



Animal &  
Plant Health  
Agency

**Great Britain and Northern Ireland Variety List  
& UK Plant Breeder's Right Technical  
Protocol for Official Examination of  
Distinctness, Uniformity and Stability (DUS)**

**Field Beans**

***Vicia faba* L.**

**May 2026**

## Changes since last version (February 2026)

- Updated A.3.5 Test centre details
- Section B 6.3 - Updated Seed quality requirements to include thousand grain weight (g) and germination rate (%)
- Section B 8.1 - Updated Labelling requirements to include thousand grain weight (g) and germination rate (%)
- Section C – 5.6 - addition to Design of Tests to include a sowing rate calculated using thousand grain weight and germination rate.
- Updated D.5.2 U Method for multiple Characters

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# Section A – General Information

## A.1 Purpose

A.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 field beans (*Vicia faba* L.) entered for Variety Listing (VL) Trials and / or Plant Breeders' Rights (PBR).

## A.2 Scope

A.2.1 These procedures apply to all varieties of field beans (*Vicia faba* L.). Special procedures and responsibilities for Genetically Modified (GM) varieties are set out in Sections A5 and A6.

A.2.2 Except where specified in this protocol or authorised by the Plant Variety Rights Office for the UK, Animal and Plant Health Agency (APHA); only Variety List candidates, Plant Breeders' Rights candidates, candidates for Foreign Authorities and the reference varieties may be incorporated in the DUS tests.

## A.3 Responsibilities

A.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, the Scottish Ministers, the Welsh Ministers and the Minister for Agriculture, Environment and Rural Affairs in Northern Ireland (the National Authorities).

A.3.2 They are supervised, on behalf of the National Authorities, by officials of the Testing Authorities: APHA; the Scottish Government (SG); the Department of Agriculture, Environment and Rural Affairs (DAERA); and the Welsh Government (WG).

A.3.3 This protocol is authorised by the Plant Variety and Seeds Committee (PVSC). It cannot be amended without its approval. Requests and suggestions for amendment of the protocol should be put in writing to APHA or the Test Centre.

A.3.4 The procedures are administered by:

Plant Variety Rights Office for the UK

Animal and Plant Health Office

Eastbrook

Shaftesbury Road

Cambridge.

CB2 8DR

Email: [pvs.helpdesk@apha.gov.uk](mailto:pvs.helpdesk@apha.gov.uk)

A.3.5 Test Centre

The DUS growing tests and assessments in this protocol are coordinated and carried out by:

Niab

Park Farm Campus

Villa Road

Impington

Cambridge.

CB24 9AT

Tel No: 01223 342200

Email: [DUStesting@niab.com](mailto:DUStesting@niab.com)

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

## **A.4 Non-Compliance with the Protocol**

A.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 technical reasons which can be justified by the Test Centre.

## **A.5 Responsibility for GM Releases**

A.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 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.

## A.6 Procedures for GM Varieties

A.6.1 Applicants intending to enter GM candidates must consult APHA, well in advance of their application, about specific requirements under GM regulations.

A.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 specific clearances.

## A.7 Associated Documents

A.7.1 The following documents are associated with this protocol.

Reference	Title
Field Bean VCU Protocol	Great Britain and Northern Ireland Variety List Trials: Protocol for Examining the Value for Cultivation and Use (VCU) of Field Beans
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 TG/8/7	Guidelines for the Conduct of Tests for Distinctness, Uniformity and Stability, Field Bean.
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)
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

### B.1 Purpose

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

### B.2 Scope

B.2.1 These procedures apply to all applications.

B.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.

### B.3 Responsibilities

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

### B.4 Receipt of Applications

B.4.1 The latest date for receipt of applications for Variety Listing and/or for Plant Breeders' Rights is stated on the GOV website (<https://www.gov.uk/guidance/national-lists-of-agricultural-and-vegetable-crops>).

B.4.2 The procedures for the submission of Variety Listing 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/guidance/national-lists-of-agricultural-and-vegetable-crops>)

B.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, 5.2 or 5.3 (an additional fee may be required).

### B.5 Receipt of Seed

B.5.1 The latest date for receipt of seed is stated in the Seed Gazette. In the absence of exceptional circumstances, seed submissions received after this date will be refused. Instructions for the delivery

of seed will be made available to applicants by APHA (<https://www.gov.uk/guidance/national-lists-of-agricultural-and-vegetable-crops>).

## B.6 Seed Quality Requirements

B.6.1 The seed must satisfy the certification requirements for Basic Seed as laid down in the seed marketing legislation of the Devolved Administrations.

B.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.

B.6.3 The seed sample must be submitted with the declared thousand grain weight (g) and germination rate (%).

## B.7 Seed Quantity

### B.7.1 Year 1

3 kg or 6000 seeds

#### B.7.1.1 Winter Field Beans

One sample is submitted for both DUS and VCU purposes. The sample size will be indicated by the VCU Trial Operator in line with the Trial Procedures for Official Examination of Value for Cultivation and Use (VCU) for Field Beans, to include 3kg for DUS purposes.

#### B.7.1.2 Spring Field Beans

A separate 3 kg DUS sample should be submitted.

### B.7.2 Year 2 and Further Year Submissions

A sample of 300g of seed will be withdrawn from VCU submissions in Year 2 and any further years to authenticate the submission. Applicants should refer to the Trial Procedures for Official Examination of Value for Cultivation and Use (VCU) for Field Beans.

### B.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.

## **B.8 Labelling Requirements, including Provisions for GM Varieties**

B.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
- Type of Seed (either "DUS" or "Combined submission of DUS and VCU")
- Quantity of seed
- Thousand grain weight (g)
- Germination (%)

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

## Section C – Growing Test Procedures

### C.1 Purpose

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

### C.2 Scope

C.2.1 These procedures apply to all varieties of field beans (*Vicia faba* L.).

### C.3 Responsibilities

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

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

### C.4 Reference Varieties

C.4.1 The principles governing the selection of reference varieties are set out in Appendix 1.

C.4.2 Seed of reference varieties will be supplied by the Test Centre.

### C.5 Design of Tests

C.5.1 The Test Centre is responsible for selecting a suitable site which should be on ground where it has been determined the risk of contamination from previous cropping is negligible. This should be on ground that has not grown a seed-bearing bean and pea crop for two years or more.

C.5.2 As field beans have no vernalisation requirement, winter and spring field beans will normally be drilled as one trial in the spring.

C.5.3 Crop husbandry should follow best practice for all operations and particularly as regards cultivation, drilling, fertiliser and spray application, use of irrigation and control of pests and diseases.

C.5.4 The minimum duration of tests should normally be two independent growing cycles. The National List and Seeds Committee (NLSC) must be informed of any proposed changes to the number of cycles.

C.5.5 The tests are carried out using a randomised design, with a plot of each variety present in each replicate as follows:

- No. of replicates                      2 or more
- No of plants per variety            minimum of 160

C.5.6 Plots should be sown using a seed rate taking into consideration the declared thousand grain weight and germination rate provided with the seed submission. The seed rate should be calculated for each variety to ensure comparable plant numbers per m<sup>2</sup> between varieties.

C.5.7 From information given in the TQ the candidate variety may be grouped with varieties that are in the same classification for the following characters: Wing: melanin spot; Plant: growth type; and Seed: black pigmentation of hilum.

C.5.8 At the end of the second year of tests, candidate varieties 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.

## C.6 Records and Recording

C.6.1 All records and plot data should be in a form determined and validated by the Test Centre.

C.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.

C.6.3 In the first test cycle, characters, as indicated in Section D, are recorded on all varieties in test and the data analysed to assess uniformity of the candidate varieties and to determine the most similar reference varieties for each candidate. (For details see Section G).

C.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).

C.6.5 If the Test Centre notices unusual or novel characters in candidate varieties, a record must be made including photographs if appropriate.

## **C.7 Communications with the Applicant**

C.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.

C.7.2 In the case of distinctness problems, if confidentiality considerations allow, the applicant should be informed which variety is not distinct and be invited to submit any information which may help to distinguish them.

C.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.

C.7.4 After each test cycle 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

## D.1 Purpose

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

## D.2 Scope

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

## D.3 Responsibilities

D.3.1 The Test Centre is responsible for coordinating the procedures in this summary of characteristics.

## D.4 Organisation

D.4.1 The minimum duration of tests to assess characteristics is normally two independent growing cycles. Shorter duration may be applied for assessment of additional characteristics. Proposed changes to the number of growing must be approved by the NLSC.

## D.5 DUS Characteristics to be Assessed

### D.5.1 Routine Characteristics

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

Note:

- \* a characteristic which must be examined according to UPOV
- G a grouping characteristic

Type of observation of characteristics:

- MG Single measurement of a group of plants or part 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:

- VG and MG characteristics: 160 plants per variety\*
- VS and MS characteristics: 60 plants or parts of plants per variety\*
- \* Unless otherwise stated in the table of characteristics (D.5.2, D.5.3 and D.5.4)

## D.5.2 Field Bean Characteristics Routinely Recorded in DUS Tests

UK No.	UPOV TG/8/7	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
1	1	Foliage: intensity of green colour	Field grown plot	160 plants per variety	VG	1 light 2 light to medium 3 medium 4 medium to dark 5 dark	2 states	Visual assessment
2	2	Foliage: greyish hue of green colour	Field grown plot	160 plants per variety	VG	1 absent 9 present	1 state	Visual assessment
3	3*	Time of flowering: (50% of plants with at least one open flower)	Field grown plot	160 plants per variety	MG Number of days from drilling to 50% flowering	1 very early 3 early 5 medium 7 late 9 very late	COYD @ 1%  See Section G.5.2	COYUs @ 0.3%  See Section G.6.3
4	4* G	Wing: melanin spot	Field grown plot	160 plants per variety	VG	1 absent 9 present	1 state	Visual assessment

5	5*	Wing: colour of melanin spot	Field grown plot	160 plants per variety	VG	1 yellow 2 brown 3 black	1 state	Visual assessment
<b>UK No.</b>	<b>UPOV TG/8/7</b>	<b>Character</b>	<b>Material examined</b>	<b>Number of plants or sample size for assessment</b>	<b>Method of assessment and recording</b>	<b>States of expression</b>	<b>D Method and Minimum Distance required</b>	<b>U Method</b>
6	6	Standard: extent of anthocyanin colouration (Only varieties with Wing: melanin spot: present)	Field grown plot	160 plants per variety	VG	1 small 3 medium 5 large	2 states	Visual assessment
7	7	Standard: intensity of anthocyanin colouration (Only varieties with Wing: melanin spot: present)	Field grown plot	160 plants per variety	VG	1 weak 2 medium 3 strong	2 states	Visual assessment
8	8	Flower: length	Field grown plot	60 plants per variety 1 flower per plant	MS	1 very short 3 short 5 medium 7 long 9 very long	COYD @ 1%  See Section G.5.2	COYUs @ 0.3%  See Section G.6.3
9	9	Standard: width	Field grown plot	60 plants per variety 1 flower per plant	MS	1 narrow 2 narrow to medium 3 medium 4 medium to broad 5 broad	COYD @ 1%  See Section G.5.2	COYUs @ 0.3%  See Section G.6.3

10	10	Flower: ratio flower length/standard width	Field grown plot	60 plants per variety 1 flower per plant	MS	1 low 3 medium 5 high	COYD @ 1% See Section G.5.2	COYUs @ 0.3%  See Section G.6.3
<b>UK No.</b>	<b>UPOV TG/8/7</b>	<b>Character</b>	<b>Material examined</b>	<b>Number of plants or sample size for assessment</b>	<b>Method of assessment and recording</b>	<b>States of expression</b>	<b>D Method and Minimum Distance required</b>	<b>U Method</b>
11	11*	Leaflet: length (basal pair of leaflets at second flowering node)	Field grown plot	60 plants per variety 1 flower per plant	MS – Image Analysis	1 very short 3 short 5 medium 7 strong 9 very strong	COYD @ 1%  See Section G.5.2	COYUs @ 0.3%  See Section G.6.3
12	12*	Leaflet: width	Field grown plot	60 plants per variety 1 flower per plant	MS – Image Analysis	1 very narrow 3 narrow 5 medium 7 broad 9 very broad	COYD @ 1%  See Section G.5.2	COYUs @ 0.3%  See Section G.6.3
13	13	Stem: anthocyanin colouration (Only varieties with melanin spot)	Field grown plot	60 plants per variety	VG	1 absent or weak 3 medium 5 strong	2 states	Visual assessment
14	14* G	Plant: growth type	Field grown plot	60 plants per variety	VG	1 determinate 2 indeterminate	1 state	Visual assessment

UK No.	UPOV TG/8/7	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
15	15*	Plant: length	Field grown plot	60 plants per variety	MS	1 very short 3 short 5 medium 7 tall 9 very long	COYD @ 1%  See Section G.5.2	COYUs @ 0.3%  See Section G.6.3
16	16	Stem: number of nodes (up to and including first flowering node)	Field grown plot	60 plants per variety	MS	1 very few 3 few 5 medium 7 many 9 very many	COYD @ 1%  See Section G.5.2	COYUs @ 0.3%  See Section G.6.3
17	17*	Pod: length (without beak)	Harvested pods	60 plants per variety 1 flower per plant	MS – Image Analysis	1 = very short 3 = short  5 = medium  7 = long  9 = very long	COYD @ 1%  See Section G.5.2	COYUs @ 0.3%  See Section G.6.3
18	18	Pod: width (from suture to suture)	Harvested pods	60 plants per variety 1 flower per plant	MS – Image Analysis	1 very narrow 3 narrow 5 medium 7 broad 9 very broad	COYD @ 1%  See Section G.5.2	COYUs @ 0.3%  See Section G.6.3

UK No.	UPOV TG/8/7	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
19	19	Pod: intensity of green colour	Field grown plot	160 plants per variety	VG	1 light 2 medium 3 dark	2 states	Visual assessment
20	20*	Seed: shape	Harvested seed	60 plants 1 pod per plant 1 seed per pod	VS	1 circular 2 non-circular	1 state	Visual assessment
21	21*	Seed: colour of testa (immediately after harvest)	Harvested seed	60 plants 1 pod per plant 1 seed per pod	VS	1 light yellow brown 2 grey 3 green 4 black	1 state	Visual assessment
22	22* G	Seed: black pigmentation of hilum (see 5.3 below)	Harvested seed	60 plants 1 pod per plant 1 seed per pod	VS	1 absent 2 present	1 state	Visual assessment
23	23*	100 seed weight	Harvested seed	60 plants 1 pod per plant 1 seed per pod	MG	1 very low 3 low 5 medium 7 high 9 very high	COYD @ 1%  See Section G.5.2	COYUs @ 0.3%  See Section G.6.3

### D.5.3 Seed: black pigmentation of hilum

Certain varieties which show segregation for this character are admissible provided the breeders are able to ensure stability in the proportion of seeds with black hilum colour present and absent. However, in this “mixed” state the characteristic cannot be used to establish distinctness. For varieties that show this segregation the character should be described by the state “present” and the proportions of the two states of expression should be included in the variety description.

### D.5.4 Approved Additional Characters

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. A fee may be charged for the examination of these characteristics as advised by APHA.

Code	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
N/A	Content of vicine/convicine*	Seed (Dry matter)	100 g of seed	MG	1 low 9 high	1 state	N/A

\*Content of vicine/convicine is measured as a concentration percentage by weight of dry matter. A combined total content measured equal to or less than 0.15% is considered low. When used to establish distinctness, comparisons will be subject to technical expert opinion.

### D.5.5 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**

## **E.1 Purpose**

E.1.1 This section sets out the procedures for reference seed stock maintenance and VCU seed stock authentication (if applicable).

## **E.2 Scope**

E.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.

## **E.3 Responsibilities**

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

## **E.4 Procedures for Reference Seed Stock Maintenance**

E.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 certification 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.

E.4.2 If, during the normal tests, there is evidence that seed is deteriorating in storage or that stocks weigh less than 1.2 kg, a request should be made to the maintainer asking for a replacement stock (4 kg) of the variety. This replacement stock must be authenticated, by comparing plots established from the replacement seed with that of the definitive seed, over a maximum of two test cycles.

E.4.3 Plots will be established from any replacement reference seed sample to be authenticated and compared visually with the definitive seed. 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 and used in subsequent years.

E.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 this sample does not meet the standards, APHA will be informed, and the variety will be deleted from the reference collection, and the Variety Lists will be reviewed.

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

E.5.1 Side-by-side plots will be established from any VCU seed sample to be authenticated and compared visually with the definitive DUS seed over the recording season.

E.5.2 The plots must be examined from establishment, through flowering to maturity.

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

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

## **E.6 Release of Reference Samples for Authorised Purposes**

E.6.1 A maximum of 400 g 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. 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.

E.6.2 Provision of reference samples, other than in 6.1, to any other parties must be authorised by APHA.

# Section F – Procedures for Assessment of New Additional DUS Characters

## F.1 Purpose

F.1.1 This section sets out the procedures for assessment of new additional DUS characters for varieties of field beans entered for Variety Listing and/or PBR trials.

## F.2 Scope

F.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.

## F.3 Responsibilities

F.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.

F.3.2 All new additional characteristics must be authorised by the NLSC in consultation with the PVSC.

## F.4 Reference Varieties

F.4.1 The reference varieties must include varieties from which the candidate variety is not distinct, as well as other varieties for control purposes.

F.4.2 Seed of reference varieties will be supplied by the Test Centre.

## F.5 Procedures

F.5.1 Details of the proposed special test or assessments will be submitted to the NLSC.

F.5.2 The NLSC may commission a test or trial to further investigate a proposal. The applicant will be advised by APHA of arrangements and costs.

F.5.3 Where the test for a character is approved by the NLSC it should be subsequently listed in Section D.5.1, D.5.2 or D.5.3 as appropriate.

# Section G – Procedures for DUS Decisions

## G.1 Purpose

G.1.1 This section sets out the standards used to assess distinctness, uniformity and stability of varieties of Barley.

## G.2 Scope

G.2.1 These procedures apply to all varieties of field beans (*Vicia faba* L.) entered for Variety Listing and/or Plant Breeders' Rights tests and those being tested on behalf of Foreign Authorities.

## G.3 Responsibilities

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

G.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.

## G.4 Reference Varieties

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

## G.5 Distinctness

G.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. Wing: melanin spot; Plant: growth type; and Seed: black pigmentation of hilum.

G.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 analysis of variance.

G.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 analysis of variance.

G.5.4 Where varieties are grown in close proximity, under the same conditions, and direct comparisons can be made, distinctness can be determined on the basis of visual

observation. In these circumstances the basis for distinctness will be recorded clearly. 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.

## G.6 Uniformity

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

### G.6.2 Uniformity is based on the assessment of off-types for visually observed characters

G.6.1 Off-type (variant) plants in the field sown plots are identified by visual assessment 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 and disease.

G.6.2.2 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.

#### G.6.2.3 Off-type standards for visually assessed characters

- Population standard = 2%
- Acceptance probability = 95%
- For example: 6 off-types in a population of 160

G.6.2.4 After all the variants have been excluded, the characteristics listed in Section D.5 are used to assess the uniformity of the remaining plants.

### G.6.3 Uniformity based on the assessment of general variation where measurements are recorded

G.6.3.1 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 0.3% ( $P=0.003$ ) significance level.

G.6.4 To be considered uniform, a variety must meet the standards in G.6.2 and G.6.3.

## G.7 Stability

G.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.

## G.8 DUS Report and Variety Description

G.8.1 Upon completion of the DUS examination the DUS Summary report will be submitted to APHA and will be discussed at the relevant DUS Test Centre Meeting. This report will specify all non-routine characteristics for establishing distinctness.

G.8.2 If the final DUS report is positive the full variety description for positive reports, will be submitted to APHA. The characteristics to be used in the description are identified in Section D.

G.8.3 For synthetic (composite varieties) as stated on the TQ i.e., varieties that are an amalgamation of closely similar lines then this will be noted in the “Remarks” on the variety description e.g. “This is a synthetic (composite) variety as stated on the Technical Questionnaire”. In addition, the following statement may be added if appropriate: “Therefore, this variety may show some variation in flower colour”.

# Appendix 1 – Reference Collection Varieties

## AX1 Variety Listing and Plant Breeders Rights

AX1.1 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:

AX1.1.1 All other candidate varieties already in DUS test in the UK or entering testing at the same time as the candidate.

AX1.1.2 All varieties with UK PBR.

AX1.1.3 All varieties on the OECD variety list that are listed by countries with comparable climatic conditions to the UK.

AX1.1.4 All varieties protected under National PBR (UPOV contracting parties) with comparable climatic conditions to the UK

AX1.1.5 Any varieties nominated by the applicant as being comparable i.e., known to be similar.

AX1.1.6 Any other varieties considered to be comparable i.e., known to be similar by the appropriate Test Centre or DUS Centre Group.

AX1.1.7 Other available comparable varieties in common knowledge.



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