



Animal &  
Plant Health  
Agency

**United Kingdom National List Technical  
Protocol for Official Examination of  
Distinctness, Uniformity and Stability (DUS)  
Oilseed rape and fodder rape  
(*Brassica napus* L. ssp. *oleifera* (Metzg.) Sinsk.)**

**August 2019**

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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 National List (NL) Trials and Plant Breeders' Rights (PBR).

## 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 APHA, 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), Food and Rural Communities (AFRC), 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, either directly or via the Test Centre.

3.4 The procedures are administered by:

Plant Varieties and Seeds  
Animal and Plant Health Agency (APHA)  
Eastbrook  
Shaftesbury Road  
Cambridge  
CB2 8DR

Tel No: 0208 0265930

Fax No: 0208 0415250

### 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: 01223 342291

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 where 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 not to do so 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

The following documents are associated with this protocol

Reference	Title
WOSR VCU Protocol and Procedures	Protocol for Official Examination of Value for Cultivation and Use (VCU), Winter Oilseed Rape
CPVO-TP 036/2	Protocol for Distinctness, Uniformity and Stability Tests, <i>Brassica napus</i> L. emend. Metzg. Rape Seed
UPOV TGP/1	General introduction to the Guidelines for the Conduct of Tests for Distinctness, Uniformity and Stability of and the Development of Harmonised Descriptions of New Varieties of Plants.
UPOV TGP/8/3	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
Commission Directive	Commission Directive of 2003/90/EC setting out implementing measures for the purposes of Article 7 of Council Directive 2002/53/EC 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	Council Regulation (EC) No. 2100/94 of 27 July 1994 on Community Plant Variety Rights

# 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 for National Listing or for Plant Breeders' Rights, which is set administratively by APHA, is 10 August. 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 Applications, together with the completed Technical Questionnaire (TQ) and the appropriate fee, must be submitted to:

Plant Varieties and Seeds  
Animal and Plant Health  
Agency Eastbrook  
Shaftesbury  
Road  
Cambridge  
CB2 8DR

Tel No: 02080 265930

- 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 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 10 August. 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 the Seed Marketing Regulations 2011 (Schedule 2 Part 4), the Oil and Fibre Plant Seed (Scotland) Regulations 2004 (Regulation 3), the Seed Marketing (Wales) Regulations 2012 (Schedule 2 Part 4) and the Seed Marketing Regulations (Northern Ireland) 2016 (Schedule 2, Part 4).

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

No.	Type	Description	Weight (kg)	Weight (g)
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 National 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 sufficient seed stocks of parent and grandparent lines are unavailable a minimum of 75g of each line should be supplied 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 will be applied.

### 7.4 Components on the National List or with PBR

Where components of hybrids are already on the UK National List, 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 Official labels will be sent to the applicant by APHA and must be attached to the seed for identification purposes.

8.2 All packages of GM material must be clearly labeled 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 Field 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 will normally be two independent growing cycles at one location. Additional growing cycles may be approved by the National List 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

In test year 2, or any subsequent years of testing, close comparisons may be made with varieties similar to the submitted material. Special side-by side comparisons may also be established in more difficult cases to help resolve problems of distinctness or study uniformity in more detail.

#### 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 in CPVO-TP 36/02. 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

#### 5.4.2 GM varieties

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

#### 5.4.3 “Tendency to form inflorescences in year of sowing” plots

A separate trial is grown to assess the characteristic “Tendency to form inflorescences in year of sowing”. 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)

#### 5.4.4 Replacement Stock Authentication

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

#### 5.4.5 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 Technical Questionnaire 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 Characteristics, recording details and instructions are given in Section D. Any variant and abnormal plants or plants occurring as a result of environmental influences, such as stress or disease, are excluded from the sample.
- 6.3 The CPVO characteristics listed in Section D5.1 are recorded in two independent growing cycles and on all varieties.
- 6.4 At the end of the second year of tests candidate varieties that are not distinct may be grown in additional side-by-side comparison plots in a third year for which an additional charge will be made to the applicant.
- 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 agent in writing of any DUS problems at the earliest practical opportunity. All such notifications must be copied to APHA.
- 7.2 If confidentiality considerations allow, the applicant should be informed which variety is similar to his/her own 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 should normally be two growing periods. Additional growing periods may 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.

5.2 Note: \* denotes a characteristic which must be examined according to Commission Directive 2003/40/EC, the CPVO protocol and/ or UPOV Guidelines

5.3 G denotes a grouping characteristic

Types of expression of characteristics:

QL – Qualitative characteristic

QN – Quantitative characteristic

PQ – Pseudo-qualitative 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

## Oilseed Rape Characteristics Routinely Recorded in DUS Tests

CPVO TP 36/1	UPOV TG/36/6	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 UPOV
1G*	1	<b>Seed: erucic acid content</b>	Submitted seed	Single analysis of submitted	PQ - Laboratory Analysis	1 = < 2% = absent 9 = >2% = present	1 state	None
2*	2	<b>Cotyledon: ratio length/width</b>	Cotyledon seedling test	40 plants per variety: 1 cotyledon per plant	QN/MS Image Analysis	3 = small 5 = medium 7 = large	COYD @1% (MJRA)	COYU @ 0.1%
3*		<b>Cotyledon: saddle depth</b>	Cotyledon seedling test	40 plants per variety: 1 cotyledon per plant	QN/MS Image Analysis	3 = small 5 = medium 7 = large	COYD @1% (MJRA)	COYU @ 0.1%
4*		<b>Cotyledon: ratio lobe separation/width</b>	Cotyledon seedling test	40 plants per variety: 1 cotyledon per plant	QN/MS Image Analysis	3 = small 5 = medium 7 = large	COYD @1% (MJRA)	COYU @ 0.1%
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 = small 5 = medium 7 = large	COYD @1% (MJRA)	COYU @ 0.1%
6*	4	<b>Leaf: green colour</b>	DUS, adult plant trial	200 plants per variety	QN/VG	3 = light 5 = medium 7 = dark	COYD@1% (MJRA)	Visual assessment
7*		<b>Leaf: glaucosity</b>	DUS, adult plant trial	200 plants per variety	QL/VG	1 = absent 9 = present	1 state	Visual assessment
8G*	5	<b>Leaf: lobes</b>	DUS, adult plant trial	200 plants per variety	PQ/VG	1 = absent 9 = present	1 state	Visual assessment
9*	6	<b>Leaf: number of lobes (fully developed leaf)</b>	DUS, adult plant trial	200 plants per variety	QN/VG	3 = few 5 = medium 7 = many	COYD@1% (MJRA)	Visual assessment
10*	7	<b>Leaf: dentation of margin</b>	DUS, adult plant trial	200 plants per variety	QN/VG	3 = weak 5 = medium 7 = strong	COYD@1% (MJRA)	Visual assessment
11G*	11	<b>Time of flowering</b>	DUS, adult plant trial	200 plants per variety	QN/MG	3 = early 5 = medium 7 = late	COYD@1% (MJRA)	Visual assessment
12*	12	<b>Flower: colour of petals</b>	DUS, adult plant trial	200 plants per variety	PQ/VG	1 = white 2 = cream 3 = yellow 4 = orange-yellow	1 state	Visual assessment
13*	13	<b>Flower: length of petals</b>	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%
14*	14	<b>Flower: width of petals</b>	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%



CPVO TP 36/1	UPOV TG/36/6	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	U Method UPOV
15*	15	<b>Production of pollen</b>	DUS, adult plant trial	200 plants per variety	QL/VG	1 = absent 9 = present	1 state	Visual assessment every plant
16*	17	<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%
17*	18	<b>Silique: length (between peduncle and beak)</b>	DUS, adult plant trial	60 plants 1 siliqua per plant	QN/MS Image Analysis	3 = short 5 = medium 7 = long	COYD @1% (MJRA)	COYU @ 0.1%
18*		<b>Silique: width</b>	DUS, adult plant trial	60 plants per variety: 1 siliqua per plant	QN/MS Image Analysis	3 = narrow 5 = medium 7 = broad	COYD @1% (MJRA)	COYU @ 0.1%
19*		<b>Silique: ratio length/width</b>	DUS, adult plant trial	60 plants 1 siliqua per plant	QN/MS Image Analysis	3 = narrow 5 = medium 7 = broad	COYD @1% (MJRA)	COYU @ 0.1%
20*	19	<b>Silique: length of beak</b>	DUS, adult plant trial	60 plants per variety: 1 siliqua per plant	QN/MS Image Analysis	3 = short 5 = medium 7 = long	COYD @1% (MJRA)	COYU @ 0.1%
21*	20	<b>Silique: length of peduncle</b>	DUS, adult plant trial	60 plants 1 siliqua per plant	QN/MS Image Analysis	3 = small 5 = medium 7 = large	COYD @1% (MJRA)	COYU @ 0.1%
22*	21	<b>Tendency to form inflorescences in year of sowing 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%

## 5.2 Additional Approved Characteristics

The following table summarises the additional characteristics which have been approved by the CPVO and 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 certain of these characteristics as advised by APHA.

CPVO TP 36/1	UPOV TG/36/6	UK	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
		16	<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 = small 5 = medium 7 = large	COYD @1% (MJRA)	COYU @ 0.1%
		95	<b>Herbicide Tolerance: Imazamox</b>	Special Seedling Herbicide Test	Seedling test: 100 plants x 2 replicates	Special Test QL/VG	1 = susceptible 9 = tolerant	1 state	Visual assessment
		72	<b>Cotyledon: saddle length/lamina length ratio</b>	Cotyledon Seedling test	40 plants per variety: 1 cotyledon per plant	QN/MS Image Analysis	3 = small 5 = medium 7 = large	COYD @1% (MJRA)	COYU @ 0.1%
		74	<b>Cotyledon: lbtwp/width ratio</b>	Cotyledon Seedling test	40 plants per variety: 1 cotyledon per plant	QN/MS Image Analysis	3 = small 5 = medium 7 = large	COYD @1% (MJRA)	COYU @ 0.1%

## 5.3 New Additional DUS Characteristics

Applicants may suggest new additional characters for testing DUS on the Technical Questionnaire or after notification by the Test Centre of distinctness problems (for procedures see Section J).

# 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 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 CPVO 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 National 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.

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

- 6.2 A maximum of 25g 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, 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.
- 6.3 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 special tests for varieties of winter oilseed rape 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 CPVO or NLSC are requested for use for establishing distinctness in difficult cases.

## 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 CPVO and NLSC.

## 4 Reference Varieties

- 4.1 The test will include the candidate variety, the varieties from which the candidate variety is not distinct, as well as other appropriate 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 CPVO and NLSC for approval. 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 National Listing.
- 5.3 Where the test for a character is approved by the CPVO and 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 winter oilseed rape.

## 2 Scope

- 2.1 These procedures apply to all varieties of winter oilseed rape and fodder rape 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 reports 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.
- 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 TG1/2 varieties need only be compared according to their 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:

- i) both years of test or,
- ii) 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 where 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.

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

6.2 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

6.3 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.

6.4 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.

*Progenitor lines*

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

6.5 After the variants have been excluded, the characteristics listed in Section D5 are used to assess the uniformity of the remaining plants.

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

6.6 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**

Upon completion of the DUS examination the DUS Summary report will be submitted to APHA by the specified date. This report will specify any non-routine characteristics used to establish distinctness.

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 National 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 varieties on the UK National List including any entered for export only to another Member State.
- 1.3 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 (France, Germany, Denmark).
- 1.4 All varieties with EU PBR that are listed by countries with comparable climatic conditions to UK (France, Germany, Denmark).
- 1.5 All varieties on the OECD variety list that are listed by countries with comparable climatic conditions to UK (France, Germany, Denmark).
- 1.6 Varieties nominated by the authorities concerned where tests are done for other Member States.
- 1.7 Any varieties nominated by the applicant as being comparable i.e. known to be similar.
- 1.8 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.