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INTERNATIONAL UNION FOR THE PROTECTION OF NEW VARIETIES OF PLANTS

Geneva

ELYTRIGIA

UPOV Code(s):

THINO_PON

Thinopyrum ponticum (Podp.) Barkworth & D. R. Dewey

GUIDELINES

FOR THE CONDUCT OF TESTS

FOR DISTINCTNESS, UNIFORMITY AND STABILITY

Alternative names:* <i>Botanical name</i>	English	French	German	Spanish
<i>Thinopyrum ponticum</i> (Podp.) Barkworth & D. R. Dewey, <i>Elytrigia</i> <i>pontica</i> (Podp.) Holub	U	Élytrigie	pontische Quecke, stumpfblütige Quecke	Agropiro

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.

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1. <u>Subject of these Test Guidelines</u>

These Test Guidelines apply to all varieties of *Thinopyrum ponticum* (Podp.) Barkworth & D. R. Dewey.

2. <u>Material Required</u>

- 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:

1000 g of seed

In the case 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. <u>Method of Examination</u>

3.1 Number of Growing Cycles

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.
- 3.3.3 The recommended type of plot in which to observe the characteristic is indicated by the following key in the Table of Characteristics:
 - A: spaced plants
 - B: row plots

3.4 Test Design

- 3.4.1 Each test should be designed to result in a total of at least 60 spaced plants, which should be divided between at least 2 replicates. In addition, the test may include 6 meters of row plot which should be divided between at least 2 replicates. The density of the seed should be such that around 200 plants/meter can be expected.
- 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 60 plants or parts of plants taken from each of 60 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 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 These Test Guidelines have been developed for the examination of cross-pollinated seed propagated 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. <u>Grouping of Varieties and Organization of the Growing Trial</u>

- 5.1 The selection of varieties of common knowledge to be grown in the trial with the candidate varieties and the way in which these varieties are divided into groups to facilitate the assessment of distinctness are aided by the use of grouping characteristics.
- 5.2 Grouping characteristics are those in which the documented states of expression, even where produced at different locations, can be used, either individually or in combination with other such characteristics: (a) to select varieties of common knowledge that can be excluded from the growing trial used for examination of distinctness; and (b) to organize the growing trial so that similar varieties are grouped together.
- 5.3 The following have been agreed as useful grouping characteristics:
 - (a) Plant: growth habit (characteristic 2)
 - (b) Plant: development of rhizomes (characteristic 4)
 - (c) Time of inflorescence emergence (characteristic 5)
- 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 pseudoqualitative) 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.

		English	1	françai	S	deutsch	español	Example Varieties Exemples Beispielssorten Variedades ejemplo	Note/ Nota
1	2	3	4	5	6	7			
		Name chara in Eng	cteristics	Nom o caract frança	tère en	Name des Merkmals auf Deutsch	Nombre del carácter en español		
		states expres		types	d'expression	Ausprägungsstufen	tipos de expresión		

6.5 Legend

1 Characteristic number

2	(*)	Asterisked characteristic	- see Chapter 6.1.2
3	Type of expression QL QN PQ	Qualitative characteristic Quantitative characteristic Pseudo-qualitative characteristic	– see Chapter 6.3 – see Chapter 6.3 c – see Chapter 6.3
4	Method of observation (and type MG, MS, VG, VS	e of plot, if applicable)	– see Chapter 4.1.5
5	(+)	See Explanations on the Table of	of Characteristics in Chapter 8.1
6	Not applicable		
7	Growth stage key	See Explanations on the Table	of Characteristics in Chapter 8.2
Sp	paced plants		

A Spaced planB Row plots

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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 A	(+)		25-29			
	Leaf	sheath: hairiness	Gaine pilosite	de la feuille : é	Blattscheide: Behaarung	Vaina foliar: vellosidad		
	absei	nt	absente	9	fehlend	ausente	Hulk	1
	prese	ent	présen	te	vorhanden	presente	Atahualpa INTA, Rayo INTA	9
2. (*)	QN	VG A	(+)		29			
	Plant	: growth habit	Plante	: port	Pflanze: Wuchsform	Planta: hábito de crecimiento		
	semi-	erect	demi-d	ressé	halbaufrecht	semierguida	Hércules	3
	intern	nediate	intermé	diaire	mittel	intermedia	Atahualpa INTA	5
	semi-	prostrate	demi-é	talé	halbliegend	semipostrada	Hulk	7
3. (*)	PQ	VG B			29			
	Leaf:	color	Feuille	: couleur	Blatt: Farbe	Hoja: color		
	light o	green	vert cla	ir	hellgrün	verde claro	Soft	1
	medi	um green	vert mo	yen	mittelgrün	verde medio	Hércules, Hulk, Rayo INTA	2
	dark	green	vert for	icé	dunkelgrün	verde oscuro	Barpiro	3
	grey	green	vert-gri	s	graugrün	verde grisáceo	Atahualpa INTA	4
4. (*)	QL	VG A			29-31	1	1	
	Plant rhizo	: development of mes	Plante dévelo rhizom	ppement de	Pflanze: Entwicklung von Rhizomen	Planta: desarrollo de rizomas		
	absei	nt	absent		fehlend	ausentes	Atahualpa INTA, Rayo INTA	1
	prese	ent	présen	t	vorhanden	presentes	Hércules, Hulk	9
5. (*)	QN	MG B/MS A	(+)		49-50			
		of inflorescence gence	Époqu	e d'épiaison	Zeitpunkt des Erscheinens der Blütenstände	Época de aparición de las inflorescencias		
	early		précoc	9	früh	temprana	Atahualpa INTA	3
	medi	um	moyeni	ne	mittel	media	Pucará PV-INTA	5
	late		tardive		spät	tardía	Hulk	7

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		English		français	deutsch	español	Example Varieties Exemples Beispielssorten Variedades ejemplo	Note/ Nota
6. (*)	QN	MS A			52-56			
	Flag	leaf: length	Derniè Iongue	ere feuille : eur	Fahnenblatt: Länge	Hoja bandera: longitud		
	short		courte		kurz	corta	Hércules	3
	medi	um	moyen	ne	mittel	media	Hulk	5
	long		longue		lang	larga	Atahualpa INTA, Guapo	7
7. (*)	QN	MS A	(+)		52-56			•
	Flag	leaf: width	Derniè largeu	re feuille : r	Fahnenblatt: Breite	Hoja bandera: anchura		
	narro	W	étroite		schmal	estrecha	Hulk	3
	medi	um	moyen	ne	mittel	media	Atahualpa INTA	5
	broad	1	large		breit	ancha	Hércules, Pucará PV-INTA	7
8. (*)	QN	MS A	(+)		60-68			
	Stem	: length	Tige :	longueur	Trieb: Länge	Tallo: longitud		
	short		courte		kurz	corto	Hércules	3
	medi	um	moyen	ne	mittel	medio	Pucará PV-INTA	5
	long		longue		lang	largo	Atahualpa INTA, Hulk	7
9. (*)	QN	MS A			68			
	Inflo	rescence: length	Inflore longue	scence : eur	Blütenstand: Länge	Inflorescencia: Iongitud		
	short		courte		kurz	corta	Pucará PV-INTA	3
	medi	um	moyen	ne	mittel	media	Hulk	5
	long		longue		lang	larga	Atahualpa INTA	7
10. (*)	QN	MS A	(+)		68			
	Inflo	rescence: density	Inflore	scence : densité	Blütenstand: Dichte	Inflorescencia: densidad		
	spars	e	lâche		locker	laxa	Hércules, Rayo INTA	1
	medi	um	moyen	ne	mittel	media	Hulk	2
	dense	9	dense		dicht	densa	Atahualpa INTA, Guapo, Pucará PV-INTA	3

8.1 Explanations for individual characteristics

Ad. 1: Leaf sheath: hairiness

Observations should be made on leaves in the upper third of the main stem.

Ad. 2: Plant: growth habit

Observations should be made visually from the attitude of the leaves throughout the plant. The angle formed by the imaginary line through the region of greatest leaf density should be used.

Ad. 5: Time of inflorescence emergence

Time of inflorescence emergence is reached when 50% of plants have first awns visible.

Ad. 7: Flag leaf: width

Observations should be made at the broadest part of the flag leaf.

Ad. 8: Stem: length

The length of the longest stem (inflorescence included) is measured from the ground.

Ad. 10: Inflorescence: density

The density is the ratio of the number of spikelets per inflorescence length.

8.2 Growth stages (Meier, U., 1997)

Seedling development (seedling: one shoot)

DC 10 Emergence of the first leaf through coleoptile DC 15 Five leaves unfolded DC 19 Nine or more leaves unfolded

Tillering

DC 20 Only the main bud (early tillering) DC 23 Main shoot and three tillers DC 25 Main shoot five tillers DC 29 Main shoot nine or more tillers

Stem elongation

DC 30 Erecting the pseudostem (formed by sheaths of leaves) DC 31 First node detectable (early stem extension across all stems) DC 35 Fifth node detectable (50% extension across all stems) DC 39 Ligule / flag leaf collar just visible (state pre-swelling)

Swelling

DC 41 Extension flag leaf sheath (slight enlargement of the inflorescence, early boot) DC 45 Pod swollen (late stage swelling) DC 47 Sheath opening of the first sheet DC 49 First awns visible (only in forms with beards)

Emergence of inflorescence (mainly asynchronous cultures)

DC 50 First spikelet of inflorescence just visible DC 52 25% of the inflorescence emerged (across all stems) DC 54 50% of the inflorescence emerged (across all stems) DC 56 75% of the inflorescence emerged (across all stems) DC 58 Inflorescence fully visible

Anthesis (mainly asynchronous cultures)

DC 60 Beginning of anthesis DC 64 Half anthesis DC 68 Anthesis complete

9. <u>Literature</u>

Cabrera, A., et al., 1970: Flora de la Provincia de Buenos Aires Parte II: Gramíneas. Colección Científica del INTA. Buenos Aires, AR, 169 pp.

Dimitri, M. J., Parodi, L., 1972: Enciclopedia Argentina de Agricultura y Jardinería Vol. I. Descripción de plantas cultivadas 2º Edición. Editorial ACME S.A.C.I. Buenos Aires, AR, pp. 150-152.

INASE, Descriptor provisorio de la especie Agropryon (Elytrigia) spp.

Latour, M. C., et al., 1970: Identificación de las principales gramíneas forrajeras del Noroeste de la Patagonia por sus caracteres vegetativos. Colección Científica del INTA. Buenos Aires, AR, pp. 30 to 77

Meier, U., 1997: Growth stages of mono- and dicotyledonous plants. BBCH-Monograph. Blackwell Wissenschafts-Verlag. Berlin; Boston, 622 pp.

10. <u>Technical Questionnaire</u>

TECHN	NICAL Q	UESTIONNAIRE		Page {x} of {y}	Reference Number:
					Application date: (not to be filled in by the applicant)
				CHNICAL QUESTION	NAIRE on for plant breeders' rights
1.	Subject	of the Technical Questio	nnai	ire	
	1.1	Botanical name	Th	inopyrum ponticum (P	odp.) Barkworth & D. R. Dewey
	1.2	Common name	El	ytrigia, Rush wheatgra	ss, Tall wheatgrass
2.		s one No. address r (if different from			
3.	Propose (if availa	ed denomination and brea ed denomination able) r's reference		's reference	

тесн	NICAL Q	UESTIONNAIRE	Page {x} of {y}		Reference Numb	er:
#4.	Informa	tion on the breeding scheme	and propagation of	the va	riety	
	4.1	Breeding scheme				
	Variety	resulting from:				
	4.1.1	Crossing				
	(a)	controlled cross (please state parent varietie	95)			[]
		()	x	()
		female parent			male parent	
	(b)	partially known cross (please state known parent v	variety(ies))			[]
		()	х	()
		female parent			male parent	
	(c)	unknown cross				[]
	4.1.2	Mutation (please state parent variety)				[]
	4.1.3	Discovery and development (please state where and whe	en discovered and h	iow de	eveloped)	[]
	4.1.4	Other (Please provide details)				[]

TECHNICAL QI	JESTIONNAIRE	Page {x} of {y}	Reference Number	:
4.2	Method of propagating the	variety		
(a) (b)	Seed-propagated varieties Cross-pollination Synthetic variety Other (please provide detail	s)		[] [] []
4.2.2	Other (Please provide details)			[]

ECH	NICAL QUESTIONNAIRE	Page {x} of {y}	Reference Number:	
	Characteristics of the variety to be characteristic in Test Guidelines;		n brackets refers to the corresponding ich best corresponds).	3
	Characteristics		Example Varieties	Note
5.1 (2)	Plant: growth habit			
	erect			1 [
	erect to semi-erect			2 [
	semi-erect		Hércules	3 [
	semi-erect to intermediate			4 [
	intermediate		Atahualpa INTA	5 [
	intermediate to semi-prostrate			6 [
	semi-prostrate		Hulk	7 [
	semi-prostrate to prostrate			8 [
	prostrate			9 [
5.2 (4)	Plant: development of rhizomes			
	absent		Atahualpa INTA, Rayo INTA	1 [
	present		Hulk, Hércules	9 [
5.3 (5)	Time of inflorescence emergence			
	very early			1 [
	very early to early			2 [
	early		Atahualpa INTA	3 [
	early to medium			4 [
	medium		Pucará PV-INTA	5 [
	medium to late			6 [
	late		Hulk	7 [
	late to very late			8 [
	very late			9[

TECHNICAL QUESTION	Page {x} of {y}		Reference Nu	umber:			
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 Characteristic(s variety(ies) similar to your candidate variety from the similar		variety differs	Describe the expression of the characteristic(s) for the similar variety(ies)		Describe the expression of the characteristic(s) for your candidate variety		
Example	Stem: length		short		medium		
Comments:							

TECH	NICAL (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					

TEC	HNICA	L QUESTIONNAIRE	Page {x} o	f {y}	Reference	Number:			
8.	Autho	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 authorizat	ion.				
9. In	formati	on on plant material to be ex	amined or submi	tted for exami	nation				
roots 9.2	s and stocks, The pl	e expression of a characteris disease, chemical treatmen scions taken from different g ant material should not ha ics of the variety, unless the	t (e.g. growth re rowth phases of we undergone a	tardants or p a tree, etc. any treatmen	besticides), e t which wou	ffects of tissuing of the state	e culture, differe	ent the	
has	underg	one such treatment, full deta our knowledge, if the plant r	ils of the treatme	ent must be g	iven. In this r	espect, pleas			
	(a)	Microorganisms (e.g. v	virus, bacteria, pł	iytoplasma)		Yes []	No []		
	(b)	Chemical treatment (e	.g. growth retarda	ant, pesticide))	Yes []	No []		
	(c)	Tissue culture				Yes []	No []		
	(d)	Other factors				Yes []	No []		
	Please provide details for where you have indicated "yes".								
10.	l he	reby declare that, to the bes	t of my knowledg	e, the informa	ation provided	d in this form i	s correct:		
	Ap	olicant's name	_					1	
	Się	jnature			Date]	

[End of document]