Limit Theorem: The Central Limit Theorem is a statement about the characteristics of the sampling distribution of means of random samples from a given population. That is, it describes the characteristics of the distribution of values we would obtain if we were able to draw an infinite number of random samples of a given size from a given population and we calculated the mean of each sample.

The Central Limit Theorem consists of three statements:

1. The mean of the sampling distribution of means is equal to the mean of the population from which the samples were drawn.

2. The variance of the sampling distribution of means is equal to the variance of the population from which the samples were drawn divided by the size of the samples.

3. If the original population is distributed normally (i.e. it is bell shaped), the sampling distribution of means will also be normal. If the original population is not normally distributed, the sampling distribution of means will increasingly approximate a normal distribution as sample size increases. (i.e. when increasingly large samples are drawn).

Chi-Square: The statistic X^2 (Chi-Square) is what statisticians call an enumeration statistic. Rather than measuring the value of each of a set of items, a calculated value of Chi-Square compares the frequencies of various kinds (or categories) of items in a random sample to the frequencies that are expected if the population frequencies are as hypothesized by the investigator. Chi-square is often used to assess the "goodness of fit" between an obtained set of frequencies in a random sample and what is expected under a given statistical hypothesis. For example, Chi-Square can be used to determine if there is reason to reject the statistical hypothesis that the frequencies in a random sample are as expected when the items are from a normal distribution.

Chi-squared (χ^2) distribution: distribution of the sum of squared independent standard normal variables. Used to do significance tests on chi-squared statistics.

Coefficient: A coefficient is a constant used to multiply another value. In the linear transformation Y = 3X + 7, the coefficient "3" is multiplied by the variable X. In the linear combination of means $L = (2)M_1 + (-1)M_2 + (-1)M_3$ the three numbers in parentheses are coefficients.

Completely Randomised Design: An experimental lay-out where the experimental units are homogenous and the treatments are randomly assigned to the uniform experimental units without any constraint. It is the simplest experimental design, which is used in the testing of many horticultural and ornamental crops under greenhouse condition where the experimenter has more control over the experimental units.

Confidence Interval: A confidence interval is a range of values that has a specified probability of containing the parameter being estimated. The 95% and 99% confidence intervals, which have 0.95 and 0.99 probabilities of containing the parameter respectively are most commonly used. If the parameter being estimated were μ, the 95% confidence interval might look like the following:
$12.5 \leq \mu \leq 30.2$
What this means is that the interval between 12.5 and 30.2 has a 0.95 probability of containing μ.

Confounding: Two factors are confounded if they vary together in such a way that it is impossible to determine which factor is responsible for an observed effect. For example, consider an experiment in which two fungicides treatments for foliar disease control were compared. Treatment one was given to the one variety and treatment two was given to another variety. If a difference between treatments were found, it would be impossible to tell if one treatment were more effective than the other or if treatments for disease control are more effective for one variety than the other. In this case, varieties and treatment are confounded. Sometimes, confounding is much more subtle. An experimenter may accidentally manipulate a factor in addition to the factor of interest.

Consistency: An estimator is consistent if the estimator tends to get closer to the parameter it is estimating as the sample size increases.

Contingency Table: A contingency table is a table showing the responses of subjects to one factor as a function of another factor. For instance, the following contingency table shows a characteristic as a function of different varieties (the data are hypothetical). The entries show the number of plants for each variety with particular notes for a characteristic.

Characteristic / *Variety*	State 1	State 2	State 3
Variety A	18	20	2
Variety B	3	10	27
Variety C	6	24	10

Continuous Variable: A continuous variable is one for which, within the limits the variable's range, any value is possible. For example, the variable 'plant height' is continuous since it may be 1.21m, 1.25m or even 1.30m etc to measure plant heights. The variable 'Number of lobed leaves' is not a continuous variable since it is not possible to get 54.12 lobed leaves from 100 leaves counted. It must be an integer. See also 'discrete variable'.

Correlation (Pearson): Given a pair of related measures (X and Y) on each of a set of items, the correlation coefficient (r) provides an index of the degree to which the paired measures co-vary in a linear fashion. In general r will be positive when items with large values of X also tend to have large values of Y whereas items with small values of X tend to have small values of Y. Correspondingly, r will be negative when items with large values of X tend to have small values of Y whereas items with small values of X tend to have large values of Y. Numerically, r can assume any value between -1 and +1 depending upon the degree of the relationship. Plus and minus one indicate perfect positive and negative relationships whereas zero indicates that the X and Y values do not co-vary in any linear fashion. See Measures of association.

COYD: Abbreviation of Combined-Over-Years Distinctness criterion. Statistical method to test distinctness in DUS testing. See TGP/9.

COYU: Abbreviation of Combined-Over-Years Uniformity criterion. Statistical method to test uniformity in DUS testing. See TGP/10.

Critical Value: A critical value (which depends on the level of significance, alpha) is used in significance testing. It is the value that a test statistic must exceed in order for the null hypothesis to be rejected. For example, the critical value of t (with 12 degrees of freedom in a two-sided test using the alpha=0.05 significance level) is 2.18. This means that for the probability to be less than or equal to 0.05, the absolute value of the t statistic must be 2.18 or greater.

Degrees of Freedom: Statisticians use the terms 'degrees of freedom' to describe the number of values in the final calculation of a statistic that are free to vary. Consider, for example the statistic s^2, the estimated variance of a sample. To calculate the estimated variance of a random sample, we must first calculate the mean of that sample and then compute the sum of the several squared deviations from that mean. While there will be n such squared deviations only (n - 1) of them are, in fact, free to assume any value whatsoever. This is because the final squared deviation from the mean must include the one value of X such that the sum of all the Xs divided by n will equal the obtained mean of the sample. All of the other (n - 1) squared deviations from the mean can, theoretically, have any values whatsoever. For these reasons, the statistic s^2, the estimated variance of a sample, is said to have only (n - 1) degrees of freedom.

Dependent Variable: A variable which the analyst is trying to explain in terms of one or more independent variables. The distinction between dependent and independent variables is typically made on theoretical grounds-in terms of a particular causal model or to test a particular hypothesis. This is often called the Y-variable.

Design of experiment: see Experimental design.

Discrete Variable: A discrete variable is one that cannot take on all values within the limits of the variable. For example, responses to a five-point rating scale can only take on the values 1, 2, 3, 4, and 5. The variable cannot have the value 1.7. A variable such as a plant height can take on any value. Variables that can take on any value and therefore are not discrete are called continuous. Statistics computed from discrete variables can be continuous. The mean on a five-point scale could be 3.117 even though 3.117 is not possible for an individual score.

Dispersion: Synonyms are variation, variability or spread. A variable's dispersion is the degree to which scores on the variable differ from each other. If every score on the variable were about equal, the variable would have very little dispersion. There are many measures of dispersion, eg. variance, standard deviation, range, interquartile range etc.

Distribution (Probability Distribution): Form of a function that describes the possible outcomes of a variable. The distribution of a variable specifies the chance that the variable takes a value in any subset of the real numbers. Examples include [Binomial Distribution, Chi-squared distribution, Continuous Distribution, Discrete Distribution, F-Distribution, Frequency Distribution, Normal Distribution, Relative Frequency Distribution, Standard Normal Distribution, Symmetric Distribution, Student's t-Distribution, t-Distribution, Z-Distribution etc.].

Effect: see Main Effect.

Efficiency: The efficiency of a statistic is the degree to which the statistic is stable from sample to sample. That is, the less subject to sampling fluctuation a statistic is, the more efficient it is. The efficiency of a statistic is measured relative to the efficiency of other statistics and is therefore often called the relative efficiency. If statistic A has a smaller standard error than statistic B, then statistic A is more efficient than statistic B. The relative efficiency of two statistics may depend on the distribution involved. For instance, the mean is more efficient than the median for normal distributions but not for many types of skewed distributions. The efficiency of a statistic can also be thought of as the precision of the estimate: the more efficient the statistic, the more precise the statistic is as an estimator of the parameter.

Estimation: The process of using a statistic to estimate a parameter of a distribution.

Estimator: An estimator is used to estimate a parameter. Normally a statistic is used as an estimator. Three important characteristics of estimators are: bias, consistency, and relative efficiency.

Expected Value: A theoretical average value of a statistic over an infinite number of samples from the same population.

Experimental Design: The lay-out of an experiment. See Completely Randomised Design, Balanced Complete Block Design, Incomplete Block Design, Alpha Design, Factorial Design.

Experimental Unit: An experimental unit is the smallest subdivision of the experiment (trial) to which the varieties are randomized. If there are more than one plant within a plot, the observations of a certain characteristic on each plant are used for estimating the plant-to-plant variability of the variety. The mean (or other function) of the observations can be considered as the plot measurement for that characteristic. Usually the experimental unit in a field trial is a plot.

F Distribution: The F distribution is the distribution of the ratio of two chi-squared variables, e.g. ratio of two estimates of variance. It is used to compute probability values in the analysis of variance. The F distribution has two parameters: degrees of freedom numerator (dfn) and degrees of freedom denominator (dfd). The dfn is the number of degrees of freedom of the numerator, and dfd is the number of degrees of freedom of the denominator. The dfd is often called the degrees of freedom for error or dfe. In the simplest case of a one-factor between-subjects ANOVA,
dfn = a-1
dfd = N-a
where "a" is the number of groups and "N" is the total number of subjects in the experiment. The shape of the F distribution depends on dfn and dfd. The lower the degrees of freedom, the larger the value of F needed to be significant. For instance, if dfn = 4 and dfd = 12, then an F of 3.26 would be needed to be significant at the 0.05 level. If the dfn were 10 and the dfd were 100, then an F of 1.93 would suffice.

Factor: Each basic treatment will be called a factor. If an experiment is testing the effect of fertiliser dosage, then 'fertiliser' is a factor. Some experiments have more than one factor. For example, if the effect of fertiliser dosage and irrigation water were both manipulated in the same experiment, then these two variables would be factors. The experiment would then be called a two-factor experiment.

Factor Level: The possible forms of a factor are called the levels of that factor. The levels of factor 'variety' for example are the different varieties in an experiment.

Factorial Design: When an experimenter is interested in the effects of two or more factors, it is usually more efficient to combine these factors in one experiment than to run a separate experiment for each factor. Moreover, only in experiments with more than one factor is it possible to test for interactions between factors. Consider a hypothetical experiment on the effects of the factor nitrogen on grain yield in a cereal crop. There were three levels of nitrogen dosage: 50kg, 100kg and 150kg per hectare. A second factor, water level, was also manipulated. There were two levels of irrigation water on the field: 5cm and 10cm. The grain yield data (t/ha) for each condition (often called treatment) in the experiment is shown below:

Water	5cm	10cm
Dosage		
50 kg/ha	1.5	1.8
100 kg/ha	2.5	2.2
150 kg/ha	2.8	1.9

The number of combinations (six) is therefore the product of the number of levels of dosage (three) and levels of water (two). Also see: Main Effect.

Fisher's Exact Test: a statistical test used for assessing significance in categorical data (see document TGP/8: Part II, Section 6 "Fisher's Exact Test").

Fitted Values of dependent variable: Explained part of observed values of the dependent variable. These values are calculated by using the estimated parameters in a model.

Fitted Constants: Special type of an (non-orthogonal) analysis of variance model assuming additivity of the factors.

Fixed term/Fixed factor: A factor is fixed when the levels under study are the only levels of interest. The levels of the factor are said to have fixed effects. For example, the treatments applied to field trials of agricultural crops are usually a fixed factor. See also factor.

F Ratio: Ratio (quotient) of two variances that is F-distributed. It is used for example in ANOVA's to test the effect of factors and their interactions.

Frequency Distribution: A frequency distribution shows the number of observations falling into each of several intervals of values. Frequency distributions are portrayed as frequency tables, histograms, or polygons. Frequency distributions can show either the actual number of observations falling in each interval or the percentage of observations. In the latter instance, the distribution is called a relative frequency distribution.

Frequency Table: A frequency table is constructed by allocating the scores on a variable into intervals and counting the number of scores in each interval. The actual number of scores is displayed as well as the percentage of scores in each interval.

Heteroscedasticity: The absence of homogeneity of variance. See Homogeneity of Variance.

Heterogeneity: The absence of homogeneity of variance. See Homogeneity of Variance.

Hierarchical Analysis: In the context of multidimensional contingency table analysis, a hierarchical analysis is one in which inclusion of a higher order interaction term implies the inclusion of all lower order terms. For example, if the interaction of two factors is included in an explanatory model, then the main effects for both of those factors are also included in the model.

Histogram: A histogram is constructed from a frequency table. The intervals are shown on the X-axis and the number of scores in each interval is represented by the area of a rectangle located above the interval, which, if the intervals are of equal width, is equivalent to the rectangle's height.

Homogeneity of Variance: The assumption of homogeneity of variance (or homoscedasticity of variance) is that the variance within each of the populations is equal. This is an assumption of analysis of variance (ANOVA). ANOVA works well even when this assumption is violated except in the case where there are unequal numbers of subjects in the various groups. If the variances are not homogeneous, they are said to be heterogeneous or heteroscedastic.

Homoscedasticity: See Homogeneity of Variance.

Hypothesis Testing: Hypothesis testing is a method of inferential statistics. An experimenter starts with a hypothesis about a population parameter called the null hypothesis. Data are then collected and the viability of the null hypothesis is determined in light of the data. If the data are very different from what would be expected under the assumption that the null hypothesis is true, then the null hypothesis is rejected. If the data are not greatly at variance with what would be expected under the assumption that the null hypothesis is true,

then the null hypothesis is not rejected. Failure to reject the null hypothesis is not the same thing as accepting the null hypothesis.

Incomplete Block Design: Block design where the number of plots within each block is smaller than the number of treatments.

Independence: Observations on one plot are called independent if they are not influenced by varieties on other plots. For example if tall varieties are planted next to a small one there could be a negative influence of the big ones on the small one. In such a case a row of plants on both sides of the plot can be planted in order to avoid dependency. See also Statistical Independence.

Independent Variable: Two variables are independent if knowledge of the value of one variable provides no information about the value of another variable. For example, if you measured the terminal leaf length and the degree of fragrance in a rose variety, then these two variables would in all likelihood be independent. Knowing that leaf length would not effect the fragrance of rose. However, if the variables were leaf length and leaf width, then there may be a high degree of dependence. When two variables are independent then the correlation between them is 0.

Interaction: A situation in which the direction and/or magnitude of the relationship between two factors depends on (i.e., differs according to) the value of one or more other factors. When interaction is present, simple additive techniques are inappropriate; hence, interaction is sometimes thought of as the absence of additivity. Synonyms: non-additivity, conditioning effect, moderating effect, contingency effect.

Interquartile Range: The interquartile range is a measure of spread or dispersion. It is computed as the difference between the 75th percentile (often called (Q3)) and the 25^{th} percentile (Q1). The formula for interquartile range is therefore: Q3-Q1. Since half the scores in a distribution lie between Q3 and Q1, the interquartile range is the distance needed to cover 1/2 the scores. The interquartile range is little affected by extreme scores, so it is a good measure of spread for skewed distributions. However, it is more subject to sampling fluctuation in normal distributions than is the standard deviation and therefore not often used for data that are approximately normally distributed.

Interval Scale: A scale consisting of equal-sized units. On an interval scale the distance between any two positions is of known size. Results from analytic techniques appropriate for interval scales will be affected by any non-linear transformation of the scale values. See also Scale of Measurement.

Intervening Variable: A variable which is postulated to be a predictor of one or more dependent variables, and simultaneously predicted by one or more independent variables. Synonym: mediating variable.

Kurtosis: Kurtosis indicates the extent to which a distribution is more peaked or flat-topped than a normal distribution.

Least Significant Difference (LSD): A commonly used mean separation procedure. For example, the difference between two means (based on the same number of observations) is declared significant at any desired level of significance if it exceed the value derived from the following formula:

$LSD = t \sqrt{(2S^2/n)}$,

where t is the tabulated two-tailed t-value at the required probability and degrees freedom. S is the pooled standard deviation of the observations and n is the number of observations per mean.

Level of a factor: See Factor Level.

Level of significance: See Significance Level.

Linear: The form of a relationship among variables such that when any two variables are plotted, a straight line results. A relationship is linear if the effect on a dependent variable of a change of one unit in an independent variable is the same for all possible such changes.

Linear Regression: Linear regression is the prediction of one variable from another variable when the relationship between the variables is assumed to be linear (Y=aX+b).

Linear Transformation: A linear transformation of a variable involves multiplying each value of the variable by one number and then adding a second number. For example, consider the variable X with the following three values: 2, 3, and 7. One linear transformation of the variable would be to multiply each value by 2 and then to add 5. If the transformed variable is called Y, then Y = 2X+5. The values of Y are: 9, 11 and 19.

LSD: See Least Significant Difference.

Main Effect: The main effect of a factor is the effect of the factor averaging over all levels of other factors in the experiment. The main effect of irrigation water given in Factorial Design example could be assessed by computing the mean for the two levels of water averaging across all three levels of nitrogen dosage. The mean for the 5cm water is: (1.5 + 2.5 + 2.8)/3 = 2.27 and the mean for the 10cm water is: (1.8 + 2.2 + 1.9)/3 = 1.97. The main effect of water, therefore, involves a comparison of the mean of the 5cm water (2.27) with the mean of the 10cm water (1.97). Analysis of variance provides a significance test for the main effect of each factor in the design.

Mean: The arithmetic mean is what is commonly called the average. When the word "mean" is used without a modifier, it can be assumed that it refers to the arithmetic mean. The mean is the sum of all the scores divided by the number of scores. The formula in summation notation is: $\mu = \sum X/N$, where μ is the population mean and N is the number of scores. If the scores are from a sample, then the symbol M refers to the mean and N refers to the sample size. The formula for M is the same as the formula for μ. The mean is a good measure of central tendency for roughly symmetric distributions but can be misleading in skewed distributions since it can be greatly influenced by extreme scores. Therefore, other statistics such as the median may be more informative for distributions such as reaction time or family income that are frequently very skewed. The sum of squared deviations of scores from their mean is lower than their squared deviations from any other number. For normal distributions, the mean is the most efficient and therefore the least subject to sample fluctuations of all measures of central tendency.

Mean Square Error: The mean square error (MSE) is an estimate of the population variance in the analysis of variance. The mean square error is the denominator of the F ratio.

Measure of Association: A number (a statistic) whose magnitude indicates the degree of correspondence i.e. strength of relationship between two variables. An example is the Pearson product-moment correlation coefficient. Measures of association are different from statistical tests of association (e.g. Pearson chi-square, F-test) whose primary purpose is to assess the probability that the strength of a relationship is different from some pre-selected value (usually zero). See also Statistical Measure, Statistical Test.

Median: The median is the middle of a distribution: half the scores are above the median and half are below the median. The median is less sensitive to extreme scores than the mean and this makes it a better measure than the mean for highly skewed distributions.

Missing Data: Information that is not available for a particular case for which at least some other information is available.

Mixed model: A mixed model contains both fixed factors and random factors. The fixed factors might represent treatments, and the random factors might represent blocks, or rows and columns of a field experiment. See also fixed factor and random factor. A mixed model is as opposed to a fixed model or a random model, which are, respectively, models that contains only fixed factors and only random factors.

Model: see statistical model

Model assumptions: With all statistical models assumptions are assumed. For example, with ANOVA two assumptions are: the residuals are normally distributed and have homogeneity of variance.

Modified Joint Regression Analysis: A statistical method used to adjust for when marked differences between years in the range of expression of a characteristic can occur. For example, in a late spring, the heading dates of grass varieties can converge. The method involves fitting a model to the variety-by-year table of means for the characteristic such that the model allows for a proportionately larger or smaller variety response depending on the year the data was observed in. For greater detail see TGP/8.

Multiple Comparison Test: See Range Test.

Multivariate Normality: The form of a distribution involving more than two variables in which the distribution of one variable is normal for each and every combination of categories of all other variables. See also Normal Distribution.

Mutually Exclusive Events: Two events are mutually exclusive if it is not possible for both of them to occur at once. For example, if a dice is rolled, the event "getting a 1" and the event "getting a 2" are mutually exclusive since it is not possible for the dice to be both a one and a two on the same roll. The occurrence of one event "excludes" the possibility of the other event.

Nominal Scale: A classification of cases which defines their equivalence and non-equivalence, but implies no quantitative relationships or ordering among them. Analytic techniques appropriate for nominally scaled variables are not affected by any one-to-one transformation of the numbers assigned to the classes. See also Scale of Measurement.

Non-additive: Not additive. See Interaction.

Normal Distribution: A particular form for the distribution of a variable which, when plotted, produces a 'bell' shaped curve- symmetrical, rising smoothly from a small number of cases at both extremes to a large number of cases in the middle. Not all symmetrical bell-shaped distributions meet the definition of normality.

Normality: See Normal Distribution.

Normal Probability Plot: Gives a visual indication of whether the distribution of a set of data is approximately normal. The data are ranked and the percentile of each data value is obtained. The data value is then plotted against the normal equivalent deviate of the data value's percentile. If the distribution is close to normal, the plotted points will lie close to a straight line.

Null Hypothesis: The null hypothesis is an hypothesis about a population parameter. The purpose of hypothesis testing is to test the viability of the null hypothesis in the light of experimental data. Depending on the data, the null hypothesis either will or will not be rejected as a viable possibility. Consider a researcher interested in whether the Variety 1 is taller than Variety 2. The null hypothesis is that $\mu_1 - \mu_2 = 0$ where μ_1 is the mean height of Variety 1 and μ_2 is the mean height of Variety 2. Thus, the null hypothesis concerns the parameter $\mu_1 - \mu_2$ and the null hypothesis is that the parameter equals zero. The null hypothesis is often the reverse of what the experimenter actually believes; it is put forward to allow the data to contradict it. In the experiment, the experimenter probably expects that Variety 1 is taller than Variety 2. If the experimental data show that Variety 1 has a sufficiently higher plant height, then the null hypothesis that there is no difference in plant height can be rejected.

Ordinal Scale: A classification of cases into a set of ordered classes such that each case is considered equal to, greater than, or less than every other case. Analytic techniques appropriate for ordinally scaled variables are not affected by any monotonic transformation of the numbers assigned to the classes. See also Scale of Measurement.

Outlier: See Outlying Case.

Outlying Case (Outlier): A case whose score on a variable deviates substantially from the mean (or other measure of central tendency). Such cases can have disproportionately strong effects on statistics.

Parameter: A parameter is a numerical quantity measuring some aspect of a population of scores. For example, the mean is a measure of central tendency. Greek letters are used to designate parameters. Following are some examples of parameters of great importance in statistical analyses and the Greek symbol that represents each one. Parameters are rarely known and are usually estimated by statistics computed in samples. To the right of each Greek symbol is the symbol for the associated statistic used to estimate it from a sample.

Quantity	*Parameter*	*Statistic*
Mean	μ	M
Standard deviation	σ	S
Proportion	π	P
Correlation	ρ	R

Pattern Variable: A nominally scaled variable whose categories identify particular combinations (patterns) of scores on two or more other variables.

Pooled Standard Deviation: Square root of pooled variance.

Pooled Variance: Weighted average of a number of variances.

Population: A population consists of an entire set of objects, observations, or scores that have something in common. The distribution of a population can be described by several parameters such as the mean and standard deviation. Estimates of these parameters taken from a sample are called statistics.

Population standard: The maximum percentage of off-types that would be permitted if all individuals of the variety could be examined. (See document TGP/8: Part II, Section 8 "The Method of Uniformity Assessment on the Basis of Off-types).

Power: Power is the probability of correctly rejecting a false null hypothesis. Power is therefore defined as: $1 - \beta$ where β is the Type II error probability. If the power of an experiment is low, then there is a good chance that the experiment will be inconclusive. That is why it is so important to consider power in the design of experiments. There are methods for estimating the power of an experiment before the experiment is conducted. If the power is too low, then the experiment can be redesigned by changing one of the factors that determine power.

Precision: also called reproducibility or repeatability, is a term applied to the likely spread of estimates of a parameter in a statistical model. Thus it expresses the extent to which further estimates will show the same or similar results. It is measured by the standard error of the estimator.

Predicted Values: see prediction.

Prediction: For a given set of values for the explanatory variables of a model, the prediction, or predicted value, is the value of the response variable that is predicted by a statistical model. See also statistical model.

Probability Value: In hypothesis testing, the probability value is the probability of obtaining a statistic as different from or more different from the parameter specified in the null hypothesis as the statistic obtained in the experiment. The probability value is computed assuming the null hypothesis is true. If the probability value is below the significance level then the null hypothesis is rejected. The probability value is also known as the significance probability.

P-Value: See Probability Value.

Qualitative Variable: see Variable.

Quantitative Variable: see Variable.

Random Sampling: In random sampling, each item or element of the population has an equal chance of being chosen at each draw. A sample is random if the method for obtaining the sample meets the criterion of randomness (each element having an equal chance at each draw). The actual composition of the sample itself does not determine whether or not it was a random sample.

Random Term / Random Factor: A factor is random when the levels under study can be considered a random sample drawn from some large homogeneous population. A goal of the study may be to make a statement regarding the larger population. See also factor.

Randomized complete block design: See (Balanced) complete block design.

Randomisation: In designing an experiment to compare a number of varieties with each other it is important to randomize the varieties over the plots.

Range: The range is the simplest measure of spread or dispersion. It is equal to the difference between the largest and the smallest values. The range can be a useful measure of spread because it is so easily understood. However, it is very sensitive to extreme scores since it is based on only two values. The range should almost never be used as the only measure of spread, but can be informative if used as a supplement to other measures of spread such as the standard deviation or semi-interquartile range; e.g. the range of the numbers 1, 2, 4, 6, 12, 15, 19, 26 is 25 (=26 – 1).

Range Test: Range tests are used to compare each mean in an experiment with every other mean; they are based on the studentized range distribution. The most commonly used range tests are: Duncan's Multiple range Test, Student-Newman-Keul's Test, Tukey's Test.

Ranks: The expression of a particular characteristic (e.g., plant height) relative to other cases on a defined scale-as in 'Short,' 'Medium,' 'Tall' etc. Note that when the actual values of the numbers designating the relative positions (the ranks) are used in analysis they are being treated as an interval scale, not an ordinal scale. See also Interval Scale, Ordinal Scale.

Ratio Scale: Ratio scales are like interval scales except they have true zero points. A good example is the Kelvin scale of temperature. This scale has an absolute zero. Thus, a temperature of 300 Kelvin is twice as high as a temperature of 150 Kelvin.

Regression Line: A regression line is a line drawn through a scatter-plot of two variables, one is the independent variable (Y) and the other is the dependent variable. The line is chosen so that it comes as close to the points as possible. In linear regression, Y values are obtained from several populations, each population being determined by a corresponding X value. The randomness of Y is essential and it is assumed that the Y populations are normally distributed and have a common variance.

Relative Frequency Distribution: See Frequency Distribution.

REML: Restricted Maximum Likelihood method used to analyse a non-orthogonal ANOVA with more than one type of experimental unit.

Residual: Unexplained part of an observation. Remains after fitting a model. It is the difference of the observation and the prediction from the model.

Replication: In order to know whether a difference between a new variety and another variety exists, replicates are needed of the varieties. This is in order to know whether the difference is a real difference between the varieties or a difference due to random fluctuations.

Resolvable Design: A resolvable design is one in which each block contains only a selection of the treatments, but the blocks can be grouped together into subsets in which each treatment is replicated once. The groupings of blocks thus form replicates.

Sample: A sample is a subset of a population. Since it is usually impractical to test every member of a population, a sample from the population is typically the best approach available. Inferential statistics generally require that sampling be random although some types of sampling seek to make the sample as representative of the population as possible by choosing the sample to resemble the population on the most important characteristics.

Sample Size: The sample size is very simply the size of the sample. If there is only one sample, the letter "N" is often used to designate the sample size. If samples are taken from each of "a" populations, then the small letter "n" is often used to designate size of the sample from each population. When there are samples from more than one population, N is used to indicate the total number of subjects sampled and is equal to (a)*(n). If the sample sizes from the various populations are different, then n_1 would indicate the sample size from the first population, n_2 from the second, etc. The total number of subjects sampled would still be indicated by N. When correlations are computed, the sample size (N) refers to the number of subjects and thus the number of pairs of scores rather than to the total number of scores. The symbol N also refers to the number of subjects in the formulas for testing differences between dependent means. Again, it is the number of subjects, not the number of scores.

Sampling Fluctuation: Sampling fluctuation refers to the extent to which a statistic takes on different values with different samples. That is, it refers to how much the statistic's value fluctuates from sample to sample. A statistic whose value fluctuates greatly from sample to sample is highly subject to sampling fluctuation.

Scale of Measurement: Scale of measurement refers to the nature of the assumptions one makes about the properties of a variable; in particular, whether that variable meets the definition of nominal, ordinal, interval or ratio measurement. See also Nominal Scale, Ordinal Scale, Interval Scale, Ratio Scale.

SED: Abbreviation of Standard Error of Difference of two means.

SEM: Abbreviation of Standard Error of Mean. See Standard Error of Mean.

Semi-Interquartile Range: The semi-interquartile range is a measure of spread or dispersion. It is computed as one half the difference between the 75th percentile [often called (Q3)] and the 25th percentile (Q1). The formula for semi-interquartile range is therefore: (Q3-Q1)/2. Since half the scores in a distribution lie between Q3 and Q1, the semi-interquartile range is 1/2 the distance needed to cover 1/2 the scores. In a symmetric distribution, an interval stretching from one semi-interquartile range below the median to one semi-interquartile above the median will contain 1/2 of the scores. This will not be true for a skewed distribution, however. The semi-interquartile range is little affected by extreme scores, so it is a good measure of spread for skewed distributions. However, it is more subject to sampling fluctuation in normal distributions than is the standard deviation and therefore not often used for data that are approximately normally distributed.

Significance Level: In hypothesis testing, the significance level is the probability threshold used for rejecting the null hypothesis. The significance level is used in hypothesis testing as follows: First, the results of the experiment are compared with the results that would be expected if the null hypothesis were true. Then, assuming the null hypothesis is true, the probability of observing as or more extreme results is computed. Finally, this probability is compared to the significance level. If the probability is less than or equal to the significance level, then the null hypothesis is rejected and the outcome is said to be statistically significant. Traditionally, experimenters have used either the 0.05 level (sometimes called the 5% level) or the 0.01 level (1% level), although the choice of levels is largely subjective. The lower the significance level, the more the data must diverge from the null hypothesis to be significant. Therefore, the 0.01 level is more conservative than the 0.05 level. The Greek letter alpha (α) is used to indicate the significance level.

Significance Test: A significance test is performed to determine if an observed value of a statistic differs enough from a hypothesized value of a parameter to draw the inference that the hypothesized value of the parameter is not the true value. The hypothesized value of the parameter is called the “null hypothesis”. A significance test consists of calculating the probability of obtaining a statistic as or more extreme than the statistic obtained in the sample assuming that the null hypothesis is correct. If this probability is sufficiently low, then the difference between the parameter and the statistic is said to be “statistically significant”. Just how low is sufficiently low? The choice is somewhat arbitrary but by convention levels of 0.05 and 0.01 are most commonly used. For instance, in Plant Breeder’s Rights varietal distinctness based on measured characteristics are often tested at 0.01 level.

Significant: A test is said to be significant if the test statistic supersedes a predetermined threshold.

Simple Effect: A simple effect of a factor is the effect at a single level of another factor. Often simple effects are computed following a significant interaction.

Size of Test: Synonym of Significance Level.

Skewness: A measure of lack of symmetry of a distribution.

Spread: See Dispersion.

Standard Deviation: It is the square root of the average squared deviation of each observation from the arithmetic mean. In other words it is the square root of variance. See Variance.

Standard Error: The standard error of a statistic is the standard deviation of the sampling distribution of that statistic. Standard errors are important because they reflect how much sampling fluctuation a statistic will show. The inferential statistics involved in the construction of confidence intervals and significance testing are based on standard errors. The standard error of a statistic depends on the sample size. In general, the larger the sample size the smaller the standard error. The standard error of a statistic is usually designated by the Greek letter sigma (σ) with a subscript indicating the statistic. For instance, the standard error of the mean is indicated by the symbol: σ_M.

Standard Error of Mean: The standard error of the mean is designated as: σ_M. It is the standard deviation of the sampling distribution of the mean. The formula for the standard error of the mean is: $\sigma_M = \sigma/\sqrt{N}$, where σ is the standard deviation of the original distribution and N is the sample size (the number of scores each mean is based upon). This formula does not assume a normal distribution. However, many of the uses of the formula do assume a normal distribution. The formula shows that the larger the sample size, the smaller the standard error of the mean. More specifically, the size of the standard error of the mean is inversely proportional to the square root of the sample size.

Standard Normal Distribution: The standard normal distribution is a normal distribution with a mean of 0 and a standard deviation of 1. Normal distributions can be transformed to standard normal distributions by the formula:

$$Z = (X- \mu)/ \sigma$$

where X is a score from the original normal distribution, μ is the mean of the original normal distribution, and σ is the standard deviation of original normal distribution. The standard normal distribution is sometimes called the Z-distribution.

Standard Scores: When a set of scores are converted to z-scores, the scores are said to be standardized and are referred to as standard scores. Standard scores have a mean of 0 and a standard deviation of 1.

Standardized Coefficient: When an analysis is performed on variables that have been standardized so that they have variances of 1.0, the estimates that result are known as standardized coefficients; for example, a regression run on original variables produces unstandardized regression coefficients known as b's, while a regression run on standardized variables produces standardized regression coefficients known as betas. (In practice, both types of coefficients can be estimated from the original variables.)

Standardized Variable: A variable that has been transformed by multiplication of all scores by a constant and/or by the addition of a constant to all scores. Often these constants are selected so that the transformed scores have a mean of zero and a variance (and standard deviation) of 1.0.

Statistical Independence: A complete lack of covariation between variables, a lack of association between variables. When used in analysis of variance or covariance, statistical independence between the independent variables is sometimes referred to as a balanced design.

Statistical Measure: A number (a statistic) whose size indicates the magnitude of some quantity of interest e.g., the strength of a relationship, the amount of variation, the size of a difference, the level of income, etc. Examples include means, variances, correlation coefficients, and many others. Statistical measures are different from statistical tests. See also Statistical Test.

Statistical Method: Examples include Analysis of Variance (ANOVA), Modified Joint Regression Analysis, COYD, COYU, and many others.

Statistical Model: is a formalized mathematical expression describing the process that is assumed to have generated a set of observed data. A statistical model provides a general structure for the analysis of the observed data and also makes clear the assumptions that are necessary for the analysis to be valid. The observed data usually comprise a variable of primary importance, i.e. the response variable, and one or more explanatory variables. The usual objective of the analysis is to study the effects of treatments and/or other explanatory variables on the response variable, and so provide a suitable statistical model for the relationship between it and the explanatory variables. Thus the model predicts or explains the response variable using the explanatory variables.

Statistical Significance: Significance tests are performed to see if the null hypothesis can be rejected. If the null hypothesis is rejected, then the effect found in a sample is said to be statistically significant. If the null hypothesis is not rejected, then the effect is not significant. The experimenter chooses a significance level before conducting the statistical analysis. The significance level chosen determines the probability of a Type I error.

Statistical Test: A statistical test can be used to assess the probability that a statistical measure deviates from some pre-selected value (often zero) by no more than would be expected due to the operation of chance if the cases studied were randomly selected from a larger population. Examples include Pearson chi-square, F test, t test, and many others. Statistical tests are different from statistical measures. See also Statistical Measure and Hypothesis Testing.

Statistic: Any numerical quantity (such as the mean) calculated from a sample. Such statistics are used to estimate parameters. The term "statistics" sometimes refers to calculated quantities regardless of whether or not they are from a sample.

Statistics: The word "statistics" is used in several different senses. In the broadest sense, "statistics" refers to a range of techniques and procedures for analyzing data, interpreting data, displaying data, and making decisions based on data. This is what courses in "statistics" generally cover. In a second usage, statistics is used as the plural of statistic.

Student's t-Distribution: Student's t-distribution is the distribution of the ratio of a standard normal variable and the square root of a chi-squared variable divided by its degrees of freedom, where the standard normal and the chi-squared variables are independent. It is used to compute probabilities and hence test significance in t-tests. See also t-test. The Student's t-distribution has one parameter, its degrees of freedom, which is the same as the degrees of freedom of the chi-squared variable it is calculated from. The shape of the Student's t-distribution resembles the bell shape of a standard normal variable, except that it is a bit lower and wider. As the number of degrees of freedom grows, the Student's t-distribution approaches the standard normal distribution.

Symmetric Distribution: is a distribution without skewness. Thus its opposing sides are symmetric about the mean and median.

t-Distribution: See Student's t-distribution.

Test: See Statistical Test

Test Statistic: A numerical quantity calculated from the observations with which a test is performed.

Transformation: A change made to the scores of all cases on a variable by the application of the same mathematical operation(s) to each score. (Common operations include addition of a constant, multiplication by a constant, taking logarithms, arcsine, ranking, bracketing, etc.).

t-Test: A t-test is any of a number of tests based on the t distribution. The general formula for t is:

t = (statistic – hypothesised value) / estimated standard error of statistic

The most common t-test is a test for a difference between two means.

Two-Point Scale: If each case is classified into one of two categories (e.g., present/absent, tall/dwarf, dead/alive) the variable is a two-point scale. For analytic purposes, two-point scales can be treated as nominal scales, ordinal scales, or interval scales.

Type I and Type II Error: There are two kinds of errors that can be made in significance testing: (1) a true null hypothesis can be incorrectly rejected and (2) a false null hypothesis can fail to be rejected. The former error is called a Type I error and the latter error is called a Type II error. These two types of errors are defined in the following table. The probability of a Type I error is designated by the Greek letter alpha (α) and is called the Type I error rate; the probability of a Type II error (the Type II error rate) is designated by the Greek letter beta (β). A Type II error is only an error in the sense that an opportunity to reject the null hypothesis correctly was lost.

		Statistical Decision	
		Reject H_o	Do not Reject H_o
True situation	H_o True	Type I error	Correct
	H_o False	Correct	Type II error

Type of Characteristic: See TGP/8.

Type of Expression: See TGP/8.

Unbalanced Data: Observations not coming from a balanced design.

Variability: See Dispersion.

Variable: A variable is any measured characteristic or attribute that differs for different subjects. For example, if the height of 30 plants were measured, then height would be a variable. Variables can be quantitative or qualitative. (Qualitative variables are sometimes called “categorical variables”). Quantitative variables are measured on an ordinal, interval, or ratio scale; qualitative variables are measured on a nominal scale.

Variance: The variance is a measure of how spread out a distribution is. It is computed as the average squared deviation of each observation from its arithmetic mean. Standard deviation is measured as the square root of variance. Both variance and standard deviation are measures of dispersion of data.

Variance Component: variance estimate of a random term in a mixed model.

Variation: See Dispersion.

Weighted Data: Weights are applied when one wishes to adjust the impact of cases in the analysis, e.g., to take account of the number of population units that each case represents. In sample surveys weights are most likely to be used with data derived from sample designs having different selection rates or with data having markedly different subgroup response rates.

Within plot standard deviation: When speaking about variance components this term is commonly used for the variability within experimental units, e.g. within plots. For example, if observations are made on several plants on the same plot it is the standard deviation between these plants.

Z-Distribution: The standard normal distribution is sometimes called the Z-distribution. See Standard Normal Distribution.

[Index of All Terms follows]

INDEX OF ALL TERMS

A

Abaxial · 104
Acceptance probability · 118
Acicular · 18, 42, 104
Aciculate · 56, 67, 69, 104
Actinomorphic · 104
Aculeate · 48, 55, 104
Acuminate · 41, 104
Acute · 40, 41, 104
Adaxial · 104
Additional characteristic · 4
Additional Standard Wording (Test Guidelines) · 4
Additional test · 4
Additivity · 118
Adherent · 51, 104
Administrative and Legal Committee · 4
Adnate · 51, 104
Adpressed · 50, 51, 104
Alate · 18
Alpha (α) · 118
Alpha-design · 118
Alternative Hypothesis · 118
Angle of the base · 29
Angular set · 17
ANOVA · 118
Anthela · 53, 104
Anthocyanin · 66
Apex · 15, 31, 41, 104
Apex shapes · 41
Apex/tip shape characteristics · 31
Apical · 104
Apiculate · 41, 104
Apopetalous · 104
Appendages · 56
Arachnoid · 55, 104
Arched · 50, 104
Arching · 104
Area · 38, 59, 62, 63, 64, 65, 68
Aristate · 41, 104
Ascending · 104
Assumptions · 118
Asterisked characteristic · 4
ASW (Test Guidelines) · 4
Asymmetric · 104
Asymmetric apex · 43
Asymmetric base · 43
Asymmetric full shape · 43
Asymmetric position · 43
Attenuate · 40, 104
Attitude · 104
Attitude / direction (plant parts) · 50
Attitude / direction (Plant parts) · 45
Atypical plant · 4
Auriculate · 40, 105
Auriculiform · 18, 105
Authority · 4
Axillary · 105

B

Balanced Complete Block Design · 118
Balanced Incomplete Block Design · 118
Banded · 67, 69, 105
Bar graph · 118
Barbate · 55, 105
Barbed · 55, 105
Basal · 105
Base · 15, 105
Base (proximal part) · 15
Base Shape Characteristics · 29
Base shapes · 40
Bearded · 105
Beta (β) · 118
Between plot standard deviation · 119
Bias · 119
Bicrenate · 54, 105
Bidentate · 54, 105
Binomial Distribution · 119
Biserrate · 54, 105
Bivariate Normality · 119
Blistered · 105
Block Design · 119
Blocking · 119
Blotch · 68, 105
Blotched · 67, 68, 105
BMT · 4
Box plot · 119
Box-and-whisker diagram · 119
Breeder · 4
Breeder's Right · 4
Bristly · 105
Broad upright · 45
Bullate · 56, 105
Bumpy · 105

C

CAJ · 5
Calathid · 53
Calcarate · 40
Campanulate · 42, 105
Canaliculate · 42, 105
Capitate · 42, 105
Capitulum (flower head) · 52, 105
Cartilaginous · 105
Categorical variables · 119
Catkin · 52
Catkin (ament) · 105
Caudate · 41, 105
CC · 5
Central bar · 67, 69, 105

Central Limit Theorem · 119
Characteristic · 5
Characteristics for Plant Structures · 44
Chart for Other Plane Shapes · 18
Chart for Simple Symmetric Plane Shapes · 16, 17
Chi-Square · 120
Chi-squared (χ^2) distribution · 120
Ciliate · 54, 56, 105
Circular · 105
Cirrhous · 41, 106
Clambering · 49, 106
Clavate · 18, 42, 106
Clawed · 18, 106
Climbing · 49
Climbing (Climber) · 106
Clustered · 106
Coalesced · 106
Coarse · 106
Coefficient · 120
Coherent · 51, 106
Color · 39, 57, 58, 106
Color change over time · 66
Color chart · 58, 59, 60
Color combinations · 58
Color Distribution · 70, 106
Color names · 59, 60, 72, 106
Color patterns · 57, 62, 64, 65, 67, 68, 70
Color range · 58, 59
Color: Approach according to defined parts of an organ · 63
Color: Approach according to the RHS Colour Chart number (Lisbon approach) · 63
Color: Approach according to the size of the surface area · 62
Color: Approach according to tissue layers · 62
Color: Hue · 57, 63, 72, 109
Color: Intensity · 57, 58, 59, 66, 110
Color: Saturation · 57, 114
Columnar · 49, 106
Combination of full plane-, base- and apex shape characteristics · 34
Combined characteristic · 5
Comparable varieties · 5
Complete Block Design · 118
Completely Randomised Design · 120
Composite characteristic · 5, 38
Compound (double) umbel · 52
Compound (triple) umbel · 52
Compound capitulum · 52
Compound inflorescences · 52
Compound spike · 52
Compressed · 16, 17, 106
Concave · 106
Confidence Interval · 120
Confounding · 120
Congested · 106
Conic · 42, 106
Connate · 51, 106
Connivent · 106
Consistency · 120
Conspicuous · 66, 106
Conspicuousness · 64, 66, 106
Consultative Committee · 5
Contiguous · 106
Contingency Table · 120
Continuous · 106
Continuous Variable · 121
Contracting Party · 5
Convention · 6
Convex · 106
Convolute · 50, 106
Cordate · 40, 106
Cordiform · 18, 107
Coriaceous · 107
Correlation · 121
Corrugated · 56, 107
Council · 6
COYD · 121
COYU · 121
Crenate · 54, 107
Crenulate · 54, 107
Crispate · 54, 107
Critical Value · 121
Crowded · 107
Crustaceous · 107
Cuneate · 40, 107
Cuneiform · 107
Cup-shaped · 42, 107
Curvature at the base · 29
Cuspidate · 41, 107
Cyathia · 53
Cyathium · 53
Cylindric · 42, 107
Cymose corymb · 53, 107

D

Decumbent · 44, 49, 107
Decurrent · 40, 107
Deflexed · 107
Degrees of Freedom · 121
Deltate · 107
Deltoid · 42, 107
Dense · 107
Density · 107
Dentate · 54, 107
Denticulate · 54, 107
Dependent Variable · 121
Depressed · 107
Descending · 107
Design of experiment · 121
Differentiated tip · 31, 41
Diffuse · 107
Discoid · 42, 107
Discrete Variable · 121
Dispersion · 121
Distal · 107
Distal part · 15
Distinct · 107
Distinct / Distinctness · 6
Distribution · 59, 62, 63, 64, 65, 66, 67, 70, 71, 72, 122
Divaricate · 49, 108
Divergent · 108
Dorsal · 108

Downwards · 46, 108
Drafter's Kit for Test Guidelines · 6
Drilled plot · 6
Drooping · 44, 45, 49, 108
DUS · 6
DUS test · 6
DUST/DUSTNT · 6
Dwarfed (Dwarf) · 108

E

Ear-row · 6
Editorial Committee · 6
Effect · 122
Efficiency · 122
Ellipsoid · 42, 108
Elliptic · 17, 108
Elongated · 16, 17
Emarginate · 41, 108
Enlarged Editorial Committee · 6
Entire · 54, 108
Equilateral · 108
Erect · 44, 46, 50, 108
Erose · 54, 108
Essential characteristic · 6
Estimation · 122
Estimator · 122
Even · 108
Example variety · 6
Expected Value · 122
Experimental Design · 122
Experimental Unit · 122
Exserted · 51, 108

F

F Distribution · 122
F Ratio · 123
Factor · 122
Factor Level · 122
Factorial Design · 122
Falcate · 18, 108
Fan shape · 108
Farinaceous (Farinose) · 108
Fasciated · 108
Fastigiate · 45, 49, 108
Felted · 108
Fibrous · 108
Filiform · 42, 108
Fimbriate · 54, 56, 108
Fine · 108
Fisher's Exact Test · 123
Fitted Constants · 123
Fitted Values of dependent variable · 123
Fixed factor · 123
Fixed term · 123
Flabellate · 108
Flabellate (fan shape) · 18
Fleshy · 108
Flexuous · 108
Floccose · 55, 109
Flush · 67, 68, 109
Form · 109
Free · 47, 51, 109
Frequency Distribution · 123
Frequency Table · 123
Full plane shape characteristics · 19
Full plane shapes · 40
Funnel-shaped · 42, 109
Fusiform · 42, 109

G

G · 6
GAIA · 6
General Introduction · 6
GENIE database · 7
Glabrate · 109
Glabrescent · 109
Glabrous · 109
Glandular · 56, 109
Globose · 42, 109
GN (Test Guidelines) · 7
Granular (Grainy) · 109
Grooved · 56, 109
Ground color · 62, 63, 109
Grouping characteristic · 7
Grouping varieties · 7
Growing cycle / independent growing cycle · 7
Growth habit · 44
Guidance Note (Test Guidelines) · 7

H

Habit · 49
Hairiness · 55
Hairs and spines · 48
Hastate · 40, 109
Hastiform · 18, 109
Herbaceous (Herb) · 109
Heterogeneity · 123
Heteroscedasticity · 123
Heterothetic compound raceme · 52
Hierarchical Analysis · 123
Hirsute · 55, 109
Hispid · 55, 109
Histogram · 123
Homeothetic compound raceme · 52
Homogeneity of Variance · 123
Homoscedasticity · 123
Horizontal · 46, 50, 109
Hue · 57, 63, 72, 109
Hypothesis Testing · 123

I

Illustrations of plant structures · 49
Included · 51, 109
Incomplete Block Design: · 124

Inconspicuous · 66, 109
Incurved · 50, 110
Independence · 124
Independent Variable · 124
Indistinct · 110
Inequilateral · 110
Inflated · 110
Inflexed · 50, 110
Inflorescence · 52
Infundibular · 109, 110
Intensity · 57, 58, 59, 66, 110
Interaction · 124
Interested Expert (Test Guidelines) · 7
Intermediate · 44, 47
Interquartile Range · 124
Interrupted · 110
Interval Scale · 124
Intervening Variable · 124
Intricate · 110
Involute · 50, 54, 110
Inwards · 50, 110

K

Kidney-shaped · 110
Kurtosis · 124

L

Laciniate · 41
Lanate · 48, 55, 110
Lanceolate · 110
Lateral · 110
Lateral outline · 15, 16, 19
Lax · 110
Leading Expert (Test Guidelines) · 7
Least Significant Difference · 124
Lemniscate · 18
Lenticular · 42, 110
Lepidote · 56, 110
Leprous · 110
Level of a factor · 124
Level of significance · 124
Ligneous · 110
Ligulate · 110
Linear · 42, 110, 124
Linear Regression · 124
Linear Transformation · 125
Lisbon · 110
Lisbon approach · 62, 63
Lobe, Lobed · 110
Long · 16
Longitudinal · 110
Lorate · 110
LSD · 124, 125
Lunate · 18, 110
Lyrate · 18, 110

M

M, MG, MS · 7
Main color · 72, 110
Main Effect · 125
Marbled · 67, 69, 110
Marginal · 111
Marginal zone · 67, 69, 111
Marginate · 67, 69, 111
Margins · 47, 54
Mean · 125
Mean Square Error · 125
Measure of Association · 125
Measurement · 7
Median · 125
Member of the Union · 7
Membranous · 111
Minor color · 58
Missing Data · 125
Mixed model · 125
Model · 125
Model assumptions · 125
Modified Joint Regression Analysis · 125
Mucronate · 41, 111
Multiple Comparison Test · 125
Multivariate Normality · 126
Mutually Exclusive Events · 126

N

Net · 67, 111
Netted · 67, 69, 111
Nominal Scale · 126
Non-additive · 126
Non-fastigiate · 45
Normal Distribution · 126
Normal Probability Plot · 126
Normality · 126
Note · 7
Null Hypothesis · 126

O

Obconic · 42, 111
Obcordate · 41, 111
Obcordiform · 18, 111
Obdeltate · 111
Oblanceolate · 111
Oblate · 111
Oblique · 51, 111
Obloid · 42, 111
Oblong · 17, 42, 111
Obovate · 17, 111
Obovoid · 42, 111
Obtriangular · 17, 111
Obtrullate · 17, 111
Obtuse · 40, 41, 112
Off-type · 8
Open · 112
Orbicular · 112

Ordinal Scale · 126
Outlier · 126
Outlying Case · 126
Outwards · 46, 50, 112
Ovate · 17, 112
Over color · 62, 63, 66, 112
Overlapping · 47
Ovoid · 42, 112

P

Panicle · 53, 112
Pannose · 55, 112
Papillose · 56, 112
Papyraceous, Papery · 112
Parallel set · 17
Parameter · 126
Parent(al) formula · 8
Patches · 67, 112
Pattern Variable · 127
Patterns · 57, 62, 64, 65, 67, 68, 70
PBR · 8
Pear-shaped · 112
Pearson · 121
Pedicel · 112
Pedicelled (Pedicellate) · 112
Peduncle · 112
Peltate · 42, 112
Pendent · 50, 112
Pendulous · 50, 112
Perpendicular · 112
Perspective from which to observe plant shapes · 36
Petiole · 112
Petiolule · 112
Photographs to illustrate color distribution and color patterns · 70
Pigment · 62, 66
Pigments (anthocyanin, carotenoid) · 66
Pilose · 112
Plant · 8
  growth type · 44
  type · 44
Plant (or tree)
  growth habit · 44
  type · 44
Plant Breeders' Right · 8
Plant grouping · 8
Plant Variety Database · 8
PLUTO database · 8
Pointed · 112
Pooled Standard Deviation · 127
Pooled Variance · 127
Population · 127
Population standard · 127
Position of broadest part · 15, 16, 19
Power · 127
Precision · 127
Predicted Values · 127
Prediction · 127
Predominant color · 58
Prickly · 112
Probability Distribution · 122
Probability Value · 127
Procumbent · 112
Procumbent (not rooting) · 49
Profile · 113
Prominence · 64
Prominent · 113
Prostrate · 44, 49, 113
Proximal · 113
Pseudoqualitative characteristic · 8
Pubescent · 55, 113
Pungent · 41, 113
P-Value · 127
Pyramidal · 42, 113
Pyriform · 42, 113

Q

Quadrangular · 113
Qualitative characteristic · 8
Qualitative Variable · 127
Quantitative characteristic · 9
Quantitative Variable · 127
Quantity · 126

R

Raceme · 52, 113
Racemose corymb · 52, 113
Ramified · 49, 113
Random Factor · 127
Random Sampling · 127
Random Term · 127
Randomisation · 127
Randomized complete block design · 118, 127
Range · 127
Range Test · 128
Ranks · 128
Ratio length/width · 14, 16, 17, 19
Ratio Scale · 128
Ratio width/length · 14, 16
Reclining · 49, 113
Rectangular · 113
Recurved · 50, 113
Reflexed · 46, 50, 113
Regression Line · 128
Relative Frequency Distribution · 128
Relative position · 47, 51
Relevant characteristic · 9
REML · 128
Reniform · 18, 113
Repand · 54, 113
Replication · 128
Residual · 128
Resinous · 113
Resolvable Design · 128
Reticulate · 56, 113
Retuse · 41, 113
Revolute · 50, 54, 113

Rhombic · 17, 113
Rhomboid · 42, 113
RHS Colour Chart · 39, 58, 59, 60, 62, 63, 64, 65, 71, 72, 73, 74, 89
Rigid · 113
Rotate · 42, 113
Rough · 113
Round · 113
Rounded · 40, 41, 114
Rounded set · 17
Rugose · 56, 114

S

S · 9
Sagittate · 18, 40, 114
Salverform · 42, 114
Sample · 128
Sample Size · 128
Sampling Fluctuation · 128
Saturation · 57, 114
Scabrous · 114
Scale of Measurement · 128
Secondary color · 62, 72, 114
SED · 128
SEM · 129
Semi-ellipsoid · 42, 114
Semi-erect · 44, 46, 50, 114
Semi-Interquartile Range · 129
Semi-prostrate · 44
Semi-upright · 114
Sericeous · 55, 114
Serrate · 54, 114
Serrulate · 54, 114
Sessile · 51, 114
Setaceous · 114
Setose · 55, 114
Shape · 17, 114
Shape illustrations · 40
Shape of apex · 19
Shape of base · 19
Shape: defining the characteristic · 39
Shape: Technical Questionnaire Characteristics · 39
Shape: types of expression and states / notes · 38
Shape: Use of composite characteristics for determining distinctness and uniformity · 38
Shape-related Characteristics · 19
Sheathing · 42, 114
Short · 16
Significance Level · 129
Significance Test · 129
Significant · 129
Simple Effect · 129
Simple inflorescences · 52
Single color · 58, 59
Single flower · 114
Sinuate · 54, 114
Size of Test · 129
Skewness · 129
Smooth · 114
Spaced plant plot/trial · 9
Spadix · 52, 114
Sparse · 114
Spathulate · 114
Spatulate · 18, 114
Special characteristic · 9
Speckle · 68, 114
Speckled · 67, 68, 114
Spheric · 114
Spike · 52, 115
Spikelets · 53
Spine · 115
Spines · 55
Spinose · 55, 115
Spiny · 115
Spiral · 42, 115
Spot · 68, 115
Spotted · 67, 68, 115
Spread · 129
Spreading · 44, 45, 49, 115
Spur Type · 115
Squamose · 115
Square · 115
Stability · 9
Stalked · 115
Stance · 115
Standard color · 60
Standard Deviation · 129
Standard Error · 129
Standard Error of Mean · 129
Standard Normal Distribution · 130
Standard Scores · 130
Standard Test Guidelines characteristic · 9
Standardized Coefficient · 130
Standardized Variable · 130
Star-shaped · 115
State of Expression · 9
Statistic · 126, 130
Statistical Independence · 130
Statistical Measure · 130
Statistical Method · 130
Statistical Model · 130
Statistical Significance · 130
Statistical Test · 130
Statistics · 131
Stellate · 18, 115
Stipitate · 115
Stipitate (stalked) · 51
Stoloniferous · 115
Stoloniferous (rooting) · 49
Striate · 56, 115
Strigose · 55, 115
Striped · 67, 69, 115
Stripes · 67, 115
Structure · 44
Student's t-Distribution · 131
Subgroup (Test Guidelines) · 9
Subulate · 18, 115
Syconium · 53
Symmetric · 115
Symmetric Distribution · 131
Symmetry · 36, 43
Sympetalous · 115

T

TC · 10
TC-EDC · 10
t-Distribution · 131
Technical Committee · 10
Technical Questionnaire · 10
Technical Working Party · 10
Technical Working Party for Agricultural Crops · 10
Technical Working Party for Fruit Crops · 10
Technical Working Party for Ornamental Plants and Forest Trees · 10
Technical Working Party for Vegetables · 10
Technical Working Party on Automation and Computer Programs · 10
Terete · 42, 115
Terminal · 115
Territory · 10
Tesselate · 67, 69, 115
Test · 131
Test Guidelines · 10
Test Guidelines characteristic · 10
Test Guidelines Subgroup · 10
Test Statistic · 131
Tetrahedronal · 42, 115
Texture · 56
TG · 11
TG Drafter's Kit · 10
TG Template · 11
TGP documents · 11
Thorn · 115
Thorny · 115
Three-dimensional shape characteristics · 36
Three-Dimensional Shapes · 42
Thyrse · 53, 115
Thyrsoid · 53
Tip · 31, 115
Tomentose · 48, 55, 116
Top · 116
Touching · 47
TQ · 11
Transformation · 131
Transverse · 116
Transverse band · 67, 69, 116
Trapezoidal · 18, 116
Triangular · 17, 116
Trichome · 116
Trullate · 17, 116
Truncate · 40, 41, 116
t-Test · 131
Tubular · 42, 116
TWA · 11
TWC · 11
TWF · 11
Twining · 49, 116
TWO · 11
Two-Point Scale · 131
TWP · 11
TWV · 11
Type I and Type II Error · 131
Type of Characteristic · 131
Type of Expression · 131

U

Umbel · 52, 116
Unbalanced Data · 131
Undulate · 54, 116
Unguiculate · 116
Uniformity · 11
Unsuitable color name · 116
Unsuitable color names · 60
UPOV · 11
UPOV code · 11
UPOV Code System · 11
UPOV color groups · 116
UPOV Color Groups · 72, 73, 74, 89
UPOV Lex · 11
UPOV member · 11
Upright · 44, 45, 49, 116
Upright to spreading · 44
Upwards · 46, 116
Urceolate · 42, 116

V

V, VG, VS · 11
Variability · 131
Variable · 132
Variance · 132
Variance Component · 132
Variation · 132
Variegation · 65, 116
Variety · 12
Variety collection · 11
Variety denomination · 11
Variety of common knowledge · 11
Veined · 67, 69, 116
Velutinous · 55, 116
Ventral · 116
Verrucose · 56, 116
Vertical · 116
Villous · 116
Viscid · 116
Visual observation (V) · 12

W

Wart · 117
Weeping · 44, 45, 49, 117
Weighted Data · 132
Within plot standard deviation · 132
Working Group on Biochemical and Molecular Techniques, and DNA-Profiling in Particular · 12
Wrinkled · 117

Z

Z-Distribution · 132
Zig-zag · 50, 117
Zygomorphic · 117

[End of document]