UNITED KINGDOM NATIONAL LIST TRIALS

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

WHITE CLOVER

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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 growing trials, 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 procedure documents.

1. **VCU Trials Procedures (White Clover)**
2. **VCU Trials Design and Data Handling Procedures**
3. **VCU Data Review, Standard Setting and Decision Making Procedures .**

3. SCOPE

3.1 This protocol applies to all varieties of white clover 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 trials, 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 (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 Procedures** must be followed for making VCU decisions. These ensure 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 trials 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 Trial Organiser to produce any additional procedures for the conduct of any test or trial for GM varieties of white clover, 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 Year 1 VCU and DUS submissions are taken from the single submitted seed sample. Year 2 VCU and any further VCU seed submissions are authenticated by the DUS test Centre according to the 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 Field and Disease tests to be carried out.

ASSESSMENTS TO BE MADE IN GROWING TRIALS

White Clover

Assessment	Character	Description
1. Yield	Total dry matter yield	Plot produce weighed and corrected to dry weight. Total yield calculated for all cuts: • Clover fraction in the second and third harvest years. • Grass plus clover in the second and third harvest years
	Seasonal dry matter yield.	Plot produce weighed and corrected to dry weight: • Clover fraction in Spring, early summer, late summer and autumn in the second and third harvest years
2. Resistance to disease	Resistance to infection by: Sclerotinia Pepper Spot Pseudopeziza Black Blotch Downy Mildew Rust (uromyces) Slugs Sitona	Presence and severity of disease infection recorded in the field.
3. Reaction to environment	Ground cover	Ground cover as % in spring and autumn of the three harvest years (Persistence Management). Ground cover as % in the autumn of the three harvest years (Yield Management).
	Resistance to winter damage	Winter damage in the spring or after a period of adverse weather.

9.2 The **VCU Trial Procedures** for White Clover 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 All growing trials and tests detailed in this protocol and associated documents must be independently inspected. The inspection must assess both whether the trial is compliant with the protocol and associated documents and whether the trial is fit for the purpose. Reports must be produced and disseminated in accordance with the **Data Review, Standard Setting and Decision Making Procedures**.

9.6 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 **Data Review, Standard Setting and Decision Making Procedures**.

10. ASSESSMENT OF ADDITIONAL VCU CHARACTERS

10.1 The applicant may request the assessment of additional characters at the time of application. The assessment of these approved characters must follow this protocol and the associated **VCU 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 Trial 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 Trials 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. The varieties to be used are recommended annually, by the Procedures Development Group for VCU field 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 trials. However, other **non-GM** varieties, which are already 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 Trials Procedures**.

13.3 A scientifically recognised trial design must be used, which maximises precision, minimises bias, and reflects the number of and types of varieties being tested. The Data Handling organisation is responsible for specifying the design and randomisation for each trial in accordance with the associated **Trials Design and Data Handling Procedures**.

14. RECORDS

14.1 Records of field assessments and tests should be in a format agreed by the 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.

14.2 All records must be completed following the associated **VCU Trials Procedures**.

APPENDIX 1

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	Technical direction and co-ordination on VCU, DUS and seeds systems, Routine variety decisions, Protocol development and recommendation to PVSC, Technical advice to PVSC.	Representatives of: Defra, SGARD, DAERA, WG
IDSG	Statistical advice on VCU, DUS and seeds systems and specific cases	BioSS, AFBI, NIAB
Procedures Development Group	Variety testing systems advice; VCU procedure development	Representatives from[1]: AFBI, APHA, SASA, Trial inspectors, BSPB plus specialists attending as required

NOTES

[1] Representation according to interest in the white clover species

APPENDIX 2

ROLES OF ORGANISERS AND OPERATORS

	RESPONSIBILITIES
Trial Organisers	In accordance with the arrangement between the Trial Organiser and the National Authorities; (a) Find potential Growing Trial Operators and Handlers for each trial series. (b) 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.
Growing Trial Operators	Conduct NL VCU growing trials in accordance with VCU Trial Procedures and instructions issued by Trial Organisers.
Seed Handling Operator	Receive and prepare seed for sowing in VCU growing trials, and for possible authentication against DUS seed, in accordance with the VCU Trials Procedures and instructions issued by the Trials Organiser.
Trial Design and Data Handling Operator	Produce trial plans, receive and validate data from Growing Trial, Quality Testing and Pathology Operators, in accordance with the Trials 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.
Trials Inspection Operators	Inspect and report on VCU growing trials to assess compliance and fitness for purpose, in accordance with the arrangement between the Trial Inspection Operator and the National Authorities.

APPENDIX 3

ADDITIONAL APPROVED VCU CHARACTERS

There are no additional VCU characters recognised by the National Authorities at the present time.