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INTERNATIONAL UNION FOR THE PROTECTION OF NEW VARIETIES OF PLANTS

Geneva

DRAFT

KANGAROO PAW *

UPOV Code(s): ANIGO

Anigozanthos Labill.

GUIDELINES

FOR THE CONDUCT OF TESTS

FOR DISTINCTNESS, UNIFORMITY AND STABILITY

prepared by experts from Australia
to be considered by the
Technical Working Party for Ornamental Plants and Forest Trees
at its fiftieth session, to be held in Victoria, British Columbia, Canada
from 2017-09-11 to 2017-09-15

Disclaimer: this document does not represent UPOV policies or guidance

Alternative names:*

Botanical name	*English*	*French*	*German*	*Spanish*
Anigozanthos Labill.	Kangaroo Paw	Anigozanthos	Känguruhblume	Anigozanthos

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

ASSOCIATED DOCUMENTS

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

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

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1. Subject of these Test Guidelines

These Test Guidelines apply to all varieties of *Anigozanthos* Labill.

2. Material Required

2.1 The competent authorities decide on the quantity and quality of the plant material required for testing the variety and when and where it is to be delivered. Applicants submitting material from a State other than that in which the testing takes place must ensure that all customs formalities and phytosanitary requirements are complied with.

2.2 The material is to be supplied in the form of young plants.

2.3 The minimum quantity of plant material, to be supplied by the applicant, should be:

10

2.4 The plant material supplied should be visibly healthy, not lacking in vigor, nor affected by any important pest or disease.

2.5 The plant material should not have undergone any treatment which would affect the expression of the characteristics of the variety, unless the competent authorities allow or request such treatment. If it has been treated, full details of the treatment must be given.

3. Method of Examination

3.1 Number of Growing Cycles

The minimum duration of tests should normally be a single growing cycle.

3.2 Testing Place

Tests are normally conducted at one place. In the case of tests conducted at more than one place, guidance is provided in TGP/9 “Examining Distinctness”.

3.3 Conditions for Conducting the Examination

3.3.1 The tests should be carried out under conditions ensuring satisfactory growth for the expression of the relevant characteristics of the variety and for the conduct of the examination.

3.3.2 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. The color chart and version used should be specified in the variety description.

3.4 Test Design

3.4.1 Each test should be designed to result in a total of at least 10 plants.

3.4.2 The design of the tests should be such that plants or parts of plants may be removed for measurement or counting without prejudice to the observations which must be made up to the end of the growing cycle.

3.5 Additional Tests

Additional tests, for examining relevant characteristics, may be established.

4. Assessment of Distinctness, Uniformity and Stability

4.1 Distinctness

4.1.1 General Recommendations

It is of particular importance for users of these Test Guidelines to consult the General Introduction prior to making decisions regarding distinctness. However, the following points are provided for elaboration or emphasis in these Test Guidelines.

4.1.2 Consistent Differences

The differences observed between varieties may be so clear that more than one growing cycle is not necessary. In addition, in some circumstances, the influence of the environment is not such that more than a single growing cycle is required to provide assurance that the differences observed between varieties are sufficiently consistent. One means of ensuring that a difference in a characteristic, observed in a growing trial, is sufficiently consistent is to examine the characteristic in at least two independent growing cycles.

4.1.3 Clear Differences

Determining whether a difference between two varieties is clear depends on many factors, and should consider, in particular, the type of expression of the characteristic being examined, i.e. whether it is expressed in a qualitative, quantitative, or pseudo-qualitative manner. Therefore, it is important that users of these Test Guidelines are familiar with the recommendations contained in the General Introduction prior to making decisions regarding distinctness.

4.1.4 Number of plants or parts of plants to be Examined

Unless otherwise indicated, for the purposes of distinctness, all observations on single plants should be made on 9 plants or parts of plants taken from each of 9 plants and any other observations made on all plants in the test, disregarding any off-type plants.

4.1.5 Method of Observation

The recommended method of observing the characteristic for the purposes of distinctness is indicated by the following key in the second column of the Table of Characteristics (see document TGP/9 “Examining Distinctness”, Section 4 “Observation of characteristics”):

MG: single measurement of a group of plants or parts of plants
MS: measurement of a number of individual plants or parts of plants
VG: visual assessment by a single observation of a group of plants or parts of plants
VS: visual assessment by observation of individual plants or parts of plants

Type of observation: visual (V) or measurement (M)

“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). Measurement (M) is an objective observation against a calibrated, linear scale e.g. using a ruler, weighing scales, colorimeter, dates, counts, etc.

Type of record: for a group of plants (G) or for single, individual plants (S)

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

In cases where more than one method of observing the characteristic is indicated in the Table of Characteristics (e.g. VG/MG), guidance on selecting an appropriate method is provided in document TGP/9, Section 4.2.

4.2 Uniformity

4.2.1 It is of particular importance for users of these Test Guidelines to consult the General Introduction prior to making decisions regarding uniformity. However, the following points are provided for elaboration or emphasis in these Test Guidelines:

4.2.2 For the assessment of uniformity of vegetatively propagated varieties, a population standard of 1% and an acceptance probability of at least 95% should be applied. In the case of a sample size of 10 plants, 1 off-type is allowed.

4.3 Stability

4.3.1 In practice, it is not usual to perform tests of stability that produce results as certain as those of the testing of distinctness and uniformity. However, experience has demonstrated that, for many types of variety, when a variety has been shown to be uniform, it can also be considered to be stable.

4.3.2 Where appropriate, or in cases of doubt, stability may be further examined by testing a new plant stock to ensure that it exhibits the same characteristics as those shown by the initial material supplied.

5. Grouping of Varieties and Organization of the Growing Trial

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

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

5.3 The following have been agreed as useful grouping characteristics:

(a) Plant: height (characteristic 1)

5.4 Guidance for the use of grouping characteristics, in the process of examining distinctness, is provided through the General Introduction and document TGP/9 “Examining Distinctness”.

6. Introduction to the Table of Characteristics

6.1 Categories of Characteristics

6.1.1 Standard Test Guidelines Characteristics

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.

6.1.2 Asterisked Characteristics

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.

6.2 States of Expression and Corresponding Notes

6.2.1 States of expression are given for each characteristic 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.

6.2.2 In the case of qualitative and pseudo-qualitative characteristics (see Chapter 6.3), all relevant states of expression are presented in the characteristic. However, in the case of quantitative characteristics with 5 or more states, an abbreviated scale may be used to minimize the size of the Table of Characteristics. For example, in the case of a quantitative characteristic with 9 states, the presentation of states of expression in the Test Guidelines may be abbreviated as follows:

State	*Note*
small	3
medium	5
large	7

However, it should be noted that all of the following 9 states of expression exist to describe varieties and should be used as appropriate:

State	*Note*
very small	1
very small to small	2
small	3
small to medium	4
medium	5
medium to large	6
large	7
large to very large	8
very large	9

6.2.3 Further explanation of the presentation of states of expression and notes is provided in document TGP/7 “Development of Test Guidelines”.

6.3 Types of Expression

An explanation of the types of expression of characteristics (qualitative, quantitative and pseudo-qualitative) is provided in the General Introduction.

6.4 Example Varieties

Where appropriate, example varieties are provided to clarify the states of expression of each characteristic.

6.5 Legend

	English	français	deutsch	español	Example Varieties Exemples Beispielssorten Variedades ejemplo	Note/ Nota
1 2	**3 4**	**5 6**	**7**			
	Name of characteristics in English	**Nom du caractère en français**	**Name des Merkmals auf Deutsch**	**Nombre del carácter en español**		
	states of expression	types d'expression	Ausprägungsstufen	tipos de expresión		

1 Characteristic number

2 (*) Asterisked characteristic – see Chapter 6.1.2

3 Type of expression
QL Qualitative characteristic – see Chapter 6.3
QN Quantitative characteristic – see Chapter 6.3
PQ Pseudo-qualitative characteristic – see Chapter 6.3

4 Method of observation (and type of plot, if applicable)
MG, MS, VG, VS – see Chapter 4.1.5

5 (+) See Explanations on the Table of Characteristics in Chapter 8.1

6 Not applicable

7 Not applicable

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

		English	français	deutsch	español	Example Varieties Exemples Beispielssorten Variedades ejemplo	Note/ Nota
1.	**(*)**	**QN VG**	**(+)**				
		Plant: height					
		short				Firefly, Rambueleg	3
		medium				Dwarf Delight, Bush Spark	5
		tall				Kings Park Federation Flame	7
2.		**QN VG**					
		Plant: number of inflorescences					
		few				Rambocity, Regal Claw	3
		medium				Regal Red, Rambueleg	5
		many				Red Cross, Lilac Queen	7
3.		**QN MS/VG**					
		Leaf: length					
		short				Bush Ranger, Firefly	3
		medium				Velvet Harmony, Kings Park Federation Flame	5
		long				Red Cross, Amber Velvet	7
4.		**QN VG**	**(+)**				
		Leaf: width					
		narrow				Pink Joey, Bush Pearl	3
		medium				Ruby Jools, Bush Ranger	5
		broad				Red Cross, Rambueleg	7

		English	français	deutsch	español	Example Varieties Exemples Beispielssorten Variedades ejemplo	Note/ Nota
5.	**(*)**	**QN VG**	**(+)**				
		Leaf: attitude					
		erect				Joey Rouge, Kings Park Federation Flame	1
		semi erect				Twilight, Bush Spark	2
		spreading				Pixie Paw, Rambueleg	3
6.		**QN VG**	**(+)**				
		Leaf: degree of curvature					
		straight				Bush Glow	1
		slightly curved				Bush Ruby	2
		strongly curved				Gold Velvet	3
7.		**PQ VG**					
		Leaf: color					
		grey green				Bush Emerald	1
		medium green				Bush Glow	2
		purplish green					3
8.		**QN VG**					
		Leaf: glaucosity					
		weak				Gold Velvet	3
		medium				Bush Games	5
		strong				Bush Emerald, Rambudan	7
9.		**QN VG**					
		Leaf: degree of hairiness of margin					
		absent or very weakly expressed				Gold Velvet	1
		weakly expressed				Bush Illusion	2
		strongly expressed				Rambubona	3
10.	**(*)**	**QL VG**					
		Inflorescence: ramification					
		absent				Bush Emerald, Bush Games	1
		present				Red Cross, Gold Velvet	9

	English	français	deutsch	español	Example Varieties Exemples Beispielssorten Variedades ejemplo	Note/ Nota
11.	**QL VG**	**(+)**				
	Inflorescence: degree of ramification					
	primary				Bush Nugget, Bush Ranger	1
	secondary				Bush Glow, Gold Velvet	2
	tertiary				Bush Ember, Bush Spark	3
12.	**QN MS/VG**					
	Inflorescence: length of lowest lateral					
	short				Yellow Gem	3
	medium				Gold Velvet	5
	long					7
13.	**QN VG**	**(+)**				
	Inflorescence: number of flowers					
	few				Bush Emerald, Bush Games	3
	medium				Rambocano, Dwarf Delight	5
	many				Red Cross, Bush Spark	7
14.	**PQ VG**					
	Pedicel: color of hairs					
	RHS Colour Chart					
15.	**QN VG**					
	Perianth tube: length					
	short				Pixie Paw, Rambueleg	3
	medium				Joey Rouge, Rambudan	5
	long				Bush Emerald, Bush Games	7
16.	**QN VG**	**(+)**				
	Perianth tube: width					
	narrow				Velvet Harmony, Amber Velvet	3
	medium				Rambudan, Dwarf Delight	5
	broad				Space Age, Bush Games	7

	English	français	deutsch	español	Example Varieties Exemples Beispielssorten Variedades ejemplo	Note/ Nota
17.	**PQ VG**	**(+)**				
	Perianth tube: profile					
	flared distally				Early Spring, Gold Velvet	1
	broadening evenly				Bush Ranger	2
	constricted medially				Bush Emerald, Mini Red	3
	parallel				Ramboball	4
	expanded medially				Rambudan	5
18.	**PQ VG**					
	Perianth tube: predominant color					
	green				Joey Fireworks	1
	yellow				Gold Velvet	2
	orange				Amber Velvet	3
	red				Bush Inferno	4
	pink				Bush Pearl	5
	purple				Rambodiam	6
19.	**QN VG**					
	Perianth tube: number of colors of hair					
	one				Bush Ochre	1
	two				Bush Nugget	2
	three				Bush Ember	3
20.	**PQ VG**					
	Perianth tube: color of <u>tip</u> of hairs					
	RHS Colour Chart					
21.	**PQ VG**					
	Perianth tube: color of <u>middle</u> third of hairs					
	RHS Colour Chart					
22.	**QN VG**	**(+)**				
	Perianth lobe: length					
	long				Ramboblitz	
	medium				Gold Velvet	
	short				Rambueleg	

	English	français	deutsch	español	Example Varieties Exemples Beispielssorten Variedades ejemplo	Note/ Nota
23. **(*)**	**QN** **VG**	**(+)**				
	Perianth lobes: reflexing					
	absent or very weak				Bush Surprise, Bush Pearl	1
	weak				Bush Glow, Bush Ranger	3
	medium				Rambubona	5
	strong				Amber Velvet	7
	very strong				Red Cross, Rambudan	9
24.	**QN** **VG**	**(+)**				
	Flower: number of anthers at top of perianth					
	two				Bush Spark, Firefly	1
	four				Pixie Paw, Rambubona	2
	six				Ruby Jools, Amber Velvet	3
25.	**PQ** **VG**					
	Ovary: color of hairs					
	RHS Colour Chart					
26.	**QN** **VG**	**(+)**				
	Flower: position of stigma in relation to anthers					
	below				Rambubona, Firefly	1
	same level				Pixie Paw	2
	above					3
27.	**QN** **VG**					
	Time of beginning of flowering					
	early				Amber Velvet	3
	medium				Rambubona	5
	late				Ramboneer	7

8.1 Explanations for individual characteristics

Ad. 1: Plant: height

Observed including inflorescences

Ad. 4: Leaf: width

Observed at the widest point

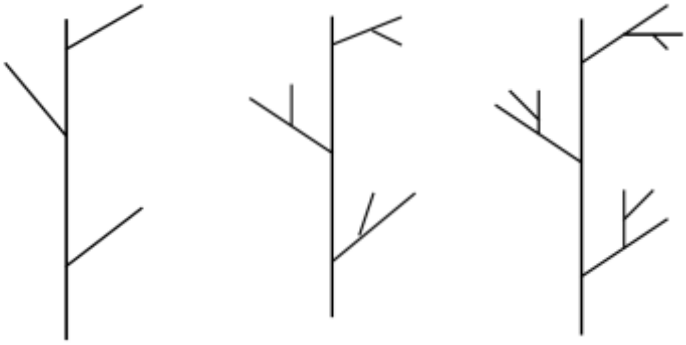
Ad. 5: Leaf: attitude

Observed at the basal third of the leaf

Ad. 6: Leaf: degree of curvature

Observed on the middle third of the leaf

Ad. 11: Inflorescence: degree of ramification



1 primary | 2 secondary | 3 tertiary

Ad. 13: Inflorescence: number of flowers

The number of flowers on the inflorescence should be determined only on flowers longer than 3mm.

Ad. 16: Perianth tube: width

Cross sectional width of the perianth tube should be observed at the base of the perianth lobes.

Ad. 17: Perianth tube: profile

1
flared distally

2
broadening evenly

3
constricted medially

4
parallel

5
expanded medially

Ad. 22: Perianth lobe: length

Observed on longest lobe.

Ad. 23: Perianth lobes: reflexing

1
absent or very weak

3
weak

5
medium

7
strong

9
very strong

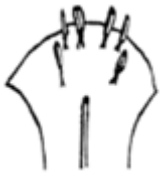
Ad. 24: Flower: number of anthers at top of perianth

1
two

2
four

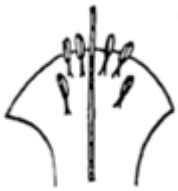
3
six

Ad. 26: Flower: position of stigma in relation to anthers



1
below

2
same level



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above

9. Literature

Records of the Australian Cultivar Registration Authority, Australian National Botanical Gardens, Canberra, AU.

Elliot and Jones, 1982: "Encyclopedia of Australian Plants Suitable for Cultivation," Vol 2, Lothian, Melbourne, AU.

Marchant et al, 1987: "Flora of the Perth Region," West Australian Herbarium, Department of Agriculture, AU.

10. Technical Questionnaire

TECHNICAL QUESTIONNAIRE	Page {x} of {y}	Reference Number:

	Application date: (not to be filled in by the applicant)

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

1. Subject of the Technical Questionnaire

1.1	Botanical name	*Anigozanthos* Labill.
1.2	Common name	Kangaroo Paw

2. Applicant

Name	
Address	
Telephone No.	
Fax No.	
E-mail address	
Breeder (if different from applicant)	

3. Proposed denomination and breeder's reference

Proposed denomination (if available)	
Breeder's reference	

TECHNICAL QUESTIONNAIRE	Page {x} of {y}	Reference Number:

#4. Information on the breeding scheme and propagation of the variety

4.1 Breeding scheme

Authorities may allow certain of this information to be provided in a confidential section of the Technical Questionnaire.

TECHNICAL QUESTIONNAIRE	Page {x} of {y}	Reference Number:

4.2 Method of propagating the variety

4.2.1 Other [ ]

(Please provide details)

TECHNICAL QUESTIONNAIRE	Page {x} of {y}	Reference Number:

5. Characteristics of the variety to be indicated (the number in brackets refers to the corresponding characteristic in Test Guidelines; please mark the note which best corresponds).

	Characteristics	Example Varieties	Note
5.1 (1)	**Plant: height**		
	short	Firefly, Rambueleg	3 [ ]
	medium	Bush Spark, Dwarf Delight	5 [ ]
	tall	Kings Park Federation Flame	7 [ ]
5.2 (10)	**Inflorescence: ramification**		
	absent	Bush Emerald, Bush Games	1 [ ]
	present	Gold Velvet, Red Cross	9 [ ]
5.3 (23)	**Perianth lobes: reflexing**		
	absent or very weak	Bush Pearl, Bush Surprise	1 [ ]
	weak	Bush Glow, Bush Ranger	3 [ ]
	medium	Rambubona	5 [ ]
	strong	Amber Velvet	7 [ ]
	very strong	Rambudan, Red Cross	9 [ ]

TECHNICAL QUESTIONNAIRE	Page {x} of {y}	Reference Number:

6. Similar varieties and differences from these varieties

Please use the following table and box for comments to provide information on how your candidate variety differs from the variety (or varieties) which, to the best of your knowledge, is (or are) most similar. This information may help the examination authority to conduct its examination of distinctness in a more efficient way.

Denomination(s) of variety(ies) similar to your candidate variety	Characteristic(s) in which your candidate variety differs from the similar variety(ies)	Describe the expression of the characteristic(s) for the **similar** variety(ies)	Describe the expression of the characteristic(s) for **your** candidate variety
Example			

Comments:

TECHNICAL QUESTIONNAIRE	Page {x} of {y}	Reference Number:

#7. Additional information which may help in the examination of the variety

7.1 In addition to the information provided in sections 5 and 6, are there any additional characteristics which may help to distinguish the variety?

Yes [ ] No [ ]

(If yes, please provide details)

7.2 Are there any special conditions for growing the variety or conducting the examination?

Yes [ ] No [ ]

(If yes, please provide details)

7.3 Other information

Authorities may allow certain of this information to be provided in a confidential section of the Technical Questionnaire.

TECHNICAL QUESTIONNAIRE	Page {x} of {y}	Reference Number:

8. Authorization for release

(a) Does the variety require prior authorization for release under legislation concerning the protection of the environment, human and animal health?

Yes [ ] No [ ]

(b) Has such authorization been obtained?

Yes [ ] No [ ]

If the answer to (b) is yes, please attach a copy of the authorization.

9. Information on plant material to be examined or submitted for examination

9.1 The expression of a characteristic or several characteristics of a variety may be affected by factors, such as pests and disease, chemical treatment (e.g. growth retardants or pesticides), effects of tissue culture, different rootstocks, scions taken from different growth phases of a tree, etc.

9.2 The plant material should not have undergone any treatment which would affect the expression of the characteristics of the variety, unless the competent authorities allow or request such treatment. If the plant material has undergone such treatment, full details of the treatment must be given. In this respect, please indicate below, to the best of your knowledge, if the plant material to be examined has been subjected to:

(a)	Microorganisms (e.g. virus, bacteria, phytoplasma)	Yes [ ]	No [ ]
(b)	Chemical treatment (e.g. growth retardant, pesticide)	Yes [ ]	No [ ]
(c)	Tissue culture	Yes [ ]	No [ ]
(d)	Other factors	Yes [ ]	No [ ]

Please provide details for where you have indicated “yes”.

.....

10. I hereby declare that, to the best of my knowledge, the information provided in this form is correct:

Applicant’s name

Signature Date

[End of document]