



RECOMMENDED LISTS

Version: June 2020

Recommended Lists Crop Committee Handbook

CONTENTS

| | | |
|----------|---|-----------|
| 1 | Introduction | 6 |
| 2 | Recommended List Board and Committees | 7 |
| | 2.1 RL Project Board | 7 |
| | 2.2 Crop Committees | 8 |
| | 2.3 Expenses | 10 |
| 3 | Confidentiality, conflicts of interest and voting | 12 |
| | 3.1 Confidentiality | 12 |
| | 3.2 Conflicts of interest | 12 |
| | 3.3 RL Committee Register of Interests – Form to be completed | 16 |
| | 3.4 Voting | 17 |
| 4 | Crop Committee meetings | 18 |
| | 4.1 Meeting calendar | 18 |
| | 4.2 Planning meetings | 19 |
| | 4.3 Data for Decision meetings | 19 |
| | 4.4 Data validation | 20 |
| | 4.5 Sowing of varieties in RL trials - overview | 21 |
| | 4.6 Candidate Selection Meeting - Criteria for RL candidate selection. | 29 |
| | 4.7 Recommended List Meeting – Criteria for recommendation | 32 |
| | 4.8 Review of Varieties | 40 |
| | 4.9 Descriptive Lists | 42 |
| | 4.10 Deferrals | 46 |
| | 4.11 Remote approvals | 47 |
| 5 | Breeders’ presentations to Crop Committees | 48 |
| | 5.1 Summer planning meetings (May/June) | 48 |
| | 5.2 Decision meetings: Candidate selection meetings (August/September) and Recommended Lists meetings (November) | 48 |
| | 5.3 Withdrawal of a candidate variety from consideration for listing | 49 |
| 6 | Right of appeal | 50 |

| | | |
|------|--|----|
| 6.1 | Appeals procedure for RL decisions and selection of varieties to be sown in trials | 50 |
| 6.2 | Procedures to guide the appeals meetings | 50 |
| 7 | Appendix 1: Procedures used by nabim for classifying new wheat varieties . | 53 |
| 7.1 | The system | 53 |
| 7.2 | History..... | 55 |
| 7.3 | Conflicts of interest and anti-competitive behaviour..... | 55 |
| 7.4 | The procedures | 56 |
| 7.5 | Appeals | 60 |
| 7.6 | Reporting of decisions..... | 61 |
| 8 | Appendix 2: MBC approvals systems for barley varieties | 62 |
| 8.1 | The system | 62 |
| 8.2 | Evaluation of varieties | 62 |
| 8.3 | The procedures | 63 |
| 8.4 | Appeals | 66 |
| 8.5 | Reporting of decisions..... | 67 |
| 9 | Appendix 3: AHDB Exports procedures: ukp and uks classifications..... | 68 |
| 9.1 | Introduction | 68 |
| 9.2 | Membership of the Exports Branding Selection Panel..... | 68 |
| 9.3 | Conflicts of Interest..... | 69 |
| 9.4 | Selection of Trial Sites and samples..... | 69 |
| 9.5 | Selection criteria | 70 |
| 9.6 | Testing and selection of laboratories | 72 |
| 9.7 | Validation of data | 72 |
| 9.8 | Provisional ratings and Historic List | 72 |
| 9.9 | Reporting of decisions..... | 73 |
| 9.10 | Appeals procedure for branding decisions | 73 |
| 10 | Appendix 4: BSPB – British Society of Plant Breeders..... | 75 |
| 11 | Appendix 5: Trials inspection and validation procedures | 76 |

| | | |
|------|---|----|
| 11.1 | Procedures for trial inspections | 76 |
| 11.2 | Criteria for trials inspection | 76 |
| 11.3 | Trials Inspection Report | 78 |
| 12 | Appendix 6: Procedures for monitoring trials data | 79 |
| 12.1 | Within-trials monitoring..... | 79 |
| 12.2 | Over-trials monitoring (standardised residuals) | 82 |
| 12.3 | Diagnostics and trial validation | 83 |
| 12.4 | General issues | 84 |
| 13 | Appendix 7: 2019 Specific criteria for the sowing of oilseed rape | 85 |
| 13.1 | Market segments | 85 |
| 13.2 | End-use quality requirements for each segment..... | 85 |
| 13.3 | Minimum standards and target specifications | 85 |
| 14 | Appendix 8: 2019 Yield targets, comparators, characteristics of importance and other defined requirements for oilseed rape – UK and regional (East/West region and North Region)..... | 89 |
| 15 | Appendix 9: 2019 Specific criteria for the sowing of barley | 91 |
| 15.1 | UK crop segmentation..... | 91 |
| 15.2 | End-use quality requirements for each segment..... | 91 |
| 15.3 | UK minimum standards and target specifications | 92 |
| 16 | Appendix 10: 2019 Yield targets, comparators, characteristics of importance and other defined requirements for winter barley | 95 |
| 17 | Appendix 11: 2019 Yield targets, comparators, characteristics of importance and other defined requirements for spring barley..... | 96 |
| 18 | Appendix 12: 2019 Specific criteria for the sowing of oats..... | 97 |
| 18.1 | UK market segments | 97 |
| 18.2 | End-use quality requirements for each Segment | 97 |
| 18.3 | UK Minimum Standards and target specifications | 97 |
| 19 | Appendix 13: 2019 Yield targets, comparators, characteristics of importance and other defined requirements for winter oats | 99 |

| | | |
|-----------|--|------------|
| 20 | Appendix 14: 2019 Yield targets, comparators, characteristics of importance and other defined requirements for spring oats | 100 |
| 21 | Appendix 15: 2019 Specific criteria for the sowing of wheat..... | 101 |
| | 21.1 UK market segments | 101 |
| | 21.2 End-use quality requirements..... | 101 |
| | 21.3 UK Minimum Standards and target specifications | 101 |
| 22 | Appendix 16: 2019 Yield targets, comparators characteristics of importance and other defined requirements for winter wheat | 105 |
| 23 | Appendix 17: 2019 Yield targets, comparators, characteristics of importance and other defined requirements for spring sown spring wheat | 107 |
| 24 | Appendix 18: Dates of meetings 2020 | 108 |

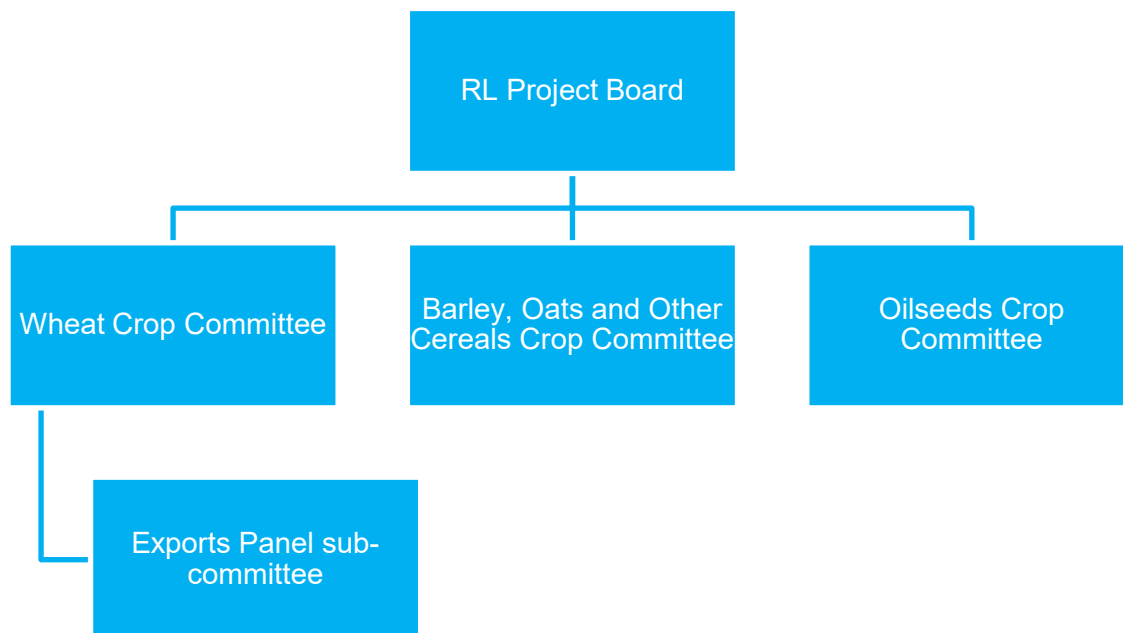
1 Introduction

AHDB Recommended Lists for cereals and oilseeds 2016–2021 is an AHDB Cereals & Oilseeds project. It is managed by a consortium comprising the Agriculture and Horticulture Development Board (AHDB), British Society of Plant Breeders (BSPB), Maltsters' Association of Great Britain (MAGB) and National Association of British and Irish Millers (nabim). A collaboration agreement for the development and publication of the AHDB Recommended Lists is in place between these parties.

The aim of this handbook is to provide practical guidance to the Crop Committees on how the collaboration agreement will be put into practice. If there are contradictions between this handbook and the collaboration agreement, the collaboration agreement will be the definitive source of information.

The AHDB Recommended Lists (RL) has a reputation as an independent and trusted source of information on varieties. It is expected that collaborators, contractors and committee members will uphold this reputation. Detailed procedures are described in this handbook which will be updated as the procedures evolve but common sense should be applied.

2 Recommended List Board and Committees



2.1 RL Project Board

The RL Project Board ensures the proper management of the AHDB Recommended Lists project. It:

- Is responsible for the development, management and dissemination of the AHDB Recommended Lists for cereals and oilseeds
- Receives and considers any conflicts of interest expressed by the chairperson, members or observers
- Sets the detailed budget for the RL project within limits set by parties in relation to their own contributions
- Establishes and appoints the Crop Committees
- Establishes and publishes Recommended List protocols
- Establishes and publishes criteria and procedures that Crop Committees follow to select each variety (Candidate variety) for inclusion into RL trials
- Establishes and publishes criteria and procedures that Crop Committees follow to enter a Candidate variety or a previously entered variety onto the Recommended List
- Establishes and publishes criteria and procedures for appeals against decisions of Crop Committees
- Hears any appeal made against a decision of a Crop Committee

The RL Project Board comprises:

- A Chair: appointed and reappointed annually by AHDB and BSBP
- Three individuals nominated by AHDB

- Three individuals nominated by BSPB
- One individual nominated by MAGB
- One individual nominated by nabim
- One individual nominated by the Agricultural Industries Confederation (AIC)
- The three Crop Committee Chairs

The quorum for a meeting of the RL Project Board is not less than seven members, provided that these include a member nominated for membership by AHDB and BSBP. In the case of hearing an appeal, the quorum is not less than four members and there is no requirement for the presence of a member nominated by BSPB.

2.2 Crop Committees

There are currently three Crop Committees:

- Wheat Crop Committee
- Barley, Oats and Other Cereals Crop Committee
- Oilseeds Crop Committee

Crop Committees work with delegated responsibility from the RL Project Board. They:

- Follow the criteria for recommendation and the decision tree
- Propose definitions, guidelines and specific criteria for recommendation to the RL Project Board. These are done in advance of decision meetings
- Make proposals to the RL Project Board on which varieties should be selected for inclusion in RL trials and, subsequently, which should be recommended
- Make proposals to the RL Project Board on which varieties should no longer be re-sown in trials and, subsequently, should be removed.

2.2.1 Crop Committee membership

Each Crop Committee normally comprises no more than 11 voting people - a Chair and ten other members. No quorum has been set for Crop Committee meetings but the Chair should ensure that they are satisfied that representation is adequate for decisions to be made.

The RL Project Board appoints Crop Committee members, taking into consideration appropriate representation of technical and commercial interests. The Chair of a Crop Committee shall be entitled, but not bound, to nominate additional individuals to a Crop Committee to act as observers. An observer shall be entitled to attend, but not vote at meetings of a Crop Committee. Any observers shall declare any and all conflicts of interest to the Crop Committee and will normally withdraw from any part of any meeting considering a matter where conflicted. The Crop Committee Chair may ask an observer to contribute to the discussion, but the observer shall not contribute an opinion on any variety decision.

AHDB and BSPB each have the right to nominate two people to each Crop Committee. nabim has the right to nominate one person to the Wheat Crop Committee. MAGB has the right to nominate one person to the Barley, Oats and Other Cereals Crop Committee. The remaining members of the Crop Committees are usually recruited by advertisement.

The Chair of each Crop Committee is appointed for a term of up to three years. One person cannot serve more than two consecutive terms as Crop Committee Chair.

Crop Committee members can serve for two consecutive three-year terms, followed by a minimum two-year break before being eligible to sit on the same Crop Committee again.

A member of the RL Project Board may not be a member of a Crop Committee unless unanimously agreed by the Board, in which case, he/she will not participate in any appeal against a decision of a Crop Committee in which he/she has participated.

Members of the AHDB Cereals & Oilseeds RL Team may attend Crop Committee meetings to assist the Chair and members but they shall not contribute an opinion on any variety and shall not vote. They will advise the Chair regarding protocols, criteria and procedures and consistency of decision making but they shall not indicate or recommend any decision concerning a variety.

2.2.2 Substitutes

When a Crop Committee member knows that they will be absent from a meeting, they should inform a member of the RL Team as soon as possible, with suggestions (if any) for a substitute. The RL Team will inform the Chair of the relevant Crop Committee and the RL Project Board.

AHDB, BSPB, nabim or MAGB will propose substitutes for their nominees to the Crop Committees, when needed. For other positions, the Chair will decide whether to accept the proposed substitute or to appoint a different person. The RL Team will be asked to ensure that any substitute is invited to the meeting.

Substitutes should have some knowledge of the working of the Recommended Lists system, as well as the particular technical expertise. Where possible, they should have experience of Crop Committees (e.g. ex-members or members of other RL Crop Committees).

Each substitute must have read, understood, signed and returned a copy of the Confidentiality Agreement to the RL Coordinator before the start of the meeting and completed the relevant business and variety conflicts of interest declaration.

If the Chair of a Crop Committee knows that they cannot attend a meeting, they should contact a member of the RL Team. The RL Team will try to arrange for a Chair from another Committee or a member of the RL Project Board to act as Chair. It will be the decision of the Chair of the RL Project Board whether to accept the proposed substitute and, if so, to see that he/she is invited to chair the meeting.

If the Chair of a Crop Committee cannot attend a meeting at short notice, a member of the RL Team will chair the start of the meeting and Crop Committee members will be asked to make proposals from their number for a substitute. If necessary, a vote will be taken. The elected substitute will then take the chair for the rest of the meeting. The substitute shall be chosen from those who have no commercial interest in any of the varieties at the meeting.

2.3 Expenses

AHDB Cereals & Oilseeds will reimburse expenses reasonably incurred in the course of Crop Committee business. The AHDB travel rules and procedures relating to claims to AHDB will be used. These include the following.

Rail travel

Where it is possible and practicable to do so, members should book ahead to obtain the best value tickets and advantage should be taken of concessionary fare rates. When a meal is taken on a train, the cost may be reimbursed in full.

Air travel

Air travel may be used and reimbursed in full where this is justified on grounds of cost, time saving, etc. Where it is possible and practicable to do so, members should book ahead to obtain the best value tickets and advantage should be taken of concessionary fare rates and low cost airlines.

Taxis

Taxi fares may be claimed for journeys for which no other suitable means of public transport is available, or if there are special circumstances that justify the additional cost.

Private cars

Mileage allowance may be claimed for necessary business use of a private car at the HMRC standard rates. Necessary charges for parking, tolls, etc. may also be claimed. If a passenger allowance is claimed, you must have business use insurance cover.

Subsistence

Where a member is required to stay overnight away from home in the course of AHDB business, the actual expenses should be claimed. This relates to reasonable hotel and meals. Current rules do not allow costs for alcoholic drinks to be reclaimed.

Submission of claims

When submitting personal claims, members must complete and sign the standard AHDB expenses form and ensure that all vouchers, receipts, tickets, etc. are attached. If you wish to reclaim expenses through your company, you will need to contact the RL Coordinator to obtain a purchase order. You can then submit an invoice to AHDB, which should detail the date and committee attended and contain a breakdown of costs (e.g. mileage, train fares, taxis, hotels, etc.). All claims should be submitted to AHDB within 3 months.

3 Confidentiality, conflicts of interest and voting

3.1 Confidentiality

Crop Committees must ensure that any intellectual property provided as, or believed to be, Commercial in Confidence is managed appropriately.

The RL Project will acquire confidential information on the performance of varieties and issues surrounding specific trials. It may also acquire confidential business information from third parties. Some of this information may never be in the public domain and must be kept confidential; other information may eventually be published but must be kept confidential until publication.

Crop Committee members should not publish any information from any committee paper and should, instead, look at the AHDB Cereals & Oilseeds public website for the latest published Recommended List information.

Members of Crop Committees must sign the confidentiality undertaking and the Declaration of Business Interests before attending their first meeting.

3.2 Conflicts of interest

The Chair and each member of a Crop Committee and any observer shall declare all conflicts of interest to the Crop Committee and will normally withdraw from any part of any meeting considering a matter where conflicted. Where the Chair withdraws, the remaining members shall select one of their number to take the chair.

3.2.1 Propriety

1. RL Project Board members including the Chair and all members of Crop Committees ('members') will satisfy high standards of impartiality, integrity and objectivity:
 - They will take decisions and make choices objectively on merits, taking into proper account industry and public interests. They will not do so in order to gain financial or other material benefits for themselves or their family or friends.
 - They are accountable for their decisions and actions and will be as open as possible about these. They should give reasons for their decisions and restrict information only when this is demanded on grounds of confidentiality or the wider public interest.
 - They will not place themselves under any financial or other obligation to outside individuals or organisations that might influence them in the performance of their duties. They shall declare any private interests relating to their duties and take steps to resolve any conflicts.
- 1.1 All members will register in the RL Project Consortium's Register of Business Interests any private interest which might influence their judgement or which could reasonably be

perceived to do so. If members have any doubt about the relevance of an interest, this should be discussed with the Chair of the committee on which they serve.

1.2 A request for members' interests to be declared, and the receipt of any declaration of interest, shall be minuted in the relevant committee's minutes. The Chairs of the Board and Crop Committees shall periodically remind members of their responsibilities.

2. In particular, members should register:

- a. relevant personal direct and indirect pecuniary interests
- b. relevant direct and indirect pecuniary interests of close family members of which they could reasonably be expected to be aware
- c. relevant personal non-pecuniary interests, including those which arise from membership of clubs and other organisations

2.1 A "relevant" interest means any interest which might influence the judgement of a member or which could be perceived (by a reasonable member of the public) to influence his judgement in the exercise of his duties

2.2 An "indirect pecuniary interest" means an interest which arises from connection with bodies which have a direct pecuniary interest or from being a business partner of, or employed by, a person with such an interest, including if:

- he/she, or a nominee of his, is a director of a company or other body, not being a public body, which has a direct pecuniary interest in the matter under consideration or
- he/she is a partner of, or is in the employment of, a person who has a direct pecuniary interest in the matter under consideration.

2.3 A member shall not be treated as having a pecuniary interest in a matter by reason only

- of his/her membership of a company or other body, if he/she has no beneficial interest in any securities of that company or other body
- of an interest in any company, body or person which is so remote or insignificant that it cannot reasonably be regarded as likely to influence a member in the consideration or discussion of or in voting on, any question with respect to that matter.

2.4 The Register is intended to provide a balance between information which should be publicly available and the proper degree of privacy to which members and their families are entitled. They are not required to disclose the amount of any remuneration or benefit, nor that of any family members.

2.5 It is left to the discretion of the individual members to give the required information. Each member is responsible for what is recorded and each is answerable for the content.

3. The Register of Interests will be kept up to date and be open to public inspection and shall, after being updated annually in January, be provided to the Chairman of the related Crop Committee and the RL Project Board.
4. Before each Crop Committee and RL Project Board meeting, members will be required to complete a Declaration of Interest (varieties) form. From these declarations, a summary of the declared conflicts of interest (varieties) will be prepared, a copy of which will be available for every member attending the meeting. A copy of this will also be attached to the minutes of each meeting.
5. The Chair of each Crop Committee or the RL Project Board shall exclude a member from a Committee or Board meeting while any matter in which that member has a relevant pecuniary interest is under consideration.
 - 5.1 If any conflict of interest is established during the course of a committee meeting, the member concerned shall withdraw from the meeting and shall play no part in the relevant discussion or decision. This action shall be recorded in the minutes.
6. In the case of Partners, an interest of one Partner shall, if known to the other, be deemed to be also an interest of the other. "Partner" means the spouse/partner of a member whether living together or in a similar relationship, excluding any business partner outside that context.

3.2.2 Register of Interests

1. The Chair will ensure that a Register of Interests is established to formally record members' declarations of interests.
 - 1.1 The purpose of this Register is to provide information of any financial benefit or other material interest which might be thought to affect the conduct of a member and his close family. Close family includes Partner, parent, children, brother, sister, or the Partners of any of these.
 - 1.2 These details will be kept up to date by means of an annual review, in January each year, of the Register in which any changes to interests declared during the preceding twelve months would be incorporated.
 - 1.3 The Register will be available to the RL Project Board and the public.
2. Members will enter information on the appended RL Register of Interests form.
 - 2.1 Members are also required to register short-term interests, which are kept in the Register for one year.
 - 2.2 Members are required to have the general purpose in mind when deciding what interests to declare. To assist members in completing the register, categories of interest have been identified. The definitions of these categories of interest should be used as guidelines within which members should proceed with good sense and responsibility. Members may disclose interests beyond those set out.

3.2.3 Concerns regarding breaches of conflict

1. Any person present at a meeting having a concern about a conflict of interest of a member of that committee shall present that concern in writing or by email to the RL Project Board Chair, copied to the relevant committee Chair. The RL Project Board Chair shall promptly inform the person about whom the concern exists of that concern.
2. The RL Project Board shall consider the concern taking into consideration such evidence as it deems appropriate to obtain and shall determine the matter and its potential impact on re-sowing or recommendation decisions prior to any relevant variety appeals being heard.
3. The decisions of the RL Project Board on the complaint and on relevant Recommended List Decisions will be final.

3.3 RL Committee Register of Interests – Form to be completed

| RL Committee Register of Interests | | |
|---|---|--|
| Name | | |
| Personal interests | | |
| 1 | Consultancies and/or direct employment: Any consultancy, other employment, partnership, directorship or position or work for an industry or relevant body held by you or a close family member and which attracts regular or occasional payments in cash, recognition in any other form, or other benefit. | |
| 2 | Fee paid work: Any commissioned or fee-paid work for which you or a close family member are paid in cash or kind by an industry or other relevant body. | |
| 3 | Shareholdings: Any shareholding or other beneficial interest in industry shares that you or a close family member have (this does not include shareholdings through unit trusts or similar arrangements where you have no influence on financial management of the shares). | |
| 4 | Clubs or other organisations: Any membership role of affiliation that you or a close family member has to clubs or organisations with an interest or involvement in the work of AHDB. | |
| 5 | Other relevant personal interests: | |
| Non-personal interests | | |
| 6 | Fellowships: Any fellowship that you or a close family member holds which is endowed by an industry or other relevant body. | |
| 7 | Indirect support: Any payment of other form of support or sponsorship from industry or other relevant body that benefits an organisation in which you or a close family member has an interest (for example, a grant of sponsorship of an academic post). | |

| RL Committee Register of Interests | | |
|---|--|--|
| 8 | Trusteeships: Any investment in industry held by a charity for which you or a close family member is a Trustee. | |
| 9 | Other public appointments: Membership by you or a close family member of local authorities, health authorities and trusts, relevant voluntary sector bodies and other public sector bodies. | |
| 10 | Other non-personal interests: | |

3.4 Voting

A member of a Crop Committee shall be entitled to attend any meeting of that Crop Committee and, having received evidence of any matter, shall vote according to their best judgement and not as instructed by any party.

An observer shall be entitled to attend but not vote at meetings of a Crop Committee.

Each Crop Committee member, including the Chair, shall have one vote. In the event of a tie, the Crop Committee Chair shall have an additional vote. Members of the Crop Committee shall be entitled to abstain and shall do so where they have a conflict of interest. Although members may abstain, they are encouraged to weigh up the evidence following the discussion and vote.

All votes by the RL Project Board and Crop Committees on the selection or recommendation of varieties shall be by secret ballot of those attending the meeting and eligible to vote.

4 Crop Committee meetings

Each Crop Committee usually meets three times per year. Dates and venues are set at the start of each calendar year (see Appendix 18 for 2019 dates July to December).

Crop Committee meetings usually start at 09.00 and may not end until 17.00. Important decisions are made at Crop Committee meetings, so members should plan to be available for the whole of the meeting. If a member will be unable to arrive for the start of the meeting or would have to leave before the end, they should consider sending apologies so that a substitute can be found.

All decisions made by the Crop Committees are proposals which require agreement by the RL Project Board.

4.1 Meeting calendar

May/June: Planning meeting

- To set the criteria for use at the next two meetings, including deciding how the yield targets will be set, other defined requirements and what the initial comparator varieties in each segment will be
- To identify varieties to be reviewed at the next meeting (notice to breeders)
- To consider any proposals for new market segments or to receive information from breeders about new traits or other breeding developments that may need special consideration in the RL process

August/September: Candidate Selection meeting

- To identify new autumn-sown varieties to be sown in RL trials (new candidates)
- To identify autumn-sown varieties to be re-sown in RL trials (re-sowing decisions)
- To identify current autumn-sown varieties to be removed from RL trials
- To identify spring-sown varieties to be reviewed at the next meeting (notice to breeders)

November: Recommended Lists meeting

- To consider varieties to add to new Recommended List
- To select varieties to be removed from Recommended List
- To identify new spring-sown varieties to be sown in RL trials (new candidates)
- To identify spring-sown varieties to be re-sown in RL trials (re-sowing decisions)
- To identify current spring-sown varieties to be removed from RL trials and the Recommended List

4.2 Planning meetings

Each Crop Committee will have a planning meeting each year in May/June. At that meeting, it will propose definitions, guidelines and criteria that apply to its specific crops.

The Crop Committee will propose the mechanism to be used to set the yield target(s), other defined requirements, and identify the comparator varieties for each segment, using its expert judgement. The comparator varieties need not necessarily be those that are used to set the yield target. For example, if the highest yielding variety in a segment is not commercially successful, the Committee may propose to include it in the calculation of the yield target but propose the market leader for the segment as an alternative or additional comparator.

At this meeting, the Crop Committee will also propose the characters to be included in the balance of features for candidate selection and recommendation decisions for each segment and the weighting to be applied to each character. The Committee may propose to weight a character as being of high, medium or low importance. Exceptionally, a Committee may decide to weight a character as being of very high importance. In designating a disease character as 'very high', the Committee must use its expert judgement, taking into account, among other things, the economic importance of the character, any changes in pathology or the availability of chemical control for any disease and any changes to market requirements, as advised by end users.

These will then apply to decisions made at subsequent meetings. Criteria should not be changed at decision meetings, other than in exceptional circumstances. Criteria may be expected to vary between market segments, crop types or regions but the criteria for a given defined market segment must be applied equally across all varieties in that market segment.

The RL Project Board will review the proposals of the Crop Committees before they are put into force. See Appendices 7–17 for the agreed criteria.

4.3 Data for Decision meetings

When considering varieties, Crop Committees should have due regard to all relevant and valid data, including:

- Data collected from the RL trials programme
- End-use data contributed by relevant stakeholders (e.g. MAGB and nabim)
- Data collected from AHDB activities, such as research projects, export testing and the UK Cereal Pathogen Virulence Survey
- Other independent data that the RL Project Board and Crop Committee considers reliable and of relevance

The Crop Committee will ensure that anecdotal information and opinion is disregarded, e.g. “it didn’t do too well on my farm last year” or “the variety looked really good at Cereals”.

4.4 Data validation

The RL Project Board has overall responsibility to ensure that the RL data is verified as being of a standard appropriate to be included and to refuse any that is not. It will ensure that any statistical analysis or other treatment of any data is appropriate and accurate.

The RL Project Board has established the following procedures to ensure data quality.

4.4.1 Trials inspection and data validation

Each RL trial will be inspected at least once by a member of the RL Team or a suitable substitute. BSPB trials will also be inspected under an agreement with APHA.

The RL Team will also validate the results of all RL trials as results are added to the RL database. Similar validation of preliminary trials is undertaken by the team as part of the APHA data validity procedures.

Further details of the procedures are given in Appendix 5.

4.4.2 Data review meeting

Concerns about the validity and/or suitability of the data to be used in reports should be referred to the RL Team via the BSPB Trials Co-ordinator as they arise. Queries on targets and comparators and notes relating to reports should also be raised as they arise, via the same route.

Dates will be set aside for a data review meeting in the days before each Crop Committee candidate selection meeting. All breeders with varieties under consideration will be invited to send a representative and the RL Team will be represented at the meeting. The meeting will take place unless there is unanimous agreement from all breeders and the RL Team that it is not required.

Issues raised at the meeting will be investigated afterwards and the outcome will be reported back to breeders.

The final data set presented to the Crop Committee, with any caveats about the data, will be circulated to the breeders with as much notice as possible before the Crop Committee meeting.

If data arrives after the review meeting and is to be used by the Committee, breeders will be notified at the earliest opportunity.

4.4.3 Data challenges

In the event of any unresolved dispute over the suitability and/or acceptance of data, at any time, an enquiry group will consider the matter. This group will consist of:

- The Chair of the relevant Crop Committee
- The Chair of the RL Project Board
- The Head of Crop Production Systems for AHDB Cereals & Oilseeds
- A non-conflicted representative of BSPB

The ruling of the enquiry group will be final up to and until the Crop Committee meeting.

Breeders wishing to call for an enquiry should contact a member of the RL Team in the first instance.

| | |
|-----------------------------|--|
| Trial Validation | <ul style="list-style-type: none">• AHDB carry out official inspection on behalf of APHA. Reports are added to the workbooks.• BSPB representatives may visit trials and send notes to BSPB trials co-ordinator and AHDB (trials@ahdb.org.uk). The notes will be added to the workbooks for consideration as part of validation.• BSPB trials co-ordinator may ask for additional trial visits to be made by AHDB. |
| Workbook Results | <ul style="list-style-type: none">• Non-validated results in workbooks are for information only.• Queries on validated results in workbooks should be referred to the RL team by the BSPB Trials Co-ordinator.• Queries and any corrective action by official supervisors will be recorded in the relevant workbooks. |
| Data Review Meetings | <ul style="list-style-type: none">• BSPB Trials Co-ordinator will set aside dates for data review meetings before the candidate selection meetings.• All breeders with varieties under consideration will be invited.• An agenda will identify any outstanding issues.• Issues raised on the day will be investigated afterwards.• RL team will be present in person or by phone.• Final data sets presented to the committee, with any caveats will be circulated to the breeders with as much notice as possible before the Crop Committee meeting. |
| Data Enquiries | <ul style="list-style-type: none">• In the event of unresolved disputes an enquiry group will convene.• Breeders should contact a member of the RL team in the first instance.• The meeting will comprise the relevant Crop Committee Chair, AHDB Head of Crop Production Systems, a non-conflicted member of BSPB and Chair of the RL Project Board.• Ruling of the enquiry group will be final up to and until the crop committee meeting. |

4.5 Sowing of varieties in RL trials - overview

4.5.1 Winter wheat, winter barley and spring barley

1. Varieties will be considered for inclusion in RL trials when they have completed two years of preliminary trials (Year 1 and Year 2) or have been included in an equivalent series of trials

with independent inspection and validation. Preliminary trials are trials commissioned by BSPB or AHDB or jointly. An equivalent series of trials is one with an equivalent number of data points that includes the same varieties, grown to the same protocol and independently inspected.

2. When selected for trials a variety will usually be grown in all trials. However, if a variety only has potential for a specialist market or a region it may be sown in a relevant subset of the trials only.
3. UK Recommended varieties will usually be grown in all RL trials for 3 years:
 - Year 3 (as RL candidate [RL1])
 - Year 4 (Listed as P1, [RL2])
 - Year 5 (Listed as P2, [RL3])
 - This is extended to 4 years for barley varieties approved for or under test for malting.
4. Regionally recommended varieties and those with a specific recommendation will be grown in the relevant subset of the trials.
5. Designated control varieties will usually be grown in all RL trials. Designated controls are those varieties nominated as 'National List' controls. A Crop Committee may from time to time recommend to the RL Project Board that an additional variety be included as a control, for example where this is required on technical grounds to provide a comparison in a particular market segment.
6. The variety with the largest certified seed area in a market segment will usually be grown in all RL trials for the following season even if it is not an "NL control".
7. Each recommended variety will be reviewed after three years in RL trials. It will continue to be grown at least in Core trials unless:
 - a. The Crop Committee has targeted its testing of the variety in another way (2 above).
 - b. It is judged to be technically outclassed.

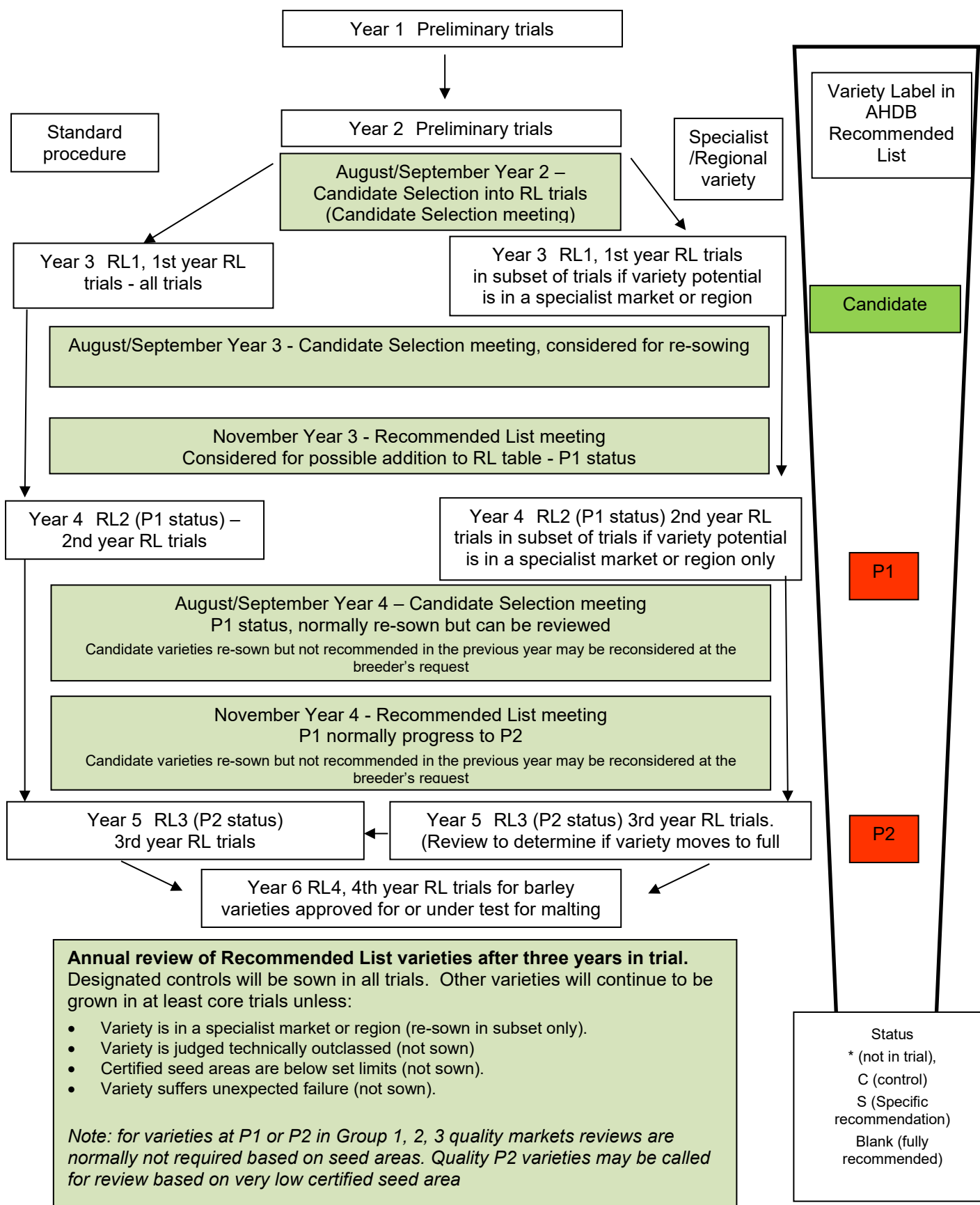
(Core trial sites comprise trials which include all varieties to give UK data for regional and/or specialist varieties. They also have both treated and untreated yield trials.)

8. The following re-sowing thresholds based on the proportion of UK certified seed area of the crop in the current season are currently in force and varieties failing to reach the threshold will not normally be re-sown in trials but may be included in a sub-set of trials on a case by case basis:
 - a. Listed as P2 and has less than 1% of the total certified seed area (for feed/non-quality markets).
 - b. Listed as P2 for wheat and barley quality markets with less than 0.2% of the total certified seed area.
 - c. Listed beyond P2 and has below 2% of the total certified seed area.

This rule does not apply to P1 and is reduced for P2 varieties in quality markets e.g. nabim group 1, 2, or 3 for wheat; brewing & distilling markets for barley. This recognises that varieties need more time to become established in these markets.

9. These re-sowing thresholds will be reviewed regularly.
10. Varieties in trial will be grown in sufficient disease tests, quality strips and special tests to provide data to continue to list their strengths and weaknesses on the RL.
11. When deciding if a variety should be re-introduced into full trials, the Crop Committee should take into account the potential of the variety to provide consistent economic benefit to each market segment and/or region.
12. Varieties that remain in trial after the above review will be reviewed annually thereafter.
13. These procedures do not restrict the Crop Committee from reviewing a variety at any time if it becomes technically outclassed, fails to meet the certified seed area targets set out in 8 above, or suffers unexpected failure.

4.5.1.1 Flowchart for sowing of varieties in Recommended List trials – winter wheat, winter barley and spring barley



4.5.2 Spring wheat, winter oats and spring oats

1. Varieties will be considered for inclusion in RL trials when they have completed two years of preliminary trials (Year 1 and Year 2) or have been included in an equivalent series of trials with independent inspection and validation. Preliminary trials are trials commissioned by BSPB or AHDB or jointly. An equivalent series of trials is one with an equivalent number of data points that includes the same varieties, grown to the same protocol and independently inspected.
2. When selected for trials a variety will be grown in all trials.
3. For oats, varieties will be grown in RL trials for two years before being considered for recommendation. Each variety will be reviewed at the end of the first year in RL trials and will be given the benefit of doubt and re-sown for a second year unless it is shown that the variety could not be recommended at the end of a further year in RL trials.
4. For spring wheat, varieties will be grown in RL trials for one year before being considered for recommendation.
5. Recommended varieties will usually be grown in all RL trials.
6. Designated control varieties will usually be grown in all RL trials. Designated controls are those varieties nominated as “National List” controls.
7. The following re-sowing thresholds based on the proportion of UK certified seed area of the crop in the current season are currently in force and varieties failing to reach the threshold will not normally be re-sown in trials but may be included in a sub-set of trials on a case by case basis:
 - a. Listed as P2 and has less than 1% of the total certified seed area (for feed/non-quality markets).
 - b. For spring wheat listed as P2 for quality markets with less than 0.2% of the total certified seed area.
 - c. Listed beyond P2 and has below 2% of the total certified seed area.

This rule does not apply to P1 and is reduced for P2 spring wheat varieties in quality markets e.g. nabim 1, 2, or 3. This recognises that varieties need more time to become established in these markets.

4.5.3 Winter oilseed rape

1. Normally, two years of preliminary trials (Year 1 and Year 2) or an equivalent series of trials with independent inspection and validation are required before inclusion in RL trials.
2. Varieties will usually be grown in RL trials for 3 years
 - Year 3 (RL Year 1) as RL candidate,
 - Year 4 (RL Year 2) Listed as P1
 - Year 5 (RL Year 3) Listed as P2
3. This scheme will apply to both regions but, if it is not possible to make recommendations at the end of the normal RL year 1 (Candidate year) because of trial losses, an extra year will be added giving an additional year before first recommendation (in effect an additional RL1 year).
4. Most varieties will then spend one further year on the list marked (*) before being removed.
5. If the breeder of a variety which was due to be dropped from the list thinks that it is of sufficient importance to be retained on the list he/she can make a case at the next Crop Committee meeting for its re-introduction into trials. Notice of such a case must be given to the RL Team at least three weeks before the meeting.
6. Only exceptional varieties which are still very widely grown will be re-introduced into trials.

4.5.3.1 Sowing of varieties in Recommended List Trials – Winter oilseed rape

| Timing | Committee action | Trial action | Potential outcomes |
|------------------------|---|--|--|
| Trial Yr 1 (NL1) | Varieties in trial | | |
| August | Selection by breeders | NL1 to NL2 | <ol style="list-style-type: none"> 1. Re-sow in NL 2 2. Do not re-sow in NL trials |
| Trial Yr 2 (NL2) | Varieties in trial | | |
| August | AHDB OCC Candidate selection | NL system to RL system | <ol style="list-style-type: none"> 1. Sow in RL trials (UK or regional) (RL candidate) 2. Do not sow in RL trials |
| Trial Yr 3 (RL Yr 1) | Varieties in trial | | |
| August | AHDB OCC re-sowing decision | RL Yr 1 to RL Yr 2 | <ol style="list-style-type: none"> 1. Re-sow in RL trials (UK or regional) 2. Do not re-sow in RL trials |
| November | AHDB OCC Recommendations | | <ol style="list-style-type: none"> 1. Recommend for UK (P1) 2. Recommend for region (P1) 3. Do not recommend |
| Trial Yr 4 (RL Yr 2) | Varieties in trial | | |
| August | AHDB OCC re-sowing decision | RL Yr 2 to RL Yr 3 | <ol style="list-style-type: none"> 1. Re-sow in RL trials (UK or regional) 2. Do not re-sow in RL trials |
| November | AHDB OCC Recommendations | | <ol style="list-style-type: none"> 1. Recommend for UK (P2) 2. Recommend for region (P2) 3. Do not recommend |
| Trial Yr 5 (RL Yr 3) | Varieties in trial | | |
| August | AHDB OCC remove from trials unless yield control (C) or required for other reason # or breeders request | C, # or reprieved varieties RL Yr 3 to RL Yr 4 | <ol style="list-style-type: none"> 1. Re-sow in RL trials (UK or regional) 2. Do not re-sow in RL trials 3. Remains in trial at breeders request – reprieved variety (strong case required and review every year) |
| November | AHDB OCC Review all varieties | | <ol style="list-style-type: none"> 1. Remains on RL as (*) 2. C remains on list 3. # remains on list 4. Remains on list at breeders request |
| Trial Yr 6 (RL year 4) | C, # and reprieved varieties remain in trial | | |
| August | AHDB OCC Re-sowing decision all varieties | C, # or reprieved variety RL Yr 3 to RL Yr 4 | <ol style="list-style-type: none"> 1. Re-sow in RL trials (UK or regional) (C and #) 2. Re-sow – reprieved variety 3. Do not re-sow in RL trials (C # and reprieved varieties) 4. Re-introduce into trial at breeders request (strong case required and review every year) |

| | | | |
|----------|--|--|--|
| November | AHDB OCC Remove from RL unless C , # or reintroduced to trials | | <ol style="list-style-type: none"> 1. Remove from RL 2. C remains on list 3. # remains on list 4. Re-introduced variety returns to list |
| | | | |

specialist and described varieties

4.6 Candidate Selection Meeting - Criteria for RL candidate selection.

The Crop Committees shall follow and not alter the criteria and procedures laid down by the RL Project Board to select Candidate Varieties for inclusion in RL Trials.

The criteria for candidate selection shall be consistent with the criteria used for recommendation so that there is a logical and coherent set of criteria used to judge varieties as they pass through the system. Crop Committees will propose suitable specific criteria relevant to their own crops and review these each year.

The RL Project Board will review such criteria before they are put into force.

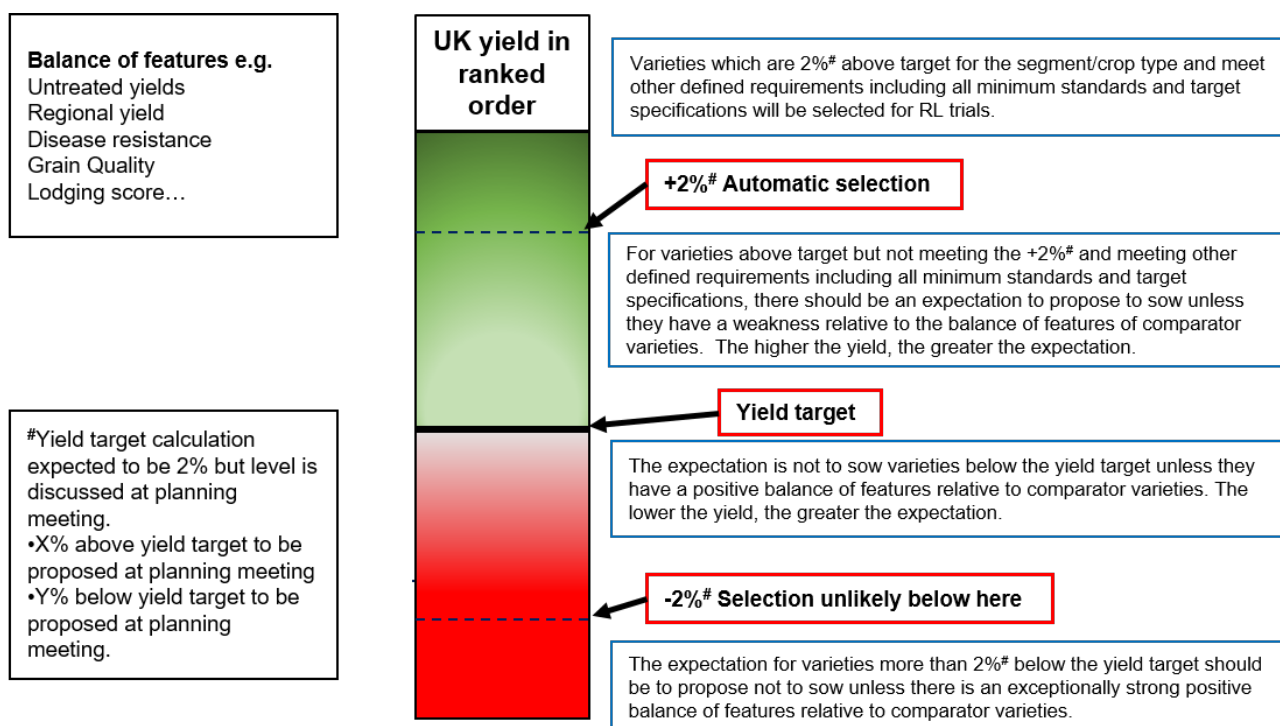
4.6.1 Procedure for candidate selection – general principles

- The Crop Committees will agree a UK yield target (or a method of calculation) for cereals, and regional gross output targets (or a method of calculation) for winter oilseed rape before the decision meeting. This will usually be at the planning meetings in May/June.
- There may be separate criteria for each market segment/crop type. If there is doubt about which market a variety is suited to, it will be assumed to be in the more “elite” segment. For example, if it might be a nabim Group 1 or nabim Group 2, it will be considered as a Group 1.
- Varieties which are 2%# above the yield target for the segment/crop type and meet all other defined requirements including all minimum standards and target specifications will be automatically selected for RL trials.
- Varieties which are 2%# above the yield target for the segment/crop type but do not meet other defined requirements including all minimum standards will be reviewed by the Committee.
- For varieties above target but not meeting the $\geq 2\%#$ threshold for automatic selection and meeting other defined requirements including all minimum standards and target specifications, there should be an expectation to propose to sow unless the variety has a weakness.
- The expectation is not to sow varieties below the yield target unless they have a positive balance of features compared to comparator varieties.
- The expectation for varieties more than 2%# below the yield target should be to propose not to sow unless there is an exceptionally strong positive balance of features. **A variety in this category will not be considered for selection unless the breeder/agent attends the crop committee meeting to make a presentation.**
- The Committees will propose guidelines and criteria at their planning meetings relating to the balance of features that will be sufficient for a variety to overcome the failure to meet a selection yield target. The balancing characteristics will be defined and will be weighted as

being of very high, high, medium or low importance. These factors will be reviewed at each planning meeting. The guidelines and criteria will be proposed by the Crop Committee for each region, for each market segment and for each crop type within a segment (e.g. 2-row and 6-row barley). The guidelines and criteria relating to the balancing features and their weightings for each crop will be published to the breeders immediately after being agreed by the RL Project Board.

Crop Committees can propose values other than 2% at the planning meetings and also identify “other defined requirements”.

4.6.1.1 Example criteria for candidate selection



NOTE: Any variety which falls more than Y%# below the yield target will NOT be considered for selection unless the breeder/agent attends the Crop Committee meeting to make a presentation.

Information on RL comparator varieties for candidate selection is not always available in the same dataset as two year candidate varieties. A 4-year table may be used by the committee to make comparisons where the candidate and comparator were not grown in the same trial series.

4.6.1.2 Criteria for candidate selection – oilseed rape

Criteria for selection of candidate varieties to each of the regional AHDB Recommended Lists follow the same guidelines as for cereals, but use the gross output value for yield targets and an agronomic merit for candidate selection.

The yield target will be set as the average gross output for the top varieties in the 4 year mean RL table in each variety segment. This includes candidate and P1 varieties. This value is used as the target to select candidates on the 2 year table. The Committee can agree the number of varieties this should comprise.

Agronomic merit values are calculated (according to regional formula) and used alongside the Gross Output yield to select candidates. A variety selected for both regions will be considered a UK variety. A single Agronomic Merit value (per region) is calculated for all categories and comprises the average of all recommended varieties for the relevant region. A correction factor is applied to

this figure to match the 4-year RL datasets with the 2-year candidate datasets. This factor is the difference between the mean Agronomic Merit values of the control varieties in the different datasets.

4.6.1.3 Winter Oilseed Rape Target calculations

Target calculations – East/West region EXAMPLE – from H2017

| Gross Output | |
|---|--------------|
| The target is the mean gross output of the top three yielding varieties (including candidates) on the 4-year table for the specified region | |
| Windoazz | 106.3 |
| Elgar | 106.3 |
| Django | 105.5 |
| Target | 106.0 |
| Agronomic merit – see Appendix 8 | |
| Controls on 4-year table | |
| PR46W21 (C) (also C on 2 year table) | 29.3 |
| PT211 (C) | 35.2 |
| Trinity (C) | 36.4 |
| V 316 OL (C) | 36.0 |
| Campus (C) (also C on 2 year table) | 35.6 |
| Average of controls common to both tables | 32.4 |
| Average of all RL varieties on 4-year table for the specified region | |
| | 36.6 |
| Difference from control | +4.2 |
| Controls on 2-year table | |
| PR46W21 (C) | 28.5 |
| PT211 (C) | - |
| Trinity (C) | - |
| V 316 OL (C) | - |
| Campus (C) | 34.7 |
| Average of 2 year controls common to both tables | 31.6 |
| Agronomic Merit Target | |
| 2-year control mean (31.6) + adjustment calculated from 4-year data (+4.2) | |
| | 35.8 |

The agronomic merit is not used for selection to the Recommended List.

4.7 Recommended List Meeting – Criteria for recommendation

4.7.1 Categories of Recommendation

There will be the following categories of recommendation:

- **Recommended for UK:** These varieties are considered generally suitable for the purpose designated across the UK

- **Recommended for specific use(s):** This category is for varieties which are grown for a specialised market(s), or which have an agronomic or disease weakness that limits the regions in which they are suitable. Their limitations and specific merits will be identified.
- **Not Recommended:** Such varieties will not normally be re-sown in trials. Those that are in the ground will not normally be included in quality analyses. These varieties will not be re-considered as candidates unless specifically requested by the breeder, or it is suggested by a Crop Committee member that results prompt a re-consideration of an individual variety. This will be considered on a case by case basis. Information gathered on the varieties will remain on the database.

4.7.2 General criteria for Recommendation

The Crop Committees shall follow and not alter the criteria and procedures laid down by the RL Project Board to recommend and/or describe varieties on an RL.

Varieties will be added to the AHDB Recommended List when they are considered to have the potential to provide a consistent economic benefit to the UK cereals or oilseeds industry. The Crop Committees will follow the primary recommendation decision tree below – section 4.7.2.9.

While the aim should be to be consistent from year to year, Crop Committees are not expected to make individual comparisons with decisions in previous years or between crops (i.e. winter and spring sown crops, or north, east/west region in oilseed rape).

A winter oilseed rape variety will be listed as UK Recommended if it is recommended in both regions.

4.7.2.1 Sufficient data

Trials and tests will be planned to give sufficient data in time for recommendation, but there are likely to be failures from time to time and statistical advice may be taken where necessary to determine whether there is insufficient data to make a decision. Crop Committees will propose to the RL Project Board the normal period of testing each crop requires before it is considered for recommendation.

4.7.2.2 Market segment

The primary segmentation will be according to market end-use requirements. The market segments for which recommendations will be made will be defined at the planning meeting in May/June each year and included in updated specific criteria for each crop.

4.7.2.3 End-use quality requirements

The end-use quality requirements for each segment will often be defined by the industry (e.g. **nabim** Groups, MBC approved) but the Crop Committee should confirm before the selection meeting how they will judge if a candidate variety meets the requirements.

4.7.2.4 Minimum standards and target specifications

Minimum standards are in place for disease resistance and target specifications for agronomy and other characteristics. In order for a cereal variety to get a full UK Recommendation or a winter oilseed rape variety to get a regional recommendation it must be at or above the minimum standards for disease resistance. Minimum standards for disease resistance ensure that growing the variety would not pose an unacceptable risk for growers across the region for which it is recommended. Most target specifications are set in accordance with industry standards and should normally be met.

Minimum standards and target specifications are whole numbers. In considering whether a variety meets a minimum standard or target specification, its rating will be rounded to the nearest whole number e.g. if the minimum for a disease is set at 3, a variety with a rating of 2.5 would be rounded to 3 and would pass the minimum standard, but a rating of 2.4 would be rounded to 2, and the variety would fail the minimum standard. The same rounding to the nearest whole number also refers to disease resistance values identified in “other defined criteria” which Crop Committees may propose at planning meetings.

Minimum standards for disease resistance are established according to scales in which the relationship between the rating and level of infection is generally understood by farmers in relation to the control that will be required.

A target specification linked to a market specification will be reviewed and may be changed in the event of a change to the relevant market specification.

A disease minimum standard or agronomic target specification may be reviewed if there is a specific and significant change in circumstances affecting the industry which means that growing a variety at the existing minimum standard/target specification for the relevant character would pose an unacceptable risk for growers across the region for which it is recommended. Such circumstances might for example be the loss of available chemistry for controlling the disease or agronomic character in question.

Any review of a minimum standard will be undertaken by the RL Board, must be evidence-based and must take account of:

- the amount, accuracy and robustness of the data generated in the RL system and used to calculate the disease rating
- information on the availability of resistance in breeding programmes
- the breeding timescale for the introduction of new resistances
- the likely durability of resistances
- an economic impact analysis of the proposed change to the minimum standard, including any associated yield reduction for UK agriculture.

Changes to a target specification may be proposed by a Crop Committee but must be approved by the RL Board.

Any such review of a minimum standard must be undertaken by the RL Project Board.

Standards for disease resistance can be raised by Crop Committees without the need for increasing the minimum standard by using the following approaches:

- i. careful choice of comparator varieties with good disease scores. It has to be remembered that the likelihood is that these comparator varieties will not necessarily be the highest yielders
- ii. reviewing the weightings applied to disease scores and using them in the discussion of 'balance of features' for a variety
- iii. including 'other required attributes' in the criteria for automatic recommendation (this should be adopted sparingly).

4.7.2.5 Specific attributes

The criteria for designating a variety as having a specific recommendation need to be defined in advance and are likely to be for a seed market of a specified minimum size (say 1% of total market) or to provide a significantly important innovation. Regionally specific recommendations may be made. However, a variety cannot be recommended for all regions if it does not have a UK recommendation.

4.7.2.6 Defined target

The yield target (or method of calculation) will be proposed at the planning meeting each year and published in the minutes of the meeting. Separate targets may be set for each market segment and crop type. Gross output (yield adjusted for oil content) is the yield measure used for oilseed rape. The % value for automatic recommendation (default 2%) will also be discussed at the planning meetings.

4.7.2.7 Balance of features that are sufficiently better

The Crop Committees will propose guidelines and criteria at their planning meetings relating to the balance of features that will be sufficient for a variety to overcome the failure to meet a selection yield target. The balancing characteristics will be defined and will be weighted as being of very high, high, medium or low importance. These factors will be reviewed at each planning meeting. The guidelines and criteria will be proposed by the Crop Committee for each region, for each market segment and for each crop type within a segment (e.g. 2-row and 6-row barley). The guidelines and criteria relating to the balancing features and their weightings for each crop will be published in the Crop Committee Handbook after being agreed by the RL Project Board. (see Appendices)

Crop Committees will propose the varieties that will be the initial comparators for balance of features at their planning meetings (see section May/June Planning meeting). Comparators are selected based upon their agronomic features, it should be remembered that these varieties will not necessarily be the highest yielding. These will then be published by way of the minutes.

Comparisons will first be made with those defined comparator varieties and a candidate should be recommended if it is better on balance. A breeder may suggest additional comparators for a particular candidate before or during a committee decision meeting, where he/she considers that one or more of the defined comparators is not an appropriate comparator for his variety. This must be stated at the start of the presentation. The breeder must justify their argument. The most likely (but not exclusive) reason will be that a variety other than a defined comparator is the leading variety in the specific position in the market that the breeder is targeting with their candidate variety. The Crop Committee must give full and proper consideration to the evidence presented by the breeder alongside the other information available to it and use its expert judgement to decide if it accepts the argument put forward by the breeder for the use of one or more additional comparators. If it accepts the breeder's proposal, the assessment of the variety should include comparison against the additional comparator. The reasons for a Crop Committee's acceptance or rejection of a breeder's request to use an additional comparator must be minuted.

Otherwise the Crop Committee should look to see if the variety has other features that justify recommendation.

- Varieties which are 2%# above target for the segment/crop type and meet other defined requirements including all minimum standards and target specifications will be automatically recommended.
- For varieties above target but not meeting the +2%# threshold for automatic selection and meeting other defined requirements including all minimum standards and target

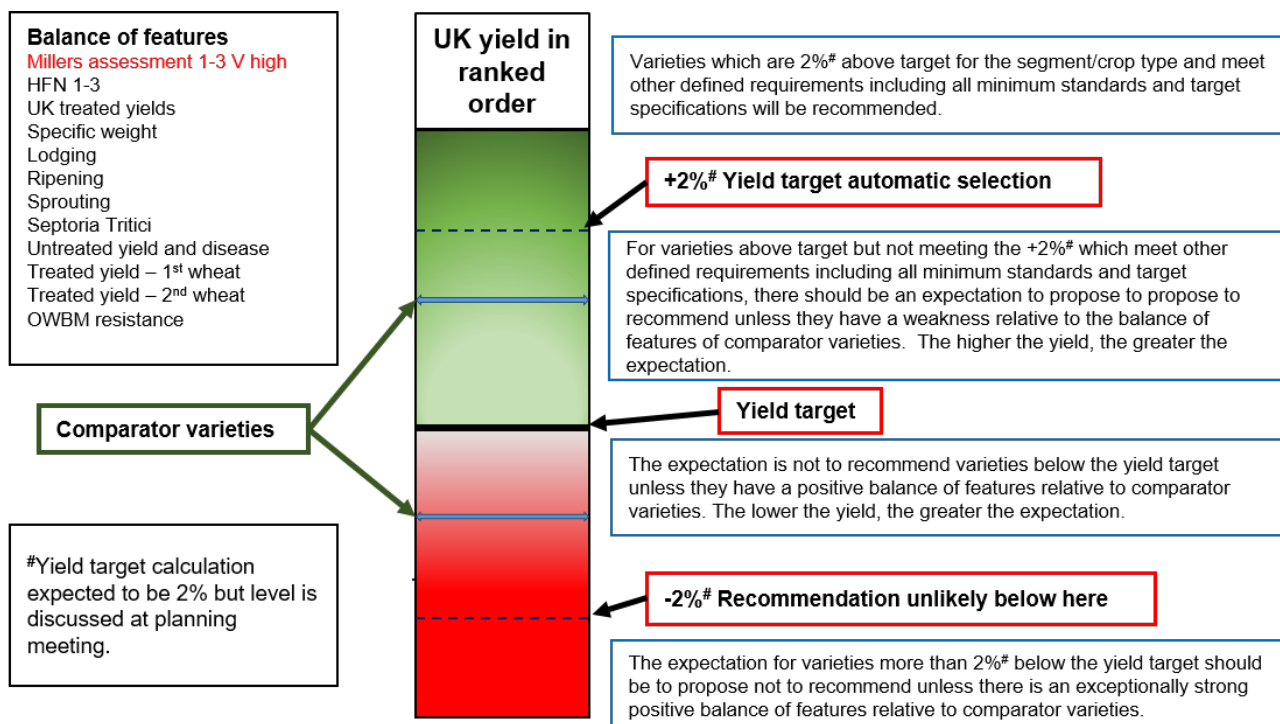
specifications there should be an expectation to propose to recommend unless the variety has a weakness relative to the balance of features of comparator varieties, for example the Crop Committee may propose not to recommend a variety that is above the yield target but which is weak for one or more characters of sufficient weighting in the balance of features consideration.

- Varieties below the yield target require a positive balance of features compared to comparator varieties to be recommended.
- The expectation for varieties more than 2%# below the yield target should be to propose not to recommend unless there is an exceptionally strong positive balance of features relative to comparator varieties. A variety will not be considered for selection unless the breeder/agent attends the crop committee meeting to make a presentation.

Crop Committees can propose values other than 2% at the planning meetings.

4.7.2.8 Example criteria for Recommendation – balance of features

Does the variety have a balance of features that is sufficiently better than the existing varieties and such that it could potentially provide a more consistent economic return in the market?

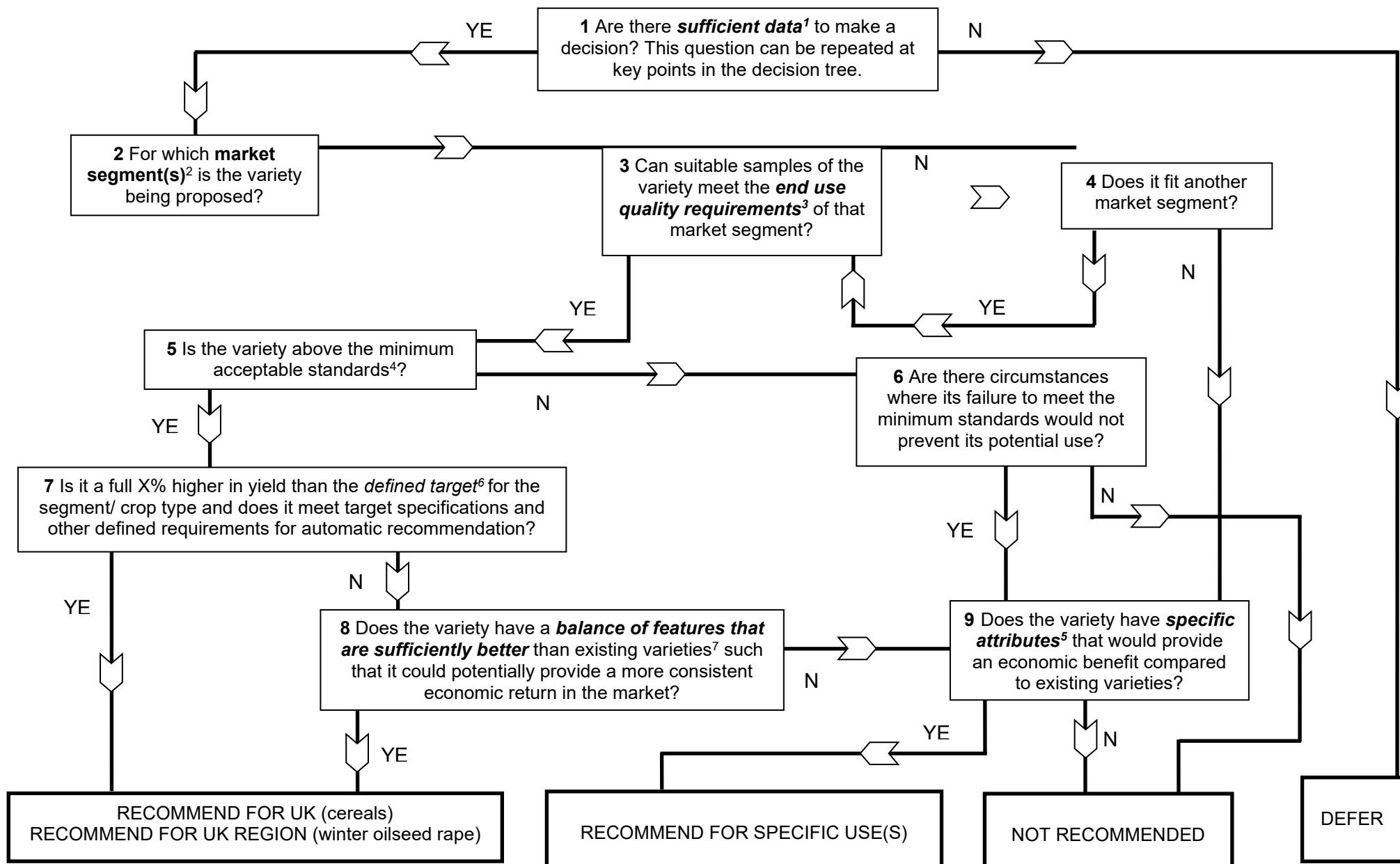


Yield target calculation expected to be 2% but level will have been discussed and agreed at the relevant planning meeting

- +3% used for feed winter barley in 2020
- (X%) above yield target to be proposed at planning meeting
- (Y%) below yield target to be proposed at planning meeting

4.7.2.9 Primary recommendation decision tree

Will recommending this variety have the potential to provide a consistent economic benefit to the UK Cereals or Oilseeds industry? If a UK recommendation cannot be made return to 1 for possible regional recommendation



4.7.3 RL tables

1. All recommended varieties will be listed in the RL tables.
2. Varieties will remain recommended until they have been out of trial for one year or until they have a very small certified seed area. Currently this is 0.5% for cereals but this is reviewed periodically. A breeder can make a case to the Crop Committee for longer retention on the list if seed production remains high.
3. For cereals, the data in the first two tables ("Market options, yield and grain quality" and "Yield, agronomy and disease resistance") should be complete for all varieties except those with a specific recommendation or for newer varieties where additional data are required for particular characteristics.
4. Varieties in their second and third year of RL trialling will be marked "P1" and "P2" respectively.
5. Varieties which are no longer in trial will be marked with *.
6. Data on varieties tested in RL trials but not recommended will be made available on the AHDB website, but not printed in the RL booklet.
7. Data on candidate varieties under test in RL trials will be printed in the RL booklet.
8. Descriptive List varieties may be presented each year, provided a comparable data set remains available.
9. Breeders or agents should inform the RL data manager of any issues regarding their varieties completing National Listing. The RL Team will consult the Plant Varieties & Seeds Gazette and with APHA staff for confirmation of National Listing. Varieties will not be added to the Recommended List unless they have a positive national listing decision on the day of the RL Project Board ratification of the new RL.

4.8 Review of Varieties

4.8.1 Notice of review of the status of a variety or of its suitability for inclusion or retention in trial

1. Varieties may be subject to review in any year as to whether or not they should continue to remain in all or part of the RL trial system. Breeders of a variety will normally receive notice of a review and be invited to present a case to the Crop Committee. If a recommended variety drops below a minimum standard or target specification it will be reviewed by the Crop Committee at the next opportunity.
2. Currently recommended varieties that are proposed controls for the coming season may be re-sown in RL trials as control varieties without the need for a breeder presentation at the re-sowing meeting. These varieties may be called for review at the recommendation

meeting. Breeders will receive notice of such a review and will be invited to present a case to the Crop Committee.

3. Candidate varieties in Recommended List trials will be reviewed at the candidate selection meeting and should be re-sown where the data suggest that there is a reasonable case to be made for their recommendation. Candidates may be re-sown in a subset of trials if this appears more appropriate than excluding them completely or sowing in all trials.
4. There will be no automatic timescale for the progress of recommended varieties through the system. Instead varieties in their first two years on the list will be marked as such and any variety can be reviewed in any year.
5. At each Crop Committee meeting any member of the Crop Committee can suggest that there is an “issue” about a variety such that it should be reviewed at the next meeting. The reasons for such a review will then be debated briefly and, by way of the minutes of the meeting, breeders will be informed that a review will take place at the next meeting. They will be invited to present a case at that meeting.
6. Reasons for a review can include: the variety becoming technically outclassed; increased susceptibility to disease; failure to meet end-user needs; or failure in the market as evidenced by lack of seed production as measured by the area entered for seed certification that year or other evidence.
7. If no “issue” is identified for a variety it will not normally be considered for decision at the next meeting.

4.8.2 Review of the status of varieties and the removal of varieties from the RL

1. Removal from the list will normally be as a consequence of removal of the variety from the RL trials.
2. Recommended varieties will normally be removed from the list after they have been out of all trials for one year. Exceptions will be made when a variety is removed because seed is no longer available in significant quantities. Currently this is 0.5% for cereals but this is reviewed periodically. A breeder can make a case to the Crop Committee for longer retention on the list if seed production remains high.
3. Data for varieties removed from the list will remain on the website by keeping copies of the last lists on which they appeared in an archive area.
4. The RL Project Board reserves the right to withdraw a variety from a RL immediately if a major defect becomes apparent such that continuing to recommend the variety would constitute an unacceptable risk to the UK industry.

5. If a recommended variety drops below a minimum standard or target specification it should be reviewed at the next opportunity. Varieties below a minimum standard should not retain a full recommendation but may retain a specific recommendation. A recommended oilseed rape variety that falls below a minimum standard for a specific region will be reviewed and a decision taken on its continued recommendation on a case by case basis. The breeder will be invited to attend the relevant Crop Committee meeting to make a case for the variety.
6. Where the review finds against the variety, this would normally result, at the next opportunity, in either the withdrawal of the variety from all trials, or its restriction to a subset of trials in cases where the failure only affects part of the market. It may also lead to the cessation of quality testing etc. of trials already sown.

4.9 Descriptive Lists

4.9.1 Descriptive Varieties for the major crops

Crop Committees may identify classes of variety, usually for niche markets, for which recommendation is not appropriate but for which there is a wish to provide some descriptive data within the RL system. For example, the Oilseeds Crop Committee has identified high erucic acid (HEAR) oilseed rape. These varieties are usually promoted into a subset of RL trials providing they appear to perform as well as those of the same type already in commerce. Data on such varieties will then be made available in the RL booklet and on the website.

Promotion and removal of a described variety from a Recommended List and the review of such varieties will follow the following process

- There will be a maximum of 3 varieties of any described variety type on a Recommended List
- New varieties of the described type will be considered for addition to the list at a breeders request
- Where there are less than three varieties of the type currently on the list
 - A yield target is set relative to the current of the described variety type, varieties equal to or above the yield target will be added automatically
 - For varieties below the yield target they must display a positive balance of features compared with other varieties of the described type already on the list, in order to be added.*
- Where there are already three varieties of the type currently on the list
 - A new variety must display a positive balance of features (including yield) compared with at least one variety already on the list to be added.*
 - In this case the variety with the weakest balance of features will be removed from the list.

- Described varieties on a Recommended List will be reviewed at a minimum every 2 years.
- Reviewed varieties will be removed from the list if they fall below the yield target and they fail to display a positive balance of features compared with at least one variety already on the list.
- For reviewed varieties to remain on the list the breeder or agent must provide written evidence that seed is available for the variety in question.

Yield targets for described varieties on the major crops

| | Yield Target |
|-------------------------|--|
| HEAR Oilseed rape | Equal to the yield of the lowest yielding variety of this type on the list |
| Semi-dwarf Oilseed rape | Equal to the yield of the lowest yielding variety of this type on the list |
| Naked spring Oats | Equal to the yield of the lowest yielding variety of this type on the list |

4.9.2 Descriptive Lists for the minor crops

Currently the RL produces Descriptive Lists (DL) for spring oilseed rape, spring linseed, winter rye and winter triticale.

Promotion into DL trials can occur once a variety has completed two years of preliminary trials (Year 1 and Year 2) or an equivalent series of trials with independent inspection and validation.

Data from DL trials is published as Descriptive Lists which include all varieties for which there are relevant data.

4.9.2.1 Descriptive Lists rules for re-sowing and addition to Descriptive List

For the Linseed Descriptive List only:

- Earliness of maturity is recognised as a positive feature with high value in the balance of characteristics.
- At least one early maturing control variety (maturity 7+) should be selected each year for use as a control variety. This control should be the highest yielding maturity class 7 or 8 variety currently in Year 4 trials (or later).
- The Committee should allow for use of a 'Special' category. Breeders who wish for such categories to be created would need to submit detailed justification to the Oilseeds Crop Committee planning meeting (May).

These rules apply to Descriptive Lists only (winter triticale (grain production), winter rye (grain production), spring oilseed rape and spring linseed).

| Trial year | Status | Sowing decision | DL decision |
|---|--------------|--|-------------|
| Year 1 | NL1/CC1 | Within UK National List or equivalent testing system. | - |
| Year 2 | NL2/CC2 | Within UK National List or equivalent testing system. | - |
| Year 3 | DL Candidate | Sow as long as remains a candidate for NL or CC unless the breeder does not wish them to be. | - |
| Add to DL with 3 years of data if the variety has achieved NL or CC status unless the breeder does not wish it to be. | | | |

| | | | |
|------------|---------|--|---|
| Year 4 | DL (P1) | Sow if the variety has achieved NL or CC status unless the breeder does not wish it to be. | DL |
| Year 5 | DL (P2) | <p>Sow if yield (gross output for spring oilseed rape) is within $\frac{3}{4}$ of a LSD of the mean of the four highest yielding varieties that have been on the DL for at least 1 year. This is ignoring any varieties just added to the list at that meeting.</p> <p>Breeders may present a written or verbal presentation for varieties that fall below the re-sowing cut-off.*</p> | <p>If re-sown remains on DL. If not re-sown remains on DL for 1 year marked with an asterisk, unless the breeder can demonstrate a significant ongoing commercial value.</p> <p>The variety may be removed at the breeder/agent's request, or if seed is unavailable.</p> |
| Year 6 (+) | DL | <p>Sow if yield (gross output for spring oilseed rape) is within $\frac{3}{4}$ of a LSD of mean of the four highest yielding varieties that have been on the DL for at least 1 year. This is ignoring any varieties just added to the list at that meeting.</p> <p>Breeders may present a written or verbal presentation for varieties that fall below the re-sowing cut-off.*</p> <p>In addition, for a variety to remain on the DL beyond P2, AHDB require a statement declaring that commercial seed will be available to growers for the coming season or proof of crop entry into official UK certified seed production in the previous 2 years.</p> | <p>If re-sown remains on DL. If not re-sown remains on DL for 1 year marked with an asterisk, unless the breeder can demonstrate a significant ongoing commercial value.</p> <p>The variety may be removed at the breeder/agent's request, or if seed is unavailable.</p> |

*Breeders/agents of varieties falling below the re-sowing cut-off may attend to present or provide a written case for their inclusion in DL trials on the basis of special agronomic or marketing features which might be worthwhile to growers or markets and which are not available in varieties that are automatically selected or are already on the Descriptive List. The Crop Committee then needs to decide, on a case by case basis, if these features are sufficient to compensate for the lower yield. If the Crop Committee does not feel that the variety warrants a place in trials, then it will not be re-sown.

4.10 Deferrals

The normal time scale for recommendation is two years of preliminary trials (year 1 and year 2 trials commissioned by BSPB or AHDB, or jointly, or their equivalent) and one year of RL trials. This may be extended to two years of RL trials for some crops: currently winter and spring oats.

Normally, trials and tests are planned to give sufficient data in time for recommendation; however, there are likely to be failures from time to time.

The RL Team will review the data in advance of each Crop Committee and will inform the meeting of any deficiencies in the data and guide the Committee on the consequences of the missing results.

If there is not enough data for the industry representatives to classify the variety to a UK market segment, the variety will be retained in trial and a decision relating to that segment will be deferred. Decisions on other segments will, however, be made if possible; for example, consideration of a barley variety as a feed variety will be made even though it might still be being tested for malting. In the event of a variety being approved for listing in a 'lower value' segment, the breeder can choose not to have that listing publicised until the final decision on all market segments has been made.

For other characteristics, varieties will usually be given the benefit of the doubt. A decision will be deferred in exceptional circumstances, where defined additional data that will clearly resolve the question can be obtained over a specified timescale. The deferred variety will be considered the following year, applying the same selection criteria as those applied to that year's candidate varieties.

Any reasons for deferral should be recorded in the minutes, with a statement of what data are required and the timescale in which the Committee expects to make a decision.

4.11 Remote approvals

Remote approval of varieties for sowing and/or recommendation normally only applies to oilseed rape in the North region and to oats, primarily due to late harvest results when insufficient data is available to make viable decisions at the crop committee meetings. This process will allow a breeder to submit a case to support their variety for selection/recommendation if they so require.

The need for remote approval of varieties will be apparent at the crop committee meeting and a mutually convenient time will be set for a tele or video conference which will allow crop committee members to attend remotely and take full part in the discussions. Breeders will be invited to make presentations for their varieties to be included in sowing and/or recommendation. The RL Team will identify the yield target, the comparators and the decisions to be made as is the norm prior to the agreed time of the tele/video conference and the information will be circulated to all crop committee members and the relevant breeders. Decisions will be added to the minutes of the Crop Committee which will be circulated to all involved parties.

The subsequent decisions will be circulated and breeders will be invited to give notice should they wish to appeal any decisions. If required an appeals meeting will be convened by the Chairman of the RL Project Board to consider any cases.

5 Breeders' presentations to Crop Committees

The Crop Committees must make reasonable arrangements to receive the opinion of owners or agents of varieties before considering their proposal whether or not to include a variety in RL trials or add to the RL. The Crop Committees' proposals shall be susceptible to appeal to the RL Project Board. The proposals of the Crop Committees shall be subject to verification and if necessary correction by the RL Project Board notwithstanding whether or not an appeal is made.

The normal annual round of breeders' presentations is detailed below.

5.1 Summer planning meetings (May/June)

Breeders are given the opportunity to inform Crop Committees about any new breeding developments that might warrant the addition of new specific categories of recommendation or additional characteristics to be taken into account as balancing features. Notification of items to raise should be made in writing to the RL Team with as much notice as possible, preferably at least three weeks before the meeting. The RL Team will then discuss the matter with the Committee Chairman and the breeder may be invited to attend the meeting to brief members on the matter. Such a presentation should not normally exceed 15 minutes.

Committees will also usually undertake an initial consideration of which varieties should be considered for removal from or re-introduction into all or part of the RL trials programme. Breeders may make a short written presentation on any variety in this context. Final Crop Committee consideration will be at the decision meeting when breeders will be given an opportunity to make a verbal presentation. Written presentations should be sent to the RL Team before the meeting so they can be circulated to the Crop Committee in advance. Breeders must provide a written summary (approx. 200 words) which will be used in the minutes of the meeting under the heading "Breeder Presentation".

5.2 Decision meetings: Candidate selection meetings (August/September) and Recommended Lists meetings (November)

Breeders may make written and/or verbal presentations in support of any variety being considered for sowing, re-sowing or recommendation. Verbal presentations for re-sowing should not exceed five minutes and those for recommendation should not exceed ten minutes. The Breeder's written statement or presentation slides will be used in the minutes of the meeting under the heading 'Breeder Presentation'.

Winter oilseed rape varieties will be considered for the East/West and North regions. If a variety is selected or recommended for both regions it will be considered a UK variety. If presentations are to be made for both regions they should be presented back to back.

5.3 Withdrawal of a candidate variety from consideration for listing

There are two reasons why a breeder might wish to withdraw a candidate from consideration for listing; i.e. that they wish it withdrawn on the basis of a commercial decision taken within the company; or that, on the basis of the trial results, they think it unlikely to qualify and do not wish to waste the Crop Committee's time. Varieties that are withdrawn without discussion by the Committee will not appear in the Recommended List publication. In order to ensure that there is no confusion, breeders considering withdrawing a candidate variety are advised to make one of the declarations set out below:

1. The candidate is withdrawn for commercial reasons and is not to be considered under any circumstances

OR

2. The candidate is provisionally withdrawn. In the event that a candidate or candidates lower in the ranking are recommended for listing, then this candidate should also be considered.

6 Right of appeal

Plant breeders and their agents will have a right of appeal against decisions taken by any Crop Committee providing the appeal is lodged within the timescale set out in the Appeals Procedures.

6.1 Appeals procedure for RL decisions and selection of varieties to be sown in trials

Appeals are heard by the RL Project Board, by all available RL Project Board members or their alternates. The Chair may also ask other experts he or she sees fit to attend to give advice on technical matters relevant to the appeal but these advisors shall not vote on any appeal.

RL Project Board members who were part of the original decision may attend the meeting to advise on discussions that took place but are not entitled to vote. They should leave the room during the discussion of the decision. The 'conflicts of interest' policy shall apply and any member with an interest in a variety under discussion will make that known to the Chair.

The appellant shall attend the appeal meeting to make a verbal case in support of his or her appeal. He or she may ask questions and may be questioned by the RL Project Board. He or she will not however, be present at the final discussion or when a vote is taken.

Decisions will be taken by a simple majority and the Chair shall have an additional casting vote should that be necessary. All members of the RL Project Board present will be expected to vote unless they have ruled themselves out at the start of the discussion.

The RL Project Manager or a person appointed by him shall attend the hearing of an appeal by the RL Project Board in order to answer questions from its members or the appellant.

6.2 Procedures to guide the appeals meetings

1. The appeal meeting time and place will be fixed before the Crop Committee meeting takes place. Breeders and their agents will be informed and must attend at the appropriate time to address the meeting.
2. Breeders or their agents will be informed about all variety decisions by the RL Team as soon as possible after each decision meeting. The initial notes of the meeting are only a guide to the discussions and should not be relied on as a complete record of the meeting. This will be by email to an agreed address and it is the responsibility of the breeder or agent to ensure that contact can be made.
3. Appeals against non-selection must be lodged at least one full working day before the time of the appeal meeting and appeals against non-recommendation at least three working days before the time of the meeting, if the timetable for appeals meetings allows this.

4. If the breeder wishes to consider an appeal he or she should contact the RL Team as soon as possible at the contact given in the notification. A member of the RL Team will then endeavour to contact the appellant to explain the decision to them, outline the appeals procedure and confirm with them that they wish to proceed with the appeal.
5. If the appellant wishes to continue, the formal appeals procedure will commence and the appellant will be liable for a fee, currently £650, for each variety that is subject to an appeal. The fee will be considered by the Board periodically and revised as appropriate.
6. The major grounds for an appeal will be one or more of the following:
 - a. The Crop Committee failed to apply properly the stated criteria for recommendation or have applied criteria other than those stated.
 - b. The criteria have not been applied equitably across all varieties within a market segment.
 - c. There were faults in the compilation or interpretation of the data of such significance that the Committee were misled.

The Board shall take into consideration supply chain, grower and agronomic requirements including the reasonable expectations of seed markets as it believes reasonably may be expected to be affected by the decision being appealed and shall have discretion to disapply such of the criteria and procedures established under clause 3.8 of the Collaboration Agreement insofar as it reasonably believes this to be necessary to satisfy such requirements.

7. No additional written submission from the appellant will be circulated to the Board before the appeal is heard. The Board will, however, receive all the papers available at the original meeting including any papers not circulated to the whole Crop Committee but instead lodged with the Chair and specialists on the Crop Committee (for example a detailed submission on disease resistance that may have been passed to the Pathologist and summarised for the rest of the Crop Committee).
8. The Appellant shall also make a verbal presentation to the meeting of not more than ten minutes. The Chair will have the right to curtail an appellant's verbal presentation which has exceeded ten minutes but this power will be used with discretion. The Appellant may table copies of his presentation for RL Project Board members at the appeals meeting.
9. Copies of the presentation must be deposited with the RL Team one working day before the appeal where practicable to do so in order that they can ensure that any data or expertise relevant to the appeal is available to the Appellant and the RL Project Board. This rule will be waived for appeals against non-selection for trial.
10. The Appellant may present a re-appraisal of any data considered at the decision meeting or any data from preliminary or RL trials that the decision meeting should have been aware of but was not drawn to its attention. The appellant should not present any data that would not have been available at the original meeting nor any other data that he/she might reasonably have

been expected to present to the decision meeting. Cases of eligibility of data will be decided by the Chair of the RL Project Board at his or her discretion.

The appellant will be informed of the result of the appeal as soon as possible after the meeting and, if the appeal is successful based on the information available to the Crop Committee; the fee liable will be waived. If the appeal is successful based on confidential information not presented at the Crop Committee and the decision of the Crop Committee was deemed correct by the RL Project Board, the fee will be payable.

| | |
|--|--|
| <p>Crop Committee Proposals</p> | <ul style="list-style-type: none"> • Crop Committees make proposals on existing varieties for re-sowing, new candidates for re-sowing, re-sowing of descriptive list varieties and varieties proposed to be added to or removed from Recommended and Descriptive Lists. • Breeders or their agents will be informed about all variety proposed decisions as soon as possible after the Crop Committee meetings. • Initial notes of the meeting are only a guide to the discussions and should not be relied on as a complete record of the meeting. |
| <p>Lodging an appeal</p> | <ul style="list-style-type: none"> • A deadline will be given by which appeals must be lodged. • The breeder should contact the RL Team as soon as possible if they wish to lodge an appeal. The RL team can explain the decision to the breeder to help them regarding the grounds for appeal. |
| <p>Major grounds for appeal</p> | <ul style="list-style-type: none"> • 1. The Crop Committee failed to apply properly the stated criteria for recommendation or have applied criteria other than those stated. • 2 The criteria have not been applied equitably across all varieties within a market segment. • 3 There were faults in the compilation or interpretation of the data of such significance that the Committee were misled. • In hearing an appeal, the RL Project Board shall take into consideration supply chain, grower and agronomic requirements including the reasonable expectations of seed markets. |
| <p>Appeals meeting</p> | <ul style="list-style-type: none"> • Appeals are heard by the RL Project Board, including their alternates. • Breeder/agent must attend and make a verbal presentation of no more than 10 minutes. They may table a copy of their presentation for RL Project Board members. • Breeder/agent will be informed of the result of the appeal as soon as possible after the meeting. • A fee (currently £650) will only be charged for unsuccessful appeals. |

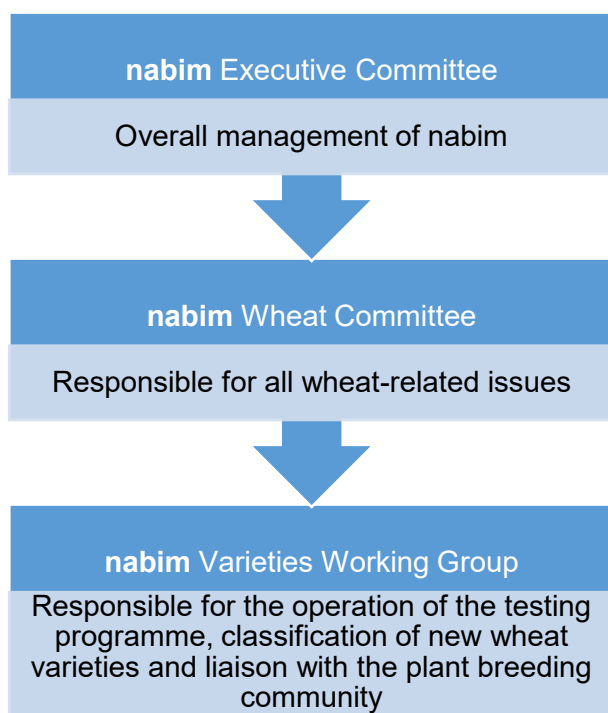
7 Appendix 1: Procedures used by nabim for classifying new wheat varieties

7.1 The system

The **nabim** system of classifying new wheat varieties has been developed to identify those new wheat varieties with the potential to supply the needs of the UK flour milling and baking industries.

The system is operated by the **nabim** Varieties Working Group (VWG). The VWG is semi-autonomous but reports directly to the **nabim** Wheat Committee; however, unlike other such working groups or committees within **nabim**, none of the information obtained from the National List and Recommended List testing is divulged to **nabim** member companies outside of the participating members of the working group. Only the final comments, produced once a variety accedes to the RL, are shared with other **nabim** member companies.

The nabim organisational system



The role of the Varieties Working Group



All members of the VWG have agreed to share their analytical test results with the other participating companies and accept that their results will also be forwarded onto the BSPB and summary results on to AHDB Cereals & Oilseeds.

The VWG is composed of the participating members. The **nabim** secretariat acts as the independent observer and is present to ensure objectivity and transparency.

If a VWG member is unable to test a series of trials, then when the meeting to discuss the overall **nabim** view is held, that company shall not expect a seat at the table, nor shall they be copied the set of results.

The membership of the VWG will not be less than four member companies (and representing at least 50% of commercial production within **nabim**). The current membership of the VWG is listed below. New companies wishing to be part of the VWG have to satisfy the existing members of their competence and reliability in undertaking the required tests. This would be satisfied by a presentation from the 'candidate' member company on their wheat variety assessments such that their particular techniques could be put into the context of the existing members. A 'ring-test' assessment of a number of 'blind' wheat samples would also be carried out by all members of the VWG including the 'candidate' member. Comparisons would be made of analytical results and baking tests.

All members of the VWG work in companies that are part of a proficiency scheme for flour and wheat testing. Although there is not a similar scheme for baking, members use the same baking tests that they undertake daily within their own businesses. At each review meeting, members comment on any results that may not conform to expectations and this sometimes results in a ring test being carried out to compare testing procedure across the laboratories.

Current membership of the nabim Varieties Working Group (15 April 2020)

| | |
|-------------------------|---|
| Allied Mills | • Mr Mark Charlton (chair) |
| Hovis Ltd | • Mr Shaun Taylor |
| Carr's Flour Mills Ltd | • Mrs Katie Barwise |
| Whitworths Holdings Ltd | • Mr Keith Newton |
| Heygates Ltd | • Dr Mervin Poole |
| ADM Milling Ltd | • Mrs Anna Perz |
| Campden BRI | • Mrs Clothilde Baker |
| nabim | • Mr Joe Brennan (independent observer) |

7.2 History

Before 1993, **nabim**'s contribution to new wheat variety assessments was very much based on individual member's relationships with, UK plant breeding companies. The official testing for the National List (NL) Years 1 and 2 and the Recommended List (RL) trials was carried out independently by the Flour Millers and Bakers Research Association (FMBRA), which evolved to become Campden BRI.

Following successful comparative analysis of varieties from the 1992 crop by Allied Mills, Rank Hovis, Spillers Milling (now ADM) and FMBRA (now Campden BRI), a formal testing protocol was agreed in early 1994. Millers would test varieties in NL1, NL2 and RL trials and the results given to BSPB and HGCA (now AHDB Cereals & Oilseeds) would be kept as confidential. The FMBRA was commissioned to carry out independent analysis to supplement the work of the flour milling companies.

In 1999, there were industry discussions concerning how the Recommended List should be operated, which was then funded by the HGCA levy but operated by the National Institute of Agricultural Botany (NIAB). Crop Evaluation Limited (CEL) was created soon after. In 2010, a consortium agreement was made between HGCA (now AHDB Cereals & Oilseeds), **nabim**, MAGB and BSPB, with the RL testing becoming an AHDB Cereals & Oilseeds R&KT project. Campden BRI is contracted to make additional testing (to supplement that of the VWG members) and this is funded by AHDB Cereals & Oilseeds (RL) and BSPB (NL).

7.3 Conflicts of interest and anti-competitive behaviour

nabim and the VWG operate procedures to prevent anti-competitive behaviour in all the Association's activities. Records of all **nabim** meetings are kept, detailing attendances and subjects discussed.

Before each VWG meeting, VWG members are required to declare all conflicts of interest that may impact on the group but especially where a member of the VWG has entered into a relationship with a plant breeder concerning any new/candidate variety. This process is similar to that used for AHDB Recommended List Crop Committee meetings and a record of these declarations is kept. Members with 'conflicts' are permitted to present their testing results but leave the room when decisions are being made.

Where individual members have supplementary testing data (e.g. from their own assessments of new varieties from the breeders and outside of the BSPB/**nabim** initiative), they are expected to declare this and they may choose to present this data at the **nabim** meetings in order to provide additional background information.

The role of the **nabim** secretariat is to advise and arbitrate where there are differences on views relating to varieties or where the narrative from such decisions is unclear. The secretariat also ensures that anti-competitive behaviour does not occur.

7.4 The procedures

7.4.1 Micro milling and baking

Small-scale milling and baking is carried out by members of the Varieties Working Group. Samples are analysed from the most suitable trial sites and analyses are focussed on fitness for baking under different milling and baking regimes.

BSPB and AHDB Cereals & Oilseeds both have predictive wheat quality testing carried out on their trial samples. These details are forwarded to both **nabim** members and Campden BRI. The chairperson of the **nabim** VWG coordinates the site selection for the **nabim** members, based on technically appropriate criteria, which may vary from year to year. The aim is to select from different sites and across a range of quality characteristics but such that these are within the limit of being commercially acceptable, e.g. not very low specific weights, low Hagberg Falling Numbers, etc.

Both BSPB and AHDB Cereals & Oilseeds have multiple sites from which millers and Campden BRI make their selection. However, in a difficult harvest where crops have been damaged by bad weather, the number of 'available' sites may be severely restricted. In these situations, a decision is made regarding the level of confidence to be placed on a limited number of samples tested of each new variety.

Samples from selected NL and RL trials are sent to the co-operating laboratories of the VWG members, analysed according to agreed (but with different milling and baking systems) protocols and the integrity of the data is checked. Appropriate control varieties are chosen by the VWG.

At the meeting held soon after the analyses are completed, each member presents their data relating to the key measured parameters and these are entered into a tabular format with these key characteristics colour-coded. An overall rating is agreed after appropriate discussion.

7.4.2 Evaluation of varieties

Within each phase of the trials process, VWG members are expected to carry out the following tests:

- Test one trial of each of the winter and spring bread wheats as well as the biscuit types.
- Within each trial there will be control varieties.
- Each member will use their standard techniques for wheat, test-milling, flour analysis and test-baking. From this information, each company circulates their results on pre-agreed templates. The information required to judge the overall quality attributes of each variety is as follows:

Bread wheat varieties:

- Wheat protein content (dm), Hagberg Falling Number, Specific weight, and grain hardness
- Flour extraction rate, flour water absorption, Farinogram attributes and flour colour
- Loaf volume or baked height and bread quality attributes

Bread wheat varieties are then assigned a potential **nabim** grouping:

- For NL trials: 1, 1/2, 2, 2/1, 2/4 or 4
- For RL trials: 1, 2 or 4

Biscuit wheat varieties:

- Wheat protein content (dm), Hagberg Falling Number, Specific weight, and grain hardness
- Flour extraction rate, Flour water absorption, Farinogram attributes and flour colour
- Flour dough Extensogram results

Biscuit wheat varieties are then given a potential **nabim** grouping:

- For NL trials: 3, 3/4 or 4
- For RL trials: 3 or 4

Within the **nabim** assessment of varieties the results will fall into pre-defined acceptance criteria, where the conditional formatting of the results spreadsheet will colour code the results using traffic light colours. The system for grading each breadmaking variety is based on the following criteria:

| Colour code | Ranking criteria |
|----------------------|---|
| Acceptable (green) | Overall performance fully meets the agreed specification value. |
| Intermediate (amber) | Overall performance is borderline in terms of meeting agreed specification value. |
| Unacceptable (red) | Overall performance does not meet the agreed specification value. |

Control varieties are selected after discussion with BSPB and AHDB Cereals & Oilseeds (as appropriate) from the AHDB Recommended List. For breadmaking wheats, one control is usually the leading Group 1 variety of the time together with an example Group 2 variety (often at the lower end of the performance spectrum) in order to provide a range of comparators. Performance of new varieties will be compared to the results obtained from these varieties. Currently, the breadmaking controls are Crusoe and KWS Siskin.

A modified colour system for grading each biscuit-making variety is based on the following criteria:

| Colour code | Ranking criteria |
|----------------------------|---|
| Acceptable (green) | Overall performance fully meets the agreed specification value. |
| Intermediate (light green) | Overall performance is borderline in terms of meeting agreed specification value. |
| Unacceptable (red) | Overall performance does not meet the agreed specification value. |

Control varieties are selected after discussion with BSPB and AHDB Cereals & Oilseeds (as appropriate) from the AHDB Recommended List. For biscuit wheats, the control is usually the leading Group 3 variety of the time. Performance of new varieties will be compared to the results obtained from these varieties. The current control variety for Group 3 wheat is KWS Barrel.

The VWG considers the technical results within a commercial performance framework to produce recommendations. The choice will be based on:

- objective criteria relating to the qualities of the varieties included in the AHDB Recommended List
- criteria supported by commercial reasoning

These assessments take place at three stages:

- Data and recommendations based on NL1 samples, which will in due course be used by AHDB Cereals & Oilseeds to select candidates for NL2 and Recommended List trials. From this NL1 data, varieties which are identified as being Group 4 types are excluded from the fast-track testing of NL2 harvested samples.
- Data and recommendations based on NL2 samples (together with NL1 data), which will be used by AHDB Cereals & Oilseeds to select candidates for Recommended List trials.
- Data and recommendations based on RL candidate samples (together with NL1 and NL2 data), which will be used by AHDB Cereals & Oilseeds to select varieties for the Recommended List.

The meetings of the **nabim** VWG are to agree the potential of those varieties in trials. Members' results are viewed overall and then each member is asked in turn to give their opinion on overall

characteristics for each variety tested and a consensus is formed. NL1 results are presented to BSPB as a presentation given by one of the **nabim** VWG members and followed up with emailed copies.

If individual members have supplementary testing data (e.g. from their own assessments of new varieties from the breeders and outside of the BSPB/**nabim** initiative), this may be tabled at the **nabim** meetings in order to provide additional background information. This provides an enhancement to the standard results but should not be used as the only means of judging a new variety or assigning a **nabim** grouping.

When decisions are required on varieties to be considered for entering RL trials or having been in RL and up for possible Recommendation, then it is the responsibility of the **nabim** VWG to look back on past assessments of individual varieties to take in all available data and across crop years. This is important because a snapshot in just one season does not show the stability of a variety. The procedure for combining all the test results is the same as detailed in the above paragraph. The **nabim** results are given to BSPB as well as presented at the AHDB Cereals & Oilseeds RL Crop Committee meetings by the **nabim** Technical Representative on the Wheat Committee.

7.4.3 Macro milling and baking

From 2014, the **nabim** VWG introduced a new system to confirm the performance of new 'promising' breadmaking wheat varieties. Having achieved 'provisional' approval to Group 1 status by the established process, the variety is assessed by milling and baking commercial quantities of the variety. If successful, it would then achieve 'full' Group 1 status. This process is detailed in a separate protocol agreed between **nabim** and BSPB.

Following **nabim** assessments at the end of NL2, potential breadmaking varieties with a Group 1, Group 1/2 or Group 2/1 grouping would have commercial crops sown to deliver approximately 60 tonnes for commercial milling at the following harvest. If there are more than four varieties meeting these criteria, the additional varieties will only be accepted for testing following further agreement between BSPB and **nabim**.

The choice will be based on:

- objective criteria relating to the qualities of the varieties included in the AHDB Recommended List
- criteria supported by commercial reasoning

For each variety, a 60 tonne crop should be contracted across a minimum of two or, ideally, three growers located across a range of regions. These fields will be located on farms that have a

professional approach to growing milling wheat and will be located in areas predetermined between BSPB and the breeders, taking proximity to the majority of UK milling companies into consideration. The varieties being tested will be co-located on farms already growing an agreed Group 1 control variety of wheat.

The target specifications for these crops are: protein 13%, specific weight 76 kg/hl and Hagberg Falling Number 250 seconds.

For each variety being grown, two 29 tonne batches of grain will be evaluated by a VWG member. The **nabim** secretariat will select the mill participating in this work each year from members willing to undertake the work.

There will be a minimum specification of 12.2% protein, 225s Hagberg Falling Number and a specific weight of 75kg/hl. The grain will also meet the appropriate food safety regulations. Grain which does not meet this specification will not be accepted. It will be the responsibility of the breeder to ensure that the wheat is grown in a manner likely to achieve this specification and to ensure that quality is not damaged during harvesting, drying or transport. Bulk commercial crops will be milled, tested and baked by the selected milling company before harvest in RL trial year. This company will also provide flour to other millers (and Campden BRI) who may choose to undertake their own baking tests.

All flour samples will be subjected to the standard analysis as well as a diversity of baking systems. Participating members will submit their results to the VWG for consideration and they will form part of the final report from **nabim**.

Results from the commercial bulk crop results will be considered by the nabim VWG together with the previous micro-milling and baking results. These will be reported, together with the final grouping categories, by March in the year of Recommendation, and then submitted to the appropriate AHDB RL Project Board meeting in April.

7.5 Appeals

The most critical stage in the process for many plant breeders is when their varieties are in the NL1 stage. There is an established 'appeals' process at this stage whereby breeders can challenge the information supplied by the VWG. This has occurred in the past, usually where varieties thought to have a potential quality use were classified as Group 4. In the later stages of testing, the data is shared and discussed with the plant breeders before the information is considered by AHDB

Cereals & Oilseeds for RL candidate selection or for approval to the Recommended List. Appeals against VWG decisions are less likely at this stage.

Decisions from the VWG are sent to BSPB within 24 hours of the decision being made and, through them, to their members whose varieties are being considered. Non-members are contacted directly. Meetings with all plant breeders whose varieties are being tested usually take place within one week of decisions being communicated.

Breeders may appeal VWG decisions in writing or by email. NL1 and RL appeals should be made to the **nabim** secretariat within five working days of the decision being published. Appeals at the NL2 stage should be made within one working day of the decision being published. Appeals will initially be considered by the **nabim** secretariat and, if necessary, a meeting or teleconference of the VWG will be convened as soon as practical.

Criteria for appeals will be based only on milling and baking results or their interpretation. Appellants should submit alternative data of known provenance and where similar controls (to those used in the NL/RL testing process) have been grown at the same sites and tested in the same way. Appeals relating to yield and agronomic characteristics will not be considered.

7.6 Reporting of decisions

nabim will produce reports to AHDB Cereals & Oilseeds, which will be presented to the Wheat Crop Committee. These documents will include data and commentary for each variety under test and will be used by the Crop Committee to identify varieties which meet the end use quality requirements identified by the four **nabim** groups.

8 Appendix 2: MBC approvals systems for barley varieties

8.1 The system

The Malting Barley Committee (MBC) system of Approval has been developed to identify those new barley varieties with the potential to supply the needs of the UK malting, brewing and distilling industries. The system is administered by the MBC, supported by its Micro-Malting Group (MMG).

The purpose of the Malting Barley Committee (MBC)

Malting Barley Committee

- To administer a joint industry committee for the selection of new malting barley varieties
- To ensure the continued supply of good quality raw materials for malting, brewing and distilling purposes
- To oversee the operations of the micro-malting group
- To hear appeals by breeders and agents on decisions

The purpose of the Micro-Malting Group (MMG)

Micro-Malting Group

- To examine the data
- To compare performance against control varieties
- To make technical recommendations on suitability to the MBC
- To revise the analytical protocol as required and maintain a degree of uniformity across labs

The MBC includes stakeholder representatives appointed by Maltsters Association of Great Britain (MAGB), British Beer & Pub Association (BBPA) and the Scotch Whisky Association (SWA); the stakeholders alone decide issues of governance. Co-opted onto the committee are technical and commercial experts from the malting, brewing and distilling industries to assist with decision-making on technical issues; these include where appropriate the Chair and Deputy Chair of the MMG and those appointed to represent the industry on AHDB's BOCC. Also co-opted onto the committee are representatives nominated by AHDB, BSPB, AIC and others with the expertise needed to run the system; these are non-voting members but they may assist with appeals. The Chairman will normally be a MAGB stakeholder but if a brewer or distiller stakeholder is willing and able to take on the role, that option is available.

8.2 Evaluation of varieties

Samples from selected Preliminary (National List) trials and Recommended List trials are sent to the co-operating laboratories of the MMG, analysed according to agreed protocols and the integrity of the data checked. Appropriate control varieties are chosen by the MMG from controls used in preliminary trials from the official controls in NL trials. The MMG discard those unsuitable for malting; if the remainder provide more than required, selection is based on the need for continuity over years and their suitability for the appropriate malting markets.

Following the validation and analysis of the data, the MMG rank the varieties from that data-set and comment on the performance of each variety compared to the controls. The system for grading each variety is based on the following criteria using a colour coded scheme.

| Colour code | Ranking criteria |
|------------------|--|
| Good (green) | Overall performance is better than the controls. |
| Possible (amber) | Overall performance is equivalent to the controls. |
| Poor (red) | Overall performance is worse than the controls/no benefit to the industry. |

Once the key characteristics have been colour-coded, the varieties are ranked, GREEN, AMBER or RED with separate rankings for brewing, malt and grain distilling. For NL1 results, varieties are unlikely to be given a green rating.

Revised means, with key characteristics and an overall rating colour code are presented for further consideration by the MBC; where appropriate data and rankings from the previous years are also presented.

The MBC assesses the recommendations and technical results. Decisions take into account commercial aspects to assess potential to supply the industry. The MBC also considers the progress and results from macro-scale trials: see below criteria for MBC Approval. Decisions taken by the MBC cover:

- Data and recommendations based on NL1 samples which will in due course be used by AHDB to select candidates for Recommended List Trials
- Data and recommendations based on NL2 samples (together with NL1 data) which will be used by AHDB to select varieties for Provisional Recommendation based on advice from industry representatives.
- Recommendations for MBC Provisional Approval based on three years of micro-malting results.
- Recommendations for progression to MBC Full Approval based on results from macro-scale trials.

The MBC is the decision-making body for the system and, in particular, the award of MBC Provisional and Full Approvals. The appeals procedure is given below.

8.3 The procedures

Procedures are revised and agreed by the MBC.

The MBC uses its collective expertise to assess both the micro-malting data, results of macro-scale trials and AHDB's agronomic data in order to identify varieties with the potential to be major malting varieties in three years' time. The decisions/recommendations will be based on:

- a. Micro-malting and macro-scale trials' data
- b. Commercial reasoning and experience necessary to interpret both malting and agronomic data
- c. The criteria and levels identified as being important to the malting, brewing and distilling use.

8.3.1 Criteria for MBC Provisional Approval

- Candidates for Provisional Approval will be selected from those varieties in UK Recommended List trials with promising NL1 and NL2 micro-malting results.
- Provisional Approval 1 will be awarded to those varieties that demonstrate useful malting quality in micro-malting tests following the first Recommended List trial harvest.
- Varieties entering the UK system via the EU Common Catalogue will be eligible for Provisional Approval once the MBC are satisfied that sufficient comparable data on UK grown barley are available, and that the micro-malting or commercial performance demonstrates useful quality.

8.3.2 Criteria for MBC Full Approval

- Candidates for Full Approval will normally have been awarded Provisional Approval 1 based on micro-malting results. To gain Full Approval, the Malting Barley Committee must have evidence of satisfactory commercial (macro-scale) performance in the malting/brewery/distillery. Macro-scale trialling is decided by individual maltsters, brewers and distillers and is not necessarily limited to those varieties supported by the MBC: to be valid the trials must be reported in the correct format direct to the MBC Secretariat.
- In any one year, it is unlikely there will be sufficient capacity to test more than five varieties in commercial scale (macro-scale) trials; because spring barley has a priority, it is unlikely that capacity will be available for more than two winter varieties.

The choice will be based on:

- a. objective criteria relating to the qualities of the varieties included in the AHDB Recommended List
 - b. criteria supported by commercial reasoning
 - c. criteria made public to the breeder/agent including the criteria for appeals.
- A minimum of 1000 tonnes of barley needs to be made available per variety in order for sufficient trials to be carried out to enable a variety to proceed from Provisional Approval 1 to Full Approval in a single crop year. If a variety is to be trialled for both brewing and distilling then a minimum of 2000 tonnes would be required.

- Wherever possible the barley available for testing should have nitrogen content of:
 - Brewing:** 1.55–1.75%
 - Distilling:** maximum 1.65%
 - Grain distilling:** minimum 1.85%
- In order to ensure a variety has the best opportunity of gaining Full Approval within the required timescale trial barley should be in store and dried by the end of September. This will then enable Maltsters to complete their trials by the end of January and Brewers/Distillers to complete the trials by the beginning of May.
- Multiple trial data from individual brewers/distillers may be admissible providing each trial is performed through a different process system.
- It is preferable that a spring barley variety should be tested against another spring barley and likewise with a winter variety.
- Satisfactory micro-malting results should be confirmed by a minimum number of satisfactory macro trials using barley grown in the relevant region:
 - For Full Approval for Brewing Use:** 2 commercial malting and 2 different brewing trials (one of which must be a mash filter).
 - For Full Approval for Distilling Use:** 2 satisfactory commercial malting and distilling trials
 - For Full Approval for Grain Distilling Use:** 2 satisfactory high DP commercial malting trials plus 1 acceptable test report by SWRI
- A variety should normally progress to Full Approval within one year of commercial trials. Where there have been insufficient satisfactory malting, brewing or distilling trials to award Full Approval in one year of commercial trials, the Malting Barley Committee may award Provisional Approval 2 to denote that a variety has not been rejected and is still progressing through the approval process. Macro-scale data from outside the UK can provide secondary evidence to back up the primary evidence from UK macro-scale trials.
- A variety should progress to Full Approval within two years of commercial trials. Any variety failing to gain Full Approval within two years will be removed from the Approved List.
- The Malting Barley Committee may consider for Provisional and Full Approval, varieties with special qualities providing that they demonstrate satisfactory (but not necessarily the best) malting and brewing/distilling performance in all respects.
- The Malting Barley Committee may use its absolute discretion with regard to awarding of Approval, which might for sound commercial reasoning override the above criteria.

8.3.3 Criteria for Removal from the List of MBC Approved Varieties

- Varieties may be removed from the List of MBC Approved or Provisionally Approved Varieties when at the discretion of the Malting Barley Committee, the Approved or Provisionally Approved variety no longer warrants promotion by the industry.
- Criteria for removal may include insufficient commercial scale trials, poor or outclassed performance, low purchases or lack of seed availability.

8.4 Appeals

BSPB are responsible for passing MMG summaries and recommendations to the breeders. If a breeder wishes to query either the data or the recommendation, he should contact the Chair of the MMG. If it is a **data issue**, the Chair should check the source data, review what was done by the MMG, respond to the breeder and inform the MBC if a revision should be made. If the breeder is unhappy with the response, he should 'appeal' to the MBC, providing a short rationale for his appeal, ahead of the MBC meeting, to both the secretary and the BSPB representative.

Queries about **recommendations** follow a similar path. The Chair should check for consistency the summary on which the recommendation was based, respond to the breeder and inform the MBC if a revision should be made. If the breeder is unhappy with the response, he should appeal to the MBC, providing a short rationale, ahead of the MBC meeting, to both the secretary and the BSPB representative. Appeals against the MMG dataset or recommendations will be taken by the MBC before discussion leading to MBC decisions; the MBC's decision on these appeals will be final.

For Appeals against other MBC decisions, a small group (at least three) will be nominated at the start of the MBC meeting. These members **may** contribute to the initial discussions but **must not** participate in the actual decision-making process. The Appeal Group will be chaired by someone who is technically knowledgeable, normally the Chair or Deputy Chair of the MMG. The other two members should ideally be drawn from non-voting members of the MBC.

MBC decisions leading to a downgrade in a variety's progress should be reported to the breeder by the BSPB Secretariat representative early in the lunch break. The BSPB representative may give guidance to the breeder on the factors/discussion leading to that decision. If the breeder wishes to appeal, a short rationale for the appeal should be emailed back to the BSPB Secretariat representative in time for him to present the appeal to the Appeal group for consideration during the lunch break.

The normal grounds for appeal are INCONSISTENCY or FAILURE TO CONSIDER ADEQUATELY THE INFORMATION AVAILABLE TO THE MBC. If the appeal is of a technical or commercial nature it will be referred back to the next meeting of the MBC. The decisions of the Appeal group will be final.

8.5 Reporting of decisions

The Malting Barley Committee decisions and advice will be presented to the Crop Committee by the industry representative on that Committee. The information is used by the Crop Committee to identify varieties which meet the end use quality requirement for UK malting varieties.

The MBC will produce reports to meet these requirements as detailed below.

Communication, including the reporting of decisions, between the MBC and AHDB's Barley and Other Crops' Committee (BOCC) is achieved as follows:

- The micro-malting database is held and updated by AHDB; any revisions to colour-coding during MBC meeting will be recorded by the AHDB staff member in attendance. This includes any changes to the colour-coding of candidates.
- Information on candidates will be communicated by an extract from the unapproved minutes of the MBC.
- Decisions on progress within the MBC Approval system are published in a press note normally issued just prior to Cereals. The AHDB staff member attending the MBC should communicate information on those varieties exiting the MBC Approval system.
- Those who sit on the MBC and BOCC should be prepared to provide supporting explanation.

9 Appendix 3: AHDB Exports procedures: ukp and uks classifications

9.1 Introduction

The Exports Branding Selection Panel is a technical sub committee of the Wheat Crop Committee responsible for maintaining the integrity of the **ukp** and **uks** export classifications and making decisions on the suitability of wheat varieties for inclusion into these classifications. The proposals of the Panel are reported to the Wheat Crop Committee via the trade representative for note and the Wheat Crop Committee then reports the proposals to the RL Board via the Crop Committee minutes for ratification. The decisions are then used in the AHDB Recommended List.

A definition of the classifications is provided below. This definition is for overseas buyers of UK grown wheat and is based on their feedback of the suitability of UK varieties for specific end uses.

- **ukp** is a blend of semi-hard endosperm varieties to suit both EU and non-EU bread making.
- **uks** is a blend of soft extensible varieties well known throughout the EU for their biscuit making and bread blending characteristics. Useful for blending with hard high protein wheats.

In practical terms the Panel meets twice per year, in autumn and spring to consider Chopin Alveograph data on new varieties coming through the AHDB Recommended List system and the performance of established recommended varieties from an export perspective.

The meetings will be held in a virtual way rather than face to face, The papers will be discussed via a suitable electronic conferencing facility initially and then followed up with a further electronic meeting if there are any queries.

9.2 Membership of the Exports Branding Selection Panel

The Panel make up is:

- The Chair (Member of the Cereals & Oilseeds Board with special responsibility for exports)
- BSPB representative
- Campden BRI representative
- Trade representative (Common to the Wheat Crop Committee and Exports Branding Selection Panel)

- Appointments to the Exports Branding Selection Panel shall be the responsibility of the Cereals & Oilseeds Board (Chair), BSPB, Campden BRI and the Wheat Crop Committee respectively.

9.3 Conflicts of Interest

Registration of business interests and variety conflicts of interest must be declared in accordance with section 3.

9.4 Selection of Trial Sites and samples

New candidates being considered for the **uks** or **ukp** brands are initially tested over three years; National List (NL) trials in years 1 and 2 and n in the Recommended List (RL) candidate trial year.

The list of NL trial candidates to be tested for export suitability is supplied to AHDB by BSPB.

Control varieties are selected from the RL control varieties where possible and should be export approved varieties themselves. Control varieties are put forward by the RL team, agreed by the Branding Selection Panel. The control varieties for harvest 2020 are shown in Table 1.

Table 1. Control varieties for export branding section harvest 2020

| | ukp | uks |
|--------|------------|------------|
| Winter | KWS Siskin | KWS Barrel |
| | | Elation |
| Spring | Mulika | |

Samples of NL trial candidates are selected from NL trial sites using data provided to AHDB by BSPB in the autumn. A minimum of four sites, will be selected for sample testing. Suitable sites will be proposed by Campden BRI with support from the AHDB RL team. Final selection will be the responsibility of AHDB. Site selection will be based on grain quality and where possible meet the following criteria:

Moisture levels are 15% or below and the majority of varieties are meeting the physical specification for export:

- i. **ukp** Specific Weight: 76kg/hl (min); HFN: 250 (min); Protein: 11-13%
- ii. **uks** Specific Weight: 75kg/hl (min); HFN: 220 (min); Protein: 10.5-11.5%

Candidates are tested in January/February for consideration at a March/April Exports Branding Selection Panel meeting in advance of the following harvest's planning meetings.

AHDB RL trial candidates to be tested for **ukp** and **uks** classification are selected from AHDB RL trial sites immediately after harvest. Suitable sites will be proposed by Campden BRI with support from the AHDB RL team. A minimum of four sites will be selected, where possible using the same criteria as above.

Sites selected for sampling should ideally be located in the South or East of England as representative of the main export growing regions. If insufficient sites meeting the quality criteria are available in this region sites from other regions may be considered.

RL varieties are tested in September/October for consideration at a November meeting in advance of the AHDB Wheat Crop Committee.

9.5 Selection criteria

To be approved for inclusion in one of the classifications a variety must consistently meet the Chopin Alveograph targets as outlined in Table 2 below.

Table 2

| Characteristic | ukp | uks |
|-----------------------|------------|------------|
| W | Min 170 | Max 120 |
| P/L | Max 0.9 | Max 0.55 |

In addition to Chopin Alveograph characteristics, export specifications include minimum requirements for Hagberg Falling Number (HFN) and specific weight. For candidates that meet Chopin Alveograph requirements, consideration is given to HFN and specific weight data in order to define export status, which will only be given to candidates that have consistently achieved typical export specifications for these parameters. The HFN and specific weight targets are outlined in Table 3.

Table 3

| Characteristic | ukp | uks |
|------------------------|--------------|--------------|
| Hagberg Falling Number | Min 250 | Min 220 |
| Specific weight | Min 76 kg/hl | Min 75 kg/hl |

Any changes to the criteria will be the responsibility of AHDB in consultation with overseas buyers, UK traders and the Exports Branding Selection Panel. There is no formal review frequency; reviews are based on end user feedback.

The performance of varieties under consideration will be compared to the control varieties across all parameters.

Any variety from National List trials that is given a “positive” or “neutral” decision will then be taken forward to further testing. Any variety given a “negative” decision will not be tested further and will not be considered by the Panel again. Definitions of Positive, Neutral and Negative are given in Table 4.

Table 4

| Decision | Ranking criteria – for re-testing at next stage |
|-----------------|---|
| Positive | The data shows that the variety meets the selection criteria fully |
| Neutral | The data shows that the variety is borderline in terms of meeting the selection criteria, defined by being within 1 LSD at 5% as reported |
| Negative | The data shows that the variety does not meet the selection criteria and is outside the parameter of 1 LSD at 5% as reported |

At RL Candidate stage, the variety will be given a “Y” (yes – approved) or “N” (not classified) rating. Only those candidate varieties which go on to be added to the Recommended List will be included in the classifications. Definitions of Y and N are given in Table 4.

Table 4

| Decision | Ranking criteria – for full recommendation for ukp uks |
|--------------------|---|
| Y (yes) | The data has shown that the variety consistently meets the selection criteria fully |
| N (not classified) | The data has shown that the variety does not meet the selection criteria and is therefore not suitable for export |

9.6 Testing and selection of laboratories

The varieties will be tested for suitability for export using the Chopin Alveograph test. This test gives an indication of the baking potential of the variety and is a test commonly used and understood by overseas millers and bakers.

The testing is carried out in 4 laboratories. The laboratories are selected on geographical location, being within key export markets or countries that compete in the export market and by their adherence to ISO27971:2008 (or revisions) or equivalent.

Contracts are in place until 2022 for laboratories in the UK, Spain, Portugal and France.

9.7 Validation of data

In order for a variety to gain **ukp** or **uks** classification the data set needs to contain results from a minimum of three trials per year for three years.

Raw data received from the laboratories are checked and validated by the RL Team and any outliers queried with the laboratory.

The data are then analysed by the RL Team. Data for specific weight and HFN will be provided by the AHDB RL. The resultant reports are provided to the Exports Branding Selection Panel for consideration at the meetings.

9.8 Provisional ratings and Historic List

Varieties will be given a provisional export rating for 2 years and shown in brackets on the RL. Once the variety has been proven commercially, usually after 3 years, it will move to a full rating. If, after two years, the variety has not been proven commercially, the Panel reserve the right to withdraw its export rating. Information on commercial experience will be collected by the Exports Branding Selection Panel trade representative ahead of the autumn selection meeting.

Previous RL varieties that have been removed from the RL, will retain their export status on the Historic List until they are no longer commercially viable. This is carried out in two stages:

1. The RL team will provide information on C2 seed area. Any variety which has seed area of more than 0.5% will remain on the Historic List.
2. Any variety which falls below 0.5% C2 seed area, and has not been presented for export in the previous season, will be removed from the Historic List.

The trade representative will be responsible for reporting to the Panel whether varieties have been presented for export in the previous season. RL varieties that have been removed from the RL will be considered at the autumn selection meeting.

The Historic List is published on the AHDB website and emailed to BSPB.

Commercial viability is defined as being regularly available and presented for export and having end-user support. The criteria do not preclude the Panel taking into account end-user views or reviewing the status of a variety on other grounds e.g. poor performance or loss of support from end-users. If a variety has received negative feedback on performance from end-users this will be considered by the Panel and may affect a variety's export classification.

9.9 Reporting of decisions

The proposals of the Exports Branding Selection Panel, along with the dataset on which the decisions were made, will be circulated via BSPB within 24 hours of the Exports Branding Selection Panel meeting by AHDB. Circulation to any non-BSPB members will be provided for if the AHDB is notified in advance.

The proposal report is also formally provided to the RL Wheat Crop Committee and RL Project Board via the Wheat Crop Committee. Ultimate responsibility for approval of the proposed classifications lies with the RL Board.

9.10 Appeals procedure for branding decisions

If a breeder wishes to consider an appeal, contact must be made with AHDB within three working days of the proposed classifications and data being published. AHDB will contact the breeder to hear the concerns and explain the background to the decision.

The major grounds for an appeal will be one or more of the following:

1. The Exports Branding Selection Panel failed to apply properly the criteria stated above for selection or have applied criteria other than those stated.
2. The criteria have not been applied equitably across all varieties within the market segment.
3. There were faults in the compilation or interpretation of the data of such significance that the Panel were misled.

After discussion with AHDB, should the breeder decide to continue with the appeal, the formal procedure will commence immediately with the appellant requested to put the concerns and case in writing to AHDB. AHDB will then set up an Appeals Committee as follows:

- The Chair of the RL Board shall chair the Appeals Panel
- A BSPB representative from the RL Board (not present at the original meeting)
- The Chair of the Wheat Crop Committee

The representative from Campden BRI, present at the original meeting will attend but will not vote on the appeal. Discussion will take place via conference call. The Appeals Committee will have available all papers from the original meeting and the written appeal from the appellant.

Decisions will be taken by a simple majority of the Appeal Committee, the Chairman will have a casting vote should that be necessary.

The appellant will be informed of the result of the appeal as soon as possible.

The results of the Appeal will be reported to the Wheat Crop Committee, which will convey the result to the RL Board for ratification.

In the event that it has not been possible to hear an appeal ahead of the Wheat Crop Committee meeting, AHDB shall make the Wheat Crop Committee aware of the outstanding appeal such that the variety can be considered. The results of the Appeal will then be reported to the Wheat Crop Committee and the RL Board at their next meeting.

10 Appendix 4: BSPB – British Society of Plant Breeders

The British Society of Plant Breeders is the representative body for the UK plant breeding industry. Formerly the Plant Royalty Bureau, the organisation was formed in 1966 after the UK Plant Varieties and Seeds Act 1964 established a legal framework for collecting seed royalties on protected varieties. Today, BSPB represents 71 members, comprising virtually 100% of public and private sector breeding activity in the UK. The Society has three core functions – royalty collection, variety trials organisation and technical support, and industry representation and promotion.

New varieties are subject to statutory registration trials before they may be marketed. They must pass DUS (Distinctness, Uniformity and Stability) tests and VCU (Value for Cultivation and Use) trials, normally for 2 years, to ensure that they meet high standards of quality and performance. In most major crop species, statutory registration is followed by further industry trials at more locations to identify the very best varieties, to be promoted onto a Recommended List.

BSPB is authorised by the UK national authorities to organise statutory VCU trials for UK National Listing purposes for all crop species with the exception of potatoes (for which VCU trials are organised by SASA in Scotland) operating under official supervision. This data generated from BSPB trials, which are carried out by plant breeders and variety trialling companies across the UK, forms a vital component of the industry led variety evaluation systems. In Cereals and Oilseeds, data supplied by BSPB provide the basis on which Recommended List candidates are selected, and account for around half the data requirements to determine which varieties ultimately gain Recommended status.

BSPB are partners with AHDB, nabim and MAGB in the delivery of the UK Recommended Lists for Cereals and Oilseeds, with BBRO for the Sugar Beet Recommended List and with AHDB and HCC for the Recommended Grass and Clover List for England & Wales. BSPB also organises trials and publishes Descriptive Lists of Forage Maize and Amenity Grasses.

11 Appendix 5: Trials inspection and validation procedures

11.1 Procedures for trial inspections

Trials will be officially inspected at least once by AHDB inspectors but additional inspections may be required in the case of problem trials or in the event of appeals.

Inspections shall be carried out at the best time to observe any defects in the trials. This is likely to be in February/March for winter oilseed rape crops to allow the assessment of plant population after the winter. Cereals should be inspected between May and July to assess the effectiveness of fungicide, plant growth regulator and fertiliser applications and the uniformity of growth and development. For all crops, trials may be inspected earlier if there are serious concerns relating to establishment or growth and development prior to trial inspection visits.

11.2 Criteria for trials inspection

| Assessment | Criteria |
|--|--|
| Sowing date, soil type and previous crop | Do these meet the requirements, if defined, and/or are they appropriate to the trial crop? |
| Suitability of field and position in field | <p>Is the soil apparently uniform in terms of texture, depth, structure and drainage?</p> <p>Is there water nearby that might lead to waterlogging?</p> <p>Is the field steeply sloping?</p> <p>Are there features such as trees and hedgerows that might give rise to pest problems or effects such as shading or wind effects that might cause abnormal lodging?</p> <p>Are there inoculated disease plots nearby that might give abnormal disease pressure?</p> <p>Is the site free of problems from previous cropping e.g. volunteers, clubroot in oilseed rape, or herbicide effects?</p> <p>Are there genetically modified (GM) plants in the field or nearby?</p> |
| Standard of drilling and field operations | <p>Has a bordered drill been used? If so, is the inter-plot border width \geq to the harvested plot width?</p> <p>Are there any interruptions in the plot drilling?</p> <p>Are there consistent distances between neighbouring rows and inter-plot gaps?</p> <p>Are tractor wheelings/tramlines at right angles to the direction of plot drilling?</p> <p>If the field is sloping, has the trial been laid out such that the plots are at right angles to the contours?</p> <p>Are there any staggered plot ends?</p> |
| Drilled to plan | Were there any changes to the plan supplied? If so, have these changes been relayed to the Trials Coordinator? |
| Plant population | Does the plant population appear to be correct? If not the Trial Manager should be asked to conduct a plant count for the control varieties. |
| Are there buffers? | Have buffers (i.e. between hybrids and open pollinating oilseed varieties) been drilled as required? |
| Weed control | <p>What is the size and population of any weeds?</p> <p>Are there any pernicious weeds such as black-grass, couch, wild oats, and brome?</p> |

| Assessment | Criteria |
|---|---|
| | Have they been sprayed and, if so, has the herbicide been effective? Are weeds competing or likely to compete with the crop? |
| Pest control | Is there any damage by pests such as insects, birds, rodents, molluscs etc.? Is the crop significantly damaged and will it recover? What measures are being/have been taken to minimise the problem? |
| Disease control | If the trial should have been sprayed, does it appear to have been effective (is the level of any disease >10% in any plot?) If there is an untreated trial in the field, compare the levels of disease between the treated and untreated plots. |
| Volunteers | Indicate approximately how many volunteers are present by assessing volunteers in the interplot gaps. How big are the volunteer plants? Are they likely to be suppressed by the crop or compete with it? Is the volunteer population constant across the trial or do they appear in bands? If they appear in bands are they across the direction of plot drilling? For oilseed rape conduct a count if there are greater than 3 volunteers per m ² and estimate the percentage ground cover. |
| Uniformity | Indicate whether the trial is growing uniformly within the reps. Indicate if there is any difference in growth between reps. Indicate if there is a serious problem with specific plots and note which plots are affected. Indicate if there is a problem with individual varieties and note which varieties are affected and inform the plant breeder/agent. If there is any lodging, indicate if it appears to be caused by differences in soil fertility or environmental effects rather than variety. |
| Any conflict with protocol or procedures | Does the trial meet the protocol and procedures specification for soil type, rotation, sowing date or any other definition? Are the harvestable plot dimensions acceptable? |
| Score individual plots on 1-4 scale where appropriate or necessary. | 1 – Exclude 2 – Of concern 3 – Slight/some concern 4 – Acceptable on day Add an explanatory note for plots where there are problems. |
| Please rate the acceptability of the trial as follows: | |
| Good: | Evenly established well-grown trial that meets protocol requirements. |
| Satisfactory: | Some problems, such as small areas of poor growth, missing plots or missing rows within plots. Some plots or parts of plot may need to be excluded but overall trials should provide satisfactory data. |
| Of concern: | Larger areas of poor establishment or growth, affecting replicates. Disease levels >10% in fungicide treated trials. A second trial inspection may be carried out to assess subsequent development. Requires careful validation at harvest. |
| Reject (abandonment of trial): | Problems with the trial which cannot be resolved. |

11.3 Trials Inspection Report

The trial inspector will record his/her findings on a standard form. The trial inspector will discuss the state of the trial with the trial manager during the inspection visit or, if unaccompanied, by email shortly afterwards. If any non-routine action is thought necessary, a plan of action will be agreed at, and the details included in the report. Having agreed on a course of action, it is the responsibility of the trial manager to ensure that this is carried out.

Individual reports will be posted on the admin area of the AHDB website (the RL extranet) usually within the trial workbook and it is the responsibility of the trial manager to read the relevant reports and to implement the agreed course of action. The trial manager will be given a user-name and password to allow access to the admin area

12 Appendix 6: Procedures for monitoring trials data

This section describes procedures for validating data from Recommended List (RL) variety performance trials and is based on guidance written by Mike Talbot of BioSS in 2001. The statistical basis for these procedures is set out in the book “Statistical Methods for Plant Variety Evaluation”, 1999, Chapman & Hall, London

The aims in monitoring RL trials data are to:

- assess the data for inconsistencies or irregularities
- ensure that the results provide a reasonable basis for estimating variety performance.

Trial results may not be satisfactory for several reasons:

- variation from replicate-to-replicate within a trial may be too great to provide reliable estimates.
- the conditions associated with the trial as a whole may not be typical of agricultural practice.
- there may be questions on the integrity of the data.

12.1 Within-trials monitoring

12.1.1 Methods of analysis

Methods of analysis for the RL trials are similar to those used for the NL VCU trials. For yields (cereals) and seed yield and gross output (oilseeds), plot data are subject to an analysis of variance. For incomplete block designs, variety means are adjusted for block differences. For all other characters, simple variety means are calculated.

12.1.2 Data checks - yields

Average yields from a trial should be within the range expected from the crop in agricultural practice. Typically this will require that mean yields for a trial should not be less than 75%, and not more than 200%, of the average for the trial series in the same year. If not, check the calculation of dry matter (DM) yield and that the harvested plot dimensions are correct. Otherwise the data should be omitted from the summary report unless the Trials Co-ordinator is satisfied that the trial represents a fair test of the varieties.

The coefficient of variation (CV) should be within limits set for the crop. The CV is the standard error of the trial expressed as a percentage of the trial mean and is therefore influenced by both the level of variability within the trial and the trial mean. The current guidelines for acceptable limits of CVs for DM yield are:

| Crop | CV% |
|-----------------------|------------|
| Winter wheat | 7% |
| Winter barley | 7% |
| Winter oats | 9% |
| Spring wheat | 7% |
| Spring barley | 7% |
| Spring oats | 10% |
| Winter oilseed rape | 10% |
| Spring oilseed rape | 10% |
| Spring linseed | 10% |
| Minor crops (Cereals) | 10% |

The trial results should always be reviewed in conjunction with the trial inspection report and the accompanying plot notes.

If the CV% is high, the trial results should be examined carefully to check if one of the replicates, or individual plot values, may be markedly influencing the CV. In which case, removal of the variable replicate or plots should be considered.

If the CV is high because yields are low, and would be within limits if based on average yields from other trials, then ignore this check. Otherwise, check the trial's results against the over-trials monitoring procedures below.

The following table is an example of how the CV% will change for a range of variability and trial mean yields (based on values for Winter Oilseed Rape with 3 replicates). Those cells in pink are outside the guidelines above. So a trial with a variance of 0.180 would be outside the guidelines if the mean yield is 4t/ha (CV=10.6%) but would be “acceptable” if the mean yield was 5t/ha (CV=8.5%). For this trial, the results would be scrutinised carefully and also reviewed in the over-trials matrix to assess consistency in the overall data set.

| Variance (s²) | 0.005 | 0.020 | 0.045 | 0.080 | 0.125 | 0.180 | 0.245 |
|----------------------------------|--------------|--------------|--------------|--------------|--------------|--------------|--------------|
| SED (from yield analysis) | 0.06 | 0.12 | 0.17 | 0.23 | 0.29 | 0.35 | 0.40 |
| Mean Yield (t/ha) | | | | | | | |
| 2.0 | 3.5 | 7.1 | 10.6 | 14.1 | 17.7 | 21.2 | 24.7 |
| 3.0 | 2.4 | 4.7 | 7.1 | 9.4 | 11.8 | 14.1 | 16.5 |
| 4.0 | 1.8 | 3.5 | 5.3 | 7.1 | 8.8 | 10.6 | 12.4 |
| 5.0 | 1.4 | 2.8 | 4.2 | 5.7 | 7.1 | 8.5 | 9.9 |
| 6.0 | 1.2 | 2.4 | 3.5 | 4.7 | 5.9 | 7.1 | 8.2 |
| 7.0 | 1.0 | 2.0 | 3.0 | 4.0 | 5.1 | 6.1 | 7.1 |
| 8.0 | 0.9 | 1.8 | 2.7 | 3.5 | 4.4 | 5.3 | 6.2 |

Variety F ratio The ratio of the variety mean square to the residual mean square in the analysis of variance should be statistically significant at the 5% level or lower. If not, check that the field plan is correct and that the plot data have been entered correctly. Otherwise, check the trial's results against the over-trials monitoring procedures below.

Residuals The individual plot values for dry matter yield are checked by examining the residuals both in terms of outliers but also spatially. A residual is the plot yield with the variety and replicate effects removed and is standardised by dividing by the overall standard deviation. On average, 95% of such standardised residuals should lie in the range +2.2 to -2.2, 99% should fall in the range +2.7 to -2.7, and 99.8% in the range +3.2 to -3.2.

The residuals on the yield output are presented in plot order. Standardised residuals in the range -2.7 to -2.2 or +2.2 to +2.7 will be highlighted in yellow, in the range -3.2 to -2.7 or +2.7 to +3.2 will be highlighted in amber and those <-3.2 or >+3.2 will be highlighted in red. These plot values will be investigated by the RL Team (in conjunction with the trials inspection report and the spatial analysis) who will decide, in consultation with the trials officer, if they are atypical and should be excluded. For residuals greater than 3.2, or less than -3.2, the observations should be excluded unless they reflect an aspect of the variety's performance that is valid for RL assessment.

If a plot value for a component of DM yield, e.g. fresh yield or DM%, is aberrant and the component can be reliably estimated from the remaining observation(s), then its value may be replaced by an estimated value.

12.1.3 Data checks - non-yield characters

Characters other than yield are also subject to statistical checks. The main purpose of these checks is to ensure that unusual observations are highlighted and observations correctly correspond to the varieties as identified in computer-held plans. An overall check is also made on the consistency of variety responses across replicates. If this check is not satisfied then confirm that the field plan is correct and that the plot data have been entered in the right order.

Checks are also made at the time of recording to ensure that values lie within a range that is acceptable for the character as set out in the Senior Trial Manager's protocol for the crop.

12.1.4 Data losses

For yield data, if observations on a variety are lost for all but one replicate, then the results for that variety are normally treated as missing for the trial with the following proviso:

- If a component of the DM yield assessment is lost (e.g. dry matter assessment) and the component can be reliably estimated from the remaining observation(s), then its value is replaced by an estimated value, e.g. the mean of the other assessments for that variety.

Within the trial

- If 50% or more of a plot is lost, the plot value should be removed. In all cases of data loss of part of a plot, the residuals should be scrutinised carefully before making a decision to accept the plot values.
- If more than $\frac{1}{2}$ of the plots in a sub-block of an incomplete block design are missing, then the residuals should be scrutinised before accepting the data from the rest of the sub-block
- If more than $\frac{1}{3}$ rd of the plots in a replicate are missing, then the residuals should be scrutinised before accepting data from the remaining plots.
- Where plots are partially e.g. rabbit damage, and an assessment of the damage to each plot is available, than an analysis may be possible which adjusts yield data for the effects of damage.

For other characters, an observation from just one replicate is normally treated as sufficient to complete the records for the trial.

12.2 Over-trials monitoring (standardised residuals)

Variety means from trials harvested in the same year are monitored by examining a table of residuals. A residual indicates the extent to which a variety in a particular trial performs better (+) or worse (-) than expected as judged by its overall performance. Expected performance is estimated from the variety mean over all trials and the mean of all varieties in the particular trial. To make it easier to quickly assess their significance, residuals are standardised by dividing by the overall standard deviation.

On its own, a large residual should not lead to exclusion of the observation. However, it may help to identify situations where a variety is particularly adapted, or less well adapted, to conditions at a location. Also, a pattern in the residuals for a variety can be linked with a feature of the centres, e.g. water availability.

Yield is a composite indicator of the overall quality of data from a trial so the monitoring procedures that are described here are always applied to yield. For some crops monitoring, is also applied to characters not directly influenced by yield.

12.3 Diagnostics and trial validation

While an individual residual reflects the performance of one variety in a particular trial, the group of residuals associated with a trial can tell something about the trial as a whole. The residuals are examined in a number of ways:

12.3.1 SD ratio (trials)

The standard deviation (SD) of the residuals for a trial, expressed as a ratio of the SD of the residuals in the rest of the table, is a measure of how variable varieties have been in a trial relative to their performance in other trials. The average SD ratio will be approximately 1.0 and a trial with above average variation will be indicated by a ratio greater than 1.0. The critical SD ratio, at the 1% probability level, depends on the number of varieties in the table, as follows:

| | | | | | |
|---------------------|-----|-----|-----|-----|-----|
| No. of varieties: | 10 | 20 | 40 | 60 | 100 |
| SD ratio criterion: | 1.9 | 1.6 | 1.4 | 1.3 | 1.2 |

12.3.2 Coefficient of correlation

The coefficient of correlation (r) between variety yields in the trial and the variety means over other trials is used to assess how closely the yields in the trial follow average yields from all other trials. Correlations of $r=0.50$ or more are to be expected from yield trials of broadly similar background. The statistical significance, at the 1% probability level, of departures from $r=0.50$ depends on the number of varieties:

| | | | | |
|--------------------------|------|------|------|------|
| No. of varieties: | 30 | 40 | 60 | 100 |
| Minimum acceptable r : | 0.05 | 0.13 | 0.21 | 0.28 |

If either of the above checks are not fulfilled, the Trials Co-ordinator needs to be satisfied that the trial is providing useful information and make certain that the within-trials monitoring checks have been satisfied. Otherwise, the results for the trial should be considered for exclusion. The reason for excluding an aberrant trial must always be recorded.

12.3.3 Checking variety consistency

The SD ratio for a variety can be used to identify greater than average consistency (or instability) in a variety's performance, in a manner similar to that used when validating trials.

12.4 General issues

Statistical tests can warn of suspect observations or trials. However, it is the responsibility of the RL Team, to decide on the appropriate action, including investigation of the data and final acceptance/rejection of the trial data (yield and agronomic data).

When considering the exclusion of an unusual observation with a known cause, an important issue may be the extent to which the factor is likely to occur in farming practice. If the observation is unusual because it would only occur in plot trials, and is unlikely to occur to the same degree in whole crop conditions e.g. bird damage, then the observation is normally excluded.

13 Appendix 7: 2019 Specific criteria for the sowing of oilseed rape

A single table, ordered by UK treated gross output (GO), is produced for decision making for Candidate Selection in August and the RL decisions in November which will then populate a single table for the RL handbook. The Committee will also be provided with supplementary tables showing varieties ordered by treated GO for each region (East/West and North).

Varieties will be considered for regional recommendation for the “East/West (E/W)” and “North” regions. Varieties recommended for both regions will achieve a UK recommendation. Varieties with Clubroot resistance will be presented separately in publication tables.

13.1 Market segments

Recommendations are made for a single market -“double low oilseed”.

There are no varietal associations in test at the moment and the Committee will agree suitable targets for this additional segment if varieties come forward from NL trials. Breeders are reminded of the need to alert the RL Team by early March if they have a variety association coming forward for possible selection into RL trials the following August.

Other markets are regarded as specialist markets.

13.2 End-use quality requirements for each segment

Double low oilseed – all segments

- Low erucic acid and glucosinolate content below 18 micromoles per gram of seed when selected into RL trials.¹

13.3 Minimum standards and target specifications

To get full recommendation² a variety must be above the minimum standards for disease resistance and should normally meet the target specifications for agronomic characters and marketing specifications such that growing the variety would not pose an unacceptable risk for growers across the region for which it is recommended.

When considering minimum standards and target specifications, varieties with ratings ending in .4 would round down while those ending in .5 would round up. Thus, 2.5 would pass a minimum of 3 while 2.4 would not. Values will also be shown as whole numbers.

¹ Glucosinolate level will be assessed from measurements made during BSPB/NL testing and there will be no further testing of glucosinolate at the RL stage. Low erucic varieties will be those classified for NL purposes as low erucic.

² A full recommendation is a variety recommended for that region. A UK recommendation is a variety recommended for both regions.

Minimum standards and target specifications are given in Appendix 8 and may be different for each region.

13.3.1 Yield target for each segment

In winter oilseed rape, comparisons will be made of the gross output (yield adjusted for oil content) and considered for each region as appropriate.

The Committee will review targets at the annual planning meeting.

Targets are given in Appendix 8.

13.3.2 Balance of features that are sufficiently better

Guidance for the relative importance of balancing features is given in Appendix 8.

13.3.3 Specialist varieties

The following have been identified:

- Clubroot resistance
- Varieties tolerant to specified herbicides
- HOLL varieties. HOLL varieties are defined as those varieties which have less than 3.5% linolenic acid and more than 75% oleic acid. The breeder must confirm that any possible candidate would qualify for the category.

13.3.4 Described varieties

High erucic (HEAR) varieties are not currently included on the AHDB Recommended List but will be described when data are available. New varieties with these characteristics can however be recommended in their own right.

Semi dwarf varieties are not currently included on the AHDB Recommended List but will be described when data are available. New varieties with these characteristics can however be recommended in their own right.

13.3.5 Candidate selection targets for use in August

BSPB/NL2

- Selection of winter oilseed rape varieties into trials will be made for the East/West and North regions and the UK (if selected for both regions). Selection will be based on a joint target of gross output and agronomic merit.

- Varieties selected for the UK will be sown in all trials.
- Varieties selected for one region will be sown in all trials in the appropriate region and all core trials.
- Gross output targets will be set as the mean of the top three varieties in RL trials (according to Appendix 8).
- Agronomic merit will be separately for each region using UK data as follows:
 - The agronomic merit for the E/W region shall be calculated using the following mechanism: UK lodging rating + UK stem stiffness rating + 1.5 x UK stem canker rating + 2 x UK LLS
 - The agronomic merit for the North region shall be calculated using the following mechanism: UK lodging rating + UK stem stiffness rating + 2 x UK light leaf spot rating (LLS)
- Agronomic merit targets will be calculated for each region according to section 4.6.
- The targets for agronomic merit should be reviewed each year.
- Agronomic merit will require adjustment to account for differences in control performance in the NL and RL trial series. This will be done as routine.
- All varieties selected will be included in any special disease tests or disease observation plots even if these are grown in a region for which they were not selected.

The Crop Committee intends to select the best high erucic³ varieties completing NL2 trials or in the year after they have completed BSPB/NL2 trials if their performance suggests that they are within 2 points of the best variety of that group for which RL data is available. These will be grown in RL trials for one year to provide data for Descriptive List purposes. The best variety of each type already described will also be included as a comparator.

The Crop Committee will review special oil types at its planning meeting each year. Breeders are reminded of the need to alert the RL Team by early March if they have an altered oil type coming forward for possible selection into RL trials the following August. If this is a new type they will be expected to demonstrate to the Oilseeds Crop Committee the existence of a specific market for that type of oil.

³ High erucic varieties are defined as those varieties entered into NL trials as high erucic and containing more than 44% erucic acid. The breeder must confirm that any possible candidate would qualify for the category.

13.3.6 Data tables

The purpose of data tables provided to the Oilseeds Crop Committee for winter oilseed rape decisions are shown below.

| Table | Number of years included | Varieties included | Characters included | Purpose | Publication |
|--------------|---------------------------------|---|------------------------------------|--|--|
| A | 4 | Controls RL RL not in trial RL candidate RL reconsidered | All characters under consideration | Re-sowing decisions (August) Recommendation (November) | Final figures in RL publication |
| B | 2 | Controls NL2 | All characters under consideration | Candidate selection decisions (August) | Final figures in RL candidate tables (after update in November) |
| C | 3 | Controls RL RL not in trial RL candidate RL reconsidered NL2 | GO and seed yield only | Allows a direct comparison of GO and seed yield between each variety Used to assess the performance of NL2 varieties against current RL varieties in a comparable dataset at candidate selection stage (August) | This table is not published and the data is for committee and Consortium member use only |

14 Appendix 8: 2019 Yield targets, comparators, characteristics of importance and other defined requirements for oilseed rape – UK and regional (East/West region and North Region)

Varieties will be considered against regional criteria. If selected for both regions the variety will be selected/recommended for the UK.

| | | Minimum standards/ Target Specifications | NL2 Candidate selection | Recommendation |
|------------------------------------|-----------------------------------|---|---|---|
| | | All variety types | All variety types | All variety types |
| Gross output (GO) - Treated | | | | |
| East/West | Regional target | | Mean GO of the top three yielding varieties in RL trials - East/West Region | Mean GO of the top three yielding recommended varieties in RL trials - East/West Region |
| North | Regional target | | Mean GO of the top three yielding varieties in RL trials - North Region | Mean GO of the top three yielding recommended varieties in RL trials - North Region |
| | Automatic level ² | | Target + 2% | Target + 2% |
| | Minimum guideline | | Target – 2% | Target – 2% |
| | Agronomic merit target | | Target † | |
| Both regions | Regional treated gross output | | high | high |
| Both regions | UK untreated gross output | | med | med |
| Both regions | Resistance to lodging | 6 (minimum) | & | high |
| Both regions | Stem stiffness | | & | med |
| Both regions | Shortness of stem | | high | high |
| East/West | Earliness of flowering | | low | low |
| North | Earliness of flowering | | med | med |
| Both regions | Earliness of maturity | | high | high |
| Both regions | Seed yield | | | low |
| Both regions | Oil content | | | low |
| Both regions | Glucosinolate content | 18 (maximum) | | |
| East/West | Light leaf spot | 3 ² (minimum) | & | v high |
| North | Light leaf spot | 6 (minimum) | & | v high |
| East/West | Stem canker | 3 ² (minimum) | & | high |
| North | Stem canker | 3 (minimum) | low | low |
| Both regions | Resistance to Turnip Yellow Virus | | high | high |
| Both regions | Tolerance to specified herbicides | | low | low |

† Agronomic merit is used at NL2 Candidate Selection only and is the mean of all RL varieties on the 4 year table in the **specific** region (see 4.6.1.3).

& Agronomic merit

Calculation of Agronomic Merit

| | |
|------------------|---|
| East/West region | & Lodging, stem stiffness, stem canker and light leaf spot contribute to the agronomic merit score at candidate selection. The calculation used to set the agronomic merit score for the East/West region is: Lodging (1-9) + stem stiffness (1-9) + 1.5 x stem canker (1-9) + 2 x LLS (1-9) |
| North Region | & Lodging, stem stiffness, stem canker and light leaf spot contribute to the agronomic merit score at candidate selection. The calculation used to set the agronomic merit score for the North region is: Lodging (1-9) + stem stiffness (1-9) + 2 x LLS (1-9) |

| | | Defined comparator varieties for 2019 | Mechanism to set yield target |
|------------------|--------------------|---------------------------------------|---|
| East/West Region | All variety types | Aspire Ambassador | Number equal to the mean GO of the top 3 yielding varieties in the East/West region ¹ |
| | Clubroot | Crome | Number equal to the GO of the highest yielding clubroot resistant variety in the East/West region |
| | HOLL | V3160L | Number equal to the GO of the highest yielding HOLL variety in the East/West region |
| | Herbicide Tolerant | PT279 CL | Number equal to the GO of the highest yielding herbicide tolerant variety in the East/West region |
| North Region | All variety types | Aspire Aurelia | Number equal to the mean GO of the top 3 yielding varieties in the North region ¹ |
| | Clubroot | Crome | Number equal to the GO of the highest yielding clubroot resistant variety in the North region |
| | HOLL | V3160L | Number equal to the GO of the highest yielding HOLL variety in the North region |
| | Herbicide Tolerant | PT279 CL | Number equal to the GO of the highest yielding herbicide tolerant variety in the North region |

| | |
|--|---|
| ¹ No restriction on use of P1 varieties | |
| ² Other defined regional requirements: | |
| East/West | A minimum rating of 6 for light leaf spot and 6 for phoma stem canker is required for a variety to meet criteria for automatic selection both as a candidate and for Recommendation |
| North | A minimum rating of 6 for light leaf spot and 3 for phoma stem canker is required for a variety to meet criteria for automatic selection both as a candidate and for Recommendation |
| | |

15 Appendix 9: 2019 Specific criteria for the sowing of barley

15.1 UK crop segmentation

Winter barley

- UK malt brewing
- Feed varieties

Spring barley

- UK malt brewing
- UK malt distilling
- Feed varieties.

The Committee will look favourably on varieties which are suitable for both malt brewing and malt distilling.

15.2 End-use quality requirements for each segment

15.2.1 UK malting varieties

A report of decisions from the malting barley committee will be used to determine varieties to be considered in this segment. Procedures used to identify suitable varieties for further brewing and distilling testing are outlined in Appendix 2.

Varieties lacking a gene for lipoxygenase production/Null-Lox, will have this characteristic accounted for by the malting barley committee. Presence of this trait is not recognised as a specialist quality and the trait will not be a characteristic of importance.

Varieties with high free amino nitrogen (FAN), will have this characteristic accounted for by the malting barley committee. Presence of this trait is not recognised as a specialist quality and the trait will not be a characteristic of importance.

Varieties which are removed from the MBC Full Approval List can be considered by the Crop Committee to remain on the AHDB Recommended List, listed as a malting variety labelled “O No longer approved by MBC” for one year or be removed earlier if seed area drops below the threshold. Where a variety had only provisional MBC approval and does not progress through the MBC system, it will be treated for RL purposes as a feed and will only stay on the List if it is competitive in the feed sector.

15.2.2 Feed varieties

Any variety falling into one of the other segments.

15.3 UK minimum standards and target specifications

Minimum standards and target specifications are given in Appendices 10 and 11.

15.3.1 Targets for each segment

These are given in Appendices 10 and 11. In addition to a yield target, the Crop Committee have agreed that feed types should also reach a specific weight target to qualify for automatic recommendation.

Separate yield targets will be set for winter barley 2-row feed and 6-row feed within the feed segment. Comparator varieties will be identified separately for 2-row feed, 6-row feed and hybrid 6-row feed varieties.

15.3.2 Balance of features that are sufficiently better

Guidance for the relative importance of balancing features is given in Appendices 10 and 11.

15.3.3 Areas of the UK for which the Committee will consider recommendations for single region/market combinations

Winter barley

| | North | East | West |
|-------------------------------------|----------|------|------|
| UK malt brewing | Possible | Yes | Yes |
| 6-row feed (conventional) varieties | Yes | Yes | Yes |
| 6 row feed (hybrid) varieties | Yes | Yes | Yes |
| 2-row feed varieties | Yes | Yes | Yes |

Spring barley

| | North | East | West |
|----------------------|----------|------|------|
| UK malt brewing | Possible | Yes | Yes |
| UK malt distilling | Yes | Yes | No |
| 2-row feed varieties | Yes | No | Yes |

15.3.4 Specialist or regional markets

Winter barley

- Variety with soil-borne mosaic virus resistance that serves a market not covered by another resistant variety of equal merit.
- BYDV Resistance/Tolerance
- North region
- East (dry) region

- West (wet) region

Spring barley

- North region
- East (dry) region
- West (wet) region
- Variety suitable for the production of malt for grain distilling

15.3.5 Candidate selection targets

These are given in Appendices 10 and 11.

Policy for selecting varieties which appear at the end of NL2 to be unsuited for the whole of the UK but may be suited for particular specialist or regional use.

Winter barley

| | Candidate selection | Normal trial series |
|---------------------------|----------------------------|----------------------------|
| Soil-borne mosaic virus | Possible | East and West |
| BYDV resistance/tolerance | Possible | All |
| Northern region | Possible | North + core |
| East (dry) region | Possible | East + core |
| West (wet) region | Possible | West + core |

Spring barley

| | Candidate selection | Normal trial series |
|-------------------|----------------------------|----------------------------|
| Northern region | Possible | North + core |
| East (dry) region | Possible | East + core |
| West (wet) region | Possible | West + core |

In addition the Crop Committee would not normally select any barley variety which did not qualify for a specific recommendation for that region. For example a feed spring barley for the East only.

The Crop Committee have also indicated that they may select additional varieties of special interest for inclusion in a selected sub-set of trials with a view to describing them. Such varieties would not be candidates for recommendation.

15.3.6 Data tables

The purpose of data tables provided to the Barley, Oats and Other Crops Crop Committee for winter and spring barley are shown below.

| Crop | Table | Number of years included | Varieties included | Characters included | Purpose | Publication |
|-------------|--------------|---------------------------------|--|------------------------------------|---|---|
| WB | A | 5 | Controls RL RL not in trial RL candidate RL reconsidered | All characters under consideration | Re-sowing decisions (August) Recommendation (November) | Final figures in RL publication |
| WB | B | 2 | Controls RL RL candidate RL reconsidered NL2 | All characters under consideration | Candidate selection decisions (August) | Final figures in RL candidate tables (after update in November) |
| SB | G | 5 | Controls RL RL not in trial RL candidate | All characters under consideration | Re-sowing and Recommendation decisions (November) | Final figures in RL publication. |
| SB | H | 2 | Controls RL RL candidate NL2 | All characters under consideration | Candidate selection decisions (November) | Final figures in RL candidate tables (after update in November) |

16 Appendix 10: 2019 Yield targets, comparators, characteristics of importance and other defined requirements for winter barley

| Variate | Minimum standards / Target Specifications | | | | Candidate Selection | | | | Recommendation | | | |
|---|---|------------|------------|-------------------|---|---|---|-------------------|---|---|---|-------------------|
| | UK Malting for Brewing # | 2-row Feed | 6-row Feed | 6-row hybrid feed | UK Malting for Brewing | 2-row Feed | 6-row Feed | 6-row hybrid feed | UK Malting for Brewing | 2-row Feed | 6-row Feed | 6-row hybrid feed |
| UK Treated yield target | | | | | See mechanism to set yield target | | | | | | | |
| Automatic level | | | | | Yield target +2% specific weight of 66 or above rhynchosporium rating of 4 or above | Yield target +3% specific weight of 66 or above rhynchosporium rating of 4 or above | Yield target +3% specific weight of 66 or above rhynchosporium rating of 4 or above | | Yield target +2% specific weight of 66 or above rhynchosporium rating of 4 or above | Yield target +3% specific weight of 66 or above rhynchosporium rating of 4 or above | Yield target +3% specific weight of 66 or above rhynchosporium rating of 4 or above | |
| Minimum guideline | | | | | Yield target -2% | | | | | | | |
| UK maltsters assessment | | | | | | | | | v high | | | |
| Specific weight | | | | | med | high | high | high | high | high | high | high |
| Screenings | | | | | med | | | | high | med | med | med |
| Nitrogen content | | | | | med | | | | high | | | |
| UK treated yield | | | | | high | high | high | high | high | high | high | high |
| East treated yield | | | | | med | med | med | med | med** | med** | med** | med** |
| West treated yield | | | | | med | med | med | med | med** | med** | med** | med** |
| North treated yield | | | | | med | med | med | med | med** | med** | med** | med** |
| UK Untreated yield | | | | | med | med | med | med | med | med | med | med |
| Lodging | 4 | 4 | 4 | 4 | med | high | high | high | med | high | high | high |
| Height without PGR | | | | | low | med | med | med | low | med | med | med |
| Ripening | | | | | high | high | high | high | high | high | high | high |
| Brackling | | | | | low | low | low | low | med | med | med | med |
| Mildew | 3 | 3 | 3 | 3 | med | med | med | med | high | high | high | high |
| Yellow rust | 3 | 3 | 3 | 3 | low | low | low | low | low | low | low | low |
| Brown rust | 3 | 3 | 3 | 3 | med | med | med | med | med | med | med | med |
| Rhynchosporium | 3 | 3 | 3 | 3 | med | v high | v high | v high | high | v high | v high | v high |
| Net Blotch | 3 | 3 | 3 | 3 | med | med | med | med | high | v high | v high | v high |
| BaYMV | | | | | med | med | med | med | med | med | med | med |
| Ramularia\$ | | | | | med | med | med | med | high | high | high | high |
| Combination of untreated yield and disease scores | | | | | high | high | high | high | high | high | high | high |
| Treated yield on light soils | | | | | low | low | low | low | low | low | low | low |
| Treated yield on heavy soils | | | | | low | low | low | low | low | low | low | low |

| Type | Defined comparator varieties for 2019 | Mechanism to set yield target (UK malting and feed barley) |
|---------------------------|---------------------------------------|---|
| UK Malting | Electrum Craft | Number to be set equal to the highest yielding fully or provisionally approved variety in the segment, unless a P1 variety when the mean of the top two highest yielding fully or provisionally approved varieties in the segment will be used. |
| 2-row feed | KWS Gimlet KWS Hawking | Number to be set equal to the highest yielding 2-row feed variety, unless a P1 variety when the mean of the top two highest yielding varieties will be used. |
| 6-row feed (conventional) | Funky | Number to be set equal to the highest yielding 6-row feed variety, unless a P1 variety when the mean of the top two highest yielding varieties will be used. |
| 6-row feed (hybrid) | SY Baracooda SY Kingsbarn | |

Varieties will be considered for use for distilling if MBC identify a variety suitable for that market.

** For regional recommendation the yield in the specific region(s) will be of high importance.

\$ The importance of ramularia is recognised. However, the use of ramularia ratings for decision making is temporarily suspended whilst further research is done to ensure that robust, meaningful information on varietal resistance and susceptibility to the disease is provided.

17 Appendix 11: 2019 Yield targets, comparators, characteristics of importance and other defined requirements for spring barley

| Variate | Minimum standards / Target specifications | | | Candidate Selection | | | Recommendation | | |
|--|---|--------------------|------------|--|--------------------|------------|--|--------------------|------------|
| | UK malt brewing | UK malt distilling | 2-row feed | UK malt brewing | UK malt distilling | 2-row feed | UK malt brewing | UK malt distilling | 2-row feed |
| UK Treated yield target | | | | See mechanism to set yield target | | | | | |
| Automatic level | | | | Yield target +2% specific weight of 66 or above | | | Yield target +2% specific weight of 66 or above | | |
| Minimum guideline | | | | Yield target -2% | | | | | |
| Maltsters assessment | | | | v high | v high | | v high | v high | |
| Varieties suitable for dual purpose (brewing & distilling) | | | | high | high | | high | high | |
| Specific weight | | | | med | med | high | high | high | high |
| Screenings | | | | med | med | | high | high | med |
| Nitrogen content | | | | med | high | | med | high | |
| UK treated yield | | | | high | high | high | high | high | high |
| East treated yield | | | | med | med | med | med** | med** | med** |
| West treated yield | | | | med | med | med | med** | med** | med** |
| North treated yield | | | | med | med | med | med** | med** | med** |
| UK Untreated yield | | | | med | med | med | med | med | med |
| Lodging | 6 | 6 | 6 | high | high | high | high | high | high |
| Height without PGR | | | | low | low | med | low | low | med |
| Ripening | | | | high | v high | v high | high | v high | v high |
| Brackling | | | | med | med | med | high | high | v high |
| Mildew | 3 | 3 | 3 | high | high | high | high | high | high |
| Yellow rust | 3 | 3 | 3 | low | low | low | low | low | low |
| Brown rust | 3 | 3 | 3 | med | med | med | med | med | med |
| Rhynchosporium | 3 | 3 | 3 | high | high | high | high | high | high |
| <i>Ramularia</i> \$ | | | | med | med | med | high | high | high |
| Combination of untreated yield and disease scores | | | | high | high | high | high | high | high |

| Type | Defined comparator varieties for 2019 | Mechanism to set yield target (UK malting and feed barley) |
|-------------------------------|---------------------------------------|--|
| UK malting - brewing | RGT Planet Laureate | Number to be set equal to the highest yielding fully or provisionally approved variety in the segment, unless a P1 variety when the mean of the top two highest yielding fully or provisionally approved varieties in the segment will be used. |
| UK malting - distilling | Laureate LG Diablo | Number to be set equal to the highest yielding fully or provisionally approved variety in the segment, unless a P1 variety when the mean of the top two highest yielding fully or provisionally approved varieties in the segment will be used. |
| UK malting – grain distilling | RGT Asteroid Fairing | Number to be set equal to the highest yielding fully or provisionally approved variety in the segment, unless a P1 variety when the mean of the top two highest yielding fully or provisionally approved varieties in the segment will be used. |
| 2-row feed | SY Splendor Prospect | Number to be set equal to the highest yielding variety, unless a P1 variety when the mean of the top two highest yielding varieties will be used. The target for 2-row feed varieties should not be lower than that used for UK malting varieties. |

** For regional recommendation the yield in the specific region(s) will be of high importance.

\$ The importance of ramularia is recognised. However, the use of ramularia ratings for decision making is temporarily suspended whilst further research is done to ensure that robust, meaningful information on varietal resistance and susceptibility to the disease is provided.

18 Appendix 12: 2019 Specific criteria for the sowing of oats

18.1 UK market segments

Winter oats

- Husked oats
- Naked oats

Spring oats

- Husked oats
- Naked Oats – Described

18.2 End-use quality requirements for each Segment

Husked varieties

- Any other husked variety.

Naked varieties

- Any non-husked variety.

18.3 UK Minimum Standards and target specifications

Minimum standards and target specifications are given in Appendices 13 and 14.

18.3.1 Yield target for each segment

These are given in Appendices 13 and 14.

18.3.2 Balance of features that are sufficiently better

Guidance for the relative importance of balancing features is given in Appendices 13 and 14

18.3.3 Specific or regional markets

None have been identified.

18.3.4 Candidate selection targets

These are given in Appendices 13 and 14.

18.3.5 Data tables

The purpose of data tables provided to the Barley, Oats and Other Crops Crop Committee for winter and spring oats are shown below.

| Crop | Table | Number of years included | Varieties included | Characters included | Purpose | Publication |
|-------------|--------------|---------------------------------|---|------------------------------------|---|---|
| WO | C | 5 | Controls RL RL not in trial RL Yr3 candidate RL Yr4 candidate RL reconsidered | All characters under consideration | Re-sowing decisions (August) Recommendation (November) | Final figures in RL publication. YR4 Candidate data published from this dataset. |
| WO | D | 2 | Controls RL RL candidate RL reconsidered NL2 | All characters under consideration | Candidate selection decisions (August) | Table updated in November. Data not published. |
| SO | I | 5 | Controls RL RL not in trial RL Yr3 candidate RL Yr4 candidate DL DL candidate | All characters under consideration | Re-sowing and Recommendation decisions (November) | Final figures in RL publication. YR4 Candidate data published from this dataset. |
| SO | J | 2 | Controls RL RL candidate NL2 DL DL candidate | All characters under consideration | Candidate selection decisions (August) | Data not published. |

19 Appendix 13: 2019 Yield targets, comparators, characteristics of importance and other defined requirements for winter oats

| | Minimum standards / Target specifications | Candidate selection | Recommendation |
|---|--|---|----------------------------|
| UK treated yield target Automatic level Minimum guideline | | See mechanism to set yield target Target + 2% and specific weight minimum of 52 kg/hl Target - 2% | |
| Specific weight Screenings Kernel content | | v high high v high | v high v high v high |
| UK treated yield Lodging | 6 | high high | high high |
| Height without PGR Ripening Winter hardiness* | | med med med | med med med |
| Mildew Crown rust* | 3 3 | med med | med med |

* If reliable data available

| | Defined comparator varieties for 2019 | Mechanism to set yield target |
|-------------------------|--|---|
| UK husked varieties | RGT Southwark Mascani (for quality) | number to be set by the highest yielding variety in the segment unless a P1 variety when the mean of the top two highest yielding varieties in the segment will be used |
| UK non-husked varieties | Fusion Peloton | number to be set by the highest yielding variety in the segment unless a P1 variety when the mean of the top two highest yielding varieties in the segment will be used |

Hullability is not to be used. Awaiting industry acceptance from QUOATS report.

20 Appendix 14: 2019 Yield targets, comparators, characteristics of importance and other defined requirements for spring oats

| | Minimum standards / Target specifications | Candidate selection | Recommendation |
|---|--|---|----------------------------|
| UK treated yield target Automatic level Minimum guideline | | See mechanism to set yield target Target + 2% and specific weight minimum of 52 kg/hl Target - 2% | |
| Specific weight Screenings Kernel content | | v high high v high | v high v high v high |
| UK treated yield UK untreated yield | | high med | high med |
| Lodging | 6 | high | high |
| Height without PGR Ripening | | med high | med high |
| Mildew Crown rust* | 3 3 | med med | med med |
| Combination of untreated yield and disease scores | | high | high |

* If reliable data available.

| | Defined comparator varieties for 2019 | Mechanism to set yield target |
|---------------------|--|---|
| UK husked varieties | Aspen Canyon | number to be set by the highest yielding variety in the segment unless a P1 variety when the mean of the top two highest yielding varieties in the segment will be used |

Hullability not to be used. Awaiting industry acceptance from QUOATS report.

21 Appendix 15: 2019 Specific criteria for the sowing of wheat

21.1 UK market segments

Recommendations will be made for the nabim Groups 1 to 4.

21.2 End-use quality requirements

Group 1

nabim will produce reports to AHDB which will be presented to the Wheat Crop Committee. These will be used by the Crop Committee to identify varieties which meet the end use quality requirements identified by the four **nabim** Groups. Procedures relating to the definition and testing of potential varieties are included in Appendix 1.

Group 2

nabim will produce reports to AHDB which will be presented to the Wheat Crop Committee. These will be used by the Crop Committee to identify varieties which meet the end use quality requirements identified by the four **nabim** Groups.

Group 3

nabim will produce reports to AHDB which will be presented to the Wheat Crop Committee. These will be used by the Crop Committee to identify varieties which meet the end use quality requirements identified by the four **nabim** Groups.

Group 4

nabim will produce reports to AHDB which will be presented to the Wheat Crop Committee. These will be used by the Crop Committee to identify varieties which meet the end use quality requirements identified by the four **nabim** Groups.

21.3 UK Minimum Standards and target specifications

These are given in Appendices 16 and 17.

21.3.1 Yield and other defined targets for each segment

The targets are given in Appendices 16 and 17 and are stated in relation to the last published Recommended List and will be re-calculated as necessary to accommodate changes in control varieties.

21.3.2 Balance of features that are sufficiently better

Guidance for the relative importance of balancing features is given in Appendices 16 and 17.

The Committee may make comparisons with varieties in other marketing groups if this is appropriate.

21.3.3 Specialist or regional varieties

The following have been identified:

- Specialist end use processing: None identified for 2020
- North region
- East region
- West region
- Specific pest/ disease resistance: BYDV resistance

21.3.4 Candidate selection targets

These are given in Appendices 16 and 17.

nabim will produce reports to AHDB which will be presented to the Wheat Crop Committee. These will be used by the Crop Committee to identify varieties which meet the end use quality requirements identified by the four **nabim** Groups.

Policy on selecting NL2 varieties for trial which appear unsuited to general selection but may suitable for particular specialist or regional use

| | Candidate selection | Normal trial series |
|--------------------------------|----------------------------|---|
| Specialist end-use processing | None identified for 2019 | Depends on specifics but may not be selected for all trials |
| Northern region | Possible | North + Core |
| Eastern (dry) region | Possible | East + Core |
| Western (wet) region | Possible | West + Core |
| Suitability for early drilling | No | No specific recommendation available |
| Specific pest resistance | BYDV resistance | All trials |
| Suitability for second cereal | No | No specific recommendation available |
| “Soft feed” | No | No specific recommendation available |
| “Hard feed” | No | No specific recommendation available |

21.3.5 Data tables

The purpose of data tables provided to the Wheat Crop Committee for winter and spring wheat are shown below.

| Crop | Table | Number of years included | Varieties included | Characters included | Purpose | Publication |
|-------------|--------------|---------------------------------|---|-------------------------------------|--|--|
| WW | A | 5 | Controls RL RL not in trial RL candidate RL reconsidered | All characters under consideration | Re-sowing decisions (August) Recommendation (November) | Final figures in RL publication |
| WW | B | 2 | Controls NL2 | All characters under consideration | Candidate selection decisions (August) | Final figures in RL candidate tables (after update in November) |
| WW | C | 3 | Controls RL RL not in trial RL candidate RL reconsidered NL2 | Yield and quality only | Allows a direct comparison of yield and quality between each variety Used to assess the performance of NL2 varieties against current RL varieties in a comparable dataset at candidate selection stage (August) | Data not published. For Committee and Consortium Member internal use only. |
| AW | E | 2 | SW Controls SW RL SW RL not in trial SW RL candidate SW NL2 | All characters (Autumn sown trials) | For information only | Not published |

| | | | | | | |
|-----------|----------|---|--|---|--|--|
| SW | F | 5 | Controls RL RL not in trial RL candidate | All characters under consideration | Re-sowing and recommendation decisions (November) | Final figures in RL publication |
| SW | G | 2 | Controls RL RL not in trial RL candidate NL2 | All characters under consideration | Candidate selection decisions (November) | Final figures in RL candidate tables |

22 Appendix 16: 2019 Yield targets, comparators characteristics of importance and other defined requirements for winter wheat

| Variate | Minimum standards / Target Specifications | | | | Candidate Selection | | | | Recommendation | | | |
|---|---|---------|---------|---------|--|---------|---------|---------|----------------|---------|---------|---------|
| | Group 1 | Group 2 | Group 3 | Group 4 | Group 1 | Group 2 | Group 3 | Group 4 | Group 1 | Group 2 | Group 3 | Group 4 |
| UK Treated yield target | | | | | See mechanism to set yield target | | | | | | | |
| Automatic level | | | | | Target +2% (with a defined requirement of a score of 5.0 or higher for septoria tritici for Automatic Selection) | | | | | | | |
| Minimum guideline | | | | | Target -2% | | | | | | | |
| | | | | | HFN and Specific weight targets | | | | | | | |
| Hagberg Falling Number | | | | | 250 | 250 | 200 | 150 | | | | |
| Specific Weight | | | | | 76 | 76 | 76 | 75 | | | | |
| Millers assessment of value within the Group | | | | | high | high | med | | v high | v high | high | low |
| Potential for ukp | | | | | high | high | | high | high | high | | high |
| Potential for uks | | | | | | | high | high | | | high | high |
| Potential for distilling in the North | | | | | | | v high | v high | | | v high | v high |
| Potential for distilling all other regions | | | | | | | high | high | | | high | high |
| Protein content | | | | | med | med | low | low | med | med | low | low |
| Hagberg Falling Number | 230 | 230 | 180 | 150 | high | high | high | low | high | high | high | low |
| Specific weight | 75 | 75 | 75 | 74 | high | high | high | high | high | high | high | high |
| 1000 grain weight* | | | | | | | | | low | low | low | low |
| Chopin alveograph W | | | | | low | low | low | low | low | low | low | low |
| Chopin alveograph p/L | | | | | low | low | low | low | low | low | low | low |
| UK treated yield | | | | | high | high | high | high | high | high | high | high |
| East treated yield** | | | | | med** | med** | med** | med** | med** | med** | med** | med** |
| West treated yield** | | | | | med** | med** | med** | med** | med** | med** | med** | med** |
| North treated yield** | | | | | med** | med** | med** | med** | med** | med** | med** | med** |
| UK untreated yield | | | | | med | med | med | med | med | med | med | med |
| Lodging without PGR | 5 | 5 | 5 | 5 | med | med | med | med | med | med | med | med |
| Lodging with PGR | 6 | 6 | 6 | 6 | v high | v high | v high | v high | v high | v high | v high | v high |
| Height | | | | | low | low | low | low | low | low | low | low |
| Ripening | | | | | high | high | high | high | high | high | high | high |
| Sprouting | | | | | high * | high * | high * | high * | high | high | high | high |
| Mildew | 3 | 3 | 3 | 3 | med | med | med | med | med | med | med | med |
| Yellow rust | 3 | 3 | 3 | 3 | high | high | high | high | high | high | high | high |
| Brown rust | 3 | 3 | 3 | 3 | med | med | med | med | med | med | med | med |
| Septoria nodorum | 3 | 3 | 3 | 3 | low | low | low | low | low | low | low | low |
| Septoria tritici | 4 | 4 | 4 | 4 | v high | v high | v high | v high | v high | v high | v high | v high |
| Eyespot | 3 | 3 | 3 | 3 | med | med | med | med | med | med | med | med |
| Fusarium | 3 | 3 | 3 | 3 | med | med | med | med | med | med | med | med |
| Combination of untreated yield and disease scores | | | | | high | high | high | high | high | high | high | high |
| Treated yield as first cereal | | | | | | | | | high | high | high | high |
| Treated yield as second cereal | | | | | | | | | high | high | high | high |
| Treated yield before 6 Oct | | | | | | | | | low | low | low | low |
| Treated yield in late autumn | | | | | | | | | low | low | low | low |
| Treated yield on light soils | | | | | | | | | low | low | low | low |
| Treated yield on heavy soils | | | | | | | | | low | low | low | low |
| OWBM resistance | | | | | high * | high * | high * | high * | high * | high * | high * | high * |
| Presence of Pch1 eyespot resistance gene | | | | | med * | med * | med * | med * | med | med | med | med |

* If reliable data available

** For regional recommendation, the yield in the specific region(s) will be of high importance

| | Defined comparator varieties for 2019 | Mechanism to set yield target |
|----------------|--|--|
| Group 1 | KWS Zyatt Skyfall | number to be set equal to the highest yielding fully or provisionally approved variety in the segment (or mean of the two highest yielding varieties if highest yielding variety is a P1) ¹ |
| Group 2 | KWS Extase KWS Siskin | number to be set equal to the highest yielding variety (or mean of the two highest yielding varieties if highest yielding variety is a P1) in the Group 1 & Group 2 segments ¹ |
| Group 3 | KWS Firefly Elicit | number to be set equal to the highest yielding variety (or mean of the two highest yielding varieties if highest yielding variety is a P1) in the Group 3 segment |
| Group 4 (soft) | LG Skyscraper RGT Saki | number to be set equal to the highest yielding variety (or mean of the two highest yielding varieties if highest yielding variety is a P1) ¹ |
| Group 4 (hard) | Graham SY Insitor | |

¹ The Group 2 target shall not be lower than that for Group 1. The Group 4 target shall not be lower than that for any other Group.

23 Appendix 17: 2019 Yield targets, comparators, characteristics of importance and other defined requirements for spring sown spring wheat

| Variate | Minimum standards / Target specifications | | | | Candidate Selection | | | | Recommendation | | | |
|--|---|---------|---------|---------|-----------------------------------|---------|---------|---------|----------------|---------|---------|---------|
| | Group 1 | Group 2 | Group 3 | Group 4 | Group 1 | Group 2 | Group 3 | Group 4 | Group 1 | Group 2 | Group 3 | Group 4 |
| UK Treated yield target | | | | | See mechanism to set yield target | | | | | | | |
| Automatic level | | | | | Target +2% | | | | | | | |
| Minimum guideline | | | | | Target -2% | | | | | | | |
| | | | | | HFN and Specific weight targets | | | | | | | |
| Hagberg Falling Number | | | | | 250 | 250 | 200 | 150 | | | | |
| Specific Weight | | | | | 76 | 76 | 76 | 75 | | | | |
| Millers assessment of value within the Group | | | | | high | high | med | | v high | v high | high | low |
| Protein content | | | | | med | med | low | low | med | med | low | low |
| Hagberg Falling Number | 230 | 230 | 180 | 150 | high | high | high | low | high | high | high | low |
| Specific weight | 75 | 75 | 75 | 74 | high | high | high | high | high | high | high | high |
| UK treated yield (spring) | | | | | high | high | high | high | high | high | high | high |
| UK treated yield (late autumn sown) | | | | | high | high | high | high | high | high | high | high |
| Lodging with PGR | 6 | 6 | 6 | 6 | high | high | high | high | high | high | high | high |
| Height | | | | | low | low | low | low | low | low | low | low |
| Ripening | | | | | med | med | med | med | med | med | med | med |
| Mildew | 3 | 3 | 3 | 3 | med | med | med | med | med | med | med | med |
| Yellow rust | 3 | 3 | 3 | 3 | high | high | high | high | high | high | high | high |
| Brown rust | 3 | 3 | 3 | 3 | med | med | med | med | med | med | med | med |
| Septoria nodorum | 3 | 3 | 3 | 3 | low | low | low | low | low | low | low | low |
| Septoria tritici | 4 | 4 | 4 | 4 | med | med | med | med | med | med | med | med |
| OWBM resistance | | | | | high * | high * | high * | high * | high * | high * | high * | high * |

* If reliable data available

| | Defined comparator varieties for 2019 | Mechanism to set yield target |
|----------------|---------------------------------------|---|
| Group 1 | Mulika | number set using the highest yielding variety (or mean of the two highest yielding varieties if highest yielding variety is a P1) ¹ |
| Group 2 | KWS Cochise | number set using the highest yielding variety (or mean of the two highest yielding varieties if highest yielding variety is a P1) in the Group 1 & Group 2 segment ¹ |
| Group 3 | - | - |
| Group 4 (soft) | - | - |
| Group 4 (hard) | Hexham | number set using the highest yielding variety (or mean of the two highest yielding varieties if highest yielding variety is a P1) ¹ |

¹ The Group 2 target shall not be lower than that for Group 1. The Group 4 target shall not be lower than that for any other Group.

24 Appendix 18: Dates of meetings 2020

Meeting dates for July – December 2020

| Date - 2020 | Meeting | Location | Start Time |
|-------------------------------------|--|---------------------|------------|
| Thursday 13 th August | 29 RL Oilseed Rape Crop Committee | PGRO, Peterborough* | 09:30 |
| Tuesday 18 th August | Oilseed Rape Candidate Selection Appeals | Stoneleigh* | 13:00 |
| Thursday 20 th August | 29 RL Barley, Oats and Other Cereals Committee | PGRO, Peterborough* | 09:30 |
| Tuesday 25 th August | Barley, Oats and Other Cereals Candidate Selection Appeals | Stoneleigh* | 13:00 |
| Thursday 10 th September | 29 RL Wheat Crop Committee | PGRO, Peterborough* | 09:30 |
| Tuesday 15 th September | Wheat Candidate Selection Appeals | Stoneleigh* | 13:00 |
| Tuesday 29 th September | 48 RL Project Board | PGRO, Peterborough* | 10:30 |
| Wednesday 28 th October | 30 RL Oilseed Rape Crop Committee | PGRO, Peterborough* | 09:30 |
| Thursday 5 th November | 30 RL Barley, Oats and Other Cereals Committee | PGRO, Peterborough* | 09:30 |
| Thursday 12 th November | 30 RL Wheat Crop Committee | PGRO, Peterborough* | 09:30 |
| Tuesday 24 th November | 49 RL Project Board and Appeals | PGRO, Peterborough* | 10:30 |

* subject to Covid-19 restrictions

While the Agriculture and Horticulture Development Board seeks to ensure that the information contained within this document is accurate at the time of printing, no warranty is given in respect thereof and, to the maximum extent permitted by law, the Agriculture and Horticulture Development Board accepts no liability for loss, damage or injury howsoever caused (including that caused by negligence) or suffered directly or indirectly in relation to information and opinions contained in or omitted from this document.

Reference herein to trade names and proprietary products without stating that they are protected does not imply that they may be regarded as unprotected and thus free for general use. No endorsement of named products is intended, nor is any criticism implied of other alternative, but unnamed, products.

AHDB Cereals & Oilseeds is a division of the Agriculture and Horticulture Development Board (AHDB).

