

UNITED KINGDOM NATIONAL LIST TRIALS

PROTOCOL FOR OFFICIAL EXAMINATION OF VALUE FOR CULTIVATION AND USE (VCU)

POTATO

	Page
1. INTRODUCTION	1
2. PURPOSE	1
3. SCOPE	1
4. RESPONSIBILITIES	1
5. COMPLIANCE WITH THE PROTOCOL	2
6. VCU DECISIONS	2
7. PROCEDURES FOR GENETICALLY MODIFIED (GM) VARIETIES	3
8. AUTHENTICATION OF SEED STOCKS	3
9. SUMMARY OF VCU TESTS AND ASSESSMENTS	3
10. ASSESSMENT OF ADDITIONAL VCU CHARACTERS	5
11. CONTROL VARIETIES	5
12. ADDITIONAL NON CANDIDATE VARIETIES	6
13. GROWING TRIALS	6
14. PATHOLOGY AND DAMAGE TESTS	6
15. RECORDS	6
APPENDIX 1	7
STRUCTURE AND RESPONSIBILITIES OF GROUPS AND COMMITTEES	7
APPENDIX 2	8
ROLES OF ORGANISERS AND OPERATORS	8
APPENDIX 3	9
ADDITIONAL APPROVED VCU CHARACTERS	9

1. INTRODUCTION

1.1 An agricultural plant variety is accepted by the National Authorities onto a National List in accordance with the provisions of the Seeds (National List of Varieties) Regulations 2001 (S.I. 2001 No. 3510).

1.2 It is a condition of acceptance, (Regulation 5(3)(c) of the Regulations), that a variety must be of satisfactory value for cultivation and use.

1.3 Value for cultivation and use is assessed by tests and growing trials, in accordance with this protocol.

2. PURPOSE

2.1 The requirements for conducting a growing trial, tests and assessments in relation to official examinations of VCU of varieties entered for National List Trials are set out in this Protocol and the following associated documents.

- 1. VCU Trial Procedures (Potato).**
- 2. VCU Trial Design and Data Handling Procedures.**
- 3. VCU Trial Inspection and Technical Validation Procedures.**
- 4. VCU Data Review, Standard Setting and Decision Making Protocol.**

3. SCOPE

3.1 This protocol applies to all varieties of potato entered for UK National List trials. Special procedures and responsibilities for Genetically Modified (GM) varieties are set out in Section 7.

4. RESPONSIBILITIES

4.1 The growing trial, 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 Minister of Agriculture, Environment and Rural Affairs in Northern Ireland (DAERA) (the National Authorities).

4.2 They are supervised by officials of the National Authorities i.e. the Animal and Plant Health Agency (APHA), the Science and Advice for Scottish Agriculture (SASA), the Department of Agriculture, Environment and Rural Affairs (DAERA) and the Welsh Government (WG).

4.3 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

4.4 This protocol is administered by:

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

Tel. No: 02080 265993
Fax. No: 02084 152504
Email: pvs.helpdesk@apha.gsi.gov.uk

4.5 Committees and Technical Groups

The structure and responsibilities of relevant committees and technical groups are detailed in Appendix 1.

4.6 Organisers and Operators

All organisers and operators involved in the procedures referred to in paragraph 2.1 must be approved by the National Authorities and have access to suitable facilities and expertise. A list of approved organisers and operators is published annually.

The roles of organisers and operators are detailed in Appendix 2.

5. COMPLIANCE WITH THE PROTOCOL

5.1 If non-compliance occurs or there are concerns regarding the validity of any data, tests or trials, this must be reported to APHA.

6. VCU DECISIONS

6.1 The **VCU Data Review, Standard Setting and Decision Making Protocol** must be followed for making VCU decisions. This ensures a consistent and objective approach is taken when assessing whether a candidate variety is an overall improvement in its value for cultivation and use.

6.2 The National List and Seeds Committee makes proposals for VCU decisions as indicated in Appendix 1.

7. PROCEDURES FOR GENETICALLY MODIFIED (GM) VARIETIES

7.1 No VCU growing trial or other tests of GM candidates can be undertaken until a Release Consent permitting release into the environment is given by the relevant authorities. Applicants intending to enter GM candidates must consult both APHA and the GM Regulatory Authorities, well in advance of their National List application.

7.2 APHA is responsible for liaison with the applicant and Trials Organiser to produce any additional procedures for the conduct of any test or trial for GM varieties of potato should any be entered for National List trials.

7.3 The National List and Seeds Committee must approve the additional procedures and any future proposed amendments.

7.4 GM Release Consent Holders are responsible for GM releases. All parties involved in VCU 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. If non-compliance with the consent conditions occurs, this must be reported to the consent holder and Trials Organiser who must notify APHA immediately.

8. AUTHENTICATION OF SEED STOCKS

8.1 A VCU seed sample from all year 1 and year 2 candidate varieties should be authenticated by the DUS Test Centre according to procedures approved by the National List and Seeds Committee.

9. SUMMARY OF VCU TESTS AND ASSESSMENTS

9.1 The following table summarises the mandatory VCU Growing Trial, and Disease, Pest and Damage tests to be carried out. A list of approved, additional characters, for which testing may be requested by the applicant, is detailed in Appendix 3.

TESTS AND ASSESSMENTS TO BE MADE IN VCU TRIALS

Potato

Assessment	Character	Description
1. Yield	Tuber yield	Plot produce sized > and < 35mm and weighed
2. Quality	Cooking quality (off-flavour and discolouration)	Off-flavours and discolouration of steamed samples
	Susceptibility to damage (external and internal)	Incidence and severity of damage tested by applying specific force to tubers
3. Resistance to harmful organisms	Resistance to infection by; Foliage late blight Tuber late blight Blackleg Common scab Powdery scab Dry rot (<i>Fusarium coeruleum</i>) Dry rot (<i>F. sulphureum</i>) PVY ^o PVY ⁿ PVA Leafroll <i>Globodera rostochiensis</i> Ro 1 <i>G. pallida</i> Pa1 & 2/3	Presence and severity of diseases or pests in inoculated or controlled exposure tests. Produce of growing trial assessed for rots, common scab (>25%), slug, wireworm and cutworm damage;
4. Reaction to environment	External and internal faults	Produce of growing trial plot assessed for physiological and physical faults e.g. misshapes growth cracks, hollow heart, internal blemishes and mechanical damage

9.2 The **VCU Trial Procedures** for Potato must be used for the assessment of VCU characters.

9.3 The Procedures Development Group will review the **VCU Trial Procedures** at least annually.

9.4 Amendments to approved procedures for the measurement of characters, or the design and operation of trials and data handling may be made by the Procedures Development Group only if they are based on sound scientific knowledge, which can be validated. The data produced by revised methods must be reliable and consistent and any changes must maintain the overall integrity of VCU decision-making. Changes that are likely to have an effect on variety ranking must be agreed by the National List and Seeds Committee.

9.5 Trial and test data must be monitored to ensure that results provide a sound basis for estimating variety performance. Only data which are sufficiently reliable may be used to produce mean variety performance results, for NL decision-making. Data monitoring must follow the associated **VCU Data Review, Standard Setting and Decision Making Protocol**.

10. ASSESSMENT OF ADDITIONAL VCU CHARACTERS

10.1 The applicant may request the assessment of additional characters at the time of application. A list of approved additional characters recognised by the National Authorities is in Appendix 3. The assessment of these approved characters must follow this protocol and the associated **VCU Trial Procedures**.

10.2 An additional test for characters **not** specified in this protocol may be requested by the applicant. APHA is responsible for liaison with the applicant and Trials Organiser to produce a procedure for the conduct of a special test or trial.

10.3 The special test or trial must be approved by the National List and Seeds Committee.

10.4 The approved special test or trial procedure should be considered as additional to the standard requirements of the protocol. Once agreed by the National List and Seeds Committee, and approved by the PVSC, the character should be added to Appendix 3 and the assessment method should be added to the **VCU Trial Procedures**.

10.5 The applicant will be advised by APHA of arrangements.

11. CONTROL VARIETIES

11.1 Control varieties must be included in all trials and tests and should normally be on the UK National List or the Common Catalogue. However, in the case of disease tests, these may be any varieties of common knowledge with a proven reaction to a particular disease. The varieties to be used are recommended annually, by the Procedures Development Group, for VCU growing trial and for disease, pest and damage trials. A list of controls is appended to the **VCU Trial Procedures**.

11.2 The Trials Organiser is responsible for organising the supply of seed of control varieties for all tests and trials.

12. ADDITIONAL NON CANDIDATE VARIETIES

12.1 In the first instance, only NL candidates and control varieties are authorised for inclusion in the VCU growing trial. However, other **non-GM** varieties, which are already on or have been on the UK National List or Common Catalogue, may be included, with the agreement of APHA.

12.2 Varieties, which have completed the normal VCU assessment period, but for which a National List decision has not been made, and other varieties may be considered for inclusion only with the specific permission of the National List and Seeds Committee.

13. GROWING TRIALS

13.1 Trials are normally sown in at least two consecutive years.

13.2 Trials should be conducted following agricultural best practice and the associated **VCU Trial Procedures**.

14. PATHOLOGY AND DAMAGE TESTS

14.1 Tests are normally conducted over 2 years except for PCN which may be concluded after 1 year.

14.2 A scientifically recognised trial design must be used, which maximises precision, minimises bias, and, if appropriate, takes account of varietal maturity. The Trial Design and Data Handling Operator is responsible for ensuring that data are provided in accordance with the associated **VCU Trial Design and Data Handling Procedures**.

15. RECORDS

15.1 Records of field assessments and tests should be in a format agreed by the Trial Design and Data Handling Operator. The format must be sufficiently consistent over sites and operators to enable effective comparisons between candidates and trials to be made. Any other factors which may have an effect on the performance of candidate varieties should be recorded.

15.2 All records must be completed following the associated **VCU Trial Procedures**.

STRUCTURE AND RESPONSIBILITIES OF GROUPS AND COMMITTEES

Groups/ committees	ROLE	Membership
PVSC	Policy on NL and seeds, Variety representations, Protocol approval, Licensing and contract award for NL	Representatives from: Defra, SGARD, DAERA, WG
NLSC (National List and Seeds Committee)	Technical direction and co-ordination on VCU, DUS and seeds systems, Variety proposed decisions, Protocol development and recommendation to PVSC, Technical advice to PVSC.	Representatives of: Defra, SGARD, DAERA, WG
IDSG (Inter- Departmental Statisticians Group)	Statistical advice on VCU, DUS and seeds systems and specific cases	BioSS, AFBI, NIAB
PDG Procedures Development Group	Variety testing systems advice; VCU procedures development	Representatives from ¹ : AFBI, APHA, SASA, BSPB, AHDB Potatoes, plus specialists attending as required.

NOTES

¹. Representation according to interest in crop group

ROLES OF ORGANISERS AND OPERATORS

	RESPONSIBILITIES
Trials Organiser	<p>In accordance with the arrangement between the Trials Organiser and the National Authorities;</p> <p>(a) Manage day to day activities to ensure that all requirements are met in respect of seed distribution, conduct of tests and trials, and submission of data.</p> <p>(b) Receive and prepare seed for sowing in VCU growing trial, and for possible authentication against DUS seed, in accordance with the VCU Trial Procedures and instructions issued by the Trials Organiser.</p> <p>(c) Despatch seed to Pathology Trial Operators</p>
Growing Trial Operator	Conduct NL VCU growing trial and damage tests in accordance with VCU Trial Procedures and instructions issued by Trials Organiser.
Pathology Trial Operators	Conduct NL disease and pest resistance tests in accordance with VCU Trial Procedures.
Seed Handling Operator	Receive and prepare seed potatoes for sowing in VCU growing trials and for possible authentication against DUS seed, in accordance with the VCU Trial Procedures and instructions issued by the Trials Organiser
Quality Testing Operator	Conduct NL quality tests in accordance with VCU Trial Procedures
Trial Design and Data Handling Operator	Receive and validate data from Growing Trial and Pathology Operators, in accordance with the Trial Design and Data Handling Procedures and instructions issued by the Trials Organiser.
Data Review and Standard Setting Operator	Review and quality assure VCU trials data and make recommendations regarding the inclusion or exclusion of specific data. Calculate standards for VCU recommendations.

ADDITIONAL APPROVED VCU CHARACTERS

The following tables list the additional VCU characters that are recognised by the UK Testing Authorities

1. Behaviour with respect to factors in the physical environment.

Character	Description of measure
None approved	

2. Quality characters (determined by sample analysis)

Characteristic	Description of measure
Crisp colour	Suitability for crisping production
Fry colour and uniformity	Suitability for French fry and chip production
Dry matter	Estimated by recording specific gravity
Tuber shape and skin texture	Measured during DUS trialling
Tuber shape uniformity, tuber size and uniformity	Assessed on produce of growing trials

3. Disease resistance characters

Characteristic	Description of measure
Skin spot	Disease susceptibility assessed by specific test
Silver scurf	Disease susceptibility assessed by specific test
Black dot	Disease susceptibility assessed by specific test
Mop top (spraing)	Disease susceptibility assessed by specific test

Trials for these assessments are normally sown in at least two consecutive years

Measurement of any of the above characters must follow the associated **VCU Trial Procedures**.