



Animal &  
Plant Health  
Agency

# Great Britain and Northern Ireland Variety List / Plant Breeders' Rights Technical Protocol for Official Examination of Distinctness, Uniformity and Stability (DUS)

Oilseed rape and fodder rape

*Brassica napus* L. ssp. *oleifera* (Metzg.) Sinsk.

01 August 2024

Changes from last version:

- Updated title from United Kingdom to Great Britain and Northern Ireland.

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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 Oilseed Rape and also Fodder Rape entered for Variety Listing (VL) Trials and/or Plant Breeders' Rights (PBR).

1.2 This Protocol version applies to all new candidates submitted for test from 1<sup>st</sup> August 2024. Candidates already in test prior to this date will complete testing under UK Protocol version dated December 2022.

## 2 Scope

2.1 These procedures apply to all varieties of Winter Oilseed Rape and Fodder Rape. 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 Variety 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, the Welsh Ministers and the Minister for Agriculture, Environment and Rural Affairs in Northern Ireland (the National Authorities).

3.2 They are supervised, on behalf of the National Authorities, by officials of the Testing Authorities, that is, APHA, Scottish Government (SG), 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  
Email: [pvs.helpdesk@apha.gov.uk](mailto:pvs.helpdesk@apha.gov.uk)

### 3.5 Test Centre

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

NIAB  
Barn 1 Park Farm  
Villa Road  
Impington  
Cambridge  
CB24 9NZ  
Tel No: 01223 342200

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, well in advance of their application, about specific requirements under GM regulations.

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 clearances.

## 7 Associated Documents

17.1 The following documents are associated with this protocol

Reference	Title
WOSR VCU Protocol and Procedures	United Kingdom Variety List Trials: Protocol for Official Examination of Value for Cultivation and Use (VCU), Winter Oilseed Rape
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 (19.04.2002).
UPOV TGP/8/5	Trial Design and Techniques Used in the Examination of Distinctness, Uniformity and Stability (28.10.2022).
UPOV TGP/9/2	Examining Distinctness (29.10.2015).
UPOV TGP/10/2	Examining Uniformity (01.11.2019).
UPOV TG/36/7	Guidelines for the Conduct of Tests for Distinctness, Uniformity and Stability, Rape Seed ( <i>Brassica napus</i> L. <i>oleifera</i> ) (24.10.2023)
GB and NI Variety Lists	The Seeds (National Lists of Varieties) Regulations 2001 (as amended) and the Seeds (Variety Lists) Regulations (Northern Ireland) 2020
Plant Varieties Act 1997	Plant Breeders' Rights Regulations 1998 and Plant Varieties Act 1997
Plant Breeders' Rights 2019	The Plant Breeders' Rights (Amendment etc.) (EU Exit) Regulations 2019 as amended by The Animal Health, Invasive Alien Species, Plant Breeders' Rights and Seeds (Amendment etc.) (EU Exit) Regulations 2019 and The Plant Breeders' Rights (Amendment) (EU Exit) Regulations 2020



# Section B – Application Requirements

## 1 Purpose

1.1 The purpose of this section is to identify the specific DUS requirements for Variety List and / or Plant Breeders' Rights applications, as appropriate.

## 2 Scope

2.1 These procedures apply to all applications.

2.2 Testing will be carried out according to these procedures. Any changes to the procedures (including new characteristics) should be agreed in advance of submitting an application, by contacting APHA.

## 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 Variety List or for Plant Breeders' Rights, which is set administratively by APHA, is stated on the GOV website (<https://www.gov.uk/national-lists-of-agricultural-and-vegetable-crops>). 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 Variety List and Plant Breeders' Rights applications, Technical Questionnaires (TQs) and for payment of administration fees can be obtained from APHA PVS at the address shown in Section A or on the GOV website (<https://www.gov.uk/national-lists-of-agricultural-and-vegetable-crops>).

4.3 Applicants should note in the TQ, submitted with the application, any additional characteristics which may require examinations that are listed in the DUS characteristics section D 5.3 (an additional fee may be required).

4.4 In the case of hybrid varieties, the TQ must include details of all parental components.

4.5 A sowing list detailing all new applications is produced by APHA. The sowing list must include details of all the varieties and parental lines that are to be sown in the trial, and any relevant details about special requirements.

## 5 Receipt of Seed

5.1 The latest date for receipt of seed is stated in the Seed Gazette 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 (<https://www.gov.uk/national-lists-of-agricultural-and-vegetable-crops>).

## 6 Seed Quality Requirements

6.1 The seed must satisfy the quality requirements for Basic Seed as laid down in the seed marketing legislation of 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 Year 1

Type	Further information	Amount	
1. Conventional Type		4Kg*	
2. Single X Hybrids	Hybrid Each of both parent lines Maintainer line Grandmother Line (MSL system)	4Kg*	250g 250g 75g
3. 3 Way Hybrids	Hybrid Parent Hybrid Male fertile parent Each of both parents of parent Hybrid Maintainer of male sterile parent	4Kg*	250g 250g 250g 250g
4. Other Types	Contact APHA		

\* Includes 3Kg for Variety List VCU trials.

The DUS and VCU seed must be supplied as one lot and sent to the Seed Handling Unit at NIAB.

### 7.2 Year 2 and Further Year Submissions

A sample of 6g (2 x 3g) of seed will be withdrawn from VCU submissions in Year 2 and any further years to authenticate the submission.

### 7.3 Shortfall in Seed Quantities

Where insufficient seed is available in the first instance a further stock must be supplied in the following year which will be authenticated against the original submission. An additional charge may be applied. This must be agreed in advance with APHA and the test centre. A minimum of 75g of each line should be supplied in the first instance.

### 7.4 Components on the Variety Lists or with PBR

Where components of hybrids are already on the GB and NI Variety Lists, the Common Catalogue or have UK PBR, seed need not be supplied. If a component of a hybrid is used by a breeder other than the original breeder of the variety, then a letter of permission must be supplied to APHA by the second breeder.

## 8 Labelling Requirements, Including Provisions for GM Varieties

8.1 Applicants must clearly label their seed, inside and outside the bag, with the following information:

- Applicant
- AFP number (if known)
- Breeder's Reference number or name
- Quantity of seed
- In the case of hybrids, whether it is a parental line

8.2 All packages of GM material must be clearly labelled 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 Winter Oilseed Rape and Fodder Rape.

## 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 where previous cropping should ensure that the risk of contamination of the tests and trials is negligible. This should be on ground that has not grown a seed-bearing cruciferous crop for six years or more.

5.2 Crop husbandry should follow best local practice for all operations and particularly as regards cultivation, drilling, fertiliser and spray application, use of irrigation and control of pests and diseases.

5.3 The minimum duration of tests should normally be two independent growing cycles at one location. Additional growing cycles may be approved by the Variety List and Seeds Committee (NLSC).

5.4 Plots are sown from the submitted seed in each year of tests.

No. of replicates per variety:	minimum of 2
Total number of plants examined/ variety	minimum of 200

#### 5.4.1 Close Comparison Plots

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 the NLSC, and an additional charge will be made to the applicant.

#### 5.4.2 Glasshouse Test for Cotyledon characters

All varieties in the DUS trial, including reference varieties, are recorded for the cotyledon characteristics listed in the table of characteristics. This requires a separate glasshouse trial where seeds are grown in trays under controlled conditions. The glasshouse test is carried out in both years for candidate varieties.

No. of replicates:	2
Total number of plants examined/ variety:	40

#### 5.4.3 GM varieties

Additional field or glasshouse tests may be required for GM varieties, depending on the trait involved.

#### 5.4.4 "Tendency to form inflorescences in year of sowing for spring sown trials" plots

A separate trial is grown in the spring to assess the characteristic "Tendency to form inflorescences in year of sowing for spring sown trials". The trial consists of the same varieties used in the main DUS trial. The test is carried out in two independent growing cycles at one location.

No. of replicates per variety:	2
Total number of plants examined/ variety:	200 (approx)

#### 5.4.5 Replacement Stock Authentication

Authentication of replacement seed samples is carried out using molecular techniques.

#### 5.4.6 VCU Seed Authentication

Authentication of VCU seed in the second year of testing is carried out using molecular techniques.

5.5 From information given in the TQ the candidate variety may be grown in a single-spaced plant test and grouped with varieties which are in the same classification for the following characters, hybridity, presence or absence of lobing, erucic acid content and time of flowering.

## 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 plant or plants resulting from an adverse reaction to husbandry practice are recorded but excluded from analysis.

6.3 The characteristics listed in Section D 5.1 are recorded in two independent growing cycles and on all varieties.

6.4 In the second test cycle, characters, as indicated in Section D, are assessed on all varieties in test and the data analysed and, together with those from the first test cycle, used to assess distinctness and uniformity of the candidate varieties. (For details see Section G).

6.5 If the Test Centre notices unusual or novel characters in candidate varieties, a note may be made of these at any time and a photographic record made.

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 test. All such notifications must be copied to APHA.

7.2 In the case of distinctness problems, 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 (if appropriate), 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 of characteristics.

## **4 Organisation**

4.1 The minimum duration of tests to assess characteristics is normally two independent growing cycles. Shorter durations 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:

\* a characteristic which must be examined according to the UPOV Guidelines. G 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 plants or sample size for assessment:

As detailed in the table of characteristics in D 5.2



## 5.2 Oilseed Rape Characteristics Routinely Recorded in DUS Tests

UK No.	UPOV TG/36/7	Character	Sample source (Material examined)	Number of plants or sample size for assessment	Method of assessment and recording	States of expression	D Method Minimum difference required	U Method
1G	1	Seed: erucic acid content	Submitted seed	Single analysis of submitted seed	PQ - Laboratory Analysis	1 = < 2% = absent 9 = >2% = present	1 state	None
2	2	Leaf: intensity of green colour	DUS, adult plant trial	200 plants per variety	QN/VG	3 = weak 5 = medium 7 = strong	COYD @1% (MJRA)	Visual assessment
3	3	Leaf: glaucosity	DUS, adult plant trial	200 plants per variety	QL/VG	1 = absent 9 = present	1 state	Visual assessment
4G	4	Leaf: lobes	DUS, adult plant trial	200 plants per variety	PQ/VG	1 = absent 9 = present	1 state	Visual assessment
5	5*	Leaf: number of lobes (fully developed leaf)	DUS, adult plant trial	200 plants per variety	QN/VG	3 = few 5 = medium 7 = many	COYD @1% (MJRA)	Visual assessment
6	6*	Leaf: incisions of margin	DUS, adult plant trial	200 plants per variety	QN/VG	3 = weak 5 = medium 7 = strong	COYD @1% (MJRA)	Visual assessment
7G	7*	Time of flowering	DUS, adult plant trial	200 plants per variety	QN/MG	3 = early 5 = medium 7 = late	COYD @1% (MJRA)	Visual assessment
8	8	Flower: colour of petals	DUS, adult plant trial	200 plants per variety	PQ/VG	1 = white 2 = yellowish white 3 = yellow 4 = orange yellow	1 state	Visual assessment
9	9	Flower: length of petals	DUS, adult plant trial	60 plants per variety: 1 petal per plant	QN/MS Image Analysis	3 = short 5 = medium 7 = long	COYD @1% (MJRA)	COYU @ 0.1%
10	10	Flower: width of petals	DUS, adult plant trial	60 plants per variety: 1 petal per plant	QN/MS Image Analysis	3 = narrow 5 = medium 7 = broad	COYD @1% (MJRA)	COYU @ 0.1%

UK No.	UPOV TG/36/7	Character	Sample source (Material examined)	Number of plants or sample size for assessment	Method of assessment and recording	States of expression	D Method Minimum difference required	U Method
11	11	<b>Flower: ratio length/width of petals</b>	DUS, adult plant trial	60 plants per variety: 1 petal per plant	QN/MS Image Analysis	3 = low 5 = medium 7 = high	COYD @1% (MJRA)	COYU @ 0.1%
12	12*	<b>Production of pollen</b>	DUS, adult plant trial	200 plants per variety	QL/VG	1 = absent 9 = present	1 state	Visual assessment
13	13*	<b>Plant: total length including side branches</b>	DUS, adult plant trial	20 plants per variety:	QN/MS or MG	3 = short 5 = medium 7 = long	COYD @1% (MJRA)	COYU @ 0.1%
14	14	<b>Silique: length (between peduncle and beak)</b>	DUS, adult plant trial	60 plants 1 silique per plant	QN/MS Image Analysis	3 = short 5 = medium 7 = long	COYD @1% (MJRA)	COYU @ 0.1%
15	15	<b>Silique: width</b>	DUS, adult plant trial	60 plants per variety: 1 silique per plant	QN/MS Image Analysis	3 = narrow 5 = medium 7 = broad	COYD @1% (MJRA)	COYU @ 0.1%
16	16	<b>Silique: ratio length/width</b>	DUS, adult plant trial	60 plants 1 silique per plant	QN/MS Image Analysis	3 = low 5 = medium 7 = high	COYD @1% (MJRA)	COYU @ 0.1%
17	17	<b>Silique: length of beak</b>	DUS, adult plant trial	60 plants per variety: 1 silique per plant	QN/MS Image Analysis	3 = short 5 = medium 7 = long	COYD @1% (MJRA)	COYU @ 0.1%
18	18	<b>Silique: length of pedicle</b>	DUS, adult plant trial	60 plants 1 silique per plant	QN/MS Image Analysis	3 = short 5 = medium 7 = long	COYD @1% (MJRA)	COYU @ 0.1%
19	19	<b>Tendency to form inflorescences in year of sowing for for spring sown trials</b>	Alternativity Trial	Plot score on Spring sown trial 200 plants per variety	QN/VG	3 = weak 5 = medium 7 = strong	COYD @1% (MJRA)	COYU @ 0.1%

## 5.3 Approved Additional Characteristics

The following table summarises the additional characteristics which have been approved by the NLSC and can be examined at the request of the applicant where necessary to establish Distinctness in instances where the routine characters have not been successful. A fee may be charged for the examination of these characteristics as advised by APHA.

UK	UPOV TG/36/7	Character	Sample source	Sample number / size for assessment and recording	Method of assessment and recording	States of expression	D Method Minimum difference required	U Method
2	2	<b>Cotyledon: ratio saddle height/width</b>	Cotyledon seedling test	40 plants per variety: 1 cotyledon per plant	QN/MS Image Analysis	3 = low 5 = medium 7 = high	COYD @1% (MJRA)	COYU @ 0.1%
3	3	<b>Cotyledon: saddle depth</b>	Cotyledon seedling test	40 plants per variety: 1 cotyledon per plant	QN/MS Image Analysis	3 = low 5 = medium 7 = high	COYD @1% (MJRA)	COYU @ 0.1%
4	4	<b>Cotyledon: ratio lobe separation/width</b>	Cotyledon seedling test	40 plants per variety: 1 cotyledon per plant	QN/MS Image Analysis	3 = low 5 = medium 7 = high	COYD @1% (MJRA)	COYU @ 0.1%
5	5	<b>Cotyledon: ratio lobe separation/saddle depth</b>	Cotyledon seedling test	40 plants per variety: 1 cotyledon per plant	QN/MS Image Analysis	3 = low 5 = medium 7 = high	COYD @1% (MJRA)	COYU @ 0.1%
6	6	<b>Cotyledon: saddle height/lamina length ratio</b>	Cotyledon seedling test	40 plants per variety: 1 cotyledon per plant	QN/MS Image Analysis	3 = low 5 = medium 7 = high	COYD @1% (MJRA)	COYU @ 0.1%
62	N/A	<b>Cotyledon: lamina base to wide point (lbtwp)</b>	Cotyledon seedling test	40 plants per variety: 1 cotyledon per plant	QN/MS Image Analysis	3 = short 5 = medium 7 = long	COYD @1% (MJRA)	COYU @ 0.1%
63	N/A	<b>Cotyledon: lbtwp/width ratio</b>	Cotyledon seedling test	40 plants per variety: 1 cotyledon per plant	QN/MS Image Analysis	3 = low 5 = medium 7 = high	COYD @1% (MJRA)	COYU @ 0.1%
95	N/A	<b>Herbicide Tolerance: Imazamox</b>	Special seedling herbicide tolerance test	Seedling test: 100 plants x 2 replicates	Special Test QL/VG	1 = susceptible 9 = tolerant	1 state	Visual assessment

New Additional DUS Characteristics: Applicants can suggest new characters on the TQ 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 (if applicable).

## 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 stock of the variety. Subject to meeting the required quality standards (see Section B), the seed is dried and stored 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 a seed stock is deteriorating in storage, or stocks reduce to less than 50 grams, a request should be made to the maintainer asking for a replacement stock (usually 500g) of the variety. This replacement stock must be authenticated against the original reference sample.

4.3 Authentication is by using molecular techniques. If there is any doubt about the authentication plots may also be sown and visually examined through all the growth stages from early habit to full harvest ripeness. If the new seed sample cannot be distinguished from the reference seed it will be accepted as representing the variety and used in subsequent years.

4.4 In the event of the replacement sample not meeting the required acceptance standards, an additional replacement sample is requested. If the additional replacement sample does not meet the acceptance criteria set out in 4.3, the APHA will be informed and the variety will be deleted from the reference collection.

## **5 Procedures for VCU Seed Stock Authentication**

5.1 VCU seed samples from year two candidates will be authenticated against the DUS seed sample.

5.2 Seed may be authenticated using molecular markers or by visual comparison of plots sown in the field. Any plots sown must be examined from establishment, through flowering to maturity.

5.3 If the VCU seed sample cannot be visually distinguished from the DUS stock it will be accepted as representing the variety

5.4 If the VCU seed sample can be visually distinguished from the DUS seed stock then it will not be accepted as representing the candidate variety and the problem must be reported to APHA as soon as it is identified.

## **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 Variety List for the supply of at least 25g of seed of the definitive sample. This seed will then be used to validate a larger sample (500g) of seed from the breeder.

## **7 Release of Reference Samples for Authorised Purposes**

7.1 A maximum of 25g of seed of reference samples can be supplied by the Test Centre, on request, to UK and UPOV DUS Testing Authorities and UK and OECD Seed Certification Agencies, provided the recipient is 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 Special Tests

## 1 Purpose

1.1 This Section sets out the procedures for assessment of new additional DUS characters for varieties winter oilseed rape entered for Variety List trials and PBR.

## 2 Scope

2.1 These procedures apply to applications where additional DUS characteristics which have not been previously approved by the NLSC, are requested for use in the examination 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 requirements will be met.

3.2 All new additional characteristics must be authorised by the NLSC.

## 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 will consider the results of the commissioned test or trial when reaching its recommendation on the granting of Plant Breeders' Rights and/or Variety Listing.

5.3 Where the test for a character is approved by the NLSC it should be subsequently listed in Section D5.2 or 5.3 as appropriate.

# Section G – Procedures for DUS Decisions

## 1 Purpose

1.1 This section sets out the standards used to assess distinctness, uniformity and stability of varieties of winter oilseed rape.

## 2 Scope

2.1 These procedures apply to all varieties of winter oilseed rape and fodder rape entered for Variety List and/or Plant Breeders' Rights tests and those being tested on behalf of 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 UPOV guidelines.

## 4 Reference Varieties

4.1 Appendix 1 sets out which varieties are considered as reference varieties for these procedures.

4.2 A system of cyclic planting of reference varieties in two years out of every three years is used, with the data for the missing year compensated for by the use of historic data from two earlier years.

## 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. erucic acid content, presence or absence of lobing, hybridity or time of flowering.

5.2 The standard applied for distinctness over two years of test is a significant difference at 1% ( $P = 0.01$ ) significance level in at least one character in a combined over years distinctness (MJRA) analysis of variance.



5.3 The standard applied over three years of test is a significant difference at the 1% ( $P = 0.01$ ) in at least one character in a combined over years distinctness (MJRA) analysis of variance.

5.4 Where the number of tested varieties is too small (below 15) giving insufficient degrees of freedom for the COYD analysis to be valid, then a standard of significant differences using the one year “t” criterion at 5% is used in:

both years of test,

or

two out of three years of test (with the significant difference in the same direction).

5.5 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. If the visual observation shows the two varieties are clearly distinct, then a case will be presented to APHA and the NLSC with any supporting evidence such as photographs.

#### 5.6 Hybrids

Distinctness follows the principle of “hybrid first”. If the final hybrid is not distinct at COYD @ 1% (MJRA) from other hybrids in test then distinctness may be examined by testing the parent lines as long as it shows differences at COYD @ 5% (MJRA). Either the female parent or the fertile pollen donor male parent must be clearly distinguishable from the respective male or female parent of the non-distinct hybrid variety. This is called the parental formula. Hybridity will be used as a grouping character based on the TQ declaration made by the applicant.

All progenitor lines must satisfy the requirements of uniformity and stability. If the progenitor lines are not uniform or stable, the hybrid fails to satisfy the requirements of DUS.

#### 5.7 Distinctness of parent lines and maintainer lines

It is not necessary to check if parent lines or maintainers are distinct (except were entered for PBR) from other varieties, or parents of other hybrids, unless used in the parent formula to establish distinctness of the final hybrid.

5.8 It is the responsibility of the applicant to provide the correct parental formula and to provide seed of the correct parents. If the hybrid is declared to be distinct on the basis of a false, formula or incorrect seed submissions this would invalidate NL and PBR.

## 6 Uniformity

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

6.2 Uniformity based on the assessment of off-types for visually observed characters

Any variant plants (off-types) are identified by visual assessment in the field and are marked for a decision on omission for recording depending upon incidence across replicates. Care is taken to ensure that the plants that are counted are not the result of any non-genetic factors such as environment, pest or disease.

6.2.1 The assessment of 'Off-types' is undertaken in both test cycles and the total combined should not exceed the number allowed using the population standards detailed below.

6.2.2 Off-type standards for visually assessed characters:

*Inbred lines and CMS lines:*

Population standard = 2%

Acceptance probability = 95%

eg: In a population of 400 13 off-types are allowed

*Single cross hybrids*

Population standard = 10%

Acceptance probability = 95%

eg: in a population of 400, 50 off-types are allowed.

*Three-Way hybrids*

The segregation of characters such as male sterility must correspond to the proportions stated in the breeding scheme submitted by the applicant.

### *Parental lines*

All parental lines must satisfy the Uniformity requirements according to their type.

6.2.3 After the variants have been excluded, the characteristics listed in Section D 5 are used to assess the uniformity of the remaining plants.

6.3 Uniformity based on the assessment of general variation where measurements are recorded:

Provided a variety meets the off-type standard, it can be considered sufficiently uniform after two test cycles, if, for all measured characters necessary for distinctness, the Combined Over Years Uniformity (COYU) analysis is not significantly greater than that of the reference varieties at the 0.1% ( $P=0.001$ ) significance level.

## **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 and will be discussed at the relevant DUS Test Centre Meeting. 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.

The characteristics to be used in the description are identified in Section D.

# Appendix 1 – Reference Collection Varieties

## 1 Variety Listing and PBR

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:

1.2 All other candidate varieties already in DUS test in the UK or entering testing at the same time as the candidate.

1.3 All varieties with UK PBR.

1.4 All varieties on the OECD variety list that are listed by countries with comparable climatic conditions to UK.

1.5 Any varieties nominated by the applicant as being comparable i.e., known to be similar.

1.6 Any other varieties considered to be comparable i.e., known to be similar by the appropriate Test Centre or DUS Centre Group.



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The Animal and Plant Health Agency (APHA) is an executive agency of the Department for Environment, Food & Rural Affairs, and also works on behalf of the Scottish Government and Welsh Government.