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INTERNATIONAL UNION FOR THE PROTECTION OF NEW VARIETIES OF PLANTS

UNION INTERNATIONALE POUR LA PROTECTION DES OBTENTIONS VÉGÉTALES

INTERNATIONALER VERBAND ZUM SCHUTZ VON PFLANZEN-ZÜCHTUNGEN

UNIÓN INTERNACIONAL PARA LA PROTECCIÓN DE LAS OBTENCIONES VEGETALES

GUIDELINES

FOR THE CONDUCT OF TESTS

FOR DISTINCTNESS, UNIFORMITY AND STABILITY

RESCUE GRASS, ALASKA BROME-GRASS, BROMUS AULETICUS

(*Bromus catharticus* Vahl., *Bromus sitchensis* Trin., *Bromus auleticus* Trin.)

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These Guidelines should be read in conjunction with document TG/1/2, which contains explanatory notes on the general principles on which the Guidelines have been established.

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I. Subject of these Guidelines

These Test Guidelines apply to Rescue Grass (*Bromus catharticus* Vahl.), Alaska Brome-grass (*Bromus sitchensis* Trin.) and *Bromus auleticus* Trin. A single combined Table of Characteristics has been drawn up for the three species.

II. Material Required

1. The competent authorities decide when, where and in what quantity and quality the plant material required for testing the variety is to be delivered. Applicants submitting material from a State other than that in which the testing takes place must make sure that all customs formalities are complied with. The minimum quantity of seed to be supplied by the applicant in one or several samples should be:

3 kg. (awns removed)

The seed should at least meet the minimum requirements for germination capacity, moisture content and purity for marketing certified seed in the country in which the application is made. Especially for storage, which requires a higher standard, the applicant should state the actual germination capacity which should be as high as possible.

2. The seed must not have undergone any treatment unless the competent authorities allow or request such treatment. If it has been treated, full details of the treatment must be given.

III. Conduct of Tests

1. The minimum duration of tests should normally be two independent growing cycles.

2. The tests should normally be conducted at one place. If any important characteristics of the variety cannot be seen at that place, the variety may be tested at an additional place.

3. The tests should be carried out under conditions ensuring normal growth. The size of the plots should be such that plants or parts of plants may be removed for measuring and counting without prejudice to the observations which must be made up to the end of the growing period. Each test should include 60 spaced plants and at least 10 meters of row plots. Separate plots for observation and for measuring can only be used if they have been subject to similar environmental conditions.

4. Plots with spaced plants. Each test should consist of 60 single spaced plants for varieties arranged in 3 replicates or more replicates.

5. Row plots. Each test should consist of at least 10 meters of row arranged in 2 or more replicates. The density of sowing should be such that about 160 to 200 plants per linear meter can be expected.

6. Additional tests for special purposes may be established.

IV. Methods and Observations

1. Unless otherwise stated, all observations on spaced plants should be made on 60 plants or parts taken from each of 60 plants.

2. Observations on rows should be made on each plot as a whole.

3 Interpretation of results should be made according to the rules of cross-pollinated varieties as stated in the General Introduction to the Test Guidelines.

V. Grouping of Varieties

1. If necessary the collection to be grown should be divided into groups to facilitate the assessment of distinctness. Characteristics which are suitable for grouping purposes are those which are known from experience not to vary, or to vary only slightly, within a variety and which in their various states are fairly evenly distributed within the collection.

2. Species would be identified with the help of ploidy and seed shape.

3. It is recommended that the competent authorities use the following characteristics for grouping varieties:

(a) Leaf: intensity of green color (in autumn of year of sowing) (characteristic 4)
(b) Plant: time of inflorescence emergence after vernalisation (in second year) (characteristic 7)
(c) Stem: length of longest stem (inflorescence included; when fully expanded) (characteristic 11)

VI. Characteristics and Symbols

1. To assess distinctness, uniformity and stability, the characteristics and their states as given in the Table of Characteristics should be used. For each characteristic it is indicated whether ‘spaced plants’ (A) or ‘row plots’ (B) or ‘special tests’ (C) should be used. The name of each example variety is followed by an abbreviation of its species (Bc = *Bromus catharticus* Vahl., Bs = *Bromus sitchensis* Trin., Ba = *Bromus auleticus* Trin.).

2. Notes (numbers), for purposes of electronic data processing, are given opposite the states of the different characteristics.

3. Legend:

(*) Characteristics that should be used on all varieties in every growing period over which the examinations are made and always be included in the variety description except when the state of expression of a preceding characteristic or regional environmental conditions render this impossible.

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

1) To be observed on A = spaced plants
B = row plots
C = special tests

2) Species of example variety:
Bc = *Bromus catharticus* Vahl. (*Bromus willdenowii* Kunth)
Bs = *Bromus sitchensis* Trin.
Ba = *Bromus auleticus* Trin.

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

	Plot[(1)] Parcelle[(1)] Parzelle[(1)]	English	français	deutsch	español	Example Varieties Exemples Beispielssorten Variedades ejemplo	Note/ Nota
1. **(+)**	**C**	**Seedling: anthocyanin coloration of sheath of first leaf**	**Plantule: pigmentation anthocyanique de la gaine de la première feuille**	**Keimpflanze: Anthocyanfärbung der Scheide des ersten Blattes**	**Plántula: pigmentación antociánica de la vaina de la primera hoja**		
		absent or very weak	absente ou très faible	fehlend oder sehr gering	ausente o muy débil	Bellegarde (Bc)	1
		weak	faible	gering	débil		3
		medium	moyenne	mittel	media		5
		strong	forte	stark	fuerte	Anabel (Bc)	7
		very strong	très forte	sehr stark	muy fuerte		9
2. **(+)**	**A** **B**	**Plant: tendency to form inflorescences without vernalisation**	**Plante : tendance à former des inflorescences sans vernalisation**	**Pflanze: Neigung zur Bildung von Blütenständen ohne Vernalisation**	**Planta: tendencia a formar inflorescencias sin vernalización**		
		absent or very weak	nulle ou très faible	fehlend oder sehr gering	ausente o muy débil	Bosir (Bs)	1
		weak	faible	gering	débil	Anabel (Bc)	3
		medium	moyenne	mittel	media	Lubro (Bs)	5
		strong	forte	stark	fuerte	Bellegarde (Bc)	7
		very strong	très forte	sehr stark	muy fuerte		9
3.	**A** **B**	**Plant: natural height (in autumn of year of sowing)**	**Plante: hauteur naturelle (en automne l'année du semis)**	**Pflanze: natürliche Höhe (im Herbst des Aussaatjahres)**	**Planta: altura (en otoño del año de siembra)**		
		short	basse	niedrig	baja		3
		medium	moyenne	mittel	media	Lubro (Bs)	5
		tall	haute	hoch	alta	Bellegarde (Bc)	7

	Plot[(1)] Parcelle[(1)] Parzelle[(1)]	English	français	deutsch	español	Example Varieties Exemples Beispielssorten Variedades ejemplo	Note/ Nota
4. (*)	**B**	**Leaf: intensity of green color (as for 3)**	**Feuille: intensité de la couleur verte (comme pour 3)**	**Blatt: Intensität der Grünfärbung (wie unter 3)**	**Hoja: intensidad del color verde (como para 3)**		
		light	claire	hell	clara	Anabel (Bc), Lubro (Bs)	3
		medium	moyenne	mittel	media	Banco (Bc)	5
		dark	foncée	dunkel	oscura		7
5.	**B**	**Foliage: fineness**	**Feuillage: finesse**	**Laub: Feinheit**	**Follaje: finura**		
		fine	fin	fein	fina	Blizzard (Bs)	3
		medium	moyen	mittel	media	Banco (Bc)	5
		coarse	grossier	grob	grosera		7
6.	**A B**	**Plant: natural height in spring (1 month after beginning of growth)**	**Plante: hauteur naturelle au printemps (1 mois après le début de la croissance)**	**Pflanze: natürliche Höhe bei Frühjahrs-aussaat (1 Monat nach Wachstums-beginn)**	**Planta: altura en primavera (1 mes después del comienzo del crecimiento)**		
		short	basse	niedrig	baja	Lubro (Bs)	3
		medium	moyenne	mittel	media	Bosir (Bs)	5
		tall	haute	hoch	alta		7
7. (*) (+)	**A B**	**Plant: time of inflorescence emergence after vernalisation (in second year)**	**Plante: époque d'épiaison après vernalisation (en deuxième année)**	**Pflanze: Zeitpunkt des Erscheinens der Blütenstände nach der Vernalisation (im zweiten Jahr)**	**Planta: época de emergencia de las inflorescencias tras la vernalización (en el segundo año)**		
		early	précoce	früh	precoz	Belgado (Bc)	3
		medium	moyenne	mittel	media	Anabel (Bc)	5
		late	tardive	spät	tardía	Lubro (Bs)	7

	Plot[(1)] Parcelle[(1)] Parzelle[(1)]	English	français	deutsch	español	Example Varieties Exemples Beispielssorten Variedades ejemplo	Note/ Nota
8.	**A B**	**Plant: natural height at inflorescence emergence (as for 6)**	**Plante: hauteur naturelle à l'épiaison (comme pour 6)**	**Pflanze: natürliche Höhe beim Erscheinen der Blütenstände (wie unter 6)**	**Planta: altura a la emergencia de las inflorescencias (como para 6)**		
		very short	très basse	sehr niedrig	muy baja		1
		short	basse	niedrig	baja		3
		medium	moyenne	mittel	media	Lubro (Bs)	5
		tall	haute	hoch	alta	Bosir (Bs)	7
		very tall	très haute	sehr hoch	muy alta		9
9.	**A**	**Flag leaf: length at inflorescence emergence (as for 6)**	**Dernière feuille: longueur à l'épiaison (comme pour 6)**	**Spitzenblatt: Länge beim Erscheinen der Blütenstände (wie unter 6)**	**Hoja bandera: longitud a la emergencia de las inflorescencias (como para 6)**		
		short	courte	kurz	corta		3
		medium	moyenne	mittel	media	Anabel (Bc) Lubro (Bs)	5
		long	longue	lang	larga	Bellegarde (Bc)	7
10.	**A**	**Flag leaf: width at inflorescence emergence (as for 6)**	**Dernière feuille: largeur à l'épiaison (comme pour 6)**	**Spitzenblatt: Breite beim Erscheinen der Blütenstände (wie unter 6)**	**Hoja bandera: anchura a la emergencia de las inflorescencias (como para 6)**		
		narrow	étroite	schmal	estrecha	Meribel (Bc)	3
		medium	moyenne	mittel	media		5
		broad	large	breit	ancha	Bellegarde (Bc)	7

	Plot[(1)] Parcelle[(1)] Parzelle[(1)]	English	français	deutsch	español	Example Varieties Exemples Beispielssorten Variedades ejemplo	Note/ Nota
11. (*)	**A**	**Stem: length of longest stem (inflorescence included; when fully expanded)**	**Tige: longueur de la tige la plus longue (inflorescence incluse; à la fin de l'élongation)**	**Halm: Länge des längsten Halmes (einschließlich Blütenstand; wenn voll ausgebildet)**	**Tallo: longitud del tallo más largo (inflorescencia incluida; al final de su elongación)**		
		short	courte	kurz	corta		3
		medium	moyenne	mittel	media	Lubro (Bs)	5
		long	longue	lang	larga	Bellegarde (Bc)	7
12. (+)	**A**	**Stem: length of upper internode (as for 11)**	**Tige: longueur du dernier entrenœud (comme pour 11)**	**Halm: Länge des obersten Internodiums (wie unter 11)**	**Tallo: longitud del entrenudo superior (como para 11)**		
		short to medium	courte à moyenne	kurz bis mittel	corta a media		4
		medium	moyenne	mittel	media	Primabel (Bc) Lubro (Bs)	5
		medium to long	moyenne à longue	mittel bis lang	media a larga	Bosir (Bs)	6
13.	**A**	**Inflorescence: length (as for 11)**	**Inflorescence : longueur (comme pour 11)**	**Blütenstand: Länge (wie unter 11)**	**Inflorescencia: longitud (como para 11)**		
		short	courte	kurz	corta		3
		medium	moyenne	mittel	media	Bosir (Bs)	5
		long	longue	lang	larga		7
14.	**B**	**Inflorescence: density (as for 11)**	**Inflorescence : densité (comme pour 11)**	**Blütenstand: Dichte (wie unter 11)**	**Inflorescencia: densidad (como para 11)**		
		sparse	lâche	locker	laxa		3
		medium	moyenne	mittel	media		5
		dense	dense	dicht	densa		7

VIII. Explanations on the Table of Characteristics

Ad. 1: Seedling: anthocyanin coloration of sheath of first leaf

The plants should be grown in the glasshouse. The anthocyanin coloration should be observed at stage one or two leaves.

Ad. 2: Plant: tendency to form inflorescences without vernalisation

The number of plants showing at least three inflorescences should be recorded for each variety. To be assessed on one occasion on the whole trial when the varieties are judged to have reached their full expression of this characteristic.

Ad. 7: Plant: time of inflorescence emergence after vernalisation (in second year)

A. Plots with spaced plants

The date of inflorescence emergence of each single plant should be assessed. A single plant is considered to have headed when the tip of three inflorescences can be seen protruding from the flag leaf sheath. From the single plant data a mean date per plot and a mean date per variety is obtained.

B. Row Plots

At each observation date the average plot stage should be expressed in one of the following growth stages:

1) Boot swollen
2) Tip of inflorescence just visible
3) ¼ of inflorescence emerged
4) ½ of inflorescence emerged

The date of inflorescence emergence is the date at which the average plot stage 2 has been reached. This date should, if necessary, be obtained by interpolation.

Ad. 12: Stem: length of upper internode

The length should be measured, when the internode is fully expanded. The longest upper internode of each plant should be measured as the distance between the upper node and the basis of the inflorescence.

IX. Literature

Betin, M., Gillet M., Mansat P., 1983. Étude complémentaire sur le comportement de différentes espèces de bromes en France: Catharticus, sitchensis, carinatus, valdivianus. Fourrages. 96, 81-104.

Hitchcock, A.S., 1935. Manual of grasses of the United States. Miscellaneous publications of the United States Department of Agriculture. 200, 31-56

Hubbard, C.E., 1967. Grasses 462, 62-89.

Kerguelen, M., 1978. Différenciation des espèces de Brome. Communication personnelle, 2 pages.

Mansat P. et Betin M., 1984. Intérêt des bromes pour la production fourragère en France. C.R. Acad. Agri. France. 70, (1), 75-83.

X. Technical Questionnaire

			Reference Number (not to be filled in by the applicant)
TECHNICAL QUESTIONNAIRE to be completed in connection with an application for plant breeders' rights			
1.	Species	*Bromus catharticus* Vahl. *Bromus sitchensis* Trin. *Bromus auleticus* Trin.	Rescue grass Alaska Brome-grass Bromus auleticus
2.	Applicant (Name and address)		
3.	Proposed denomination or breeder's reference		

4. Information on origin, maintenance and reproduction of the variety

4.1 Other information

4.2 Genetic origin and breeding method

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

	Characteristics	Example Varieties	Note
5.1 (4) B	**Leaf: intensity of green color (in autumn of year of sowing)**		
	light	Anabel (Bc), Lubro (Bs)	3[ ]
	medium	Banco (Bc)	5[ ]
	dark		7[ ]
5.2 (7) A B	**Plant: time of inflorescence emergence after vernalisation (in second year)**		
	early	Belgado (Bc)	3[ ]
	medium	Anabel (Bc)	5[ ]
	late	Lubro (Bs)	7[ ]
5.3 (11) A	**Stem: length of longest stem (inflorescence included; when fully expanded)**		
	short		3[ ]
	medium	Lubro (Bs)	5[ ]
	long	Bellegarde (Bc)	7[ ]

6. Similar varieties and differences from these varieties

Denomination of similar variety	Characteristic in which the similar variety is different [o)]	State of expression of similar variety	State of expression of candidate variety

[o)] In the case of identical states of expressions of both varieties, please indicate the size of the difference.

7. Additional information which may help to distinguish the variety

7.1	Ploidy	hexaploid	*B. catharticus, B. auleticus*	6[ ]
		octoploid	*B. sitchensis*	8[ ]
7.2	Seed shape	rounded	*B. auleticus*	1[ ]
		flat	*B. catharticus, B. sitchensis*	2[ ]

7.3 Resistance to pests and diseases

7.4 Special conditions for the examination of the variety

7.5 Other information

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 that question is yes, please attach a copy of such an authorization.

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