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INTERNATIONAL UNION FOR THE PROTECTION OF NEW VARIETIES OF PLANTS

Geneva

SCORPION WEED

UPOV Code(s): PHACE_TAN

Phacelia tanacetifolia Benth.

GUIDELINES

FOR THE CONDUCT OF TESTS

FOR DISTINCTNESS, UNIFORMITY AND STABILITY

Alternative names:*

Botanical name	English	French	German	Spanish
	,	Phacélie à feuilles de tanaisie	Phazelie	Phazelia

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 *Phacelia tanacetifolia* Benth..

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

500 g of seed

The seed should meet the minimum requirements for germination, species and analytical purity, health and moisture content, specified by the competent authority. In cases where the seed is to be stored, the germination capacity should be as high as possible and should, be stated by the applicant.

- 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
- 3.1.1 The minimum duration of tests should normally be two independent growing cycles.
- 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 The optimum stage of development for the assessment of each characteristic is indicated by a number in the Table of Characteristics. The stages of development denoted by each number are described in Chapter 8.
- 3.4 Test Design
- 3.4.1 Each test should be designed to result in a total of at least 200 plants, which should be divided between at least 2 replicates.
- 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 40 plants or parts of plants taken from each of 40 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 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 nonlinear 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 These Test Guidelines have been developed for the examination of cross-pollinated varieties. For varieties with other types of propagation the recommendations in the General Introduction and document TGP/13 "Guidance for new types and species", Section 4.5 "Testing Uniformity" should be followed.
- 4.2.3 The assessment of uniformity should be according to the recommendations for cross-pollinated varieties in the General Introduction.
- 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 seed 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) Ploidy (characteristic 1)
 - (b) Time of beginning of flowering (characteristic 3)
 - (c) Plant: natural height (characteristic 4)
 - (d) Flower: color (characteristic 8)
- 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. <u>Introduction to the Table of Characteristics</u>
- 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 Growth stage key See Explanations on the Table of Characteristics in Chapter 8

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

		English		français	deutsch	español	Example Varieties Exemples Beispielssorten Variedades ejemplo	Note/ Nota
1. (*)	QL	VG	(+)					
	Ploid	у	Ploïdie	9	Ploidie	Ploidía		
	diploid	d	diploïd	е	diploid	diploide	Amerigo, Lisette, Oka, Wolga	2
	tetrap	loid	tétraple	oïde	tetraploid	tetraploide		4
2.	QN	VG			35-39			
		intensity of color		e : intensité de la ur verte	Blatt: Intensität der Grünfärbung	Hoja: intensidad del color verde		
	light		faible		hell	claro		1
	mediu	ım	moyen	ine	mittel	intermedio	Lisette	2
	dark		forte		dunkel	oscuro	Balo	3
3. (*)	QN	MG	(+)					
	Time flowe	of beginning of ring	Époqu	ie de début de on	Zeitpunkt des Blühbeginns	Época de comienzo de la floración		
	early		précoc	e	früh	temprana	Barcelia, Lilla	3
	mediu	ım	moyenne		mittel	intermedia	Amerigo, Anabela	5
	late		tardive		spät	tardía	Beehappy	7
4. (*)	QN	VG	(+)		62-65			
	Plant	natural height	Plante nature	: hauteur elle	Pflanze: natürliche Höhe	Planta: altura natural		
	short		basse		niedrig	corta	Asta	1
	mediu	ım	moyen	ne	mittel	mediana	Anabela, Lilla, Natra	2
	tall		haute		hoch	alta	Balo, Mira, Stala	3
5. (*)	QN	MS/VG	(+)		62-65			
	Leaf:	length	Feuille	e : longueur	Blatt: Länge	Hoja: longitud		
	short		courte		kurz	corta	Astra, Atara, Balo	1
	mediu	ım	moyen	ne	mittel	mediana	Anabela, Vetrovska	2
	long		longue	,	lang	larga	Amerigo	3
6. (*)	QN	MS/VG	(+)		62-65			
	Leaf:	width	Feuille	: largeur	Blatt: Breite	Hoja: anchura		
	narro	N	étroite		schmal	estrecha	Natra	1
	mediu	ım	moyen	ne	mittel	mediana	Beehappy, Boratus	2
	broad		large		breit	ancha	Anabela	3

		English		français	deutsch	español	Example Varieties Exemples Beispielssorten Variedades ejemplo	Note/ Nota
7. (*)	QN	VG	(+)		62-65			
·	Leaf: a	anthocyanin ation		: pigmentation yanique	Blatt: Anthocyanfärbung	Hoja: pigmentación antociánica		
	absent	t or weak	absent	e ou faible	fehlend oder sehr gering	ausente o leve	Lilla	1
	mediu	m	moyen	ne	mittel	media	Lisette	2
	strong		forte		stark	intensa	Factotum	3
8. (*)	PQ	VG			62-65	l	l	
	Flowe	r: color	Fleur :	couleur	Blüte: Farbe	Flor: color		
	white		blanc		weiß	blanco	Blanca	1
	blue vi	olet	violet-b	leu	blauviolett	violeta azulado	Angelia	2
	red vio	let	violet-re	ouge	rotviolett	violeta rojizo		3
9. (*)	QN	MS/VG			75-78	l	l	
·	includ	length of stem ling tescences	tige, y	: longueur de la compris les escences	Pflanze: Länge des Triebs einschließlich Fruchtstand	Planta: longitud del tallo incluidas las infrutescencias		
	short		courte		kurz	corto		1
	mediu	m	moyen	ne	mittel	mediano	Vega	3
	long		longue		lang	largo	Wolga	5
10. (*)	QN	MS/VG	(+)		75-78			
·	Infruc	tescence: length	Infruct	escence :	Fruchtstand: Länge	Infrutescencia: longitud		
	short		courte		kurz	corta	Oka, Wolga	1
	mediu	m	moyen	ne	mittel	mediana	Vetrovska	3
	long		longue		lang	larga	Barcelia	5
11. (*)	QN	VG	(+)		75-78			
		tescence: er of tendrils		escence : e de vrilles	Fruchtstand: Anzahl Ranken	Infrutescencia: número de zarcillos		
	few		petit		wenige	bajo	Boratus	1
	mediu	m	moyen		mittel	medio	Angelia, Oka	2
	many		grand		viele	alto	Amerigo, Meva	3
12.	QN	MG			89			
	1000 s	seed weight	Poids	de 1000 graines	1000-Korngewicht	Peso de 1000 semillas		
	low		petit		gering	bajo	Lilla	3
	mediu	m	moyen		mittel	medio	Vetrovska	5
	high		grand		hoch	alto	Anabela	7
13.	QN	VG			89			
	Seed: brown	intensity of color		: intensité de la r brune	Samen: Intensität der Braunfärbung	Semilla: intensidad del color marrón		
	light		faible		hell	claro	Amerigo, Anabela	1
	mediu	m	moyen	ne	mittel	intermedio	Lilla, Stala	2
	dark		forte		dunkel	oscuro	Natra	3

8. <u>Explanations on the Table of Characteristics</u>

8.1 Explanations for individual characteristics

Ad. 1: Ploidy

The ploidy should be determined by standard cytological methods.

Ad. 3: Time of beginning of flowering

Beginning of flowering is reached when 10% of plants have open flowers.

Ad. 4: Plant: natural height

To be observed from the base of the plant to the top of the inflorescence on the main stem.

Ad. 5: Leaf: length

A leaf from the middle part of the main stem should be observed.



Ad. 6: Leaf: width

A leaf from the middle part of the main stem should be observed. Width should be measured at the widest part.



Ad. 7: Leaf: anthocyanin coloration

To be observed on leaves from the middle part of the main stem.

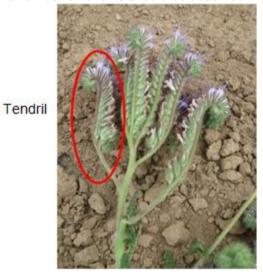
Ad. 10: Infructescence: length

The infructescence should be observed from the uppermost branch on the main stem to the top of the uppermost tendril.



Ad. 11: Infructescence: number of tendrils

The number of tendrils should be observed in the infructescence of the main stem.



8.2 Growth stages

KEY GENERAL DESCRIPTION

0	Germination
00	Dry Seed
10	Leaf development
20	Formation of side shoots
30	Stem elongation, shoot development (main shoot)
31 32 33 34 35 39	Stem 10% of final length Stem 20% of final length Stem 30% of final length Stem 40% of final length Stem 50% of final length Maximum stem length reached
50	Inflorescence emergence (main shoot)
60	Flowering
61 62 63 64 65 67 69	Beginning of flowering: 10% of flowers open 20% of flowers open 30% of flowers open 40% of flowers open Full flowering: 50% of flowers open, first petals may be fallen Flowering finishing: majority of petals fallen or dry End of flowering: fruit set visible
70	Development of seeds
75 76 77 78 79	50% of seeds have reached final size 60% of seeds have reached final size 70% of seeds have reached final size 80% of seeds have reached final size All seeds have reached final size
80	Maturity of seeds
89	Fully ripe: seeds show fully-ripe color

9. <u>Literature</u>

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Jasinska, Z., Kołecki, A., 1999: Szczgólowa Uprawa Roślin. AXA, Wrocław, PL, p.305.

Meyer, U. (Ed.), 1997: Growth stages of mono- and dicotyledonous plants: BBCH Monograph. Biologische Bundesanstalt fur Land- und Forstwirtschaft (ed.). Blackwell Wiss.-Verlag. Wien, AT, pp. 100-105.

Podbielkowski, Z., 1985: Słownik roślin użytkowych. PWRiL, Warszawa, PL, p.89.

10. <u>Technical Questionnaire</u>

TECHN	NICAL Q	UESTIONNAIRE		Page {x} of {y}	Reference Number:	
					Application date: (not to be filled in by the applican	ıt)
				HNICAL QUESTIONNA ction with an application	IRE for plant breeders' rights	
1.	Subject	of the Technical Questionr	nair	·e		
	1.1	Botanical name	Pha	acelia tanacetifolia Bentl	h.	
	1.2	Common name	Sco	orpion Weed		
2.	Applica	nt				
	Name					
	Address	5				
	Telepho	one No.				
	Fax No.	. [
	E-mail a	address				
	Breede applica	r (if different from nt)				
3.	Propose	ed denomination and breed	der'	s reference		
	Propose (if availa	ed denomination [able)				
	Breede	r's reference				

IIOAL V	QUESTIONNAIRE	Page {x} of {y}	Reference Number:
Inform	ation on the breeding sche	me and propagation	n of the variety
4.1	Breeding scheme		
Variet	y resulting from:		
4.1.1	Crossing		
(a)	controlled cross		[]
` '	(please state parent varie	eties)	
() x	()
female	e parent		male parent
(b)	partially known cross		[]
	(please state known pare	ent variety(ies))	
() x	()
female	e parent		male parent
(c)	unknown cross		[]
4.1.2	Mutation		[]
(pleas	e state parent variety)		
4.1.3 (pleas	Discovery and developr e state where and when dis		[]
4.1.4	Other		[]

TECHNICAL Q	UESTIONNAIRE	Page {x} of {y}	Reference Number:	
4.2	Method of propagating	the variety		
4.2.1	Seed-propagated varie	ties		
	Cross-pollination Synthetic variety Population Other (please provide of	details)	[] []	
4.2.2	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)	Ploidy							
	diploid	Amerigo, Lisette, Oka, Wolga	2[]					
	tetraploid		4[]					
5.2 (3)	Time of beginning of flowering							
	very early		1[]					
	very early to early		2[]					
	early	Barcelia, Lilla	3[]					
	early to medium		4[]					
	medium	Amerigo, Anabela	5[]					
	medium to late		6[]					
	late	Beehappy	7[]					
	late to very late		8[]					
	very late		9[]					
5.3 (4)	Plant: natural height							
	short	Asta	1[]					
	medium	Anabela, Lilla, Natra	2[]					
	tall	Balo, Mira, Stala	3[]					
5.4 (8)	Flower: color							
	white	Blanca	1[]					
	blue violet	Angelia	2[]					
	red violet		3[]					
5.5 (10)	Infructescence: length							
	short	Oka, Wolga	1[]					
	short to medium		2[]					
	medium	Vetrovska	3[]					
	medium to long		4[]					
	long	Barcelia	5[]					

TECHNICAL QUESTIONN	Page {x} of ⊦	{y}	Reference Nu				
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	Characteristics your candidate was from the similar	ariety differs	the characte	expression of ristic(s) for the variety(ies)	Describe the exp the characteristic candidate va	(s) for your	
Example Leaf: le		ngth	sl	hort	medium		
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	7.2 Are there any special conditions for growing the variety or conducting the examination?					
	Yes	[]	No	[]		
7.3	Other	information				

TECH	INICA	L QUEST	IONNAIRE	Page {x} of	{y}	Reference	e Number:	1		
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 bee	n obtained?						
		Yes	[]	No	[]					
	If the answer to (b) is yes, please attach a copy of the authorization.									
9. Info	ormatio	on on plant	t material to be exa	amined or submit	ted for exam	ination				
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)	Micro	oorganisms (e.g. v	rirus, bacteria, ph	ytoplasma)		Yes []	N	0 []
	(b)	Cher	mical treatment (e.	g. growth retarda	nt, pesticide)	Yes []	N	0 []
	(c) Tissue culture						Yes []	N	0 []
	(d)	(d) Other factors					Yes []	N	0 []
	Plea	Please provide details for where you have indicated "yes".								
10.	I he	I hereby declare that, to the best of my knowledge, the information provided in this form is correct:								
	App	licant's na	me							
	Sia	ınature				Date				

End of document