TG/58/6

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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

RYE

(*Secale cereale* L.)

GENEVA
1999

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RYE

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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.

TABLE OF CONTENTS PAGE

I. Subject of these Guidelines

These Test Guidelines apply to all varieties of *Secale cereale* L.: parental lines, hybrids and open-pollinated varieties..

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:

5 kg for hybrids and open-pollinated varieties
1.5 kg for parental lines.

In the case of hybrid varieties, an additional 1.5 kg of each component (e.g. parental line, single hybrid, restorer) should be submitted. 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. The germination capacity should be as high as possible.

2. The plant material 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 similar growing periods.

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 field 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 measurement and counting without prejudice to the observations which must be made up to the end of the growing period. Each test at each testing place should include in total per growing period:

(a) Row plots

600 plants which should be divided between two replicates.

(b) Plots with single-spaced plants

60 single-spaced plants which should be divided between three replicates.

Separate plots for observation and for measuring can only be used if they have been subject to similar environmental conditions.

4. Additional tests for special purposes may be established.

IV. Methods and Observations

1. The characteristics described in Chapter VII should be used for the testing of distinctness of parental lines, hybrids and open-pollinated varieties.

2. If not otherwise indicated, all observations for the assessment of distinctness should be made on at least 600 plants in the case of characteristics marked with VG (visual assessment by a single observation of a group of plants or parts of plants), and on 60 plants or parts of 60 plants in the case of characteristics marked with M (actual measurement) or VS (visual assessment by observations of a number of individual plants or plant parts).

3. The assessment of uniformity of parental lines and single hybrids should–if not otherwise indicated–be done on 600 plants; a population standard of 0.5% with an acceptance probability of at least 95% should be applied. The maximum number of off-types allowed would be 6. In the case of 60 or 100 parts respectively or parts of 60 or 100 plants respecctively a population standard of 2% with an acceptance probability of at least 95% should be applied. The maximum number of off-types allowed would be 3 or 5 respectively.

4. For open-pollinated varieties and other hybrids than single hybrids, where uniformity is not judged in absolute terms, the variability within the variety should not exceed the variability of comparable varieties already known.

V. Grouping of Varieties

1. The collection of varieties 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. Their various states of expression should be fairly evenly distributed throughout the collection.

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

(a) Ploidy (characteristic 1)
(b) Seasonal type (characteristic 22).

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.

2. Notes (numbers), for the purposes of electronic data processing, are given opposite the states of expression for each characteristic. For each characteristic it is indicated whether actual measurements (M), visual assessments by a single observation of a group of plants or parts of plants (VG) or visual assessments by observations of a number of individual plants or plant parts (VS) should be used. For certain characteristics, different example varieties, separated by a semicolon, are indicated for winter rye and spring rye. Where spring varieties are indicated they follow the semicolon.

3. Legend

(*) Characteristics that should be used on all varieties in every growing period over which examinations are made and always be included in the variety descriptions, 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) The optimum stage of development for the assessment of each characteristic is indicated by a number in the second column. The stages of development denoted by each number are described at the end of Chapter VIII. The letters indicate the following:

M: actual measurement
VG: visual assessment by a single observation of a group of plants or parts of plants
VS: visual assessment by observations of a number of individual plants or plant parts

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

	Stage [1] / Stade [1] / Stadium [1] / Estado [1]	English	français	deutsch	español	Example Varieties / Exemples / Beispielssorten / Variedades ejemplo	Note/ Nota
1. (*) (+)	**VS**	**Ploidy**	**Ploïdie**	**Ploidie**	**Ploidía**		
		diploid	diploïde	diploid	diploide	Farino; Sorom	2
		tetraploid	tétraploïde	tetraploid	tetraploide	Tero	4
2. (+)	**00 VS**	**Grain: color of aleurone layer**	**Grain: couleur de la couche à aleurone**	**Korn: Farbe der Aleuronschicht**	**Grano: color de la capa de aleurona**		
		light	claire	hell	claro	Tetrahell	1
		dark	foncée	dunkel	oscuro	Pekuro; Sorom	2
3. (*) (+)	**10-11 VS**	**Coleoptile: anthocyanin coloration**	**Coléoptile: pigmentation anthocyanique**	**Keimscheide: Anthocyanfärbung**	**Coleóptilo: pigmentación antociánica**		
		absent or very weak	absente ou très faible	fehlend oder sehr gering	ausente o muy débil		1
		weak	faible	gering	débil		3
		medium	moyenne	mittel	media		5
		strong	forte	stark	fuerte	Calypso; Sorom	7
		very strong	très forte	sehr stark	muy fuerte		9
4. (+)	**12-13 M**	**Coleoptile: length**	**Coléoptile: longueur**	**Keimscheide: Länge**	**Coleóptilo: longitud**		
		very short	très courte	sehr kurz	muy corto		1
		short	courte	kurz	corto		3
		medium	moyenne	mittel	medio	Clou; Sorom	5
		long	longue	lang	largo	Uso	7
		very long	très longue	sehr lang	muy largo		9

	Stage [1)] Stade [1)] Stadium [1)] Estado [1)]	English	français	deutsch	español	Example Varieties Exemples Beispielssorten Variedades ejemplo	Note/ Nota
5. **(+)**	**12-13** **M**	**First leaf: length of sheath**	**Première feuille: longueur de la gaine**	**Erstes Blatt: Länge der Blatt-scheide**	**Primera hoja: longitud de la vaina**		
		very short	très courte	sehr kurz	muy corta		1
		short	courte	kurz	corta	Cero	3
		medium	moyenne	mittel	media	Clou; Sorom	5
		long	longue	lang	larga	Protector	7
		very long	très longue	sehr lang	muy larga		9
6. **(+)**	**12-13** **M**	**First leaf: length of blade**	**Première feuille: longueur du limbe**	**Erstes Blatt: Länge der Blattspreite**	**Primera hoja: longitud del limbo**		
		very short	très courte	sehr kurz	muy corto		1
		short	courte	kurz	corto	Cero	3
		medium	moyenne	mittel	medio	Farino; Sorom	5
		long	longue	lang	largo	Protector	7
		very long	très longue	sehr lang	muy largo		9
7. **(*)** **(+)**	**25-29** **M**	**Plant: growth habit**	**Plante: port**	**Pflanze: Wuchs-form**	**Planta: porte**		
		erect	dressé	aufrecht	erecto		1
		semi-erect	demi-dressé	halbaufrecht	semierecto	Protector	3
		intermediate	demi-dressé à demi-étalé	mittel	intermedio	—: Sorom	5
		semi-prostrate	demi-étalé	halbliegend	semipostrado	Calypso	7
		prostrate	étalé	liegend	postrado		9

	Stage [1)] Stade [1)] Stadium [1)] Estado [1)]	English	français	deutsch	español	Example Varieties Exemples Beispielssorten Variedades ejemplo	Note/ Nota
8. **(*)** **(+)**	**50-60** **VG**	**Flag leaf: glaucosity of sheath**	**Dernière feuille: glaucescence de la gaine**	**Oberstes Blatt: Bereifung der Blattscheide**	**Ultima hoja: glauescencia de la vaina**		
		absent or very weak	nulle ou très faible	fehlend oder sehr gering	ausente o muy baja		1
		weak	faible	gering	baja	Protector	3
		medium	moyenne	mittel	media	—; Sorom	5
		strong	forte	stark	alta	Amando	7
		very strong	très forte	sehr stark	muy alta		9
9. **(*)** **(+)**	**52** **M**	**Time of ear emergence**	**Époque d'épiaison**	**Zeitpunkt des Ährenschiebens**	**Fecha del espigado**		
		very early	très précoce	sehr früh	muy precoz		1
		early	précoce	früh	precoz	Danko	3
		medium	moyenne	mittel	media	Farino; Sorom	5
		late	tardive	spät	tardía		7
		very late	très tardive	sehr spät	muy tardía		9
10.	**60-69** **M**	**Leaf next to flag leaf: length of blade**	**Avant-dernière feuille: longueur du limbe**	**Zweitoberstes Blatt: Länge der Spreite**	**Penúltima hoja: longitud del limbo**		
		very short	très court	sehr kurz	muy corta		1
		short	court	kurz	corta	Amando	3
		medium	moyen	mittel	media	Dino; Sorom	5
		long	long	lang	larga		7
		very long	très long	sehr lang	muy larga		9

	Stage [1] Stade [1] Stadium [1] Estado [1]	English	français	deutsch	español	Example Varieties Exemples Beispielssorten Variedades ejemplo	Note/ Nota
11.	**60-69 M**	**Leaf next to flag leaf: width of blade**	**Avant-dernière feuille: largeur du limbe**	**Zweitoberstes Blatt: Breite der Blattspreite**	**Penúltima hoja: anchura del limbo**		
		very narrow	très étroit	sehr schmal	muy estrecho		1
		narrow	étroit	schmal	estrecho	Amando	3
		medium	moyen	mittel	medio	Protector; Sorom	5
		broad	large	breit	ancho		7
		very broad	très large	sehr breit	muy ancho		9
12. (*)	**69-75 VS**	**Ear: glaucosity**	**Épi: glaucescence**	**Ähre: Bereifung**	**Espiga: glauescencia**		
		absent or very weak	nulle ou très faible	fehlend oder sehr gering	ausente o muy baja		1
		weak	faible	gering	baja		3
		medium	moyenne	mittel	media	—; Sorom	5
		strong	forte	stark	alta	Motto	7
		very strong	très forte	sehr stark	muy alta		9
13. (*) (+)	**70-85 VS**	**Stem: hairiness below ear**	**Tige: pilosité au-dessous de l'épi**	**Halm: Behaarung unterhalb der Ähre**	**Tallo: vellosidad bajo la espiga**		
		absent or very weak	nulle ou très faible	fehlend oder sehr gering	ausente o muy baja	Halo; Sorom	1
		weak	faible	gering	baja	Uso; Petka	3
		medium	moyenne	mittel	media		5
		strong	forte	stark	alta		7
		very strong	très forte	sehr stark	muy alta		9

	Stage [1)] Stade [1)] Stadium [1)] Estado [1)]	English	français	deutsch	español	Example Varieties Exemples Beispielssorten Variedades ejemplo	Note/ Nota
14. (*)	**80-92 M**	**Plant: length (stem, ear and awns)**	**Plante: longueur (tige, épi et barbes)**	**Pflanze: Länge (Halm, Ähre und Grannen)**	**Planta: longitud (tallo, espiga y barbas)**		
		very short	très courte	sehr kurz	muy corta		1
		short	courte	kurz	corta	Calypso	3
		medium	moyenne	mittel	media	—; Sorom	5
		long	longue	lang	larga	Protector	7
		very long	très longue	sehr lang	muy larga		9
15.	**80-92 M**	**Stem: length between upper node and ear**	**Tige: longueur entre le dernier nœud et l'épi**	**Halm: Länge zwischen oberstem Knoten und Ähre**	**Tallo: longitud entre el nudo superior y la espiga**		
		very short	très court	sehr kurz	muy corto		1
		short	court	kurz	corto	Calypso	3
		medium	moyen	mittel	medio	Borellus; Sorom	5
		long	long	lang	largo	Protector	7
		very long	très long	sehr lang	muy largo		9
16.	**80-92 M**	**Ear: length (without awns)**	**Épi: longueur (sans barbes)**	**Ähre: Länge (ohne Grannen)**	**Espiga: longitud (sin barbas)**		
		very short	très court	sehr kurz	muy corta		1
		short	court	kurz	corta	Danko	3
		medium	moyen	mittel	media	Uso; Sorom	5
		long	long	lang	larga	Protector	7
		very long	très long	sehr lang	muy larga		9

	Stage [1] Stade [1] Stadium [1] Estado [1]	English	français	deutsch	español	Example Varieties Exemples Beispielssorten Variedades ejemplo	Note/ Nota
17. (*) (+)	**80-92 M**	**Ear: density**	**Épi: compacité**	**Ähre: Dichte**	**Espiga: densidad**		
		very lax	très lâche	sehr locker	muy laxa		1
		lax	lâche	locker	laxa	Protector	3
		medium	demi-lâche à demi-compact	mittel	media	Hacada; Sorom	5
		dense	compact	dicht	densa	Danko	7
		very dense	très compact	sehr dicht	muy densa		9
18.	**90-92 VS**	**Ear: attitude**	**Épi: port**	**Ähre: Haltung**	**Espiga: porte**		
		erect	droit	aufrecht	erecto		1
		semi-erect	légèrement incurvé	geneigt	semierecto		3
		horizontal	demi-incurvé	waagerecht	horizontal	Calypso; Sorom	5
		semi-recurved	incurvé	überhängend	colgante		7
		recurved	très incurvé	stark überhängend	muy colgante		9
19. (*) (+)	**90-92 M**	**Grain: weight per thousand grains**	**Grain: poids de mille grains**	**Korn: Tausend-korngewicht**	**Grano: peso de mil granos**		
		very small	très faible	sehr niedrig	muy bajo		1
		small	faible	niedrig	bajo	Rheidol	3
		medium	moyen	mittel	medio	Danko; Sorom	5
		large	élevé	hoch	alto		7
		very large	très élevé	sehr hoch	muy alto	Clou	9

	Stage [1] Stade [1] Stadium [1] Estado [1]	English	français	deutsch	español	Example Varieties Exemples Beispielssorten Variedades ejemplo	Note/ Nota
20. (*) (+)	**92 M**	**Grain: length**	**Grain: longueur**	**Korn: Länge**	**Grano: longitud**		
		very short	très court	sehr kurz	muy corto		1
		short	court	kurz	corto	Uso	3
		medium	moyen	mittel	medio	Esprit; Sorom	5
		long	long	lang	largo		7
		very long	très long	sehr lang	muy largo		9
21. (+)	**92 VS**	**Grain: coloration with phenol**	**Grain: coloration au phénol**	**Korn: Phenolfärbung**	**Grano: coloración al fenol**		
		absent or very light	nulle ou très clair	fehlend oder sehr hell	ausente o muy claro		1
		light	claire	hell	claro		3
		medium	moyenne	mittel	medio	Clou; Sorom	5
		dark	foncée	dunkel	oscuro	Esprit; Petka	7
		very dark	très foncée	sehr dunkel	muy oscuro		9
22. (*)	**VG**	**Seasonal type**	**Type de développement**	**Wechselverhalten**	**Tipo de desarrollo**		
		winter	hiver	Winterform	invierno	Farino	1
		alternative	alternatif	Wechselform	alternativo		2
		spring	printemps	Sommerform	primavera	—; Sorom	3

VIII. Explanation on the Table of Characteristics

Ad. 1: Ploidy

Ploidy should be assessed on at least 100 seedlings.

Ad. 2: Grain: color of aleurone layer

The color should be assessed visually on at least 100 grains of the material sent in for testing.

Ad. 3: Coleoptile: anthocyanin coloration

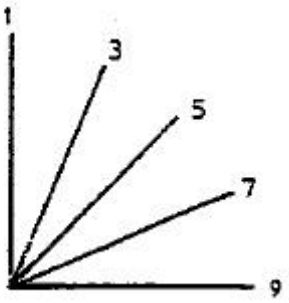
The anthocyanin coloration should be assessed visually in the laboratory. For this purpose 100 grains should be placed on filter paper and germinated on germination tables at a temperature of 15 to 16° C in darkness. When the coleoptile has reached about 1 cm in length (after 5 to 6 days), the plants should receive for 4 days without interruption light of about 13 000 to 15 000 lux at room temperature (18 - 19° C).

Ad. 4 - 6: Cleoptile: length (4), First leaf: length of sheath (5), length of blade (6)

3 x 24 grains of the material sent in for testing are sown in multipot plates with standard soil in 1 cm sowing depth. The plants are produced in the greenhouse at 20° C and with additional light for 12 hours per day during 12 days. 20 plants per replicate are measured.

Ad. 7: Plant: growth habit

The growth habit should be assessed on single-spaced plants visually from the attitude of the leaves and tillers. The angle formed by the outer leaves and the tillers with an imaginary middle axis should be used. The states of expression should be determined as follows:



erect (1)
semi-erect (3)
intermediate (5)
semi-prostrate (7)
prostrate (9)

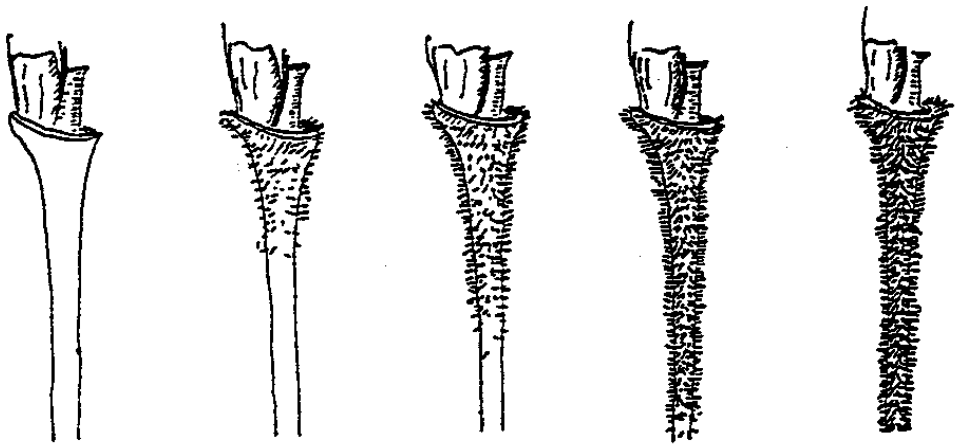
Ad. 8: Flag leaf: glaucosity of sheath

The observation should be done on the upper third of the sheath.

Ad. 9: Time of ear emergence

To assess the time, the number of plants which have reached stage 52 of the EUCARPIA Decimal Code for the Growth Stages of Cereals should be recorded at two-day intervals. From these data the average time of ear emergence of the variety should be calculated.

Ad. 13: Stem: hairiness below ear



1	3	5	7	9
absent or very weak	weak	medium	strong	very strong

Ad. 17: Ear: density

The density should be assessed by calculating the average number of rachis segments per length of ear.

Ad. 19 + 20: Grain: weight per thousand grains (19), length (20)

The weight and the length should be assessed by taking one harvested bunch each from the row plots. The length should be observed on 60 grains.

Ad. 21: Grain: coloration with phenol

Method for Determination of Phenol Reaction

Number of grains per test:	100 The grains should not have been treated chemically
Preparation of grains:	Soak in tap water for 16 to 20 hours, drain and remove surface water, place the grains with crease downwards, cover dish with lid
Concentration of solution:	1% Phenol-solution (freshly made up)
Amount of solution:	2 ml in a petri-dish on filter paper
Place:	Laboratory
Light:	Daylight, out of direct sunshine
Temperature:	18 to 20^{o} C
Time of recording:	4 hours after adding solution
Scale of recording:	See characteristic 21 in the Table of Characteristics
Note:	At least two of the example varieties should be included as a control

Decimal Code for the Growth Stages of Cereals*

2-digit Code	General Description	Feekes' Scale	Additional Remarks on Wheat, Barley, Rye, Oats and Rice
	Germination		
00	Dry seed		
01	Start of imbibition		
02	-		
03	Imbibition complete		
04	-		
05	Radicle emerged from caryopsis		
06	-		
07	Coleoptile emerged from caryopsis		
08	-		
09	Leaf just at coleoptile tip		
	Seedling growth		
10	First leaf through coleoptile	1	Second leaf visible (less than 1 cm)
11	First leaf unfolded(1)		
12	2 leaves unfolded		
13	3 leaves unfolded		
14	4 leaves unfolded		
15	5 leaves unfolded		50% of laminae unfolded
16	6 leaves unfolded		
17	7 leaves unfolded		
18	8 leaves unfolded		
19	9 or more leaves unfolded		

* Reproduced from EUCARPIA Bulletin No. 7, 1974, pages 49 - 52, with the kind permission of the authors. For further information, see J.C. Zadoks, T.T. Chang and C.F. Konzak, EUCARPIA Bulletin No 7, 1974, pages 42 - 52.

2-digit Code	General Description	Feekes' Scale	Additional Remarks on Wheat, Barley, Rye, Oats and Rice
	Germination		
20	Main shoot only		
21	Main shoot and 1 tiller	2	
22	Main shoot and 2 tillers		This section to be used to supplement records from other sections of the table: "concurrent codes."
23	Main shoot and 3 tillers		
24	Main shoot and 4 tillers		
25	Main shoot and 5 tillers		
26	Main shoot and 6 tillers	3	
27	Main shoot and 7 tillers		
28	Main shoot and 8 tillers		
29	Main shoot and 9 or more tillers		
	Stem elongation		
30	Pseudo stem erection (2)	4 - 5	In rice: vegetative lag phase
31	1st node detectable	6	Jointing stage
32	2nd node detectable	7	
33	3rd node detectable		Above crown nodes
34	4th node detectable		
35	5th node detectable		
36	6th node detectable		
37	Flag leaf just visible	8	
38	-		
39	Flag leaf ligule/collar just visible	9	Pre-boot stage In rice: opposite auricle stage

2-digit Code	General Description	Feekes' Scale	Additional Remarks on Wheat, Barley, Rye, Oats and Rice
	Booting		
40	-		Little enlargement of the inflorescence, early-boot stage
41	Flag leaf sheath extending		
42	-		
43	Boots just visibly swollen		Mid-boot stage
44	-	10	
45	Boots swollen		Late-boot stage
46	-		
47	Flag leaf sheath opening		
48	-		
49	First awns visible	10.1	In awned forms only
	Inflorescence emergence		
50	First spikelet of inflorescence just visible	N	N = non-synchronous crops
51		S	S = synchronous crops
52	¼ of inflorescence emerged	N	
53		S	
54	½ of inflorescence emerged	N	
55		S	
56	¾ of inflorescence emerged	N	
57		S	
58	Emergence of inflorescence completed	N	
59		S	

2-digit Code	General Description	Feekes' Scale		Additional Remarks on Wheat, Barley, Rye, Oats and Rice
	Anthesis			
60		N		
	Beginning of anthesis		10.51	
61		S		Not easily detectable in barley. In rice: Usually immediately following heading
62	-			
63	-			
64		N		
	Anthesis half-way		10.52	
65		S		
66	-			
67	-			
68		N		
	Anthesis complete		10.53	
69		S		
	Milk development			
70	-			
71	Caryopsis watery ripe		10.54	
72	-			
73	Early milk			
74	-			
75	Medium milk		11.1	Increase in solids of liquid endosperm notable when crushing the caryopsis between fingers
76	-			
77	Late milk			
78	-			
79	-			
	Dough development			
80	-			
81	-			
82	-			
83	Early dough			

2-digit Code	General Description	Feekes' Scale	Additional Remarks on Wheat, Barley, Rye, Oats and Rice
84	-		Fingernail impression not held.
85	Soft dough	11.2	
86	-		.
87	Hard dough		
88	-		Fingernail impression held, inflorescence losing chlorophyll
89	-		
	Ripening		
90	-		In rice: Terminal spikelets ripened.
91	Caryopsis hard (difficult to divide by thumbnail) (3)	11.3	In rice: 50% of spikelets ripened
92	Caryopsis hard (can no longer be dented by thumbnail) (4)	11.4	In rice: Over 90% of spikelets ripened (5)
93	Caryopsis loosening in daytime		Risk of grain loss by shedding
94	Over-ripe, straw dead and collapsing		
95	Seed dormant		
96	Viable seed giving 50% germination		
97	Seed not dormant		
98	Secondary dormancy induced		
99	Secondary dormancy lost		
	Transplanting and recovery (rice only)		
T1	Uprooting of seedlings		
T2	-		
T3	Rooting		
T4	-		
T5	-		
T6	-		
T7	Recovery of shoots		
T8	-		
T9	Resumption of vegetative growth		

Notes on the Table

(1) Stage of seedling inoculation with rust in the greenhouse.

(2) Only applicable to cereals with a prostrate or semi-prostrate early growth habit.

(3) Ripeness for binder (ca. 16% water content). Chlorophyll of inflorescence largely lost.

(4) Ripeness for combine harvester (< 16% water content).

(5) Optimum harvest time.

IX. Literature

[no special literature]

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	*Secale cereale* L. RYE
2.	Applicant (Name and address)	
3.	Proposed denomination or breeder's reference	

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

4.1 Genetic origin and breeding method

4.2 Type of material

(a)	parental line	[ ]
(b)	single hybrid	[ ]
(c)	three-way hybrid	[ ]
(d)	double hybrid	[ ]
(e)	top-cross hybrid	[ ]
(f)	open-pollinated variety	[ ]
(g)	other (indicate formula)	[ ]

4.3 Formula (if applicable, for every component in separate sheets, the information according to the following chapters 5 to 7 to be added).

4.4 Other information

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 (1)	**Ploidy**		
	diploid	Farino; Sorom	2[ ]
	tetraploid	Tero	4[ ]
5.2 (3)	**Coleoptile: anthocyanin coloration**		
	absent or very weak		1[ ]
	weak		3[ ]
	medium		5[ ]
	strong	Calypso; Sorom	7[ ]
	very strong		9[ ]
5.3 (9)	**Time of ear emergence**		
	very early		1[ ]
	early	Danko	3[ ]
	medium	Farino; Sorom	5[ ]
	late		7[ ]
	very late		9[ ]
5.4 (13)	**Stem: hairiness below ear**		
	absent or very weak	Halo; Sorom	1[ ]
	weak	Uso; Petka	3[ ]
	medium		5[ ]
	strong		7[ ]
	very strong		9[ ]

	Characteristics	Example Varieties	Note
5.5 (14)	**Plant: length (stem, ear and awns)**		
	very short		1[ ]
	short	Calypso	3[ ]
	medium	—; Sorom	5[ ]
	long	Protector	7[ ]
	very long		9[ ]
5.6 (22)	**Seasonal type**		
	winter	Farino	1[ ]
	alternative		2[ ]
	spring	—; Sorom	3[ ]

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 Resistance to pests and diseases

7.2 Special conditions for the examination of the variety

7.3 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.

[End of document]