

**UNITED KINGDOM NATIONAL LIST/ PLANT BREEDERS RIGHTS TECHNICAL PROTOCOL FOR  
THE OFFICIAL EXAMINATION OF DISTINCTNESS, UNIFORMITY AND STABILITY (DUS)**

**OATS**

*(Avena sativa L.)*

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**SECTION A - GENERAL INFORMATION****1 PURPOSE**

- 1.1 This Protocol sets out the procedures for conducting tests and assessments in relation to official examinations of DUS, maintenance of reference stocks and verification of VCU submissions of varieties of winter and spring Oats entered for National List (NL) Trials and Plant Breeders' Rights (PBR).

**2 SCOPE**

- 2.1 These procedures apply to all varieties of Oats including those that thresh free from the husk (naked types). Special procedures and responsibilities for Genetically Modified (GM) varieties are set out in Sections A5 and A6.
- 2.2 Except where specified in this protocol or authorised by the Animal and Plant Health Agency (APHA) Varieties and Seeds, only National List candidates, Plant Breeders' Rights candidates, candidates for Foreign Authorities and the reference varieties may be incorporated in the DUS tests.

**3 RESPONSIBILITIES**

- 3.1 The growing tests and assessments in this protocol are carried out under the responsibility of the Secretary of State for Environment, Food and Rural Affairs, Scottish Ministers, Welsh Ministers and the Northern Ireland Assembly (The National Authorities).
- 3.2 They are supervised, on behalf of the National Authorities, by officials of the Testing Authorities, that is, the Animal and Plant Health Agency (APHA), the Scottish Government Agriculture and Rural Development Division (SGARD), the Department of Agriculture, Environment and Rural Affairs (DAERA) and the Welsh Government (WG).
- 3.3 This protocol is authorised by the Plant Variety and Seeds Committee (PVSC). It cannot be amended without their approval. Requests and suggestions for amendment of the protocol should be put in writing to APHA Varieties and Seeds, either directly or via the Test Centre.
- 3.4 The procedures are administered by:

Plant Varieties and Seeds

The Animal and Plant Health Agency

Eastbrook

Shaftesbury Road

Cambridge

CB2 8DR

Tel No 0208 02 65930

Fax No 0208 41 52504

- 3.5 Test Centre

The DUS growing tests and assessments in this protocol are co-ordinated and carried out by:

NIAB

Huntingdon Road

Cambridge

CB3 0LE

Tel No. +44(0)1223 342200

Fax No. +44(0)1223 277602

- 3.6 The Test Centre is responsible for providing the appropriate facilities.

## 4 NON-COMPLIANCE WITH THE PROTOCOL

- 4.1 Where the protocol uses the word “must” for any action then failure to carry out this action will result in non-compliance. Where non-compliance occurs or there are concerns regarding the validity of any data or tests this must be reported to APHA. Where this protocol uses the word “should” for any action this is the method to be followed unless there are clear reasons which can be justified by the Test Centre as technically sound.

## 5 RESPONSIBILITY FOR GM RELEASES

- 5.1 GM Release Consent Holders are responsible for GM releases. All parties involved in DUS work operating under a GM Release Consent must adhere to the instructions of the Release Consent Holder, where necessary, to comply with the relevant consent conditions. Where DUS protocol non-compliance occurs, this must be reported to the consent holder and the Test Centre who will notify APHA.

## 6 PROCEDURES FOR GM VARIETIES

- 6.1 Applicants intending to enter GM candidates must consult APHA about specific requirements under GM regulations, well in advance of their application.
- 6.2 The Test Centre must ensure that no test or trial sites are planted with GM candidates and/or varieties until APHA has given the specific clearance.

## 7 ASSOCIATED DOCUMENTS

- 7.1 The following documents are associated with this protocol

<b>Reference</b>	<b>Title</b>
Oats VCU Protocol	United Kingdom National List Trials: Protocol for Official Examination of Value for Cultivation and Use (VCU) of Cereals (wheat, barley, oats, triticale, rye and spelt wheat).
UPOV TG/1/3	General Introduction to the Examination of Distinctness, Uniformity and Stability and the Development of Harmonised Descriptions of New Varieties of Plants.
UPOV TGP/8/2	Trial Design and Techniques Used in the Examination of Distinctness, Uniformity and Stability.
UPOV TGP/9/2	Examining Distinctness.
UPOV TGP/10/1	Examining Uniformity.
CPVO-TP 020/1	Protocol for Distinctness, Uniformity and Stability Tests of Oats. (for applications made before 01/08/15)
CPVO-TP 020/2	Protocol for Distinctness, Uniformity and Stability Tests of Oats. (for applications made on or after 01/08/2015)
UPOV TG/20/10	Guidelines for the Conduct of Tests for Distinctness, Uniformity and Stability, Oats.
Commission Directive	2003/90/EC as amended setting out implementing measures for the purposes of Article 7 of Council Directive 2002/53/EC (13 June 2002) as regards the characteristics to be covered as a minimum by the examination and the minimum conditions for examining certain varieties of agricultural plant species.
Council Regulation	2100/94/EC of 27 July 1994 on Community Plant Variety Right.

**SECTION B - APPLICATION REQUIREMENTS****1 PURPOSE**

- 1.1 The purpose of this section is to identify the specific requirements for National List and Plant Breeders' Rights applications.

**2 SCOPE**

- 2.1 These procedures apply to all applications.

**3 RESPONSIBILITIES**

- 3.1 The applicants are responsible for ensuring that these procedures are complied with.

**4 RECEIPT OF APPLICATIONS**

- 4.1 The latest date for receipt of applications for acceptance of a variety onto the National List or for Plant Breeders' Rights, which is set administratively by APHA, is 31 August for Winter Oats and 30 November for Spring Oats. Applications received after this date may be considered for inclusion in the current year's tests and trials on a case-by-case basis.
- 4.2 The procedures for the submission of National List and Plant Breeders' Rights applications, technical questionnaires and for payment of administration fees can be obtained from APHA PVS at the address shown in Section A or on the website [GOV.UK](http://GOV.UK).
- 4.3 Applicants should notify APHA of special DUS characteristics which may require additional examinations. These claims should, in addition, be noted in the TQ accompanying the application.
- 4.4 In the case of hybrid varieties the TQ must include details of the nature of the hybrid and all progenitor lines.

**5 RECEIPT OF SEED**

- 5.1 The latest date for receipt of seed is 15 September for Winter Oats and 15 January for Spring Oats and is set administratively by APHA. Seed submissions received after this date will normally be refused. Instructions for the delivery of seed will be made available to applicants by APHA.

**6 SEED QUALITY REQUIREMENTS**

- 6.1 The seed must satisfy the quality requirements for Basic Seed as laid down in Schedule 2 Part 2 of the Seed Marketing Regulations (England) 2011 and equivalent regulations made by the Devolved Administrations.
- 6.2 The seed must not be chemically treated. Seed treatment, if required, will be undertaken by the Test Centre. The chemicals applied and rates of application will be determined by the Test Centre.

## 7 SEED QUANTITY

- 7.1
- |    |                   |   |
|----|-------------------|---|
| 1. | Conventional Type | 2kg * (can be submitted as 1.5kg bulk seed and 0.5kg selected seed) with 1000 seed weight given |
| 2. | Other Types       | Contact APHA  |

\* There is a separate submission of seed for VCU trials in Year 1.

### 7.2 Year 2 and Further Year Submissions

None for DUS

A sample of 350g of seed will be withdrawn from VCU submissions in Year 2 and any further years to authenticate the submission (see Section E5). Applicants should refer to Trial Procedures for Official Examination of Value for Cultivation and Use (VCU) for Cereals for seed requirements and Section E4 dealing with replacement seed of a variety.

### 7.3 Shortfall in Seed Quantities

Where insufficient seed is available in the first instance a further stock should be supplied in the following year which will be authenticated against the original submission. An additional charge may be applied.

## 8 LABELLING REQUIREMENTS, INCLUDING PROVISIONS FOR GM VARIETIES

8.1 Applicants **must** label their seed clearly with the following information:

- Applicant
- Breeder's Reference number or name
- Type of Seed (Bulk or Selected, DUS only)
- Quantity of seed

8.2 All packages of GM material must be labelled clearly as "GMO" or "Genetically Modified Organism".

**SECTION C – GROWING TEST PROCEDURES****1 PURPOSE**

- 1.1 The purpose of this section is to provide details of the procedures used in the growing tests for DUS analysis.

**2 SCOPE**

- 2.1 These procedures apply to all varieties of Oats.

**3 RESPONSIBILITIES**

- 3.1 The Test Centre is responsible for conducting these procedures.
- 3.2 The Test Centre will be responsible for ensuring that no material supplied to them is used for any other purpose than the conduct of these procedures or the release of reference samples for authorised purposes (See Section E7).

**4 REFERENCE VARIETIES**

- 4.1 The principles governing the selection of reference varieties are set out in Appendix 1.
- 4.2 Seed of reference varieties will be supplied by the Test Centre.

**5 DESIGN OF TESTS**

- 5.1 The Test Centre is responsible for selecting a suitable site which should be on ground that has not normally had an oat crop in the previous three years but may be less where the risk of contamination is negligible.
- 5.2 Field husbandry should follow best local practice for all operations and particularly as regards the presence of any wild oats, cultivation, drilling, fertiliser and spray application, use of irrigation and control of pests or diseases.
- 5.3 The minimum duration of tests should normally be two independent growing cycles. Additional growing cycles may be approved by the National List and Seeds Committee (NLSC).
- 5.4 From information given in the Technical Questionnaire the candidate variety may be grown in field grown plots and compared with varieties which are in the same classification for the following characters: absence or presence of hairs on the uppermost node of the stem; absence or presence of glaucosity on the lemma of the primary grain; the colour of the lemma of the primary grain; seasonal type.
- 5.5 Plots are sown from the submitted seed in each year of test.
- |  |                |
|--|----------------|
| Number of plots:                         | 2              |
| Total Number of Plants Examined/Variety: | 2000 (minimum) |
| No of plants/m <sup>2</sup>              | 200-300        |
- 5.6 In the case where two samples have been submitted (ie selected seed and bulk seed), all testing is conducted on the selected seed sample. A sample of 200g will be withdrawn from the bulk seed and sown side by side to the selected seed for authentication.

- 5.7 During the second year of testing, plots are sown from the “selected” seed and a second replicate of three rows using seed from the bulk submission:

Number of plots	11/2
Total Number of plants Examined/variety	2000 (approx)
No of plants/m <sup>2</sup>	200-300
Time of sowing (winter oats)	October - November
Time of sowing (spring oats)	February - April

- 5.8 At the end of the first recording year, varieties which are most similar to the candidate varieties are identified and may be sown in the second year of test.
- 5.9 At the end of the second year of tests, candidate varieties that are still not distinct may be grown in additional direct comparison plots. This requires approval from APHA and an additional charge will be made to the applicant.

## 6 RECORDS AND RECORDING

- 6.1 All records and plot data should be in a form determined and validated by the Test Centre.
- 6.2 Characters, recording details and instructions are given in Section D. Any variant and abnormal plants or plants resulting from an adverse reaction to husbandry practice are recorded but excluded from the sample.
- 6.3. In the first recording year, characters, as indicated in Section D, are recorded on all varieties in test and the data analysed to assess uniformity of the candidate variety and to determine the most similar reference varieties. For details see Section G.
- 6.4. In the second recording year, characters, as indicated in Section D, are assessed on all varieties in test and the data analysed and, together with those from the first year, used to assess distinctness and uniformity of the candidate variety. For details see Section G.
- 6.5 If the Test Centre notices unusual or novel characters in candidate varieties they may be noted and a photographic record taken.

## 7 COMMUNICATIONS WITH THE APPLICANT

- 7.1 The Test Centre will notify the applicant or the agent of any DUS problems at the earliest practical opportunity as they arise during the growing season. All such notifications are copied to APHA.
- 7.2 If confidentiality considerations allow, the applicant should be informed which variety is similar and be invited to submit any information which may help to distinguish them.
- 7.3 If DUS problems arise, applicants will be invited to visit the DUS tests by arrangement so that the material can be examined and discussions held with the Test Centre.
- 7.4 After each recording season the results are summarised and reported to the applicant and APHA by the Test Centre.



## **SECTION D - SUMMARY OF DUS CHARACTERISTICS TO BE ASSESSED. METHOD OF ASSESSMENT AND STANDARDS APPLIED**

### **1 PURPOSE**

1.1 The purpose of this section is to summarise the characteristics to be assessed.

### **2 SCOPE**

2.1 This section summarises characteristics, states of expression, method of observation and standards required for DUS assessment.

### **3 RESPONSIBILITIES**

3.1 The Test Centre is responsible for co-ordinating the procedures in this summary.

### **4 ORGANISATION**

4.1 The minimum duration of tests to assess characteristics is normally two consecutive growing periods. Shorter periods may be applied for assessment of additional characteristics. Additional growing periods must be approved by the NLSC.

### **5 DUS CHARACTERISTICS TO BE ASSESSED**

5.1 Routine Characteristics

The following table summarises the DUS characteristics to be routinely examined.

Note: \* denotes a characteristic which must be examined according to European Commission Directive 2003/90/EC, the CPVO protocol and/or UPOV Guidelines.

G denotes a grouping characteristic

Type of observation of characteristics:

MG Single measurement of a group of plants or parts of plants

MS Measurement of a number of individual plants or parts of plants

VG Visual assessment by a single observation of a group of plants or parts of plants

VS Visual assessment by observation of individual plants or parts of plants

Number of plant or sample size for assessment

A Sample size of 100 (See Section G 6.6)

B Sample size of 2000

CPVO – TP 020/1 & TP 020/2	UPOV TG/20/10	Character	Material examined	Number of plants or sample size for assessment	Method of assessment and recording	States of expression	D Method and Minimum Distance required	U Method: standard applied
1	1	<b>Plant: growth habit</b>	Field grown plot	B	VG	1 erect 3 semi-erect 5 intermediate 7 semi- prostrate 9 prostrate	2 states	Visual 0.1% @95%
2	2	<b>Lowest leaves: hairiness of sheaths</b>	Field grown plot	B	VG	1 absent or very weak 3 weak 5 medium 7 strong 9 very strong	2 states	Visual 0.1% @95%
3	3	<b>Leaf blade: hairiness of margins of leaf below flag leaf</b>	Field grown plot	B	VG	1 absent or very weak 3 weak 5 medium 7 strong 9 very strong	2 states	Visual 0.1% @95%
4	4	<b>Plants: frequency of plants with recurved flag leaves</b>	Field grown plot	B	VG	1 absent or very low 3 low 5 medium 7 high 9 very high	2 states	Visual 0.1% @95%
5	5	<b>Time of panicle emergence: (first spikelets visible on 50% of panicles)</b>	Field grown plot	B	MG	1 very early 3 early 5 medium 7 late 9 very late	2 states	Visual 0.1% @95%
6G	6	<b>Stem: hairiness of uppermost node</b>	Field grown plot	A	VG	1 absent 9 present	1 state	Visual 1% @95%
7	7	<b>Stem: intensity of hairiness of uppermost node</b>	Field grown plot	A	VG	1 absent or very weak 3 weak 5 medium 7 strong 9 very strong	2 states	Visual 1% @95%
8	9	<b>Panicle: attitude of branches</b>	Field grown plot	A	VG	1 erect 3 semi-erect 5 horizontal 7 drooping 9 strongly drooping	2 states	Visual 1% @95%
9	11	<b>Glumes: glaucosity</b>	Field grown plot	B	VG	1 absent or very weak 3 weak 5 medium 7 strong 9 very strong	2 states	Visual 0.1% @95%

CPVO – TP 020/1 &- TP 020/2	UPOV TG/20/10	Character	Material examined	Number of plants or sample size for assessment	Method of assessment and recording	States of expression	D Method and Minimum Distance required	U Method: standard applied
10	12	<b>Glumes: length</b>	Samples from field grown plot	A	MS	1 very short 3 short 5 medium 7 long 9 very long	2 states	Visual 1% @95%
11	14*	<b>Primary grain: intensity of glaucosity of lemma (husked oats only)</b>	Samples from field grown plot	A	VG	1 absent or very weak 3 weak 5 medium 7 strong 9 very strong	2 states	Visual 1% @95%
12	15	<b>Plant: length (stem and panicle)</b>	Field grown plot	B	MG	1 very short 3 short 5 medium 7 long 9 very long	2 states	Visual 0.1% @95%
13	16	<b>Panicle: length</b>	Samples from field grown plot	A	VG	1 very short 3 short 5 medium 7 long 9 very long	2 states	Visual 1% @95%
14	17	<b>Grain: husk</b>	Samples from field grown plot	A	VG	1 absent 9 present	1 state	Visual 1% @95%
15	18	<b>Primary grain: tendency to be awned</b>	Samples from field grown plot	A	VG	1 absent or very weak 3 weak 5 medium 7 strong 9 very strong	2 states	Visual 1% @95%
16	19	<b>Primary grain: length of lemma</b>	Samples from field grown plot	A	MS	1 very short 3 short 5 medium 7 long 9 very long	2 states	Visual 1% @95%
17G	20	<b>Grain: colour of lemma</b>	Samples from field grown plot	A	VG	1 white 2 yellow 3 brown 4 grey 5 black	1 state	Visual 1% @95%
18	21	<b>Primary grain: hairiness of back of lemma (except for white and yellow oats)</b>	Samples from field grown plot	A	VG	1 absent 9 present	1 state	Visual 1% @95%

CPVO – TP 020/1 &- TP 020/2	UPOV TG/20/10	Character	Material examined	Number of plants or sample size for assessment	Method of assessment and recording	States of expression	D Method and Minimum Distance required	U Method: standard applied
19	22	Primary grain: hairiness of base	Samples from field grown plot	A	VG	1 absent or very weak 3 weak 5 medium 7 strong 9 very strong	2 states	Visual 1% @95%
20	23*	Primary grain: length of basal hairs	DUS plot	A	VG	1 very short 3 short 5 medium 7 long 9 very long	2 states	1% @95%
21	24	Primary grain: length of rachilla	DUS plot	A	VG	1 very short 3 short 5 medium 7 long 9 very long	2 states	1% @95%
22		Seasonal type	TQ declaration by applicant	B	VG	1 winter 2 alternative 3 spring	1 state	0.1% @95%

## 5.2 CPVO Approved Additional Characteristics

There are no additional characteristics which have been approved by the CPVO for oats.

## 5.3 New Additional DUS Characteristics

Applicants can suggest new additional characters on the Technical Questionnaire for testing DUS or after notification by the DUS Test Centre of distinctness problems. For procedures see Section F.

## **SECTION E - REFERENCE SEED STOCK MAINTENANCE AND VCU SEED STOCK AUTHENTICATION PROCEDURES**

### **1 PURPOSE**

- 1.1 This section sets out the procedures for reference seed stock maintenance and VCU seed stock authentication.

### **2 SCOPE**

- 2.1 These procedures apply to all reference collection varieties and VCU seed submissions where the VCU seed has not been taken from the same bulk as the seed used for the DUS test.

### **3 RESPONSIBILITIES**

- 3.1 The Test Centre is responsible for conducting these procedures.

### **4 PROCEDURES FOR REFERENCE SEED STOCK MAINTENANCE**

- 4.1 The seed sample submitted with the successful or pending application is considered to be the definitive seed of the variety. In the case of a 'selected seed' sample and a 'bulk seed' sample being submitted, the 'selected seed' sample will be considered to be the definitive sample until the bulk sample has been authenticated (Section C). Subject to meeting the required quality standards (see Section B) the seed is dried and placed in storage under controlled and monitored refrigerated conditions as part of the official reference collection.
- 4.2 If during the normal tests there is any evidence that seed is deteriorating in storage, or that stock weighs under 200g, a request will be made to the maintainer asking for a replacement seed (1 kg) of the variety. This replacement seed must be authenticated against the definitive seed.
- 4.3 Plots will be established from any replacement reference seed sample to be authenticated and compared visually with the definitive seed over a maximum of two recording seasons. Plots must be examined through all the growth stages from early habit to full harvest ripeness. If the new seed sample cannot be visually distinguished from the reference seed it will be accepted as representing the variety. It will then be considered as the definitive seed and substituted for the existing definitive seed in the reference collection.
- 4.4 In the event of the replacement sample not meeting the required acceptance standards set out in 4.3, an additional replacement sample will be requested. If the additional replacement sample does not meet the acceptance standards, the variety will be deleted from the reference collection.

### **5 PROCEDURES FOR VCU SEED STOCK AUTHENTICATION**

- 5.1 A representative sub-sample of seven grains from the VCU seed submission are compared to a representative sub-sample of seven grains from the DUS seed submission (definitive seed) by electrophoresis using the acid PAGE method. If the VCU seed sample shows the same banding pattern as the DUS seed sample, it will be considered to represent the variety.
- 5.2 If the VCU seed sample does not show the same banding pattern as the DUS seed sample a further test of 56 grains will be carried out. If the VCU seed sample still does not match the DUS seed, side-by-side field plots of the two samples will be established and compared visually from early habit to full harvest ripeness.
- 5.3 If the VCU plot does not differ from the DUS plot in the comparison of field sown plots the VCU seed will be considered to represent the variety.

5.4 If the VCU plot can be visually distinguished from the definitive stock in the authentication plots then it will not be accepted as representing the variety.

## **6 PROCEDURES FOR THE INCLUSION OF NEW COMMON KNOWLEDGE VARIETIES INTO THE REFERENCE COLLECTION**

6.1 When a new variety enters into common knowledge such that it must be included in the reference collection, a request will be sent by the Test Centre to the Testing Authority which has added this variety to its National list for the supply of at least 200g of seed of the definitive sample. This seed will then be used to validate a larger sample of seed from the breeder or the VCU seed sample.

## **7 RELEASE OF REFERENCE SAMPLES FOR AUTHORISED PURPOSES**

7.1 A maximum of 200g of seed of reference samples can be supplied by the Test Centre, on request, to UK, EU and UPOV DUS Testing Authorities and UK, EU and OECD Seed Certification Agencies. The recipient will be notified in writing that this material, or any material derived from it, must not be supplied to a Third party or used for any other purpose than as a reference for official DUS testing or seed certification.

7.2 Provision of reference samples, other than in 7.1, to any other parties must be authorised by APHA.

**SECTION F - PROCEDURES FOR ASSESSMENT OF NEW ADDITIONAL DUS CHARACTERS****1 PURPOSE**

- 1.1 This Section sets out the procedures for assessment of new additional DUS characters for varieties of Oats entered for National List trials and PBR.

**2 SCOPE**

- 2.1 These procedures apply to applications where new additional DUS characteristics which have not been approved by the NLSC are requested for use for determinations of DUS.

**3 RESPONSIBILITIES**

- 3.1 The Test Centre is responsible for liaising with the applicant to produce a proposed procedure for the conduct of new tests. This procedure must ensure that Distinctness, Uniformity and Stability will be assessed.
- 3.2 All new additional characteristics must be authorised by the NLSC and CPVO.

**4 REFERENCE VARIETIES**

- 4.1 The reference varieties will include only those varieties from which the candidate variety is not distinct, as well as other varieties for control purposes.
- 4.2 Seed of reference varieties will be supplied by the Test Centre.

**5 PROCEDURES**

- 5.1 Details of the proposed special test or assessments will be submitted to the NLSC to consider the feasibility of setting up a test acceptable to the UK Authorities. The applicant will be advised by APHA of arrangements and costs.
- 5.2 The NLSC or CPVO (as appropriate) will consider the results of the commissioned test or trial when reaching its recommendation on the granting of Plant Breeders' Rights and/or National Listing.
- 5.3 Where the test for a character is approved by the NLSC it should be subsequently listed in Section D5.1 or 5.2 as appropriate.

**SECTION G - PROCEDURES FOR DUS DECISIONS****1 PURPOSE**

1.1 This section sets out the procedures for assessing DUS decisions on varieties of Oats.

**2 SCOPE**

2.1 These procedures apply to all varieties of Oats entered for National List and Plant Breeders' Rights tests and those being tested for Foreign Authorities.

**3 RESPONSIBILITIES**

3.1 The Test Centre is responsible for applying the criteria for DUS, set out in this procedure.

3.2 The Test Centre is responsible for producing the DUS report in accordance with these procedures and for ensuring that they are in accordance with CPVO protocols or UPOV guidelines as appropriate.

**4 REFERENCE VARIETIES**

4.1 Appendix I sets out which varieties are considered as reference varieties for these procedures.

**5 DISTINCTNESS**

5.1 In accordance with associated document UPOV TG/1/3, varieties can be considered distinct where they have a different expression in a grouping character e.g. absence or presence of hairs on the uppermost node of the stem; absence or presence of glaucosity on the lemma of the primary grain; the colour of the lemma of the primary grain; seasonal type.

5.2 The standard applied for distinctness over two years of test is a significant difference of one or two states in the expression of a characteristic in accordance with the table of characteristics given above in Section D.

5.3 If distinctness is assessed using the 2 x 1% criterion, the varieties need to be significantly different in the same direction at the 1% level in at least two out of three years in one or more measured characteristics. The tests in each year are based on Student's two-tailed t-test of the differences between variety means with standard errors estimated using the residual mean square from the analysis of the variety x replicate plot means.

5.4 Where varieties are grown in close proximity under the same conditions, and a direct comparison can be made, distinctness can be determined on the basis of visual observation. Characters are recorded using the notes to represent states of expression (See Section D). In these circumstances the basis for distinctness will be clearly recorded.

5.5 As there is no vernalisation requirement for winter oats i.e. cold temperature exposure to the young plants to initiate ear development, winter and spring oats are grown according to their seasonal type as stated on the Technical Questionnaire submitted by the applicant.

**6 UNIFORMITY**

6.1. Uniformity is assessed for all characteristics used to establish Distinctness.

6.2 Uniformity is based on the assessment of off-types (variants) for visually observed characters.

6.3 The assessment of off-types is undertaken in both test cycles and the total should not exceed the number allowed using the population standards detailed below. Care is taken to ensure that the plants that are counted are not the result of any non-genetic factors such as environment, pest and disease.



- 6.4 In a sample size of 2,000 (characters marked as “B” in Section D), a population standard of 0.1% and an acceptance probability of at least 95% should be applied. For example in a sample of 2000 plants, 5 off-types are allowed.
- 6.5 In a sample size of 100 (characters marked as A in Section D), a population standard of 1% and an acceptance probability of at least 95% should be applied. For example, in a sample of 100 plants or parts of plants, 3 off-types are allowed.
- 6.6 For characters marked as “A” in Section D, the assessment of uniformity can be carried out in two stages. In the first stage, 20 plants or parts of plants are examined. If no off-types are observed the variety is declared uniform. If more than three off-types are found the variety is declared not to be uniform. If one to three off-types are observed, a further 80 plants or parts of plants should be examined.
- 6.7 Resubmissions  
For all varieties, except hybrid varieties, a resubmission 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 15 plants in a sample size of 2000 plants (population standard of 0.5% with an acceptance probability of at least 95%) or 9 plants or parts of plants in a sample size of 100 (population standard of 5% with and acceptance probability of at least 95%).

## **7 STABILITY**

- 7.1 A variety is considered sufficiently stable when there is no evidence to indicate that it lacks uniformity or fails to conform to the essential characteristics of its description in different submissions or in different tests.

## **8 DUS REPORT AND VARIETY DESCRIPTION**

- 8.1 Upon completion of the DUS examination the DUS Summary Report will be submitted to APHA by the specified date. This report will specify all non-routine characteristics for establishing distinctness.
- 8.2 The final DUS report, including the full variety description, will be submitted to APHA by the specified date.

**APPENDIX 1****REFERENCE COLLECTION VARIETIES****1 NATIONAL LISTING AND PLANT BREEDERS RIGHTS**

- 1.1 The DUS reference collection, for any given category of plant variety comprises the following at the time when the application for the candidate is made:
  - 1.1.1 All other candidate varieties already in DUS test in the UK, or entering testing at the same time as the candidate, including those being tested for other Member States or the CPVO.
  - 1.1.2 All varieties on the UK National List including any entered for export only to another Member State.
  - 1.1.3 All varieties with UK PBR.
  - 1.1.4 Varieties on the EC Common Catalogue whose seed is known to be certified or marketed in the UK that are listed by countries with comparable climatic conditions to UK.
  - 1.1.5 All varieties with EU PBR that are listed by countries with comparable climatic conditions to the UK.
  - 1.1.6 All varieties on the OECD variety list that are listed by countries with comparable climatic conditions to UK.
  - 1.1.7 Varieties nominated by the authorities concerned where tests are done for other Member States.
  - 1.1.8 Any varieties nominated by the applicant as being comparable i.e. known to be similar.
  - 1.1.9 Any other varieties considered to be comparable i.e. known to be similar by the appropriate Test Centre or DUS Centre Group.