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INTERNATIONAL UNION FOR THE PROTECTION OF NEW VARIETIES OF PLANTS
GENEVA

BUCKWHEAT

UPOV Code: FAGOP_ESC

Fagopyrum esculentum Moench

GUIDELINES

FOR THE CONDUCT OF TESTS

FOR DISTINCTNESS, UNIFORMITY AND STABILITY

Alternative Names: *

<i>Botanical name</i>	<i>English</i>	<i>French</i>	<i>German</i>	<i>Spanish</i>
<i>Fagopyrum esculentum</i> Moench, <i>Fagopyrum sagittatum</i> Gilib.	Buckwheat	Blé noir, Sarrasin	Buchweizen	Alforfón, Trigo sarranceno

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 *Fagopyrum esculentum* Moench.

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*

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 *Stage of development for the assessment*

The optimum stage of development for the assessment of each characteristic is indicated by a number in the second column of the Table of Characteristics. The stages of development denoted by each number are described in Chapter 8.3.

3.4 *Test Design*

Each test should be designed to result in a total of at least 100 plants, which should be divided between at least 2 replicates.

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 / 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 taken from each of 60 plants and any other observations made on all plants in the test, disregarding any off-type plants. In the case of observations of parts taken from single plants, the number of parts to be taken from each of the plants should be 1.

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 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) Time of beginning of flowering (characteristic 5)
- (b) Plant: height (characteristic 7)
- (c) Flower: color of petals (characteristic 11)
- (d) Stem: number of nodes (characteristic 15)
- (e) Time of maturity (characteristic 17)
- (f) Seed: skin color (characteristic 20)

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*

(*) Asterisked characteristic – see Chapter 6.1.2

QL Qualitative characteristic – see Chapter 6.3

QN Quantitative characteristic – see Chapter 6.3

PQ Pseudo-qualitative characteristic – see Chapter 6.3

MG, MS, VG, VS – see Chapter 4.1.5

(a)-(b) See Explanations on the Table of Characteristics in Chapter 8.1

(+) See Explanations on the Table of Characteristics in Chapter 8.2

09-99 See Explanations on the Table of Characteristics in Chapter 8.3

C special test

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

	English	français	deutsch	español	Example Varieties/ Exemples/ Beispielssorten/ Variedades ejemplo	Note/ Nota
1. C	Plant: ploidy	Plante : ploïdie	Pflanze: Ploidie	Planta: ploidía		
QL	diploid	diploïde	dipoid	diploide	Shinano No.1	2
	tetraploid	tétraploïde	tetrapoid	tetraploide	Miyazaki-ohtsubu	4
2. 09 VG	Cotyledon: anthocyanin coloration	Cotylédon : pigmentation anthocyanique	Keimblatt: Anthocyanfärbung	Cotiledón: pigmentación antociánica		
QN	absent or very weak	nulle ou très faible	fehlend oder sehr gering	ausente o muy débil	Aelita	1
	weak	faible	gering	débil	Astoria, Shinano No.1	3
	medium	moyenne	mittel	media	Miyazaki-ohtsubu	5
	strong	forte	stark	fuerte	Rubra	7
3. 51 VG	Stem: anthocyanin coloration	Tige : pigmentation anthocyanique	Stengel: Anthocyanfärbung	Tallo: pigmentación antociánica		
QN	absent or weak	nulle ou faible	fehlend oder gering	ausente o débil	Shinano-natsusoba, Yangjeol	1
	medium	moyenne	mittel	media	Daesan, Takane ruby	2
	strong	forte	stark	fuerte	Shinei red	3
4. 51 VG	Inflorescence: anthocyanin coloration of bud	Inflorescence : pigmentation anthocyanique du bourgeon	Blüte: Anthocyanfärbung der Knospe	Inflorescencia: pigmentación antociánica de la yema		
QN	absent or very weak	nulle ou très faible	fehlend oder sehr gering	ausente o muy débil	Shinano No.1, Max	1
	weak	faible	gering	débil		3
	medium	moyenne	mittel	media	Lifago	5
	strong	forte	stark	fuerte	Lifesturm, Takane ruby	7

	English	français	deutsch	español	Example Varieties/ Exemples/ Beispielssorten/ Variedades ejemplo	Note/ Nota	
5. (*) (+)	MG	Time of beginning of flowering	Époque de début de floraison	Zeitpunkt des Blühbeginns	Época del inicio de la floración		
QN	early	précoce	früh	precoz	Kitawasesoba, Vokiai	3	
	medium	moyenne	mittel	media	Shinano No.1, Shinano-natsusoba, Zita	5	
	late	tardive	spät	tardía	La Harpe, Shinei red	7	
6. (+)	65 VG	Plant: growth type	Plante : type de croissance	Pflanze: Wuchstyp	Planta: hábito de crecimiento		
QL	determinate	déterminé	begrenzt wachsend	determinado	Kitawasesoba	1	
	indeterminate	indéterminé	unbegrenzt wachsend	indeterminado	Kitanomashu	2	
7. (*) (+)	65 MG	Plant: height	Plante : hauteur	Pflanze: Höhe	Planta: altura		
QN	short	basse	niedrig	baja	Shinano-natsusoba	3	
	medium	moyenne	mittel	media	Shinano No.1	5	
	tall	haute	hoch	alta	Miyazaki-ohtsubu	7	
8. (+)	65 VG	Leaf blade: shape of base	Limbe : forme de la base	Blattspreite: Form der Basis	Limbo: forma de la base		
PQ	(a)	truncate	tronquée	abgestumpft	truncada	1	
		weakly cordate	légèrement cordiforme	leicht herzförmig	ligeramente cordiforme	Shinano No.1, Shinano-natsusoba	2
		strongly cordate	fortement cordiforme	stark herzförmig	fuertemente cordiforme	Miyazaki-ohtsubu	3
		sagittate	sagittée	pfeilspitzenförmig	sagitada	Daesan	4

		English	français	deutsch	español	Example Varieties/ Exemples/ Beispielssorten/ Variedades ejemplo	Note/ Nota
9.	65 VG	Leaf blade: intensity of green color	Limbe : intensité de la couleur verte	Blattspreite: Intensität der Grünfärbung	Limbo: intensidad del color verde		
QN	(a)	light	claire	hell	clara	Smuglianka, Takane ruby	1
		medium	moyenne	mittel	media	Luba, Panda, Shinano No.1	2
		dark	forte	dunkel	oscura	Miyazaki-ohtsubu, Vokiai	3
10.	65 VG	Flower: size	Fleur : taille	Blüte: Größe	Flor: tamaño		
QN		small	petite	klein	pequeño	Shinano No.1	1
		medium	moyenne	mittel	medio	Shinano-natsusoba	2
		large	grande	groß	grande	Miyazaki-ohtsubu	3
11. (*)	65 VG	Flower: color of petals	Fleur : couleur des pétales	Blüte: Farbe der Blütenblätter	Flor: color de los pétalos		
PQ		white	blancs	weiß	blanco	Shinano No.1, Yangjeol	1
		light green	vert clairs	hellgrün	verde claro	Zelenotsvetkovaya 90	2
		light red	rouge clair	hellrot	rojo claro	Shinei red	3
		dark red	rouge foncé	dunkelrot	rojo oscuro	Takane ruby	4
12. (+)	65 VG	Flower: length of pedicel	Fleur : longueur du pédicelle	Blüte: Länge des Blütenstiels	Flor: longitud del pedicelo		
QN		short	court	kurz	corta	Miyazaki-ohtsubu	1
		medium	moyen	mittel	media	Shinano No.1	2
		long	long	lang	larga		3
13. (+)	65 VG	Plant: total number of flower clusters	Plante : nombre total d'amas de fleurs	Pflanze: Gesamtzahl der Blütentrauben	Planta: número total de racimos florales		
QN		few	petit	wenige	bajo	Shinano-natsusoba	1
		medium	moyen	mittel	medio	Shinano No.1	2
		many	grand	viele	alto	Miyazaki-ohtsubu	3

	English	français	deutsch	español	Example Varieties/ Exemples/ Beispielssorten/ Variedades ejemplo	Note/ Nota
14. 78 MS (+)	Stem: length	Tige : longueur	Stengel: Länge	Tallo: longitud		
QN	short	courte	kurz	corta	Shinano-natsusoba	3
	medium	moyenne	mittel	media	Shinano No.1	5
	long	longue	lang	larga		7
15. 78 MS (*)	Stem: number of nodes	Tige : nombre de nœuds	Stengel: Anzahl der Knoten	Tallo: número de nudos		
QN	few	petit	wenige	bajo	Shinano-natsusoba	3
	medium	moyen	mittel	medio	Shinano No.1	5
	many	grand	viele	alto	Takane ruby	7
16. 78 MS (+)	Stem: diameter	Tige : diamètre	Stengel: Durchmesser	Tallo: diámetro		
QN	small	petit	klein	pequeño	Shinano-natsusoba	1
	medium	moyen	mittel	medio	Shinano No.1	2
	large	grand	groß	grande		3
17. 89 MG (*) (+)	Time of maturity	Époque de maturité	Zeitpunkt der Reife	Época de madurez		
QN	early	précoce	früh	precoz	Shinano-natsusoba	3
	medium	moyenne	mittel	media	Shinano No.1	5
	late	tardive	spät	tardía	Shinei red	7
18. 99 MS/ VG (b)	Seed: length	Semence : longueur	Samen: Länge	Semilla: longitud		
QN	short	courte	kurz	corta		1
	medium	moyenne	mittel	media	Shinano No.1	2
	long	longue	lang	larga	Miyazaki-ohtsubu	3

	English	français	deutsch	español	Example Varieties/ Exemples/ Beispielssorten/ Variedades ejemplo	Note/ Nota
19. 99 VG (+)	Seed: shape	Semence : forme	Samen: Form	Semilla: forma		
PQ (b)	elliptic	elliptique	elliptisch	elíptica	Kubokawa-zairai	1
	ovate	ovale	eiförmig	ovado		2
	trullate	trullée	rautenförmig	rómbica	Shinano No.1, Yangjeol	3
20. 99 VG (*)	Seed: skin color	Semence : couleur de l'épiderme	Samen: Farbe der Haut	Semilla: color de la piel		
PQ (b)	grey	gris	grau	gris	La Harpe	1
	medium brown	brun moyen	mittelbraun	marrón medio	Daesan, Kora, Luba, Panda, Takane ruby, Zita	2
	dark brown	brun foncé	dunkelbraun	marrón oscuro	Ilija, Shinano No.1, Yangjeol	3
	black	noir	schwarz	negro	Czernoplodnaja, Shinano-natusoba, Smuglianka	4
21. 99 MG	Seed: 1000 seed weight	Semence : poids de 1 000 semences	Samen: Gewicht von 1 000 Samen	Semilla: peso de 1000 semillas		
QN (b)	low	petit	gering	pequeño	Kora, La Harpe, Luba, Panda, Shinei red	3
	medium	moyen	mittel	mediano	Shinano No.1, Smuglianka, Zita	5
	high	élevé	hoch	grande	Ilija, Kara Dag, Kitawasesoba, Lena, Vokiai	7

8. Explanations on the Table of Characteristics

8.1 *Explanations covering several characteristics*

- (a) all observations on leaves should be observed on leaves from the middle part of the plant
- (b) all observations on seeds should be observed on ripened seeds from the upper part of the plant

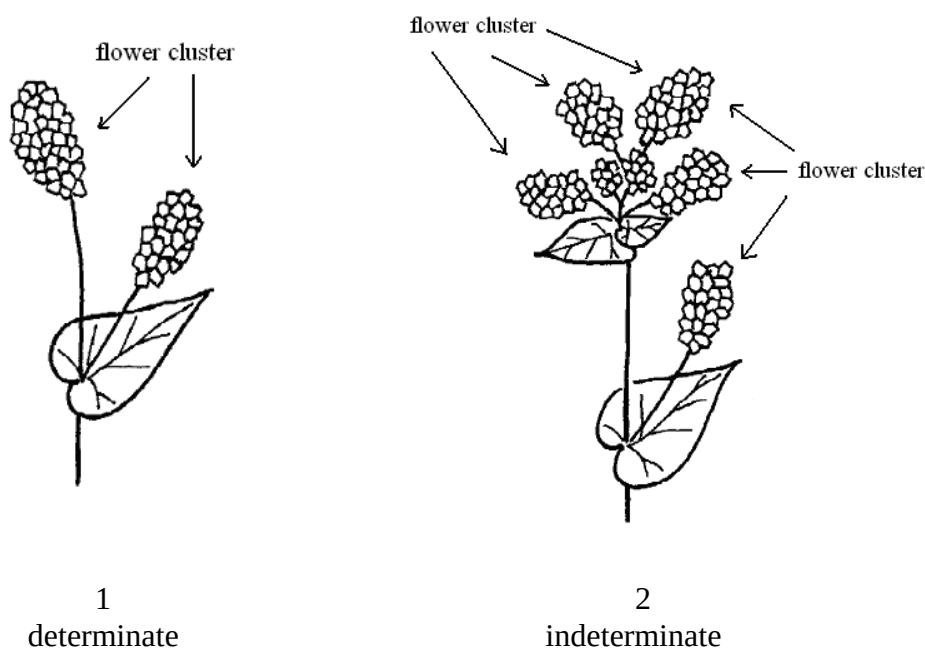
8.2 *Explanations for individual characteristics*

Ad. 5: Time of beginning of flowering

The time when 10% of plants have at least one open flower.

Ad. 6: Plant: growth type

Ad. 13: Plant: total number of flower clusters



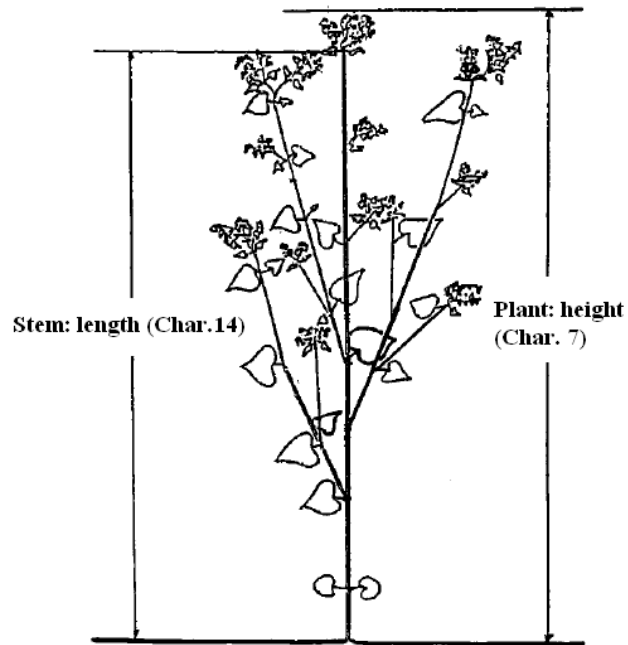
If the terminal inflorescence of the main stem has one to two flower clusters, the variety belongs to the determinate growth type. If it has five or more flower clusters, the variety belongs to the indeterminate (unlimited) growth type.

The total number of flower clusters per plant should be observed.

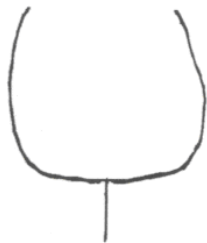
Ad. 7: Plant: height

Ad. 14: Stem: length

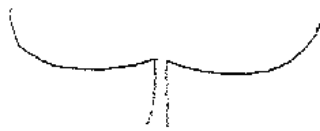
For plant height, the natural height should be measured.



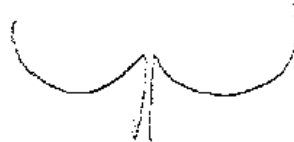
Ad. 8: Leaf blade: shape of base



1
truncate



2
weakly cordate

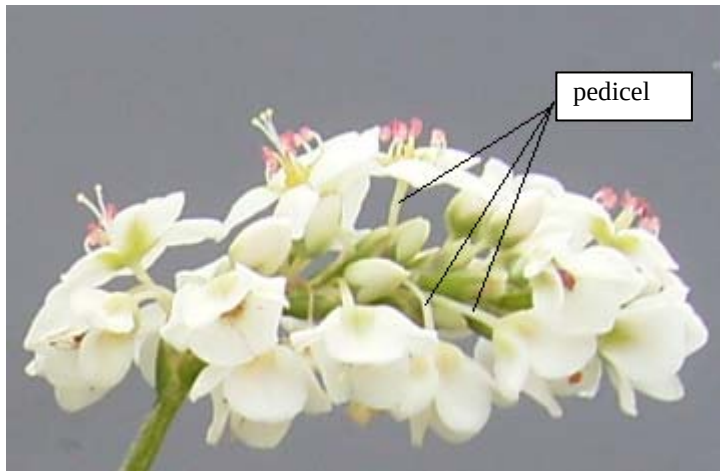


3
strongly cordate



4
sagittate

Ad. 12: Flower: length of pedicel



Ad. 16: Stem: diameter

To be measured on central part of internode between first and second node on main stem.

Ad. 17: Time of maturity

The time when 80% of seeds show fully-ripe color.

Ad. 19: Seed: shape



1
elliptic



2
ovate



3
trullate

8.3 *Phenological growth stages*

The growth stages are adapted from the BBCH scale (Meyer, 1997) as follows:

<i>Code</i>	<i>Description</i>
Principal growth stage 0 09	Sprouting Emergence: Cotyledons break through soil surface
Principal growth stage 5 51	Inflorescence emergence Inflorescence buds visible
Principal growth stage 6 65	Flowering Full flowering: about 50% of flowers open
Principal growth stage 7 78	Development of seed 80% of seeds mature
Principal growth stage 8 89	Ripening or maturity of seed Seed shows fully-ripe color
Principal growth stage 9 99	Senescence, beginning of dormancy Harvested product

9. Literature

Hayashi, H., Honda, Y., Katsuta, M., *etc.*, 2004: Varieties of Buckwheat. The Japan Buckwheat Association. Tokyo, JP.

Hoshikawa, K., 1980: Buckwheat in New Agricultural Crops. Yokendo. Tokyo, JP, pp. 400-409.

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

Shigemori, I., Honda, Y., *etc.*, 2003: Test Guideline for Buckwheat. Ando. Nagano, JP, pp. 5-47.

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	<i>Fagopyrum esculentum</i> Moench, (Syn. <i>Fagopyrum sagittatum</i> Gilib.)	
1.2 Common name	Buckwheat	
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:
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#4. Information on the breeding scheme and propagation of the variety

4.1 Breeding scheme

Variety resulting from:

4.1.1 Crossing []

(.....)
female parent

x

(.....)
male parent

(a) controlled cross []
(please state parent varieties)

(b) partially known cross []
(please state known parent variety(ies))

(.....)
female parent

x

(.....)
male parent

(c) unknown cross []

4.1.2 Mutation []
(please state parent variety)

4.1.3 Discovery and development []
(please state where and when discovered
and how developed)

4.1.4 Other []
(please provide details)

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:
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4.2 Method of propagating the variety

(a) Cross-pollination []

(b) Self-pollination []

(c) 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 Time of beginning of flowering (5)			
very early		1 []	
very early to early		2 []	
early	Kitawasesoba, Vokiai	3 []	
early to medium		4 []	
medium	Shinano No.1, Shinano-natsusoba, Zita	5 []	
medium to late		6 []	
late	La Harpe, Shinei red	7 []	
late to very late		8 []	
very late		9 []	
5.2 Plant: height (7)			
very short		1 []	
very short to short		2 []	
short	Shinano-natsusoba	3 []	
short to medium		4 []	
medium	Shinano No.1	5 []	
medium to tall		6 []	
tall	Miyazaki-ohtsubu	7 []	
tall to very tall		8 []	
very tall		9 []	

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Characteristics	Example Varieties	Note
5.3 Flower: color of petals		
(11)		
white	Shinano No.1, Yangjeol	1 []
light green	Zelenotsvetkovaya 90	2 []
light red	Shinei red	3 []
dark red	Takane ruby	4 []
5.4 Stem: number of nodes		
(15)		
very few		1 []
very few to few		2 []
few	Shinano-natsusoba	3 []
few to medium		4 []
medium	Shinano No.1	5 []
medium to many		6 []
many	Takane ruby	7 []
many to very many		8 []
very many		9 []
5.5 Time of maturity		
(17)		
very early		1 []
very early to early		2 []
early	Shinano-natsusoba	3 []
early to medium		4 []
medium	Shinano No.1	5 []
medium to late		6 []
late	Shinei red	7 []
late to very late		8 []
very late		9 []

TECHNICAL QUESTIONNAIRE		Page {x} of {y}	Reference Number:
Characteristics		Example Varieties	Note
5.6	Seed: skin color		
(20)			
	grey	La Harpe	1 []
	medium brown	Daesan, Kora, Luba, Panda, Takane ruby, Zita	2 []
	dark brown	Ilija, Shinano No.1, Yangjeol	3 []
	black	Czernoplodnaja, Shinano-natsusoba, Smuglianka	4 []

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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
<i>Example</i>	<i>Plant: height</i>	<i>short</i>	<i>medium</i>

Comments:

[#] 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:
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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”.

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

Applicant's name			
Signature			

[End of document]