Animal &
Plant Health
Agency

Great Britain and Northern Ireland Variety List Trials: Trial Procedures for Official Examination of Value for Cultivation and Use (VCU) Harvest 2026

Cereals – Wheat, Barley, Oats, Triticale, Rye, Spelt Wheat, Durum Wheat

May 2025

Changes since last version

- Updated all references of NL to VL
- Updated email link to national archives at end of document
- Updated Appendix 4
- Updated Appendix 5

Contents

Scope

This document contains the appendices for the main guidance document:

Trial Procedures for Official Examination of Value for Cultivation and Use (VCU) Harvest 2026 – Cereals – Wheat, Barley, Oats, Triticale, Rye, Spelt Wheat, Durum Wheat

Appendix 1 – Approved Trial Organisers/ Operators for wheat, barley, oats, triticale, rye and spelt wheat

Activity	Organisers/Operators Responsible
Data Handling Operators	BioSS* AHDB Cereals and Oilseeds** Niab***
Trials Organiser	BSPB
Pathology Trials Operator	Niab
Trial Inspection and Technical Validation Operator	AHDB Cereals and Oilseeds and SASA
Quality Testing Operators	Niab and Campden BRI
Data Review and Standards Setting Operator	Niab

*Wheat, Barley, Oats, Spring Triticale and Spring Rye

**Triticale, Rye

*** Spelt wheat, Durum wheat

Appendix 2 – Seed treatment products for use on VL trials

Where there are alternative treatments, all varieties in the trial must be treated with the same product.

Crop	Treatment
Winter wheat	Prothioconazole + Tebuconazole (Redigo Pro) Kinto Plus (Fluxapyroxad, Triticonazole and Fludioxonil) may be used
Winter barley	Prothioconazole + Tebuconazole (Redigo Pro). Raxil Star. Kinto Plus (Fluxapyroxad, Triticonazole and Fludioxonil) may be used
Winter oats	Prothioconazole + Tebuconazole (Redigo Pro). Kinto Plus (Fluxapyroxad, Triticonazole and Fludioxonil) may be used
Spring wheat	Prothioconazole + Tebuconazole (eg Redigo Pro)
Spring barley	Prothioconazole + Tebuconazole (Redigo Pro)
Spring oats	Prothioconazole + Tebuconazole (Redigo Pro)
Winter Triticale	Prothioconazole + Tebuconazole (Redigo Pro) Kinto Plus (Fluxapyroxad, Triticonazole and Fludioxonil) may be used
Rye	Prothioconazole + Tebuconazole (Redigo Pro) Kinto Plus (Fluxapyroxad, Triticonazole and Fludioxonil) may be used
Spelt wheat	No Treatment

Durum Wheat	Prothioconazole + Tebuconazole (eg Redigo Pro)

Appendix 3 – Seed dispatch deadline dates

VCU seed must be delivered to each Growing Trials Operator/ Seed Handling Operator by:

Winter wheat	15 September
Triticale	1 September
Rye	1 September
Winter Spelt Wheat	1 September
Durum wheat	1 September
Winter barley	8 September
Winter oats	15 September
Spring wheat	23 October
Spring Spelt Wheat	15 December
Spring barley	15 January
Spring oats	15 January

Appendix 4 – Growing Trial Operators and trial locations

4.1 Growing Trial Operators/Seed Handling Operators

A WINTER WHEAT

Growing Trial Operator	Seed Handling Operator (if not Trial Operator)	Location of trial	Trial description
Saaten Union UK Ltd	N/A	Wold Newton, Lincolnshire	T and UnT
Niab	N/A	Terrington, Norfolk	T only
Niab	N/A	Callow, Herefordshire	T and UnT
Elsoms Wheat Ltd	N/A	Spalding, Lincolnshire	T, UnT and L
KWS UK Ltd	N/A	Framlingham, Suffolk	T and UnT
KWS UK Ltd	N/A	Frisby on the Wreak, Leicestershire	T and L
RAGT Seeds Ltd	N/A	Ickleton, Cambridgeshire	T only
Agrii	N/A	Thaxted, Essex	T only
Limagrain UK Ltd	N/A	Elmswell, Bury St Edmunds, Suffolk	T only

Syngenta Ltd	N/A	Horncastle, Lincolnshire	T only
Envirofield	N/A	Woodstock, Oxfordshire	T only
Niab	N/A	Broughton, Hants	T only
Niab	N/A	Petham, Kent	T only
Frontier Agriculture Ltd	N/A	Driffield, Yorkshire	T only
SRUC	N/A	East Lothian	T, UnT and L
DSV UK Ltd	N/A	Wardington, Banbury, Oxon	T only
Scottish Agronomy	N/A	Tayside, Angus	T and UnT

B SPRING WHEAT

Growing Trial Operator	Seed Handling Operator (if not Trial Operator)	Location of trial	Trial description
Saaten Union UK Ltd	N/A	Cowlinge, Suffolk	T and DOP
John Innes Enterprise	N/A	Norwich, Norfolk	T and DOP
KWS UK Ltd	N/A	Fowlmere, Cambridgeshire	T and DOP
Niab	N/A	Sutton Scotney, Hampshire	T only
Stockbridge Technology Centre	Saaten Union	Cawood, North Yorkshire	T only
Frontier Agriculture	N/A	Swallow, Lincolnshire	T only

C WINTER BARLEY

Growing Trial Operator	Seed Handling Operator (if not Trial Operator)	Location of trial	Trial description
Agrii	N/A	Great Dunmow, Essex	T only
Saaten Union UK Ltd	N/A	Cowlinge, Suffolk	T only
KWS UK Ltd	N/A	Newton, Cambridgeshire	T only
Syngenta Ltd	N/A	Great Sturton, Lincolnshire	T and UnT
Scottish Agronomy	N/A	Balgonie, Fife	T and UnT
Niab	N/A	Wimborne, Dorset	T and UnT
Niab	N/A	Callow, Herefordshire	T and UnT
Frontier Agriculture	N/A	Driffield, Yorkshire	T only
Scottish Agronomy	N/A	Ellon, Aberdeenshire	T and UnT
Scottish Agronomy	N/A	St Boswells, Scottish Borders	T and UnT

D SPRING BARLEY

Growing Trial Operator	Seed Handling Operator (if not Trial Operator)	Location of trial	Trial description
KWS UK Ltd	N/A	Fulbourn, Cambridgeshire	T only
Niab	N/A	Morley, Norfolk	T only
Scottish Agronomy	N/A	Gateside, Nr Kinross	T and UnT
Syngenta Ltd	N/A	Great Sturton, Lincolnshire	T and UnT
Stockbridge Technology Centre	Saaten Union	Cawood, North Yorkshire	T only
Scottish Agronomy	N/A	Hill of Fearn, Tain	T only
Trials Force	Agrii	Steelstrath, Aberdeenshire	T and UnT
Niab	N/A	Andover, Hampshire	T and UnT
Trials Force	Agrii	Cullen, Banffshire	T only
SRUC	N/A	West of Ormiston, East Lothian	T only
Scottish Agronomy	N/A	Tayside, Angus	UnT only
AFBI	Agrii	Crossnacreevy	T and UnT

E WINTER OATS

Growing Trial Operator	Seed Handling Operator (if not Trial Operator)	Location of trial	Trial description
Agrii	N/A	Great Dunmow, Essex	T and UnT
Scottish Agronomy	N/A	Balgonie, Fife	T and UnT
Eurofins	N/A	Worcester, Worcestershire	T and UnT
Niab	N/A	Sutton Scotney, Hampshire	T only

F SPRING OATS

Growing Trial Operator	Seed Handling Operator (if not Trial Operator)	Location of trial	Trial description
Scottish Agronomy	N/A	Balgonie, Fife	T and UnT
Saaten Union	N/A	Cowlinge, Suffolk	T and UnT
Niab	N/A	Callow, Herefordshire	T and UnT
Scottish Agronomy	N/A	Aberdeenshire	T and UnT
AFBI	Agrii	Crossnacreevy	T and UnT

G WINTER RYE

Growing Trial Operator	Seed Handling Operator (if not Trial Operator)	Location of trial	Trial description
Saaten Union UK Ltd	N/A	Cowlinge, Suffolk	T and UnT

H SPRING RYE

Growing Trial Operator	Seed Handling Operator (if not Trial Operator)	Location of trial	Trial description
Saaten Union UK Ltd	N/A	Cowlinge, Suffolk	T only

I WINTER TRITICALE

Growing Trial Operator	Seed Handling Operator (if not Trial Operator)	Location of trial	Trial description
Saaten Union UK Ltd	N/A	Cowlinge, Suffolk	T only

J SPRING TRITICALE

Growing Trial Operator	Seed Handling Operator (if not Trial Operator)	Location of trial	Trial description
Saaten Union UK Ltd	N/A	Cowlinge, Suffolk	T only

K DURUM WHEAT

Growing Trial Operator	Seed Handling Operator (if not Trial Operator)	Location of trial	Trial description
Saaten Union UK Ltd	N/A	Cowlinge, Suffolk	T only

4.2 Pathology Trials Operator

Pathology Trials Operator	Location of trial
Niab	UK

Appendix 5 – Control varieties for VCU assessments

The Winter Control varieties are:

Winter Wheat

- LG Skyscraper (Feed)
- Champion (VL1) (Feed)
- Skyfall (Bread making)
- KWS Extase (Bread making)
- Bamford (Biscuit)

Winter Spelt Wheat

- Zollernspelz
- Zollernfit

Winter Barley

- Craft (Malting)
- KWS Feeris (6 row Feed)
- SY Kingsbarn (6 row Hybrid Feed)
- Buccaneer (Malting)
- LG Caravelle (2 row Feed)

Winter Oats

- Cromwell
- Mascani
- Dalguise
- Peloton (Naked oat)

Winter Rye

- SU Performer

Winter Triticale

- Kasyno
- Lumaco

Crop	Variety
Winter Wheat	LG Skyscraper (Feed) Champion (VL1) (Feed) Skyfall (Bread making) KWS Extase (Bread making) Bamford (Biscuit)
Winter Spelt Wheat	Zollernspelz Zollernfit
Winter Barley	Craft (Malting) KWS Feeris (6 row Feed) SY Kingsbarn (6 row Hybrid Feed) Buccaneer (Malting) LG Caravelle (2 row Feed)
Winter Oats	Cromwell Mascani Dalguise Peloton (Naked oat)
Winter Rye	SU Performer
Winter Triticale	Kasyno Lumaco

The Spring Control varieties are:

Spring Wheat

- KWS Ladum
- KWS Cochise
- Hexham
- KWS Fixum

Spring Durum Wheat

- Miradoux
- Toscadou

Spring Barley

- RGT Planet
- LG Diablo
- Laureate
- Skyway
- Firefoxx

Spring Oats

- Canyon
- WPB Isabel
- Merlin
- Lennon (Naked comparator)

Spring Rye

- SU Vergil
- Ovid

Spring Triticale

- Doublet
- Trimour

Crop	Variety
Spring Wheat	KWS Ladum KWS Cochise Hexham KWS Fixum
Spring Durum Wheat	Miradoux Toscadou
Spring Barley	RGT Planet LG Diablo Laureate Skyway Firefoxx
Spring Oats	Canyon WPB Isabel Merlin Lennon (Naked comparator)
Spring Rye	SU Vergil Ovid
Spring Triticale	Doublet Trimour

Appendix 6 – Plant growth regulator protocol for cereal variety trials - 2024/2025

Last updated: December 2023

Recommendations by Paul Gosling, BASIS registration number R/E/8107/IFM.

RL Trials Co-ordinator:	Mark Bollebakker	01480 482989
VL Co-ordinator:	BSPB Trials	01353 653200

The following notes are given for guidance in the use of plant growth regulators (PGRs) on Recommended List trials. The full manufacturer instructions should be consulted prior to the storage, handling or use of any agrochemical product. The instructions and advice given on product labels should be followed at all times. There should be no conflicting advice between that given in this protocol and on the product label; if there appears to be any conflict, inform the Trials Co-ordinators before the application is made.

Summary of applications for VL trials

Crop	Fungicide treated plots	Plots or DOPs without fungicide	Lodging trials
Winter wheat	Yes	No	No
Spring wheat (late autumn or spring sown)	Yes	No	N/A
Winter barley	Yes, unless the crop is stressed and the risk of lodging is negligible.	Yes, unless the crop is stressed and the risk of lodging is negligible.	No
Spring barley	Only if a high risk of lodging	No	No
Winter oats	Yes, +F/+PGR plots only.	Yes	No
Spring oats	Yes, +F/+PGR plots only.	No	N/A
Winter rye	Yes	Yes	N/A
Winter triticale	Yes	Yes	N/A

Plant growth regulators should not be applied to trials grown specifically for the assessment of lodging. There are important restrictions relating to the use of plant growth regulators.

Crop damage can occur if manufacturers' guidelines are not followed.

Common restrictions are those relating to crops that:

- Are sited on soils of low fertility
- Are suffering from herbicide damage
- Are under stress from drought, waterlogging or any other cause
- Were sown in the very late spring

Trial managers should consult the manufacturer's instructions to see if any of these restrictions apply.

IN ALL CASES, PLANT GROWTH REGULATOR SHOULD BE APPLIED TO DESIGNATED PLOTS ONLY AS SPECIFIED IN THE AHDB RECOMMENDED LIST CEREAL TRIALS PROTOCOL

General guidance and notes specific to the use of PGRs on variety trials

Products should be used according to current manufacturers' instructions. It is the responsibility of the Trial Manager to ensure that the growth stages of all of the varieties in the trial are within the manufacturer's guidelines for use. The following notes are intended to highlight matters of particular relevance to the use of PGR products on variety trials and timings are relevant to earliest varieties.

The **Terpal** doses in this protocol are below full rate (**2.0 l/ha**).

Consult the Trials Co-ordinators if you feel that a higher dose is needed e.g. if there is a risk of severe lodging. However, be aware that late applications of **Terpal** (e.g. at around the flag leaf emergence stage) at higher doses can lead to crop damage or stimulate the production of secondary tillers.

Winter Wheat and late autumn sown Spring Wheat

Product	Crop	Rate & timing
Either split dose 3C Chlormequat 750 + Moddus	Winter wheat only	3C Chlormequat 750 at 1.0 l/ha at G.S. 25 – 30 PLUS †Moddus at 0.1 l/ha if applied at the G.S 30 timing. Followed at G.S. 31 – 32 by 3C Chlormequat 750 at 1.0 l/ha PLUS †Moddus at 0.1 – 0.2 l/ha. Do not apply if any variety is beyond the G.S. 32 timing.
OR SINGLE DOSE (Winter wheat and late sown autumn sown spring wheat) 3C Chlormequat 750 + Moddus	Winter wheat	3C Chlormequat 750 at 1.5 – 2.0 l/ha at GS30 – 31 (in the North and North-west regions this can be delayed to GS32) PLUS †Moddus at 0.1 – 0.2 l/ha. Do not apply if any variety is beyond G.S. 32.
	Spring wheat	3C Chlormequat 750 at 1.25 l/ha at GS30 – 31 (in the North and North- west regions this can be delayed to G.S. 32) PLUS †Moddus at 0.1 – 0.2 l/ha. Do not apply if any variety is beyond G.S. 32.
Optional: *Terpal	N/A	Either single-dose of 0.75 – 1.5 l/ha (depending on lodging risk and *condition of the crop) at GS32 – 37 OR (particularly for the early sown crops) a split

		dose of 1.0 l/ha at GS33 plus 0.75 l/ha at GS37

***Terpal** should not be applied to any variety in the trial if the leaf sheaths have split and the ears are visible.

- **DO NOT** apply **Terpal** if the crop is suffering from herbicide damage or physical stress caused by e.g., waterlogging, drought, take-all.
- **DO NOT** apply in temperatures above 21°C. If, in Winter wheat/Spring wheat trials there are large differences in growth stages; contact the RL Trials Co-ordinator/ VL Coordinator.

† **Moddus** - Apply unless the crop is stressed or the lodging risk is negligible.

Spring Wheat trials

Product	Rate & timing
Optional: 3C Chlormequat 750 + Moddus	Single half dose of 0.6 l/ha at GS 30 – 31. Consult the Trials Co-ordinator if the crop is late sown and/or under stress. Do not apply if any variety is beyond G.S. 31.

Terpal and Moddus should not be applied to Spring Wheat trials.

Winter Barley trials

Product	Rate & timing
Optional: 3C Chlormequat 750 + Moddus	Single half dose of 0.6 l/ha at GS 30 – 31. Consult the Trials Co-ordinator if the crop is late sown and/or under stress. Do not apply if any variety is beyond G.S. 31.
Moddus	Optional: G.S. 31 – 32 in high fertility situations (0.1 – 0.2 l/ha)
*Terpal	0.75 – 1.0 l/ha at *G.S. 32 – 39

*The preferred option for **Terpal** is for the product to be applied separately from the T2 application. **Terpal** should not be applied on any variety in the trial if the leaf sheaths have split and the ears are visible.

- **DO NOT** apply **Terpal** if the crop is suffering from herbicide damage or physical stress caused by e.g. waterlogging, drought, take-all.
- **DO NOT** apply in temperatures above 21°C.

Spring Barley trials

Product	Rate & timing
Moddus	Optional: Moddus may be applied at 0.1-0.2 l/ha at GS30 for increased rooting and tiller survival and where lodging may be expected.
Terpal	Optional: Terpal 0.5 l/ha at GS32-37. Apply only if the risk of lodging is high and the crop shows no signs of stress.

Winter and Spring Oat trials

Product	Rate & timing
Moddus	Optional: Moddus at 0.1 – 0.2 l/ha, in high lodging risk situations and if applied at G.S. 30.
3C Chlormequat 750 Option for an additional Canopy in high-risk situations.	Single dose: 3C Chlormequat 750 1.5 – 2.0 l/ha at G.S.31 – 32. A non-ionic wetting agent should be used - see product label. In high-risk situations Canopy 0.75 – 1.5 l/ha up to G.S. 41.

Apply routinely as a single application to all appropriate trials unless it is felt that the application is inadvisable, in which case the Trials Co-ordinators should be consulted

Winter Rye trials

Product	Rate & timing
3C Chlormequat 750	Either single dose: 3C Chlormequat 750 at 1.0 l/ha PLUS † Moddus at 0.1 – 0.2 l/ha at G.S. 30 Or split dose: 3C Chlormequat 750 1.0 l/ha at G.S. 31 – 32 PLUS † Moddus at 0.1 – 0.2 l/ha.
Medax Max Check timing with label	Medax Max 0.3 - 0.4 kg/ha should be used if Terpal timing is missed at GS37. This is safe up to GS49 and is safer for use on the ear in comparison to Terpal.
Terpal	Terpal 1.5 – 2.0 l/ha at G.S. 37

† Moddus. Apply unless the crop is stressed or the lodging risk is negligible.

Winter Triticale trials

Product	Rate & timing
3C Chlormequat 750	Single dose: 3C Chlormequat 750 at 1.0 l/ha PLUS † Moddus at 0.1 – 0.2 l/ha at GS30
Optional: Medax Max	Medax Max 0.3 – 0.4 kg/ha

Spring Rye (VL trial)

Product	Rate & timing
3C Chlormequat 750	Single dose: 3C Chlormequat 750 at 2.0 l/ha

Add recommendation for Spring Rye, Meddax Max full rate at GS 25 – 30 (at point of breaking dormancy).

Spring Triticale (VL trial)

Product	Rate & timing
3C Chlormequat 750	Single dose: 3C Chlormequat 750 at 2.0 l/ha

Appendix 7 – Fungicide protocol for cereal variety trials – 2024/25

Last updated: December 2023

Recommendations by Paul Gosling, BASIS registration number R\E\8107\IFM.

RL Trials Co-ordinator:	Mark Bollebakker	01480 482989
VL Co-Ordinator:	BSPB Trials	01353 653200

This programme is for use on AHDB Recommended List and National List cereal trials in 2021/22:

- For spring and summer applications to trials for harvest 2022.
- For autumn applications to trials to be harvested in 2023.

It is an experimental protocol and is designed to meet the protocol aim of keeping disease levels in treated plots below 5% infection in all varieties and in all trials. It is not intended to follow commercial practice.

Please note that most treatments are compulsory, and the rates and timings specified should be adhered to as closely as possible. The protocol is robust and, if applied correctly, should be effective. **If, however, disease levels rise above 5% (e.g., if weather conditions do not allow optimal application), please contact Mark Bollebakker (RL) or Louise Everest (VL) to discuss an appropriate course of action.**

Fungicides should be applied at the stated dose rates unless agreed otherwise with the RL Trials Co-ordinator or VL Co-ordinator. Changes to dose rates will only be sanctioned in exceptional circumstances, such as drought-stressed trials under low disease pressure.

Please contact the RL Trials Co-ordinator or VL Co-ordinator if you have any difficulty in sourcing a particular product.

In some cases, two or more products may be available from a company with the same active substances and formulation; if you wish to use such a product and it is not listed in this protocol, contact the RL Trials Co-ordinator or VL Co-ordinator. Generic products should be avoided as they may contain the same active substances but in a different formulation.

Important: Every care has been taken to ensure that all mixtures, rates, and timings are approved, meeting COSSH regulations and manufacturers and statutory guidelines. However, it is the responsibility of the Trial Manager to ensure that they meet all current regulations at the time of application. It is recommended to seek advice from a qualified BASIS advisor for suitability to local conditions and regulatory compliance. The RL Trials Co-ordinator or VL Co-ordinator should be notified of any conflict between the protocol and current regulations.

In accordance with FRAC guidelines, only two applications of strobilurin fungicides and two SDHI fungicides are to be applied to any crop.

Product	Active Substances	Amount of active substance	Manufacturer
Ascra Xpro	Bixafen Fluopyram Prothioconazole	65 g/l 65 g/l 130 g/l	Bayer Crop Science
Comet 200	Pyraclostrobin	200 g/l	BASF
Cyflamid	Cyflufenamid	50 g/l	Certis
Elatus ERA	Benzovindiflupyr Prothioconazole	75 g/l 150 g/l	Syngenta
Entargo	Boscalid	500 g/l	BASF
Arizona	Boscalid	500 g/l	BASF
Arizona	Folpet	500 g/l	Adama
Proline 275	Prothioconazole	275 g/l	Bayer
Prosaro	Mefentrifluconazole Fluxapyroxad	47.5/100 g/l	BASF
Sunorg-Pro	Metconazole	90 g/l	BASF
Talius/Justice	Proquinazid	200 g/l	DuPont
Tebucur 250	Tebuconazole	250 g/l	Belchim/Rotam
Univoq	Fenpicoxamid Prothioconazole	50 g/l 100 g/l	Corteva

WINTER WHEAT

Treatment Timing	Growth Stage (G.S.) – target timing or disease	Product/active ingredient	Rate
T0	**G.S. 30 (with no later than when 50% of varieties at G.S.30)**		
		Cyflamid +	0.25 – 0.35 l/ha
		Tebucur 250 +	0.6-0.75 l/ha
		Comet 200	0.4 – 0.6 l/ha
Note: Arizona is compulsory at T1 and T2 but can only then be used at one timing either at T0, T1.5 or T3		*Arizona*	*1.0 l/ha*
T0	**G.S. 32 (with most varieties at G.S. 32)**		
		Revystar XE +	1.0 – 1.25 l/ha
		Arizona +	1.0 l/ha
		Talius/Justice	0.15 l/ha
Optional for a rust situation		Elatus Era	0.6 l/ha
Optional for an eyespot situation		Entargo +	0.5 l/ha
T1.5	**G.S. 33 (targeting leaf 2 emerging)**		
Optional in a rust situation ***Note: 14-day interval between T1.5 Tebuconazole application and T2 application.***		*Sunorg Pro (Metconazole 250)*	*0.5 l/ha*
Optional in a Septoria situation		*Prothioconazole*	*0.6 l/ha*

Note: Arizona is compulsory at T1 and T2 but can only then be used at one timing either at T0, T1.5 or T3.	*Arizona*	*1.0 l/ha*
T2	**G.S 39 – 45 and no later than 4 weeks after T1 application**	
Please refer to the Corteva website on guidance for water volumes.	Univoq +	1.0 – 1.5 l/ha
Optional nationally but compulsory for the East and Southern regions.	Tebuconazole 250	0.75 – 1.0 l/ha
	Arizona	1.0 l/ha
Optional - If mildew established.	*Cyflamid*	*0.25 – 0.35 l/ha*
T3	**G.S. 55 – 61 Timing for Fusarium control (very early anthesis preferred).**	
	Prosaro +	0.8 – 1.0 l/ha
	Comet 200	0.4 – 0.6 l/ha
Note: Arizona is compulsory at T1 and T2 but can only then be used at one timing either at T0, T1.5 or T3. If used at T3 it can only be used up to GS59.	*Arizona*	*1.0 l/ha*
Post T3		
For extreme septoria or brown rust situations please contact the relevant trials coordinator. *Tebucur 250 has a maximum total dose limit of 2l/ha and can be applied up to GS71. In extreme yellow rust situations, there may be flexibility for a third application of Tebucur 250 at 0.5 l/ha, but please contact the relevant trials co-ordinator before doing so.*		

NOTE:

No more than TWO applications of a SDHI product should be applied to any cereal crop.

Depending whether "Knock down" or protectant activity is required, applications of Cyflamid (eradicant) and Talius/Justice (protectant) can be swapped at T0 or T1. DO NOT APPLY CONSECUTIVE APPLICATIONS OF PRODUCTS CONTAINING CYFLAMID.

For Cyflamid, the maximum number of treatments is TWO PER CROP on ALL recommended cereals, to be applied ONLY IN SPRING.

SPRING WHEAT

Treatment Timing	Growth Stage (G.S.) – target timing or disease	Product/active ingredient	Rate
Pre T1			
For disease infections before G.S. 29 consult the relevant trials co-ordinator.			
T1	**G.S. 29 – 31**		
		Ascra Xpro +	0.8 - 1.0 l/ha
		Comet 200 +	0.4 – 0.6 l/ha
		Arizona +	1.0 l/ha
		Talius/Justice	0.15 l/ha
T2	**G.S. 37 and no later than 3 weeks after T1 application**		
		Univoq +	1.0 – 1.5 l/ha
		Arizona	1.0 l/ha
Optional if mildew established		*Cyflamid*	*0.25 – 0.5 l/ha*
T3	**G.S. 51 – 61**		
		Prosaro +	0.8 l/ha
		Comet 200 +	0.4 – 0.6 l/ha
If including Arizona, must not exceed G.S. 59		*Arizona*	*1.0 l/ha*

Note: In a yellow rust situation, an application of tebuconazole 250 (0.75 – 1.0 l/ha) can be made at an appropriate timing.

WINTER BARLEY

Treatment Timing	Growth Stage (G.S.) – target timing or disease	Product/active ingredient	Rate
Before T0			
Optional - If net blotch or mildew present in Autumn or early Spring please contact the trials co-ordinator			
T0	**G.S. 26 – 30 at start of Spring growth**		
		Proline 275 +	0.3 – 0.5 l/ha
		Comet 200	0.35 – 0.5 l/ha
T1	**G.S. 30 – 31 No later than 4 weeks after T0 application**		
		Ascra Xpro +	0.7 – 1.25 l/ha
		Arizona +	1.5 l/ha
		Cyflamid	0.25 – 0.35 l/ha
T2	**G.S 39 – 45 (varieties should not exceed G.S. 45)**		
		Revystar XE +	1.0 – 1.25 l/ha
		Arizona	1.5 l/ha
Optional: If net blotch or rhynchosporium is developing. **<u>Not to be applied after the start of flowering.</u>**		*Proline 275*	*0.3 – 0.5 l/ha*
T3	**G.S. 59 – 61**		

Optional ***(TO BE CONSIDERED COMPULSORY IF BROWN RUST IS A RISK)***. Must not be applied after the start of flowering **NOTE: Comet 200 must be applied before G.S. 59**	*Proline 275 +* *Comet 200*	*0.3 – 0.5 l/ha* *0.35 – 0.5 l/ha*

SPRING BARLEY

Treatment Timing	Growth Stage (G.S.) – target timing or disease	Product/active ingredient	Rate
T0	G.S. 13 – 15		
Optional: If disease is present		*Proline 275*	*0.2 – 0.4 l/ha*
T1	**G.S. 25 – 31 Applications at the early end of this range may be necessary if rhynchosporium or mildew are developing.**		
		Ascra Xpro +	0.6 – 1.0 l/ha
		Arizona	1.0 l/ha
Optional: if mildew is present		*Cyflamid*	*0.25 – 0.35 l/ha*
T2	**G.S 45 – 59 (earliest varieties should not exceed G.S.59) no later than 3 weeks after T1 application. If any varieties have passed G.S. 59 contact relevant trials co-ordinator.**		
Note: If trial is grown for malting quality Revystar XE **must not** be applied after G.S. 45		Revystar XE +	0.75 –1.0 l/ha
		Arizona	1.5 l/ha
T3	**G.S. 59 – 69**		
Optional: If net blotch or rhynchosporium or fusarium developing		*Proline 275*	*0.3 – 0.5 l/ha*

WINTER OATS

Treatment Timing	Growth Stage (G.S.) – target timing or disease	Product/active ingredient	Rate
T0	**G.S. Mid to late tillering**		
		Cyflamid +	0.25 – 0.35 l/ha
		Prothioconazole	0.35 l/ha
T1	**G.S. 31**		
		Ascra Xpro +	0.7 - 1.2 l/ha
		Talius/Justice	0.15 l/ha
Optional - if crown rust is a problem.		*Tebuconazole 250*	*0.5 l/ha*
T2	**G.S. 39 – 45**		
		Elatus Era +	0.6 – 0.8 l/ha
		Cyflamid	0.25 – 0.35 l/ha
T3	**G.S. 45 – 59**		
Optional: If crown rust pressure has remained high before G.S.59 – 61.		*Comet 200*	*0.5 l/ha*
		Tebuconazole 250 +	0.5 l/ha

SPRING OATS

Treatment Timing	Growth Stage (G.S.) – target timing or disease	Product/active ingredient	Rate
T0	**G.S. 13 – 15**		
Optional: If mildew present.		*Cyflamid*	*0.25 – 0.35 l/ha*
		Prothioconazole	0.35 l/ha
T1	**G.S. Mid to late tillering**		
		Ascra Xpro +	0.7 – 1.2 l/ha
		Talius/Justice	0.2 l/ha
Optional: If crown rust is a problem.		*Tebuconazole 250*	*0.5 l/ha*
T2	**G.S. 39 – 45**		
		Elatus Era +	0.6 – 0.8 l/ha
		Cyflamid	0.25 – 0.35 l/ha
Optional: If crown rust pressure is a problem.		*Comet 200+* *Tebuconazole 250 +*	*0.5 l/ha* *0.5 l/ha*

WINTER RYE & TRITICALE

Treatment Timing	Growth Stage (G.S.) – target timing or disease	Product/active ingredient	Rate
T0	**G.S. 30**		
		Tebuconazole 250 +	0.75 – 1.0 l/ha
Optional: If mildew present, TRIALS OPERATORS' DISCRETION WHETHER TO USE EITHER AT T0 OR T1.		*Cyflamid*	*0.25 – 0.35 l/ha*
T1	**G.S. 31 – 32**		
Increase rate for high rust.		Elatus Era +	1.0 l/ha
Optional: If mildew present, TRIALS OPERATORS' DISCRETION WHETHER TO USE EITHER AT T0 OR T1.		*Cyflamid*	*0.25 – 0.35 l/ha*
T2	**G.S. 39 – 45**		
		Revystar XE	0.5 – 1.0 /l/ha
T3	**G.S. 59 – 61**		
Optional: Rye only if rust remain a problem before G.S.61.		*Prosaro*	*0.8 l/ha*

SPRING RYE AND TRITICALE

Treatment Timing	Growth Stage (G.S.) – target timing or disease	Product/active ingredient	Rate
T1	**G.S. 31 – 32**		
		Tebuconazole 250 +	0.75 – 1.0 l/ha
		Talius/Justice	0.15 l/ha
T2	**G.S. 32 – 45**		
		Elatus Era	1.0 /l/ha

Recommended List Fungicide and PGR Ag Chem product labels

Introduction

This list can be used to help find the relevant product labels for PGRs, fungicides, herbicides, and insecticides listed in the main protocols. The links below can be used to navigate to the company page and search for the product labels.

Adama UK

Listen > Learn > Deliver | ADAMA

BASF

Product Labels, MSDSs & EISs (basf.co.uk)

Bayer Crop Science

Crop Protection Products from Bayer Crop Science UK

Belchim UK

Products UK – Belchim Crop Protection

Certis Europe

Products A-Z and Key Documents | Certis Europe United Kingdom

Corteva/DU Pont

Find a Product | Corteva Agriscience

Syngenta

Labels and SDS downloads | Syngenta

Appendix 8 – Moisture content determination for yield

Yield data must be corrected to 15% moisture content. In order to do this, the moisture content of the harvested plot grain is required. One of three methods of determining dry matter must be used – the oven method, electronic moisture analysers method or NIR (Near Infrared) determination.

8.1 Oven method

Samples are dried until constant mass is achieved. For expediency it is permissible to dry samples for a fixed time provided it can be demonstrated that this is sufficient to reliably achieve constant mass for samples even when the chosen apparatus is fully loaded with samples.

8.1.1 Apparatus and Equipment

Oven – Electrically heated and controlled in such a way that, during normal working, the mean temperature of the air and of the shelves carrying the test samples is 100° C and operates within the range 96 - 104° C. (Temperature to be reviewed by the Procedures Development Group).

The oven should be regularly maintained and regularly checked for correct operation.

Sample drying trays – Durable under test conditions and being of a size which enables the test sample to be distributed evenly within the tray and at depth which does not protract the drying time.

Balance – Accuracy 0.1 g ± 0.05 g. The balance should be regularly serviced and calibrated. Frequent checks on its correct operation should be made during the period when the balance is in use.

8.1.2 Method

The test samples are received direct from the combine in hermetically sealed bags or containers. Weigh a fully representative 100 g sub-sample or an accurately recorded catch-weight between 100-200 g and place into the drying tray with an identifying label.

Place the drying trays containing the test samples into the pre-heated oven. Dry the test samples for the pre-determined period or until constant mass is achieved (see below).

Remove the test samples from the oven and allow to cool to ambient temperature.

Record the dry weight of the test sample to 0.1 g.

If achievement of constant mass is to be directly measured, five check samples should be removed from a range of positions within the oven after a period of about 16hrs. The dry weight of these samples should be recorded as above. The check samples should be returned to the oven and dried for a further 2 hours and the dry weight again recorded. A dry matter content of less than 0.3% between the two determinations will be accepted as representing constant mass. If constant mass has not been achieved, the check samples should be returned to the oven for further periods of two hours until constant mass is observed.

8.1.3 Results

The dry matter content of the test sample is calculated as follows;

$$\textit{Dry Matter (\%)} = \frac{\textit{Dry test sample weight}}{\textit{Original test sample weight}} \times 100$$

When all samples from a given trial have been recorded, the fresh and dry weights are immediately reported to the Data Handling Operator electronically. When the dry weights are reported as a percentage, the fresh weight should be reported as 100.

8.2 Electronic moisture assessment (moisture analysers)

8.2.1 Principles

Moisture analysers, either separate instruments or probes on combines, may be used for determining the dry matter of harvested grain. There are no restrictions on the make or model of moisture analyser that may be used, provided the conditions described below are met.

The manufacturer's recommendations for use must be followed. On-combine analysis must only be carried out on equipment specifically manufactured for this purpose. 'Desk-top' analysers should not be used on the combine because it has been shown that heat and vibration can cause inaccuracy.

8.2.2 Equipment

The analysing equipment must:

- Be calibrated at least once annually for each crop according to the manufacturer's instructions using check samples (see reference below) and have a moisture content accuracy of plus/minus 0.5%. The calibration data should be retained for a minimum of 1 year.
- Be serviced regularly, especially just prior to harvest, according to manufacturer recommendations. The action taken should be documented and the information held for a minimum of 1 year.
- Be fit for use in accordance with manufacturer instructions. It should have an adequate power supply throughout operation. Instructions should be held with the machine and all operators adequately trained in its operation.

8.2.3 In the field:

- The determination of dry matter must be the same for all plots in a trial replicate. For this reason, there should be minimal risk of rainfall during the harvest of a replicate. If there is a significant risk then backup samples should be taken from all plots to allow comparison through the oven method.
- The grain samples to be analysed must be between 83 and 88% dry matter (12 to 17% moisture content). If it is possible that samples in a replicate may fall outside this range, samples must be taken from all plots so that the oven method may be used should it be necessary. Polythene bags and plot identity labels must be carried at all times to allow this to be carried out.
- The grain to be analysed must be fully ripe with no green ears/grains in any sample. In these cases the samples for the oven method should be used.
- The data sent to the Data Handling Operator must be in the form DRY MATTER%.

References:

BS 4317-24:1990, ISO 7700/1-1984 Methods of test for cereals and pulses. Method of checking the calibration of moisture meters for cereals.

8.3 NIR determination

The NIR method is permitted for the measurement of moisture content provided that the instrument uses current UK NIR Network calibrations for the appropriate crops. The operator must also participate in the monthly ring checks for the various calibrations being used to demonstrate that the instrument and operating practices are performing within specification. Records of the results of the monthly ring checks should be available for inspection if required.

Appendix 9 – Dates by which records should be submitted

9.1 To Trials Organiser

Record	Latest date of receipt by Trials Organiser
Site data part 1 (including site sketch)	Within 2 months of drilling trial (autumn sown trials) Within 1 month of drilling trial (spring sown trials)
Site data part 2	By the time trials harvested
Plot records (in approved electronic format)	Growing Trial Operator should notify Trials Organiser that trial has been harvested within 2 days of harvest

9.2 Plot records to Data Handling Operator

Record	Date
Plot records SHOULD be sent to Data Handling Operator	Yield and moisture data within 3 days of harvest Other data within 10 days of record being taken

9.3 Plot samples to Quality Testing Operator

Samples	Date
Plot samples for quality testing SHOULD be sent to Quality Testing Operator	Within 2 days of harvest

Appendix 10 – Growth stages of cereals

SEEDLING GROWTH

10	first leaf through coleoptile
11	first leaf unfolded
12	2 leaves unfolded
13	3 leaves unfolded
14	4 leaves unfolded
15	5 leaves unfolded
16	6 leaves unfolded
17	6 leaves unfolded
18	8 leaves unfolded
19	9 or more leaves unfolded

TILLERING

20	main shoot only
21	main shoot and 1 tiller
22	main shoot and 2 tillers
23	main shoot and 3 tillers
24	main shoot and 4 tillers
25	main shoot and 5 tillers
26	main shoot and 6 tillers
27	main shoot and 7 tillers
28	main shoot and 8 tillers
29	main shoot and 9 or more tillers

STEM ELONGATION

30	Ear at 1 cm
31	1st node detectable
32	2nd node detectable
33	3rd node detectable
34	4th node detectable
35	5th node detectable
36	6th node detectable
37	flag leaf just visible
39	flag leaf ligule/collar just visible

BOOTING

41	flag leaf sheath extending
43	boots just visibly swollen

45 boots swollen
47 flag leaf sheath opening
49 first awns visible

INFLORESCENCE (EAR EMERGENCE)

51 First spikelet of inflorescence just visible
52 ¼ of inflorescence emerged
55 ½ of inflorescence emerged
57 ¾ of inflorescence emerged
59 inflorescence completed

ANTHESIS

60 beginning of anthesis
61
64 anthesis half-way
65
68 anthesis completed
69

MILK DEVELOPMENT

71 caryopsis watery ripe
73 early milk
75 medium milk
77 late milk

DOUGH DEVELOPMENT

83 early dough
85 soft dough
87 hard dough

RIPENING

91 caryopsis hard (difficult to divide by thumb-nail)
92 caryopsis hard (can no longer be dented by thumb-nail)
93 caryopsis loosening in daytime

Reference: Tottman D R, Broad H (1987) Decimal Code for the Growth Stages of Cereals Annals of Applied Biology 100, 683-687.

Appendix 11 – Assessment keys for cereal diseases

1) Examine top 4 leaves. If top leaf has been fully expanded for less than 14 days, refer to 2nd leaf as 'top leaf'.
2) Ignore all naturally senescent leaf tissue.
3) Include all chlorosis and necrosis attributable to disease.
4) Record % infection; use interpolated values (e.g. 3%) if necessary.

If foci present, record average over the plot as a whole.

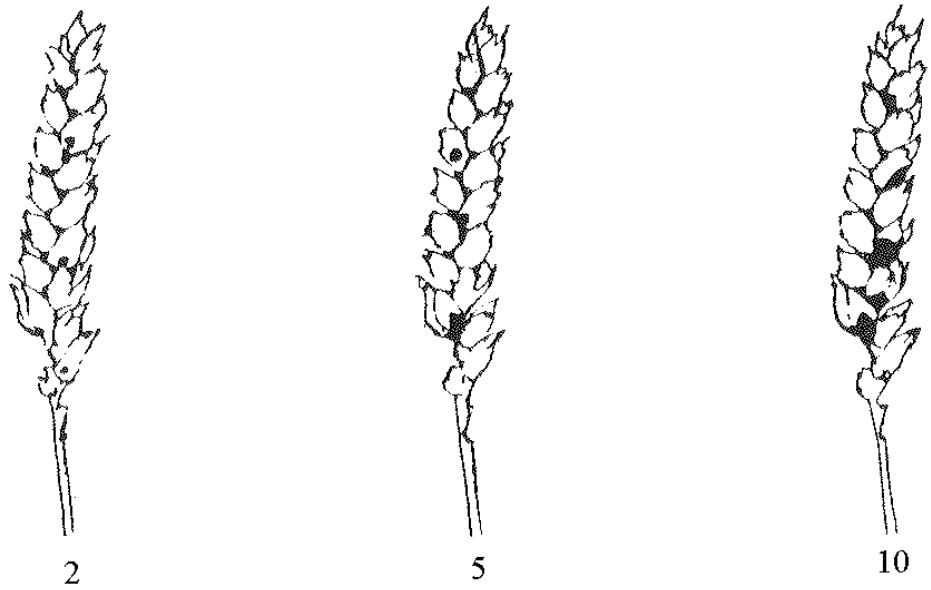
% Infection	Crown rust	Yellow rust	Brown rust
0	No infection observed		
0.1	1 small cluster of pustules per tiller	1 stripes per tiller	25 pustules per tiller
1	1 cluster per leaf	2 stripes per leaf	100 pustules per leaf
5	Most tillers infected but some top leaves uninfected	Most tillers infected but some top leaves uninfected	Top leaf – numerous pustules but leaves appear green overall
10	All leaves infected but leaves appear green overall	All leaves infected but leaves appear green overall	Top leaf – pustules sufficiently dense to give brown appearance in patches
25	Leaves appear ½ infected ½ green		
50	Leaves appear more infected than green		
75	Very little green leaf tissue left		
100	Leaves dead - no green tissue left		

% Infection	Septoria	Rhynchosporium	Net blotch
0	No infection observed		
0.1	1 lesion per 10 tiller	1 lesion per 10 tillers	1 small lesion per 10 tillers
1	2 small lesions per tiller	1 lesion per tiller	1 small lesion per tiller
5	Small lesions beginning to form areas of dead tissue across width of leaf	Discrete lesions on most tillers, about 2 per leaf	2 lower leaves appear ¼ infected. Other leaves - few lesions
10	2 lower leaves – large areas of diseased tissue some covering 1/3 of leaf	Lesions coalescing but leaves appear green overall	2 lower leaves appear ½ infected. Other leaves - numerous lesions
25	Leaves appear ½ infected ½ green		
50	Leaves appear more infected than green		
75	Very little green leaf tissue left		
100	Leaves dead - no green tissue left		

% Infection	Mildew
0	
0.1	3 pustules per tiller
1	5 pustules per leaf
5	2 lower leaves appear ¼ infected
10	2 lower leaves appear ½ infected
25	Leaves appear ½ infected ½ green
50	Leaves appear more infected than green
75	Very little green leaf tissue left
100	Leaves dead - no green tissue left

% Infection	Ramularia
0	
1 – 5	Sparse lesions on upper leaves
6 – 10	More lesions on upper leaves
11 – 20	Numerous lesions on middle and upper leaves with some necrosis
21 – 30	Many lesions and severe necrosis on upper leaves and lesions on middle leaves
31 – 40	Extensive lesions on upper leaves many lesions on middle leaves and necrosis
41 – 50	Severe damage to upper leaves more lesions and necrosis on middle and lower leaves
51 – 75	100% lesions on upper leaves severe necrosis on middle leaves
75 – 100	Almost all leaves necrotic with lesions on all leaves

Ear Blight of wheat (Fusarium Spp.)



Percentage area infected

(O = Healthy)

Notes on assessment:

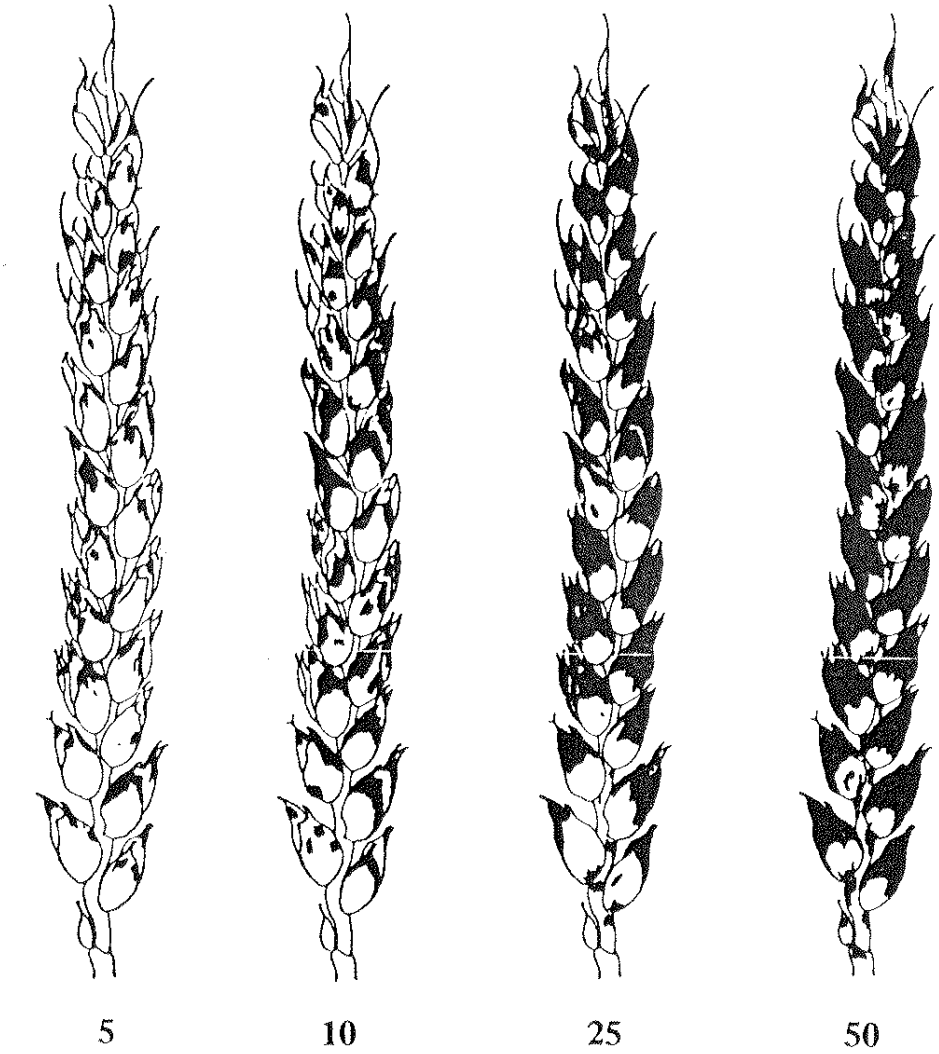
1) Carry out the assessment between GS 80-90.
2) Conduct a ‘whole-plot’ assessment using the diagram above as a guide to infection levels.

3) Estimate the infection level at several points in the plot, giving a single score per plot that is representative of the whole plot.

For further details see:

- Parry D W, Bayles R A & Priestley R H (1984).
- Resistance of winter wheat varieties to Ear Blight (Fusarium culmorum).
- Journal the National Institute of Agricultural Botany 16, 465-468.

Wheat glume blotch (Septoria nodorum Berk.)



Percentage of ear affected

Notes on assessment:

1) Carry out the assessment between GS 80-90.
2) Conduct a ‘whole-plot’ assessment using the diagram above as a guide to infection levels.
3) Estimate the infection level at several points in the plot, giving a single score per plot that is representative of the whole plot

For further details see:

- Parry D W, Bayles R A & Priestley R H (1984).
- Resistance of winter wheat varieties to Ear Blight (Fusarium culmorum).
- Journal the National Institute of Agricultural Botany 16, 465-4

For further information and photos see the HGCA cereals encyclopaedia at http://cereals.ahdb.org.uk/.

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