CPVO-TP/120/2 Final
English
Date: 06/11/2003

EUROPEAN UNION

COMMUNITY PLANT VARIETY OFFICE

PROTOCOL FOR DISTINCTNESS, UNIFORMITY AND STABILITY TESTS

***Triticum durum* Desf.**

DURUM WHEAT

UPOV Species Code: TRITI_TUR_DUR

Adopted on 06/11/2003

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/120/3 dated 21st October 1988 for the conduct of tests for Distinctness, Uniformity and Stability. This protocol applies to all varieties of *Triticum durum* Desf.

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, analytical purity and seed health 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 Office 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.

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 durum wheat. 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) Lower glume: hairiness on external surface (characteristic 17)
b) Straw: pith in cross section (characteristic 18)
c) Awns: colour (characteristic 19)
d) Ear: colour (characteristic 21)
e) Grain: coloration with phenol (characteristic 25)

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.

The test design is as follows:

If not otherwise indicated, 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.

All observations for the assessment of distinctness on individual plants 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.

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 3 in 100 (Population standard of 1% with an acceptance probability of ≥ 95%). 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 1 and 25, 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-types are observed, the variety is declared to be uniform. If more than 3 off-types are observed, the variety is declared not to be uniform. If 1 to 3 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 5 in 2000 (Population standard of 0.1% with an acceptance probability of ≥ 95%). Characteristics which should be observed on a sample size of 2000 plants are indicated by a "B" in the table of characteristics.

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.

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

CPVO N°	UPOV N°	Characteristics	Stage[1], Method	Examples[2]	Note
1.	**1.**	**Coleoptile: anthocyanin coloration**	09-11		
(+)[3]		absent or very weak	A; VG	Fara, Valgiorgio	1
		weak		Campomoro	3
		medium		Capdur, Chandur	5
		strong		Primadur	7
		very strong		Miradur	9
2.	**3.**	**Plant: growth habit**	25-29		
(+)		erect	B; VG		1
		semi-erect		Jiloca	3
		intermediate		Valnova	5
		semi- prostrate			7
		prostrate			9
3.	**4.**	**Plants: frequency of plants with recurved flag leaves**	47-51		
(+)		absent or very low	B; VG	Roqueño	1
		low			3
		medium			5
		high			7
		very high		Capdur	9

[1] The optimum stage of development as well as method of observation for the assessment of each characteristic are indicated by numbers and letters. Explanations are given in Annex 1 in 'Explanations and Methods'.
[2] 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[1], Method	Examples[2]	Note
4.	**5.**	**Time of ear emergence (first spikelet visible on ears of 50% of plants)**	50-52		
		very early	B; MG		1
		early			3
		medium			5
		late			7
		very late			9
5.	**6.**	**Flag leaf: glaucosity of sheath**	55-69		
		absent or very weak	B; VG	Capeiti 8	1
		weak			3
		medium			5
		strong		Grandur, Jiloca	7
		very strong		Valnova	9
6.	**7.**	**Flag leaf: glaucosity of blade (lower side)**	55-69		
		absent or very weak	B, VG		1
		weak		Grandur	3
		medium		Esquilache	5
		strong		Bidi-17	7
		very strong			9
7.	**9.**	**Culm: hairiness of uppermost node**	55-75		
(+)		absent or very weak	B; VG	Bidi-17	1
		weak		Esquilache, Grandur	3
		medium		Mexa	5
		strong			7
		very strong			9

CPVO N°	UPOV N°	Characteristics	Stage[1], Method	Examples[2]	Note
8.	**10.**	**Culm: glaucosity of neck**	60-69		
		absent or very weak	B; VG	Capeiti 8	1
		weak			3
		medium			5
		strong		Roqueño	7
		very strong			9
9.	**11.**	**Ear: glaucosity**	60-69		
		absent or very weak	B; VG	Capeiti 8	1
		weak		Jiloca	3
		medium		Oscar	5
		strong		Grandur, Roqueño	7
		very strong			9
10.	**12.**	**Plant: length (stem, ear and awns)**	75-92		
		very short	B; MG	Gargiflash, Oscar	1
		short		Mexa	3
		medium		Grandur	5
		long		Senatore Capelli	7
		very long			9
11.	**14.**	**Awns at tip of ear: length in relation to ear**	75-92		
		shorter	B; VG		1
		equal			2
		longer		Oscar	3
12.	**15.**	**Lower glume: shape (spikelet in mid-third of ear)**	80-92		
		ovoid	A; VG	Grandur, Randur	3
		elongated		Oscar	5
		strongly elongated		Bidi-17	7

CPVO N°	UPOV N°	Characteristics	Stage[1], Method	Examples[2]	Note
13.	**16.**	**Lower glume: shape of shoulder (as for 12)**	80-92		
(+)		sloping	A; VG		1
		rounded		Esquilache	2
		straight		Roqueño	3
		elevated			4
		elevated with 2nd beak present		Capdur, Oscar	5
14.	**17.**	**Lower glume: shoulder width (as for 12)**	80-92		
(+)		narrow	A; VG	Oscar	3
		medium			5
		broad			7
15.	**18.**	**Lower glume: length of beak (as for 12)**	80-92		
		very short	A; VG	Jiloca	1
		short			3
		medium			5
		long		Mexa	7
		very long			9
16.	**19.**	**Lower glume: shape of beak (as for 12)**	80-92		
(+)		straight	A; VG	Durox, Mexa	1
		slightly curved		Bidi-17	3
		moderately curved		Capdur	5
		strongly curved			7
17.	**20.**	**Lower glume: hairiness on external surface (as for 12)**	80-92		
		absent	A; VG	Grandur, Roqueño	1
G		present		Paramo	9

CPVO N°	UPOV N°	Characteristics	Stage[1], Method	Examples[2]	Note
18.	**21.**	**Straw: pith in cross section (half way between base of ear and stem node below)**	90-92		
(+)		thin	A; VG	Valnova	3
		medium			5
G		thick		Paramo	7
19.	**22.**	**Awn: colour**	90-92		
		whitish	B; VG	Esquilache	1
		light brown			2
		brown		Tejon	3
G		black		Capdur, Valnova	4
20.	**23.**	**Ear: length excluding awns**	90-92		
		very short	A; MS		1
		short		Oscar	3
		medium			5
		long		Valnova	7
		very long			9
21.	**25.**	**Ear: colour (at maturity)**	90-92		
		white	B; VG	Esquilache, Valdur	1
		slightly coloured		Randur	2
G		strongly coloured			3
22.	**27.**	**Ear: density**	92		
		lax	A; VG		3
		medium		Roqueño	5
		dense		Bidi-17	7

CPVO N°	UPOV N°	Characteristics	Stage[1], Method	Examples[2]	Note
23.	**28.**	**Grain: shape**	92		
(+)		ovoid	A;VG		3
		semi-elongated		Tejon	5
		elongated		Chandur, Senatore Capelli	7
24.	**29.**	**Grain: length of brush hair in dorsal view**	92		
(+)		short	A; VG	Chandur, Roqueño	3
		medium		Valdur	5
		long		Clairdoc	7
25.	**30.**	**Grain: coloration with phenol**	92		
(+)		nil or very light	A; VG	Esquilache	1
		light		Randur	3
		medium			5
		dark			7
G		very dark			9
26.	**31.**	**Seasonal type**	-		
		winter type	B; VG		1
		alternative type		Camacho, Valnova	2
		spring type		Tejon	3

ANNEXES TO FOLLOW

ANNEX I

PAGE

ANNEX II

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 1: Coleoptile: anthocyanin coloration

Method for the Determination of Anthocyanin Coloration

Number of grains per test ..... 100 grains.

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.

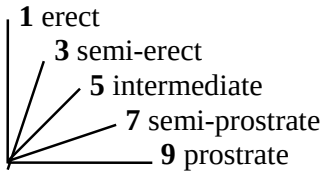
Temperature ..... 15 to 20°C.

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

Scale of recording..... See characteristic 1 in the Table of Characteristics.

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

Ad 2: 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 3: Plants: frequency of plants with recurved flag leaves

1 all flag leaves are rectilinear

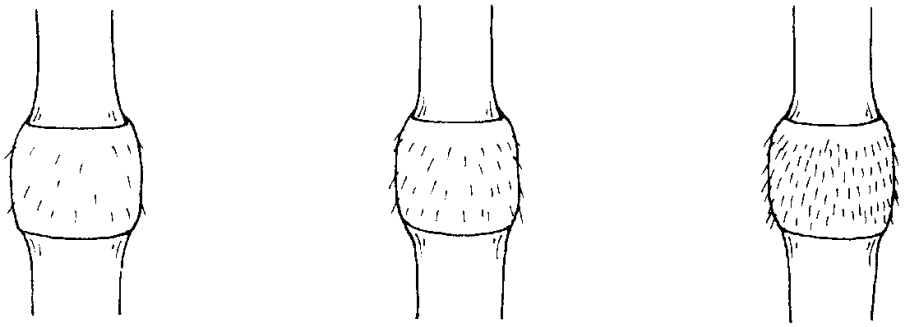
3. about 1/4 of the plants with recurved flag leaves

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 7: Culm: hairiness of uppermost node

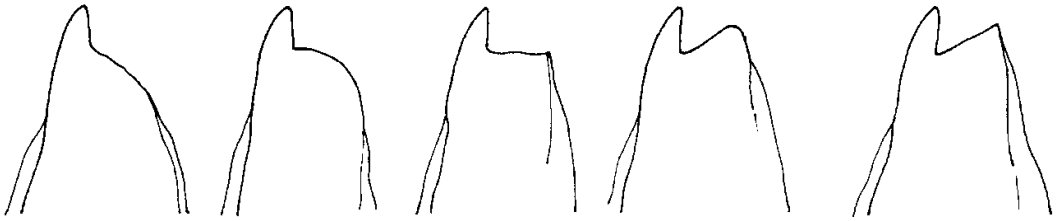


3
weak

5
medium

7
strong

Ad 13: Lower glume: shape of shoulder (spikelet in mid-third of ear)



1
sloping

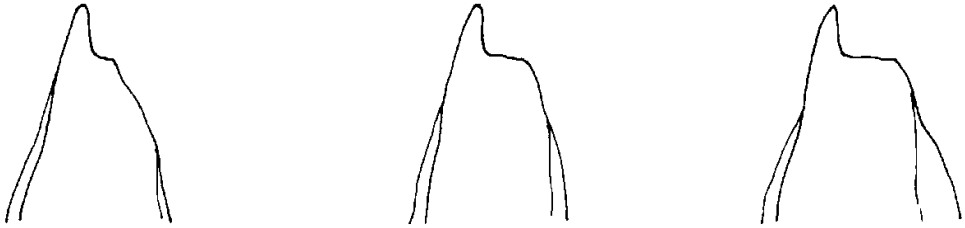
2
rounded

3
straight

4
elevated

5
elevated with
2nd beak present

Ad 14: Lower glume: shoulder width (spikelet in mid-third of ear)

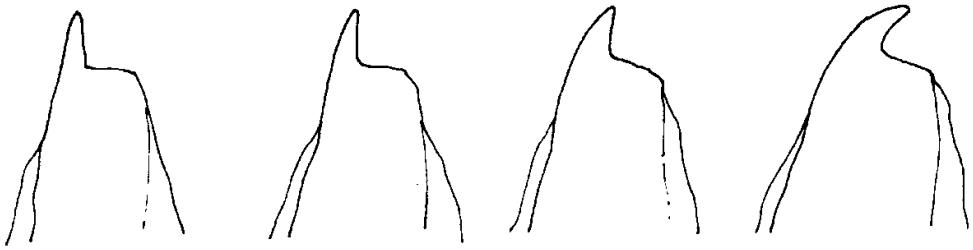


3
narrow

5
medium

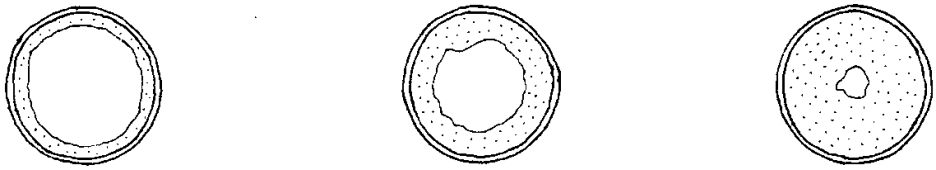
7
broad

Ad 16: Lower glume: shape of beak (spikelet in mid-third of ear)



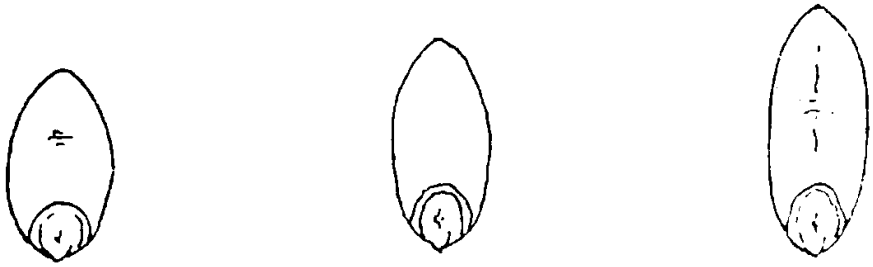
1	2	3	4
straight	slightly curved	moderately curved	strongly curved

Ad 18: Straw: pith in cross section (half way between base of ear and stem node below)



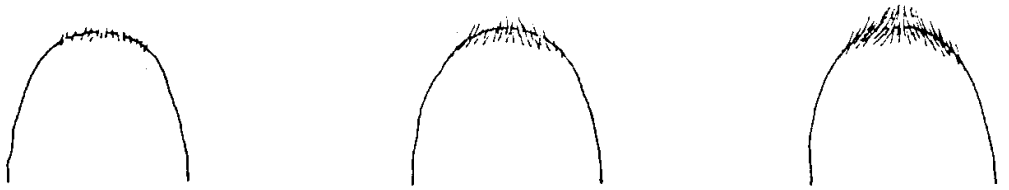
3	5	7
thin	medium	thick

Ad 23: Grain: shape



3	5	7
ovoid	semi-elongated	elongated

Ad 24: Grain: length of brush hair in dorsal view



3
short

5
medium

7
long

Ad 25: Grain: coloration with phenol

Method for Determination of Phenol Reaction

Number of grains per test ..... 100 grains. 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^{o}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.

DECIMAL CODE FOR THE GROWTH STAGE[4]

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		

[4] Reproduced from EUCARPIA Bulletin No. 7, 1974, pp.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, pp. 42 - 52. The French translation has been kindly furnished by Mrs. R. Cassini, Mr. R. Cassini and Mr. R. Marie. The German translation has been kindly furnished by Mr. A.O. Klomp and Mrs. I. Volk.

2- digit Code	General description	Feekes'Scale		Additional remarks on Wheat, Barley, Rye, Oats and Rice
	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
	Booting			Little enlargement of the inflorescence, early-boot stage
40	-			
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 51	First spikelet of inflorescence just visible	N S		
52 53	1/4 of inflorescence emerged	N S	10.2	N = non-synchronous crops S = synchronous crops
54 55	1/2 of inflorescence emerged	N S	10.3	
56 57	3/4 of inflorescence emerged	N S	10.4	
58 59	Emergence of inflorescence completed	N S	10.5	
	Anthesis			
60 61	Beginning of anthesis	N S	10.51	Not easily detectable in barley.
62	-			In rice: usually immediately following heading
63	-			
64 65	Anthesis half-way	N S	10.52	
66	-			
67	-			
68 69	Anthesis complete	N S	10.53	

2- digit Code	General description	Feekes'Scale	Additional remarks on Wheat, Barley, Rye, Oats and Rice
	Milk development		
70	-		
71	Caryopsis watery ripe	10.54	
72	-		
73	Early milk		Increase in solids of liquid endosperm notable when crushing the caryopsis between fingers.
74	-	11.1	
75	Medium milk		
76	-		
77	Late milk		
78	-		
79	-		
	Dough development		
80	-		
81	-		
82	-		
83	Early dough		
84	-		Fingernail impression not held.
85	Soft dough	11.2	
86	-		Fingernail impression held, inflorescence losing chlorophyll.
87	Hard dough		
88	-		
89	-		
	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 or 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

European Union
Community Plant Variety Office

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

***Triticum durum* Desf.**

DURUM WHEAT

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 Origin

(a) Seedling (indicate parent varieties)..... [ ]

(b) Mutation (indicate parent variety) ..... [ ]

(c) Discovery (indicate where, when and how the variety has been developed):..... [ ]

(d) Other (please specify)..... [ ]

4.2 Method of propagation

(a) Cuttings..... [ ]

(b) *In vitro* propagation ..... [ ]

(c) Seed ..... [ ]

(d) Other (please specify): ..... [ ]

4.3 Other information:

In the case of seed propagated varieties: method of production:

(a) Self-pollinated ..... [ ]

(b) Cross-pollinated (please give details) ..... [ ]

(c) Hybrid (please give details) ..... [ ]

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

4.5 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 (26)	**Seasonal type**		
	winter type		1 [ ]
	alternative type	Camacho, Valnova	2 [ ]
	spring type	Tejon	3 [ ]
5.2 (17)	**Lower glume: hairiness on external surface (spikelet in mid-third of ear)**		
	absent	Grandur, Roqueño	1 [ ]
	present	Paramo	9 [ ]
5.3 (18)	**Straw: pith in cross section (half way between base of ear and stem node below)**		
	thin	Valnova	3 [ ]
	medium		5 [ ]
	thick	Paramo	7 [ ]
5.4 (19)	**Awn: colour**		
	whitish	Esquilache	1 [ ]
	light brown		2 [ ]
	brown	Tejon	3 [ ]
	black	Capdur, Valnova	4 [ ]
5.5 (21)	**Ear: colour (at maturity)**		
	white	Esquilache, Valdur	1 [ ]
	slightly coloured	Randur	2 [ ]
	strongly coloured		3 [ ]

Characteristics		Example varieties	Note
5.6 (25)	**Grain: coloration with phenol**		
	nil or very light	Esquilache	1 [ ]
	light	Randur	3 [ ]
	medium		5 [ ]
	dark		7 [ ]
	very dark		9 [ ]

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.

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

[End of document]