Protocol 005: SR 22-26 (Jan 2022)

RECOMMENDEDLISTS

AHDB Recommended Lists (RL) for cereals and oilseeds: Spring Oilseed Rape Trials (2022–26)

This protocol was believed to comply with relevant agrochemical, environmental and other regulations at the time of writing but it is the responsibility of the contractor to ensure that it continues to comply. In the event of non-compliance the protocol should not be followed but the Field Trials Manager should be notified at once of how the protocol requirements would breach regulations.

Any deviation from this protocol other than under the circumstances described above may result in a breach of contract and should be agreed in advance.

Changes from previous version

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Contents

Hyperlinks are provided for quick navigation of this document. To return to your original reading point, press Alt and the Left Arrow keys.

Part 1: General information

1.1 Trial distribution

Four untreated replications.

UK: SR411 and SR414

England: SR412

Scotland: SR413

1.2 Trial design and treatments

Trials will be untreated only.

Trial design will be complete block or incomplete block design.

Restored hybrids will be blocked together within the randomisation. Each restored block will be bordered on either side with a restored hybrid buffer plot.

Semi-dwarf varieties may also be blocked together and surrounded by dwarf buffers.

The remaining block of conventional varieties will be bordered on either side with a conventional buffer plot.

These blocking arrangements may be unnecessary if a bordered plot-drill is used. Contact the RL Field Trials Managers Team for more information.

Sowing lists and trial design will be specified by the RL Data Team. Randomisations will be incomplete block neighbour-restricted designs. It is important that any change to the drilling layout is discussed and agreed with the beforehand.

Replications: Four

Part 2: The Trials system

2.1 General

The trial operator will be responsible for the choice of site, and for the establishment, supervision, recording and harvesting of the trial.

Genetically modified (GM) varieties

There are no GM varieties in Recommended List or Descriptive List trials. RL or DL trials must not be grown on, or near, land that contains, or has contained, genetically modified (GM) plants without the express permission of AHDB. Seed suppliers will be required to give written assurances that all reasonable steps have been taken to prevent the adventitious presence of GM material during breeding, production and handling of the seed submitted for trials.

The varieties/seed submitted will be:

- varieties bred from parent plants that have not been genetically modified.
- produced from plants grown under appropriate isolation conditions and isolated from transgenic lines.

A site should be chosen that will avoid problems from previous cropping e.g. oilseed rape volunteers or herbicide effects from a previous crop.

A decision to abandon a trial must only be taken in consultation with the Field Trials Managers Team.

In principle, cultivation and agronomy should follow best local practice.

Records should be clear and self-explanatory so that the trial can be taken over at short notice by another officer without difficulty.

The seed has been supplied for trial purposes only, and must not be used for further multiplication or any purpose other than that specified by AHDB, unless special permission has been obtained. It is frequently supplied for testing on the condition that it is not multiplied for other purposes and it is the responsibility of the officer in charge of the trial to ensure that this does not occur.

2.2 Randomisation of trials

The RL Data Team will generate trial layouts. They will be transferred to the appropriate trial centres in electronic format as Excel workbooks (one for each trial). Instructions concerning the recording and transfer of data will be issued separately.

In an incomplete block design, any splitting within superblocks must ensure that blocks stay complete. Any movement of varieties to avoid clustering should be within sub-blocks and not between. If there are any problems with the plan or adjusting it to fit to the field, the RL Data Team should be consulted.

2.3 Plot dimensions, discards and surround

It is essential that the plot size suits the intended plot equipment and contractors should discuss their plans with the Field Trials Managers Team prior to drilling to ensure that this is the case.
Plots should be drilled to a greater length than required and cut back to the required length prior to harvest. The plot width for calculating harvested area is measured centre gap to centre gap with an inter-plot gap in the range 0.5 m to 0.8 m. Sown plot width should reflect the blade width of the swathers where used.

Trials will be four reps with a minimum harvested area of 20 m^2. By prior arrangement with the Field Trials Managers Team, a bordered drill may be used with a minimum harvested area of 18 m^2.

2.4 Trial seed

Seed should be supplied to the seed processor specified by the Field Trials Manager. In order to meet protocol sowing requirements, it is essential that seed is supplied by deadlines specified by the Field Trials Manager in the seed order. Seed received after these deadlines may be omitted from trials.

Supply of seed to trial operators

Seed is supplied to trial sites as bulks sufficient to sow the specified trials. It may be chemically treated, details of which will accompany the seed. It is the responsibility of each trial operator to prepare plot packets from the bulk of seed supplied and to ensure that the correct plant population is achieved. Variety names, codes and thousand seed weight information will be sent to trial operators, usually by e-mail.

Surplus seed may be used for discard and buffer plots or filling in but for no other purpose without the prior consent of the Field Trials Managers Team.

2.5 Drilling

Seed rates may be adjusted to suit site conditions at the discretion of the trials operator with the aim of producing a plant population of between 80 and 100 plants/m². Hybrids should be drilled at 80% seed rate.

The following formula will be used to calculate the seed rate for a given thousand seed weight:

$$\text{Seed rate (kg/ha)} = \frac{(\text{Target population} \times \text{Thousand seed weight}) \times 100}{(\text{Establishment\%} \times \text{Germination \%})}$$

For operators using seed counters the following formula can be used to calculate required seed numbers per plot:

$$\text{Seeds per plot} = \frac{(\text{Target population} \times \text{Drilled plot area}) \times 10{,}000}{(\text{Establishment\%} \times \text{Germination \%})}$$

When drilling, every effort should be made to obtain even emergence. Internal gangways should not be mown until the risk of pigeon damage has passed.

2.6 Husbandry guidelines

2.6.1 Site Selection

To minimise the risk of damage by flea beetles and/or pollen beetles the trial should be located within a host farm crop of spring oilseed rape and/or close to other spring oilseed rape trials. Trial operators should be aware that repeat pesticide applications may be required to control persistent insect pests and make plans accordingly.

Trials should be grown in farm crops and sited away from trees, hedges, headlands and other features likely to cause uneven growth. The soil should be as uniform as possible but, if there are irregularities such as ridges or furrows, the trial should be drilled across them. Ensure that cultivations are carried out across the direction of sowing. The trial must not be located on land that has been used for trials in the previous 12 months.

Previous cropping must be appropriate for a spring oilseed rape crop to be grown. Sites should be selected for a minimum of volunteers and a five year break would be ideal. Shorter rotations may be allowed in prior consultation with the Field Trials Managers Team. All attempts should be made to reduce volunteer pressure within the trials. A site that follows a failed winter oilseed rape crop should be avoided.

Applications of fertilisers and sprays should be uniform, it is normally best to apply these across the direction of the plots.

2.6.2 Timing of sowing

Trials should be drilled when soil and weather conditions are conducive to rapid establishment. Time the drilling of the trial so that emergence coincides with that of the surrounding spring oilseed rape farm crop. In dry spring conditions, irrigation may be used to assist establishment by prior arrangement with the Field Trials Managers Team.

Under current legislation the seed is unlikely to have been treated with insecticide seed treatments and so it is essential that trial operators are vigilant with pre- and post-emergence flea beetle control measures.

2.6.3 Herbicides

Chemicals should not be used to which any variety is known to be sensitive. If in doubt, the Field Trials Managers Team should be consulted (contact details can be found on the AHDB extranet).

2.6.4 Fungicides

Trials will normally be untreated with fungicide. However, though the risks of *Sclerotinia* and *Alternaria* development are generally lower in spring oilseed rape than the winter crop, damaging attacks can occur which could threaten the validity of the trial. If there is considered to be a high risk of disease infection, then an appropriate fungicide should be applied at mid-flower for Sclerotinia, or from mid-flower to pod senescence for *Alternaria*. Other disease control should only be undertaken after agreement by the Field Trials Managers Team.

2.6.5 Fertilisers

Nitrogen fertiliser should be applied according to advisory guidelines (e.g. The AHDB Nutrient Management Guide (RB 209)).

Trial operators should be aware of the implications of other nutrient requirements (especially Sulphur) and should be prepared, if necessary, to apply appropriate treatments.

2.6.6 Plant growth regulators

Plant growth regulators should not be used.

2.6.7 Pest control

Adequate measures should be taken to prevent or minimise damage by any pest.

Flea beetle may be a significant pest during establishment and trial operators must demonstrate that adequate pre- and/or post-emergence control measures have been taken.

Grazing, particularly by pigeons, may be selective and control measures should be taken if necessary. Internal gangways should be made after the risk of pigeon damage has passed. Birds can also cause damage near harvest, especially when trials are near houses. Control can be difficult but every effort should be made to minimise losses.

Pollen beetles attack crops from just before first flowering and can be particularly damaging in spring oilseed rape. A pesticide application at the green/yellow flower bud stage may be necessary. Seed weevil and Brassica pod midge may require control measures at this time also. Assessments should be made wherever pest damage occurs since decisions have to be made on the validity of each plot affected.

2.6.8 Harvesting

Plots should be trimmed to their final length before mid-stem extension to minimise the damage to remaining plants. If the trial is to be cut direct, a header-extension must be fitted to the plot combine to minimise table losses. Side-knives must not be used.

It is the trial operator's responsibility to ensure that plots can be harvested without damaging neighbouring plots and without contamination; plots should be separated adequately as required by hand or machine. If it is necessary to reduce the length of any plot at harvest, clear details should be given in the trial diary sheet and the harvested plot length of each plot should be recorded and submitted with the yield data.

Notify the Field Trials Managers that harvest has taken place on the day of harvest, or first thing the following day. Yield with dry matter must be returned within five days of the harvest of the trial, together with any other outstanding data. If dry matters are being conducted by a sub-contractor, yield data must be returned within two days.

Non-semi-dwarf varieties may be swathed or desiccated (preferably using a translocated desiccant such as glyphosate) and combined direct at the discretion of the trial operator and depending on the state of the crop after flowering. Semi-dwarf blocks must not be swathed, irrespective of the decision for the rest of the trial and the trial must be laid out to allow for this.

Equipment to conduct either technique must be available to the trial operator at the optimum time. The trial operator must indicate in the trial workbook which technique has been used, giving the reasons for their choice.

Swathing or desiccation: points for consideration

Swathing

Plots should be tall enough such that stems can be cut to leave long stubble onto which the cut plants can rest during the drying period.

It may not be possible to satisfactorily swath very short crops and/or those that have pods on branches that are very close to the ground.

Plots can be swathed during weather periods that would preclude desiccation.
Swathed crops are more prone to bird damage (such as pigeons) especially if harvest is delayed.

Desiccation and direct-combining

On tall and/or thick crops it may not be possible to get spraying machinery through the trial without causing unacceptable damage, and it may be impossible to get even coverage of the desiccant: swathing may be the better option.

Thin, standing plots that have not interlinked to form a canopy may be more prone to wind shedding if harvesting is delayed.

2.7 Completion of records

The trial workbook should be used to record all data.

Completed data should be returned to trials@ahdb.org.uk as soon as records are taken and by the deadlines shown in the table below:

Report	Deadline	Sheets to be returned (use return macro to submit the required workbook tabs)
1) Confirmation of sowing and notification of changes to plan	Within 5 days of sowing	Confirmation that the trial has been sown and if it has been sown to plan. Trial layout – clearly changes if trial has not been sown to plan
2) Site data	Spring sown trials: as soon as possible and within one month of sowing.	Site data Map of area Field layout sketch Trial layout Trial diary
3)Early data	Spring sown trials: within one month of sowing. Some measures maybe recorded after this time.	Early data recording tab Trial diary update
4) Disease data	Spring crops - As soon as recorded and by 22nd August.	Disease data recording tab Trial diary update
5) Harvest data	Within 5 days of harvest	Harvest data recording tab Agchem details Trial diary update

Early, disease and harvest plot data tabs contain columns for records likely to be undertaken during the recording period and which may or may not be required by the protocol. Any additional recording columns can be added on the relevant data tabs.

2.7.1 Site plot data (Site data, location and plan details)

For autumn-sown trials this information should be returned shortly after full establishment and within two months of sowing. The information for spring-sown trials should be returned as soon as possible and within a month of sowing.

This report should include:

- Confirmation of sowing to plan or full details of any changes to plan.

This should be done by clearly highlighting the changes on the trial layout tab contained in the workbook. On receipt of the returned workbook the RL data team will ensure that the plan has been modified correctly within all areas of the workbook and may re-issue an updated workbook to include these changes in all areas of the workbook including the data tab. If a new workbook is issued it is recommended that any older versions of the workbook are deleted.

- Completed site data tab
- Map of area. Site location details i.e. how to get to the field by road.
- Field layout sketch. Sketch showing the layout of the trial(s) in the field, in relation to other trials and showing access roads, gates etc.
- Trial layout. Trial sketch showing plot numbers and variety IDs.
- A short post-establishment report of the condition of the trial in the diary tab.

2.7.2 Early data

This sheet will contain

- All agronomic plot data to be recorded upto and including flowering (GS4.9).
- For each measure you will need to provide, date of recording, and the growth stage at time of assessment.
- Please submit data as it is assessed

2.7.3 Disease data

This sheet will contain

- Disease data relevant to your crop and trial purpose
- For each measure you will need to provide, date of recording, and the growth stage at time of assessment.
- Please submit data as it is assessed

Where disease levels are very low and the decision is taken to postpone an assessment until a later date please enter this information in the trial diary.

2.7.4 Harvest data

This sheet will contain:

- All plot data, including yield, dry matter and all remaining agronomic data (see 2.7.4).
- For each measure you will need to provide date of recording and the growth stage at time of assessment.

- Trial treatments and agrochemical inputs.
- Trial diary comments. Note any factors that may affect the validity of the trial.
- The method of harvest (i.e. swathing or cut direct) should be indicated in the trial diary and (if desiccant used) in the agrochemical sheet.

2.7.5 Agronomic characters and scales

The list below details the records required and the scales that should be used. Data should be recorded in the Excel recording sheets within the trial workbooks. A de-randomising macro allows you to conduct an initial validation of the data.

The growth stage should be recorded for each observation. The correct growth stage key is given in Appendix 2.

Plot numbers and variety codes must correspond to those on the trial plan within the workbook.

In order to make records comparable across sites, it is essential that the names and units used should be correct. This can be achieved by pasting blank records as required from the additional records worksheet. Records of other characters will be processed and examined but it may not be possible to use them in over-trials reports.

All plot records are compulsory and should be recorded even if all scores are the same. Records are made using the following scales and guidelines:

Emergence (1-9)	1 = very slow 9 = very fast	**OBLIGATORY**

Give the estimated date of full emergence for a control variety.

Establishment (1-9)	1 = very thin 9 = very thick	**OBLIGATORY**

Record after emergence is complete and give the approximate numbers of plants per metre row for the extreme values used.

Early vigour (1-9)	1 = very weak 9 = very vigorous	**OBLIGATORY**

This should be recorded soon after full emergence. Record also the weediness and predominant weeds present at this time.

Grazing damage (1-9)	1 = all plants severely damaged 9 = no plants damaged	**OBLIGATORY**

Indicate the cause of damage and advise the Trials Coordinator by e-mail what action has been taken to minimise further damage.

Flowering (1-9) 1 = very late **OBLIGATORY**
9 = very early

One record is normally sufficient. Please also estimate the date of full flowering for the earliest control variety.

Lodging (1-9) 1 = completely lodged **OBLIGATORY**
9 = no lodging

The aim of this score is to describe the canopy structure at harvest. Please note that because of the nature of lodging in rape plots, a score of 5 can imply either half the plot area completely flat or the whole plot leaning at 45 degrees. Record even if there is no lodging.

Plant height (cm) **OBLIGATORY**

Record average plot height at the end of flowering before leaning or lodging takes place. If lodging has occurred, choose a representative area of the plot, lift a number of plants against the measuring pole and record an average height.

Maturity (1-9) 1 = very late **OBLIGATORY**
9 = very early

Maturity can only be judged by opening a number of pods along the length of the plot to assess seed colour. Pod colour does not give a reliable guide. Avoid unrepresentative areas of the plot when making assessments, for example, localised disease infections.

Harvest date **OBLIGATORY**

Obligatory. Record in the format dd/mm/yyyy.

Yield (kg) and Dry matter% **OBLIGATORY**

Obligatory from yield plots.

Plot dimensions

Plot length	The plot length harvested in metres
Plot width	The width of the harvested plot in metres from outer row to outer row plus half of the inter-plot gap. If the inter-plot gap varies it should be measured for each plot

Record all plots.

The fresh seed yield should be recorded in kg. Any tare weight should be subtracted before submitting the data. Any factors which may have affected the yield of the trial or individual plots should be noted and accompany the yield data.

The dry matter% of each plot must be determined by the oven method and samples retained for oil content analysis (see Appendix 4).

(Resistance to) Seed loss (1-9)	1 = severe seed loss 9 = no seed loss	**OBLIGATORY**

Record even if there is no seed loss. Base scores either on observation of pod shattering or counts of seed on the ground. Seed loss is easier to assess before combining. Ensure that combines are set correctly to minimise losses at harvest. Estimate the number of seeds lost per m^2 for the plot(s) with the most losses so that the approximate yield loss can be estimated.

Pests and other factors affecting validation

Attacks by pests and any other site features should be noted. Individual plot records should be made if varietal differences are apparent. The character recorded should be clearly described and the scale clearly defined. Notes on factors that are likely to affect the validity of the trial should be recorded in the in the Excel recording sheets within the trial workbooks.

2.7.6 Disease assessment and recording

Foliar disease should be recorded if the level of infection on the most affected variety is over 5% of the leaf area according to the keys given in Appendix 1.

2.8 Trial samples and quality tests

Sample requirements will be specified by the Field Trials Manager each year and details will be circulated to all trial operators.

A 200g sample should be taken from each plot at the time of plot weighing, in a polythene bag for moisture and oil content determination. Place one label on the inside of each bag and seal them by rolling over the top and securing the bags and the second label with rubber bands.
Dry matter determination can be sub-contracted by prior arrangement with the Field Trials Manager, in which case the samples should be sent ex-combine. If dry matter assessment is being carried out on-centre then the dried samples should be sent for analysis.

Harvest instructions and pre-printed plot labels will be sent out by the Field Trials Manager prior to harvest.

Samples should be forwarded immediately to the appointed laboratory.

It is important that samples are despatched quickly – either immediately after dry matter assessment or immediately after harvest if a sub-contractor is conducting dry matter assessment. A next day delivery should be requested from the carrier. Notification of sample dispatch should be e-mailed to the Field Trials Manager at the same time.

2.9 Trial inspection

All trials will be inspected by an AHDB approved inspector and, in some cases, it may be necessary to visit on more than one occasion.

The requirements for Trials Operators in respect of inspections are as follows:

1. To give reasonable access to trials to inspectors.
2. To supply the inspector with information (for example sprays applied etc) within seven days of a request.
3. To co-operate with the inspector in making any non-routine assessments required to establish the validity of the trial (for example population counts).
4. To carry out any action agreed in consultation with the inspector. In particular it is important that any requirement to shorten plots is undertaken and that missing values are returned on any plots which have been dropped from the trial.

The trials inspection also provides an opportunity for feed-back to AHDB about any problems with the trials protocol and trials operators are encouraged to make any points to the inspector so that these can be considered for future revisions to the protocol.

Appendix 1 - Assessment key for oilseed rape diseases

Light leaf spot, Alternaria, downy mildew, Phoma and white leaf spot on leaves and pods:

1) Examine all leaves and pods in three areas of each plot.
2) Ignore all naturally senescent tissue.
3) Include all necrosis and chlorosis attributable to disease.
4) Estimate % infection using the descriptions below. Record the average % infection from the three areas. Interpolate values if necessary. Disease may be recorded on a 1–9 scale but the data must be submitted as a percentage score. Both scales are given in the assessment keys.

1–9 score	**% Infection**	**Leaves**	**Pods**
1	0	No infection observable	
2	0.1	Trace of infection	
3	1	Diseased leaves with 1 small lesion; plants with a few scattered lesions	Terminal raceme with a few scattered lesions
4		Leaves appear 1/10 infected; diseased leaves with 2 lesions	Terminal raceme appears 1/10 infected; diseased pods with 1 or 2 lesions
5	10	Leaves appear ¼ infected; diseased leaves with few large or many small lesions	Terminal raceme appears ¼ infected; diseased pods with 2 or more lesions
6	25	Area appears ½ infected ½ green	
7	50	Area appears more infected than green	
8	75	Very little green tissue left	
9	100	Leaves/pods dead - no green tissue left	

These descriptions are guides for specific levels; interpolate between these points as necessary e.g.15%, 27%, 60% etc.

Appendix 2 - Growth stage key for oilseed rape

	Growth Stage	
Germination and emergence	0.0	Dry seed
Leaf production	1.0	Both cotyledons unfolded and green
	1.1	First true leaf emerged
	1.2	Second true leaf emerged
	1.X etc	Third true leaf emerged
Stem extension	2.0	No internodes (rosette)
	2.5	About five internodes
Flowerbud development	3.0	Only leaf buds present
	3.1	Flower buds present but enclosed by leaves
	3.3	Flower buds visible from above ('green bud')
	3.5	Flower buds raised above leaves
	3.6	First flower stalks extending
	3.7	First flower buds yellow ('yellow bud')
Flowering	4.0	First flower opened
	4.1	10% all buds opened
	4.3	30% all buds opened
	4.5	50% all buds opened
Pod development	5.3	30% potential pods
	5.5	50% potential pods
	5.7	70% potential pods
	5.9	All potential pods
Seed development	6.1	Seeds expanding
	6.2	Most seeds translucent but full size
	6.3	Most seed green
	6.4	Most seed green-brown mottled
	6.5	Most seeds brown
	6.6	Most seed dark brown
	6.7	Most seed black but soft
	6.8	Most seed black and hard
	6.9	All seeds black and hard
Leaf senescence	7.0	
Stem senescence	8.1	Most stem green
	8.5	Half stem green
	8.9	Little stem green
Pod senescence	9.1	Most pods green
	9.5	Half pods green
	9.9	Few pods green

Appendix 3 - Deadlines and milestones

It is required that AHDB trials will be grown to the highest standards and that contractors will give them priority. Failure to meet the trial specification without good reason will be a breach of the contract and could result in reduced or no payment of the agreed fee for that trial.

If any operation, for example drilling, disease recording or harvesting, are delayed or carried out in poor conditions, it is the responsibility of the contractor to inform the Trials Coordinator and to explain the reasons for the delay/ problem. **Failure to inform the RL Field Trials Managers will constitute a breach of the contract.**

The RL Field Trials Managers should be notified if there is good reason that deadlines cannot be met. **Failure to return data and / or samples by these deadlines without good reason will constitute a breach of contract**.

Report	**Deadline**	**Sheets to be returned (use return macro to submit the required workbook tabs)**
Confirmation of sowing and notification of changes to plan	Within 5 days of sowing	Confirmation that the trial has been sown and if it has been sown to plan. Trial layout – clearly changes if trial has not been sown to plan
Site data	Spring sown trials: as soon as possible and within one month of sowing.	Site data Map of area Field layout sketch Trial layout Trial diary
Early data	Spring sown trials: within one month of sowing. Some measures may be recorded after this time.	Early data recording tab Trial diary update
Disease data	Spring crops– As soon as recorded and by 22nd August.	Disease data recording tab Trial diary update
Harvest data	Within 5 days of harvest	Harvest data recording tab Agchem details Trial diary update

Response to email or telephone queries from the Field Trials Managers during the season	7 days after the request or by harvest if this is sooner
Response to email or telephone queries from the Field Trials Managers after the trial has been harvested	1 working day
Quality samples	To be received by the appropriate laboratory (as designated by the Field Trials Manager) within 5 days of harvest.

Appendix 4 – Dry matter and oil content determination in oilseed rape

Oven method

An accurately weighed and recorded sample of 100g seed (±5g) per plot is placed in the drier which must be at a temperature of 100ºC ±4°C with the air recirculation set in the range 80-100% recirculation in order to restore the temperature to 100°C ±4°C as rapidly as possible. When the temperature is restored to 100°C ±4°C the air regulator is set at 80% recirculation i.e. 20% fresh hot air. The regulator is critical for rapid drying. The samples are dried at 100°C ±4°C for such time as is necessary for complete drying.

The dried sample is removed from the drier as soon as the sample is cool enough for accurate weighing. **The dry weight is recorded to one decimal place.**

Samples should be retained for oil content determination (see section 2.8).

Do not use an electronic moisture analyser to assess dry matter.