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English
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CPVO · OCVV
Community Plant Variety Office
Office Communautaire des Variétés Végétales

PROTOCOL FOR DISTINCTNESS, UNIFORMITY AND STABILITY TESTS

X Triticosecale Witt.

TRITICALE

UPOV Species Code: TRITL

Adopted on 14/01/2011

Entry into force on 01/08/2010

I SUBJECT OF THE PROTOCOL

The protocol describes the technical procedures to be followed in order to meet the requirements of Council Regulation 2100/94 on Community Plant Variety Rights. The technical procedures have been agreed by the Administrative Council and are based on general UPOV Document TG/1/3 and UPOV Guideline TG/121/3 dated 6th October 1989 for the conduct of tests for Distinctness, Uniformity and Stability. This protocol applies to all varieties of *X Triticosecale* Witt. For a variety to be classified as triticale, its caryotype must contain at least half the chromosomes of rye.

II SUBMISSION OF SEED AND OTHER PLANT MATERIAL

1. The Community Plant Variety Office (CPVO) is responsible for informing the applicant of

   - the closing date for the receipt of plant material;
   - the minimum amount and quality of plant material required;
   - the Examination Office to which material is to be sent.

   A sub-sample of the material submitted for test will be held in the variety collection of the Examination Office as the definitive sample of the candidate variety.

   The applicant is responsible for ensuring compliance with any customs and plant health requirements.

2. Final dates for receipt of documentation and material by the Examination Office

   The final dates for receipt of requests, technical questionnaires and the final date or submission period for plant material will be decided by the CPVO and each Examination Office chosen.

   The Examination Office is responsible for immediately acknowledging the receipt of requests for testing, and technical questionnaires. Immediately after the closing date for the receipt of plant material the Examination Office should inform the CPVO if no plant material has been received. However, if unsatisfactory plant material is submitted the CPVO should be informed as soon as possible.

3. Seed requirements

   Information with respect to closing dates and submission requirements of plant material for the technical examination of varieties can be found on the CPVO web site (www.cpvo.europa.eu) and in the special Issue S2 of the Official Gazette of the Office published yearly at the month of September.

   Quality of seed:..... The minimum requirements for germination capacity and analytical purity should not be less than the standards laid down in EC Directive 66/402/EEC

   Seed Treatment: ..... The plant material must not have undergone any treatment unless the CPVO and the Examination Office allow or request such treatment. If it has been treated, full details of the treatment must be given.

   Labelling of sample: ..... - Species
   - File number of the application allocated by the CPVO
   - Breeder's reference
   - Examination reference (if known)
   - Name of applicant
   - The phrase “On request of the CPVO”.

III CONDUCT OF TESTS

1. Variety collection

A variety collection will be maintained for the purpose of establishing distinctness of the candidate varieties in test. A variety collection may contain both living material and descriptive information. A variety will be included in a variety collection only if plant material is available to make a technical examination.

Pursuant to Article 7 of Council Regulation No. 2100/94, the basis for a collection should be the following:

- varieties listed or protected at the EU level or at least in one of the EEA Member States;
- varieties protected in other UPOV Member States;
- any other variety in common knowledge.
- In case of hybrids, all components of hybrid varieties in common knowledge must be considered as part of the reference collection.

The composition of the variety collection in each Examination Office depends on the ecological conditions in which the Examination Office is located.

Variety collections will be held under conditions which ensure the long term maintenance of each accession. It is the responsibility of Examination Offices to replace reference material which has deteriorated or become depleted. Replacement material can only be introduced if appropriate tests confirm conformity with the existing reference material. If any difficulties arise for the replacement of reference material Examination Offices must inform the CPVO. If authentic plant material of a variety cannot be supplied to an Examination Office the variety will be removed from the variety collection.

2. Material to be examined

Candidate varieties will be directly compared with other candidates for Community plant variety rights tested at the same Examination Office, and with appropriate varieties in the variety collection. When necessary an Examination Office may also include other candidates and varieties. Examination Offices should therefore make efforts to co-ordinate the work with other offices involved in DUS-testing of triticale. There should be at least an exchange of technical questionnaires for each candidate variety, and during the test period, Examination Offices should notify each other and the CPVO of candidate varieties which are likely to present problems in establishing distinctness. In order to solve particular problems Examination Offices may exchange plant material.

3. Characteristics to be used

The characteristics to be used in DUS tests and preparation of descriptions shall be those referred to in the table of characteristics. All the characteristics shall be used, providing that observation of a characteristic is not rendered impossible by the expression of any other characteristic, or the expression of a characteristic is prevented by the environmental conditions under which the test is conducted. In the latter case, the CPVO should be informed. In addition the existence of some other regulation e.g. plant health, may make the observation of the characteristic impossible.

The Administrative Council empowers the President, in accordance with Article 23 of Commission Regulation N° 1239/95, to insert additional characteristics and their expressions in respect of a variety.

4. Grouping of varieties

The varieties and candidates to be compared will 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 of expression are fairly evenly distributed throughout the collection. In the case of continuous grouping characteristics overlapping states of expression between adjacent groups is required to reduce the risks of incorrect allocation of candidates to groups. The characteristics that could be used for grouping are the following (CPVO numbering; G for grouping in table of characteristics).

a) Time of ear emergence (characteristic 6)

b) Stem: density of hairiness of neck (characteristic 11)

c) Lower glume: hairiness on external surface (characteristic 16)

d) Grain: colouration with phenol (characteristic 20)

e) Seasonal type (characteristic 21)

5. Trial designs and growing conditions

The minimum duration of tests will normally be two independent growing cycles. Tests will be carried out under conditions ensuring normal growth. The size of the plots will 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 cycle.

As a minimum, each test should include about 2000 plants which should be divided between two or more replicates.

The assessment for the characteristic “Seasonal type” should be carried out on at least 500 plants.
Tests on ear rows are conducted on at least 100 ear-rows.

In case of hybrids, the parent lines have to be included in the test and should be tested and assessed as any other mainly self-pollinating variety. The observations on the hybrid variety itself should be made on at least 200 plants.

All observations determined by measurement or counting should be made on 20 plants or parts of 20 plants.

6. Special tests

In accordance with Article 83(3) of Council Regulation No. 2100/94 an applicant may claim either in the Technical Questionnaire or during the test that a candidate has a characteristic which would be helpful in establishing distinctness. If such a claim is made and is supported by reliable technical data, a special test may be undertaken providing that a technically acceptable test procedure can be devised.

Special tests will be undertaken, with the agreement of the President of CPVO, where distinctness is unlikely to be shown using the characters listed in the protocol.

7. Standards for decisions

a) **Distinctness**
A candidate variety will be considered to be distinct if it meets the requirements of Article 7 of Council Regulation No. 2100/94.

To assess distinctness of hybrids, a pre-screening system on the basis of the parental lines and the formula may be established according to the following recommendations:

(i) description of parental lines according to the Test Guidelines;

(ii) check of the originality of the parental lines in comparison with the reference collection, based on the characteristics in the table of characteristics in order to screen the closest inbred lines;

(iii) check of the originality of the hybrid formula in comparison with those of the hybrids in common knowledge, taking into account the closest inbred lines;

(iv) assessment of the distinctness at the hybrid level of varieties with a similar formula.

Qualitative characteristics:

In the case of characteristics which show discrete discontinuous states of expression, a difference between two varieties is clear if the respective characteristics have expressions which fall into two different states.

Quantitative characteristics:

Characteristics which show a continuous range of expression from one extreme to the other may be either measured or visually observed.

In the case of visually observed characteristics, a difference between two varieties is clear if the expression of the respective characteristics differs by at least the span of one note, taking into account the variability observed within the varieties.

If distinctness is assessed using the t-test least significant difference the difference between two varieties is clear if it occurs with the same sign at the 1% significance level or less ($p \leq 0.01$) in two consecutive or two out of three growing cycles.

If distinctness is assessed by the combined over years distinctness analysis (COYD) the difference between two varieties is clear if the respective characteristics are different at the 1% significance level or less ($p \leq 0.01$) in a test over either two or three years.

If the significance level or statistical methods proposed are not appropriate the method used should be clearly described.

b) **Uniformity**

Uniformity is assessed by visual observation and the detection of off-types.

The number of off-types in a sample size of 100 ear-rows, plants or parts of plants should not exceed 10 in 100 (population standard of 6 % and an acceptance probability of $\geq$ 95% is applied). Characteristics which should be observed on a sample size of 100 plants are indicated by an "A" in the table of characteristics. For these "A" characteristics, with the exception of characteristics 2 and 20, the assessment of uniformity can be done in 2 steps. In a first step, 20 plants or parts of plants are observed. If no off-type is observed, the variety is declared to be uniform. If more than 6 off-types are observed, the variety is declared not to be uniform. If 1 to 6 off-types are observed, an additional sample of 80 plants or parts of plants must be observed.

The number of off-types in a sample size of 2000 plants or parts of plants should not exceed 18 in 2000 (population standard of 0.6 % and an acceptance probability of $\geq$ 95% is applied). Characteristics which should be observed on a sample size of 2000 plants are indicated by a "B" in the table of characteristics.

For hybrids, the number of off-types in a sample size of 200 plants should not exceed 27 in 200 (Population standard of 10% with an acceptance probability of $\geq$ 95%).

For all varieties except hybrid varieties, a re-submission of plant material may be allowed for the second growing cycle if in the first growing cycle the number of off-types did not exceed 28 plants in a sample size of 2000 plants (Population standard of 1 % with an acceptance probability of ≥ 95%) or 21 plants, parts of plants or ear rows in a sample size of 100 (Population standard of 15% with an acceptance probability of ≥ 95%).

c) **Stability**

A candidate will be considered to be sufficiently stable when there is no evidence to indicate that it lacks uniformity.
Seed samples of further submissions included in any test must show the same expression of characteristics as the material originally supplied.

IV REPORTING OF RESULTS

After each recording season the results will be summarised and reported to the CPVO in the form of a UPOV model interim report in which any problems will be indicated under the headings distinctness, uniformity and stability. Candidates may meet the DUS standards after two growing cycles but in some cases three growing cycles may be required. When tests are completed the results will be sent by the Examination Office to the CPVO in the form of a UPOV model final report.

If it is considered that the candidate complies with the DUS standards, the final report will be accompanied by a variety description in the format recommended by UPOV. If not the reasons for failure and a summary of the test results will be included with the final report.

The CPVO must receive interim reports and final reports by the date agreed between the CPVO and the Examination Office.

Interim reports and final examination reports shall be signed by the responsible member of the staff of the Examination Office and shall expressly acknowledge the exclusive rights of disposal of CPVO.

V LIAISON WITH THE APPLICANT

If problems arise during the course of the test the CPVO should be informed so that the information can be passed on to the applicant. Subject to prior permanent agreement, the applicant may be directly informed at the same time as the CPVO particularly if a visit to the trial is advisable.

VI ENTRY INTO FORCE

The present protocol enters into force on **01.08.2010**. Any ongoing DUS examination of candidate varieties started before the aforesaid date will not be affected by the approval of the partially revised Technical Protocol. Technical examinations of candidate varieties are carried out according to the TP in force when the DUS test starts. The starting date of a DUS examination is considered to be the due date for submitting of plant material for the first test period.

In cases where the Office requests to take-over a DUS report for which the technical examination has either been finalized or which is in the process to be carried out at the moment of this request, such report can only be accepted if the technical examination has been carried out according to the CPVO TP which was in force at the moment when the technical examination started.

****

VI - TABLE OF CHARACTERISTICS TO BE USED IN DUS-TEST AND PREPARATION OF DESCRIPTION

CPVO N°	UPOV N°	Characteristics	Stage, Method [1]	Examples [2]	Note
1.	**1.**	**Ploidy**	05-07		
		tetraploid			4
		hexaploid		Tricolor; -	6
		octoploid			8
2.	**2.**	**Coleoptile: anthocyanin coloration**	09-11		
(+) [3]		absent or very weak	A; VG		1
		weak			3
		medium		Trimaran; -	5
		strong		Tricolor; -	7
		very strong		Lamberto; -	9
3.	**3.**	**Plant: growth habit**	25-29		
(+)		erect	B; VG		1
		semi-erect		Cumes; -	3
		intermediate		- ; -	5
		semi- prostrate		Ampiac; -	7
		prostrate		- ; -	9
4.	**4.**	**Plant: frequency of plants with recurved flag leaves**	47-51		
(+)		absent or very low	B; VG		1
		low		Trimaran; -	3
		medium		Cumes; -	5
		high		Trias	7
		very high			9

[1] The optimum stage of observation is explained in Annex 1 in 'Explanations and Methods'. The sample size and the method of observation for each characteristic are indicated by numbers and letters. Explanations are given in Annex 1 in 'Explanations and Methods'.

[2] For certain characteristics, different example varieties, separated by a semicolon, are indicated for winter triticale and spring triticale. Where spring triticale varieties are indicated they follow the semicolon. Example varieties are given as an indication, others may be used.

[3] See explanations in Annex 1 in 'Explanations and Methods'.

CPVO N°	UPOV N°	Characteristics	Stage, Method [1]	Examples [2]	Note
5.	**5.**	**Flag leaf: anthocyanin coloration of auricles**	47-51		
		absent or very weak	A; VG	Binova; -	1
		weak		Cumes; -	3
		medium		- ; -	5
		strong		Galtjo; -	7
		very strong		-; Fscal	9
6.	**6.**	**Time of ear emergence (first spikelet visible on 50 % of plants)**	50-52		
		very early	B; MG	Curtido; -	1
		early		Tricolor; -	3
		medium		Calao; -	5
		late		Lasko; -	7
G		very late		Pinokio; -	9
7.	**7.**	**Flag leaf: glucosity of sheath**	55-65		
		absent or very weak	B; VG		1
		weak		-; Abaco	3
		medium		Kortego; Bacum	5
		strong		Calao; -	7
		very strong			9
8.		**Flag leaf: glucosity of blade (lower side)**	55-65	-	
		absent or very weak	A; VG		1
		weak		- ; Abaco	3
		medium		Kortego; -	5
		strong		Calao; -	7
		very strong		Lupus; -	9

CPVO N°	UPOV N°	Characteristics	Stage, Method [1]	Examples [2]	Note
9.	**9.**	**Anthers: anthocyanin coloration**	65		
		absent or very weak	A; VG	Tricolor; -	1
		weak		Aubrac; -	3
		medium			5
		strong			7
		very strong			9
10.	**12.**	**Ear: glucosity**	60-69		
		absent or very weak	B; VG		1
		weak		Fidelio; -	3
		medium		Magnat; -	5
		strong		Ampiac; -	7
		very strong		Osorno; -	9
11.	**13.**	**Stem: density of hairiness of neck**	60-69		
(+)		absent or very weak	B; VG	Trimaran; -	1
		weak		Galtjo; -	3
		medium		Carnac; -	5
		strong		Magnat; -	7
G		very strong			9
12.	**14.**	**Plant: length (stem, ear and awns)**	80-92		
		very short	B; MG		1
		short		Trili Uno; -	3
		medium		Calao; -	5
		long		Alamo; -	7
		very long			9
13. **(+)**	**15.**	**Ear: distribution of awns**	80-92		
		tip awned	A; VG		1
		half awned			2
		fully awned		Trimaran; -	3

CPVO N°	UPOV N°	Characteristics	Stage, Method [1]	Examples [2]	Note
14.	**16.**	**Awns above the tip of ear: length**	80-92		
		very short	A; MS		1
		short		Rotego; -	3
		medium		Carnac; Bacum	5
		long		Ampiac; -	7
		very long			9
15.	**17.**	**Lower glume: length of first beak (spikelet in mid-third of ear)**	80-92		
(+)		very short	A; VG		1
		short		Trinidad; -	3
		medium		Trimaran ; -	5
		long		-; Bacum	7
		very long		Ampiac; -	9
16.	**19.**	**Lower glume: hairiness on external surface(as for 17)**	80-92		
		absent	A; VG	Carnac; -	1
G		present		Tricolor; Bacum	9
17.	**20.**	**Straw: pith in cross section (halfway between base of ear and stem node below)**	90-92		
		thin		Lamberto ; -	3
		medium	A; VG	Pinokio	5
		thick			7
18.	**22.**	**Ear: density**	92		
		lax	A; VG	Ticinio	3
		medium		Cumes; -	5
		dense		Calao ; -	7

CPVO N°	UPOV N°	Characteristics	Stage, Method [1]	Examples [2]	Note
19.	**23.**	**Ear: length excluding awns**	92		
		short	A; MS	Calao	3
		medium		Lupus; Bacum	5
		long		Pinokio ; -	7
20.	**25.**	**Grain: coloration with phenol**	92		
(+)		nil or very light	A; VG	SW Talentro; -	1
		light		Tricolor; -	3
		medium		Cedro; -	5
		dark		Galtjo; -	7
G		very dark		Binova; -	9
21.	**26.**	**Seasonal type**	-		
(+)		winter type	B; VG	Trimaran; -	1
		alternative type		Filius. Arc en Ciel	2
G		spring type		-; Abaco	3

ANNEXES TO FOLLOW

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Decimal code for the growth stage 17

ANNEX I I

Technical Questionnaire

ANNEX I

EXPLANATIONS AND METHODS

Method of observation of characteristics

Letters indicate the relevant method for the assessment of uniformity and distinctness

A	Sample size of 100 plants to be observed for the assessment of uniformity
B	Sample size of appr. 2000 plants to be observed in a plot for the assessment of uniformity
MG	Single measurement of a group of plants or parts of plants for the assessment of distinctness
MS	Measurement of a number of individual plants or parts of plants for the assessment of distinctness
VG	Visual assessment by a single observation of a group of plants or parts of plants for the assessment of distinctness
VS	Visual assessment by observation of individual plants or parts of plants for the assessment of distinctness

How to apply the above mentioned assessment methods in practice:

1. Assessment of uniformity

When attributing the letter A or B for the assessment of uniformity of a certain characteristic, the expert should address himself to single plants (A) or to all plants of the plot (B). The population standards as defined for observations made on either A or B need to be applied accordingly.

2. Assessment of distinctness

When a method of observation is attributed to a certain characteristic, the first differentiation is made depending if the action taken is a visual observation (V) or a measurement (M).

The second differentiation deals with the number of observations the expert attributes to each variety, thus the attribution of either G or S.
If a single observation of a group consisting of an undefined number of individual plants is appropriate to assess the expression of a variety, we talk about a visual observation or a measurement made on a group of plants, thus we attribute the letter G (either VG or MG). If the expert makes more than one observation on that group of plants, the decisive part is that we have at the end only one data entry per variety which means that we have to deal with G (e.g. measurement of plant length on a plot – MG, visual observation of green colour of leaves on a plot – VG).
If it is necessary to observe a number of individual plants to assess the expression of a variety, we should attribute the letter S (thus either VS or MS). Single plant data entries are kept per variety for further calculations like the variety mean (e.g. measurement of length of ears – MS, visual observation of growth habit of single plants in grasses – VS). The number of individual plants to be observed in such cases is stated in section III.5.

Ad 2: Coleoptile: anthocyanin coloration

Method for the Determination of Anthocyanin Coloration

Number of grains per test..... 20 grains for distinctness, 100 grains for uniformity.

Preparation of grains..... Set up non-dormant grains on moistened filter paper with a Petri dish lid during germination.

Place ..... Laboratory or glasshouse.

Light..... After the coleoptiles have reached a length of about 1 cm in darkness, they are placed in artificial light (daylight equivalent), 12,000 to 15,000 lux continuously for 3 - 4 days.

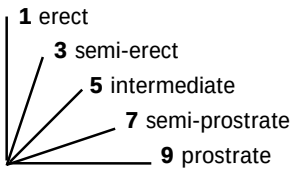
Temperature ..... 15 to 20°C.

Time of recording ..... Coleoptiles fully developed (about 1 week) at stage 09-11.

Scale of recording See characteristic 2 in the Table of Characteristics.

Note ..... At least one of the example varieties should be included as a control when testing for distinctness.

Ad 3: Plant: growth habit



The growth habit should be assessed 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.

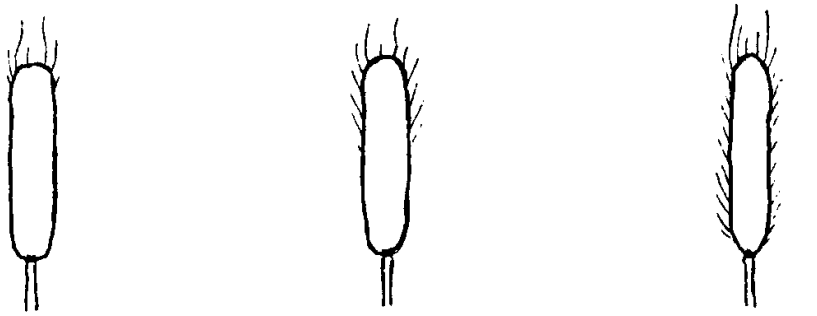
Ad 4: Plant: frequency of plants with recurved flag leaves

1. .....all flag leaves are rectilinear
3. .....about 1/4 of the plants with recurved flag leaves
5. .....about 1/2 of the plants with recurved flag leaves
7. .....about 3/4 of the plants with recurved flag leaves
9. .....all flag leaves are recurved

Ad 11: Stem: density of hairiness of neck

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

Ad 13: Ear: distribution of awns

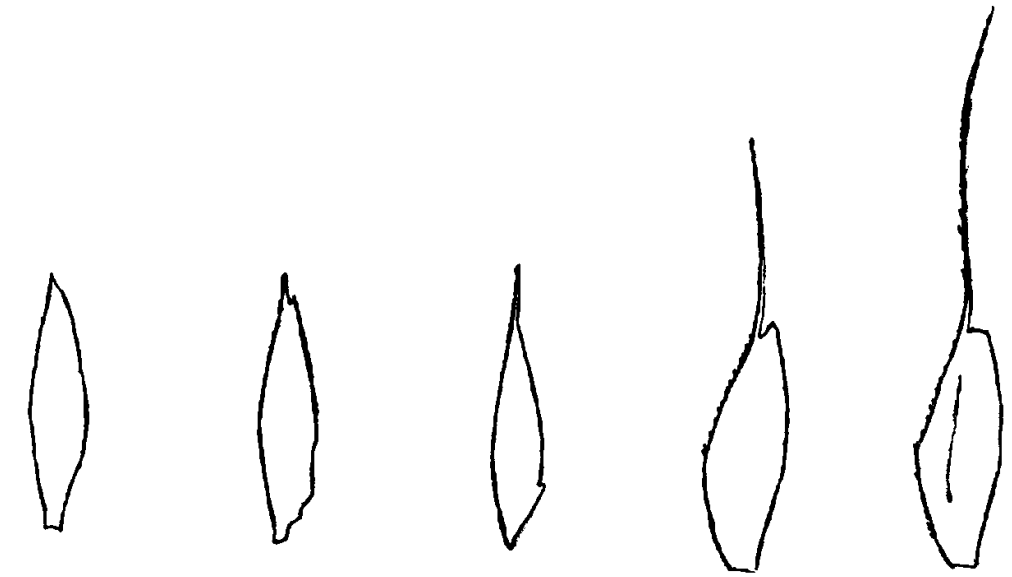


1
tip awned

2
half awned

3
fully awned

Ad 15: Lower glume: length of first beak



1
very short

3
short

5
medium

7
long

9
very long

Ad 20: Grain: coloration with phenol

Method for Determination of Phenol Reaction

Number of grains per test.....20 grains for distinctness, 100 grains for homogeneity. The grains should not have been treated chemically.

Equipment .....Petri dishes (approx. 9 cm diameter).

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 per cent Phenol-solution (freshly made up).

Amount of solution.....The grains should be about 3/4 covered.

Place .....Laboratory

Light.....Daylight - out of direct sunshine.

Temperature .....18 to 20°C.

Time of recording .....4 hours (after adding solution).

Scale of recording.....See characteristic 25 in the Table of Characteristics.

Note.....At least one of the example varieties should be included as a control.

Ad 23: Seasonal type

The seasonal type should be assessed on a plot sown in springtime. At the time when the latest spring type variety is fully mature (stage 91/92 of the Eucarpia decimal code), the growth stage reached by the respective variety should be assessed. The states of expression are defined as follows:

Winter type .....The plants have reached stage 45 of the Eucarpia decimal code (boots swollen) at maximum

Alternative type .....The plants have exceeded stage 45 of the Eucarpia decimal code--- as a rule they have exceeded stage 75--- and have reached stage 90 at maximum

Spring type .....The plants have exceeded stage 90 of the Eucarpia decimal code.

DECIMAL CODE FOR THE GROWTH STAGE

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	50% of laminae unfolded	
13	3 leaves unfolded		
14	4 leaves unfolded		
15	5 leaves unfolded		
16	6 leaves unfolded		
17	7 leaves unfolded		
18	8 leaves unfolded		
19	9 or more leaves unfolded		
	Tillering		
20	Main shoot only		
21	Main shoot and 1 tiller	2	This section to be used to supplement records from other sections of the table: "Concurrent codes".
22	Main shoot and 2 tillers	3	
23	Main shoot and 3 tillers		
24	Main shoot and 4 tillers		
25	Main shoot and 5 tillers		
26	Main shoot and 6 tillers		
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	-		Pre-boot stage
39	Flag leaf ligule / collar just visible	9	In rice: Opposite auricle

2- digit Code	General description	Feekes'Scale		Additional remarks on Wheat, Barley, Rye, Oats and Rice
	Booting			Little enlargement of the
40	-			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	N		
51	visible	S		
52	1/4 of inflorescence emerged	N	10.2	N = non-synchronous crops
53		S		S = synchronous crops
54	1/2 of inflorescence emerged	N	10.3	
55		S		
56	3/4 of inflorescence emerged	N	10.4	
57		S		
58	Emergence of inflorescence	N	10.5	
59	completed	S		
	Anthesis			
60	Beginning of anthesis	N	10.51	Not easily detectable in barley.
61		S		In rice: usually immediately
62	-			following heading
63	-			
64	Anthesis half-way	N	10.52	
65		S		
66	-			
67	-			
68	Anthesis complete	N	10.53	
69		S		
	Milk development			
70	-			
71	Caryopsis watery ripe		10.54	
72	-			
73	Early milk			Increase in solids of liquid
74	-		11.1	endosperm notable when
75	medium milk			crushing the caryopsis between
76	-			fingers.
77	Late milk			
78	-			
79	-			
	Dough development			
80	-			
81	-			
82	-			
83	Early dough			
84	-			Fingernail impression not held.
85	Soft dough		11.2	
86	-			
87	Hard dough			Fingernail impression held,
88	-			inflorescence losing chlorophyll.
89	-			

2- digit Code	General description	Feekes'Scale	Additional remarks on Wheat, Barley, Rye, Oats and Rice
	Ripening		
90	-		In rice: terminal spikelets ripened.
91	Caryopsis hard (difficult to divide by thumb-nail) (3)	11.3	
92	Caryopsis hard (can no longer be dented by thumb-nail) (4)	11.4	In rice: 50% of spikelets ripened
93	Caryopsis loosening in daytime		In rice: over 90% of spikelets ripened
94	Over-ripe, straw dead and collapsing		
95	Seed dormant		Risk of grain loss by shedding
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 of the Decimal Code for the Growth Stages of Cereals

(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 (less than 16% water content).

(5) Optimum harvest time.

ANNEX II

CPVO · OCVV
Community Plant Variety Office
Office Communautaire des Variétés Végétales

TECHNICAL QUESTIONNAIRE

to be completed in connection with an application for Community Plant Variety Rights
Please answer all questions. A question without any answer will lead to a non-attribution of an application date. In cases where a field / question is not applicable, please state so.

1. **Botanical taxon:** Name of the genus, species or sub-species to which the variety belongs and common name

***X Triticosecale* Witt.**

TRITICALE

2. **Applicant(s):** Name(s) and address(es), phone and fax number(s), Email address, and where appropriate name and address of the procedural representative

3. **Variety denomination**

a) Where appropriate proposal for a variety denomination:

b) Provisional designation (breeder's reference):

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

4.1 Breeding, maintenance and reproduction of the variety
Please indicate breeding scheme, parents, other relevant information

4.2 Geographical origin of the variety: the region and the country in which the variety was bred or discovered and developed

4.3 Shall the information on data relating to components of hybrid varieties including data related to their cultivation be treated as confidential?

[ ] YES [ ] NO

If yes, please give this information on the attached form for confidential information.

If no, please give information on data relating to components of hybrid varieties including data related to their cultivation:

Breeding scheme (indicate female component first)

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

Characteristics		Example varieties	Note
5.1 (1)	**Ploidy**		
	tetraploid		4 [ ]
	hexaploid	Tricolor; -	6 [ ]
	octoploid		8 [ ]

	Characteristics	Example varieties	Note
5.2 (6)	**Time of ear emergence (first spikelet visible on 50 % of ears)**		
	very early	Curtido; -	1 [ ]
	early	Tricolor; -	3 [ ]
	medium	Calao; -	5 [ ]
	late	Lasko	7 [ ]
	very late	Pinokio	9 [ ]
5.3 (11)	**Stem: density of hairiness of neck**		
	absent or very weak	Trimaran; -	1 [ ]
	weak	Galtjo; -	3 [ ]
	medium	Carnac; -	5 [ ]
	strong	Magnat; -	7 [ ]
	very strong		9 [ ]
5.4 (12)	**Plant: length (stem, ear and awns)**		
	very short		1 [ ]
	short	Trili Uno; -	3 [ ]
	medium	Calao; -	5 [ ]
	long	Alamo; -	7 [ ]
	very long		9 [ ]
5.5 (16)	**Lower glume: hairiness on external surface (spikelet in midthird of ear)**		
	absent	Carnac; -	1 [ ]
	present	Tricolor; Bacum	9 [ ]
5.6 (20)	**Grain: coloraiton with phenol**		
	nil or very light	SW Talentro; -	1 [ ]
	light	Tricolor; -	3 [ ]
	medium	Cedro; -	5 [ ]
	dark	Gatltjo; -	7 [ ]
	very dark	Binova; -	9 [ ]

Characteristics		Example varieties	Note
5.7 (21)	**Seasonal type**		
	winter type	Trimaran; -	1 [ ]
	alternative type	Filius; Arc en Ciel	2 [ ]
	spring type	- ; Abaco	3 [ ]

6. Similar varieties and differences from these varieties:

Denomination of similar variety	Characteristic in which the similar variety is different[1)]	State of expression of similar variety	State of expression of candidate variety

[1)] 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

[ ] YES, please specify

[ ] NO

7.3 Other information

[ ] YES, please specify

[ ] NO

8. GMO-information required

The variety represents a Genetically Modified Organism within the meaning of Article 2(2) of Council Directive EC/2001/18 of 12/03/2001.

[ ] YES [ ] NO

If yes, please add a copy of the written attestation of the responsible authorities stating that a technical examination of the variety under Articles 55 and 56 of the Basic Regulation does not pose risks to the environment according to the norms of the above-mentioned Directive.

9. Information on plant material to be examined

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 or pesticide)	[ ] Yes	[ ] No
(c) Tissue culture	[ ] Yes	[ ] No
(d) Other factors	[ ] Yes	[ ] No

Please provide details of where you have indicated “Yes”:

10. Possible place of the technical examination

In case the CPVO needs to arrange a technical examination for this candidate variety, there might be more than one examination office entrusted by the CPVO suitable to grow your variety. In this case, the Office will decide on the place of the technical examination but you might wish to express here a preference in respect of an examination office. The available entrusted examination offices for that species can be found in the S2 Gazette under http://www.cpvo.europa.eu/main/en/home/documents-and-publications/s2-gazette

I/we hereby declare that to the best of my/our knowledge the information given in this form is complete and correct.

Date Signature Name

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