

# AHDB Recommended List

## Winter wheat 2020/21

Market options, yield and grain quality



End-use group Scope of recommendation	nabim Group 1				nabim Group 2				nabim Group 3					Soft Group 4								Hard Group 4								Average LSD (5%)						
	UK	UK	UK	UK	UK	UK	E&W	UK	UK	UK	UK	UK	UK	UK	UK	UK	N	UK	E&W	UK	UK	N	N	UK	UK	UK	UK	UK	E&W		UK	UK	UK	W	UK	UK
<b>Fungicide-treated grain yield (% treated control)</b>	C				C				C					C								C														
United Kingdom (11.2 t/ha)	99	97	96	96	101	101	100	99	102	100	100	98	97	105	104	103	101	101	101	100	99	97	96	96	105	104	103	103	102	102	102	101	100	100	99	2.1
East region (11.1 t/ha)	99	97	96	96	100	101	100	99	102	100	99	98	97	106	104	102	101	101	101	100	99	97	96	96	104	104	103	103	102	102	101	101	100	100	99	2.3
West region (11.2 t/ha)	99	97	97	96	101	101	101	99	102	100	100	98	97	104	104	104	101	101	102	100	99	96	96	95	105	105	103	103	102	102	104	101	102	99	101	2.7
North region (11.3 t/ha)	97	96	92	92	100	98	[93]	101	98	104	100	97	98	103	[101]	100	102	101	96	99	98	98	99	95	[105]	[102]	102	102	103	102	99	96	[[91]]	99	98	3.1
<b>Main market options (The specific attributes of varieties are different so, whenever possible, varieties should not be mixed in store)</b>																																				
UK breadmaking	Y	Y	Y	Y	Y	Y	Y	Y	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-			
UK biscuit, cake-making	-	-	-	-	-	-	-	-	Y	Y	Y	Y	Y	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-			
UK distilling	-	-	-	-	-	-	-	-	-	-	Y	-	[Y]	[Y]	-	[Y]	[Y]	Y	-	[Y]	[Y]	[Y]	Y	Y	-	-	-	-	-	-	-	-	-	-		
ukp bread wheat for export	Y	-	Y	-	[Y]	Y	[Y]	Y	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-			
uks soft wheat for export	-	-	-	-	-	-	-	-	[Y]	Y	Y	Y	Y	-	-	-	-	Y	Y	-	-	Y	Y	Y	-	-	-	-	-	-	-	-	-	-		
<b>Grain quality</b>																																				
Endosperm texture	Hard	Hard	Hard	Hard	Hard	Hard	Hard	Hard	Soft	Soft	Soft	Soft	Soft	Soft	Soft	Soft	Soft	Soft	Soft	Soft	Soft	Soft	Soft	Hard	Hard	Hard	Hard	Hard	Hard	Hard	Hard	Hard	Hard			
Protein content (%)	12.4	12.4	12.9	12.2	12.0	11.9	12.3	11.5	11.9	11.3	11.7	11.6	11.7	11.4	11.6	11.4	11.1	11.6	11.7	11.3	11.4	11.4	11.8	10.7	11.3	11.3	11.4	10.9	11.4	11.4	11.7	12.1	11.6	12.0		
Protein content (%) - Milling spec	13.2	13.3	13.5	13.0	12.6	12.6	12.9	12.2	12.6	12.0	12.3	12.3	12.4	12.1	12.1	12.1	12.0	12.3	12.3	12.1	12.0	12.2	12.2	12.5	11.2	12.0	12.0	12.0	11.5	12.1	11.9	12.5	12.7	12.4	12.5	
Hagberg Falling Number	269	278	273	272	297	286	279	295	245	224	216	235	225	218	221	288	182	206	236	175	223	216	195	250	265	262	219	204	151	209	276	273	307	229	321	
Specific weight (kg/hl)	77.8	78.3	77.9	77.2	78.4	77.2	77.6	77.3	75.8	77.1	76.9	77.5	76.0	76.9	75.7	77.9	75.6	77.4	77.5	73.9	75.6	77.8	75.9	76.4	78.3	78.5	76.3	76.0	76.3	75.9	76.8	77.0	73.8	76.9	80.7	
Chopin alveograph W	181	-	217	-	199	164	212	[183]	[90]	96	90	93	103	-	-	[72]	[77]	94	91	[87]	[65]	-	-	-	-	-	-	-	-	[124]	-	-	-	-		
Chopin alveograph P/L	0.7	-	0.6	-	0.6	0.5	0.7	[0.7]	[0.3]	0.4	0.3	0.4	0.3	-	-	[0.3]	[0.3]	0.3	0.4	[0.3]	[0.3]	-	-	-	-	-	-	-	-	[0.5]	-	-	-	-		

**Varieties no longer listed:** Evolution, JB Diego, KWS Trinity and Myriad.  
 Comparisons of varieties across regions are not valid.  
 All yields in this table are taken from treated trials receiving a full fungicide and PGR programme.

UK = Recommended for the UK  
 E&W = Recommended for the East and West regions  
 N = Recommended for the North region  
 W = Recommended for the West region

C = Yield control (for current table). For this table KWS Santiago was also a yield control but is no longer listed.  
 \* = Variety no longer under test in RL trials  
 [ ] = Limited data  
 [[ ]] = Very limited data

Y = Suited to that market  
 [Y] = May be suited to that market

LSD = Least significant difference  
 Average LSD (5%): Varieties that are more than one LSD apart are significantly different at the 95% confidence level.

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## Winter wheat 2020/21

Yield, agronomy and disease resistance



End-use group Scope of recommendation	nabim Group 1				nabim Group 2				nabim Group 3					Soft Group 4								Hard Group 4								Average LSD (5%)						
	UK	UK	UK	UK	UK	UK	E&W	UK	UK	UK	UK	UK	UK	UK	UK	UK	N	UK	E&W	UK	UK	N	N	UK	UK	UK	UK	UK	E&W		UK	UK	UK	W	UK	UK
<b>Fungicide-treated grain yield (% treated control)</b>																																				
United Kingdom (11.2 t/ha)	99	97	96	96	101	101	100	99	102	100	100	98	97	105	104	103	101	101	101	100	99	97	96	96	105	104	103	103	102	102	102	101	100	100	99	2.1
East region (11.1 t/ha)	99	97	96	96	100	101	100	99	102	100	99	98	97	106	104	102	101	101	101	100	99	97	96	96	104	104	103	103	102	102	101	101	100	100	99	2.3
West region (11.2 t/ha)	99	97	97	96	101	101	101	99	102	100	100	98	97	104	104	104	101	101	102	100	99	96	96	95	105	105	103	103	102	102	104	101	102	99	101	2.7
North region (11.3 t/ha)	97	96	92	92	100	98	[93]	101	98	104	100	97	98	103	[101]	100	102	101	96	99	98	98	99	95	[105]	[102]	102	102	103	102	99	96	[[91]]	99	98	3.1
<b>Untreated grain yield (% treated control)</b>																																				
United Kingdom (11.2 t/ha)	83	78	71	82	95	83	77	71	84	72	81	71	69	83	86	80	76	77	79	85	83	67	75	77	82	79	84	79	79	81	88	83	90	82	81	4.9
<b>Agronomic features</b>																																				
Resistance to lodging without PGR (1-9)	7	8	7	7	7	6	8	7	8	7	7	7	6	7	7	7	7	7	7	6	6	7	7	7	6	7	7	7	7	7	7	7	7	7	7	0.6
Resistance to lodging with PGR (1-9)	8	8	8	8	8	7	7	8	8	8	8	8	7	7	8	8	7	8	8	7	6	8	8	8	7	8	7	7	7	7	8	7	8	8	8	0.5
Height without PGR (cm)	84	83	81	89	90	84	85	81	82	83	85	85	89	91	87	93	86	82	91	86	83	85	80	85	93	83	86	87	85	86	87	86	82	92	82	1.7
Ripening (days +/- Skyfall, -ve = earlier)	0	0	0	+1	0	0	+1	+2	+1	+1	+1	+1	0	0	+3	+1	+1	+1	+1	+2	0	+2	+1	+3	+1	0	0	+1	+1	0	0	+1	0	+1	+2	0.6
Resistance to sprouting (1-9)	[5]	5	6	6	[7]	5	[6]	7	[6]	6	[5]	6	5	[6]	[5]	[7]	[5]	[6]	[5]	[4]	[5]	6	5	5	[5]	[6]	[5]	[4]	[5]	[4]	7	5	[7]	[5]	6	0.8
<b>Disease resistance</b>																																				
Mildew (1-9)	7	6	6	6	6	8	5	8	5	7	6	5	7	7	6	6	7	7	7	7	7	3	6	6	6	6	6	4	7	6	7	6	7	5	8	1.0
Yellow rust (1-9) - <b>see note below</b>	7	5	9	9	9	9	9	7	9	9	9	8	5	8	9	8	9	9	5	9	9	6	6	9	7	6	7	8	7	7	8	9	9	7	9	0.7
Brown rust (1-9) - <b>see note below</b>	6	8	3	6	7	5	5	4	6	5	7	5	7	6	8	7	5	6	7	6	7	7	8	8	4	6	6	6	7	5	6	5	7	6	5	1.1
Septoria nodorum (1-9)	[6]	[6]	[6]	[6]	-	[6]	-	[6]	-	[6]	[6]	[6]	[6]	-	-	-	[5]	[6]	[7]	[6]	[6]	[6]	[7]	-	-	[6]	[6]	[6]	[6]	[6]	-	[6]	[6]	0.9		
Septoria tritici (1-9)	6.4	5.8	6.2	6.0	8.1	6.6	5.3	5.9	7.0	4.3	5.5	5.0	5.4	5.0	6.8	5.1	4.9	4.3	6.6	7.9	5.4	4.8	4.8	6.0	6.6	5.0	6.3	4.8	4.9	6.3	6.8	5.9	8.2	6.6	6.1	0.8
Eyespot (1-9)	7@	6@	5	6@	[4]	5	[5]	4	[4]	5	4	5	4	[4]	-	[5]	4	4	4	3	4	5	4	7@	-	-	4	4	5	4	4	4	-	6@	5	1.7
Fusarium ear blight (1-9)	6	7	6	6	6	5	7	6	5	6	6	6	6	6	6	6	6	6	6	6	6	7	6	6	6	6	6	6	6	5	6	6	6	6	6	0.5
Orange wheat blossom midge	-	R	-	-	-	-	R	-	R	R	R	R	R	R	R	R	R	R	-	R	R	R	R	-	R	R	R	R	R	-	-	R	-	-	-	

On the 1-9 scales, high figures indicate that a variety shows the character to a high degree (e.g. high resistance). Comparisons of varieties across regions are not valid.

### Yellow and brown rust ratings

During 2019 higher than expected levels of yellow and brown rust were seen in some varieties in some trials. Careful analysis of the 2019 data from RL trials did not reveal dramatic changes in average disease ratings. These are national average ratings and it is not yet clear if the reported cases of high yellow and brown rust disease levels in 2019 indicate the initial emergence of new rust races or exceptionally high disease pressure at some sites. Given the highly dynamic nature of the yellow and brown rust populations in the UK over recent years all varieties should be closely monitored for rusts, as local rust populations may differ from the general UK population and may be more or less virulent on a variety than the RL rating suggests.

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 \* = Variety no longer under test in RL trials  
 [ ] = Limited data  
 [ [ ] ] = Very limited data

@ = Believed to carry the *Pch1* Rendezvous resistance gene to eyespot but this has not been verified in Recommended List tests.  
 R = Believed to be resistant to orange wheat blossom midge (OWBM) but this has not been verified in Recommended List tests.

LSD = Least significant difference  
 Average LSD (5%): Varieties that are more than one LSD apart are significantly different at the 95% confidence level.

# AHDB Recommended List

## Winter wheat 2020/21

Supplementary data



End-use group Scope of recommendation	nabim Group 1				nabim Group 2				nabim Group 3					Soft Group 4										Hard Group 4										Average LSD (5%)		
	UK	UK	UK	UK	UK	UK	E&W	UK	UK	UK	UK	UK	UK	UK	UK	UK	N	UK	E&W	UK	UK	N	N	UK	UK	UK	UK	UK	E&W	UK	UK	UK	W		UK	UK
Breeder/UK contact	C				C				C					NEW										NEW												
Breeder	KWS	RAGT	Lim	R2n	Mom	KWS	LimEur	KWS	KWS	KWS	ElsW	KWS	Lim	LimEur	RAGT	LimEur	KWS	ElsW	ElsW	LimEur	LimEur	Mom	KWS	Lim	SyP	KWS	SyP	R2n	KWS	SyP	SyP	KWS	DSV	ElsW	KWS	
UK contact	KWS	RAGT	Lim	RAGT	KWS	KWS	Lim	KWS	KWS	KWS	Els	KWS	Lim	Lim	RAGT	Lim	KWS	Els	Els	Lim	Lim	KWS	KWS	Lim	Syn	KWS	Syn	RAGT	KWS	Syn	Syn	KWS	DSV	Els	Sen	
Annual treated yield (% control)																																				
2015 (12.1 t/ha)	99	97	92	94	-	101	-	99	-	100	99	99	96	-	-	-	102	102	100	99	99	97	97	96	-	-	102	102	102	102	97	98	-	102	98	2.3
2016 (11.0 t/ha)	98	96	95	92	99	99	99	100	100	101	102	95	98	108	-	104	102	101	102	102	101	100	98	94	-	-	103	106	103	103	102	100	-	99	97	2.1
2017 (11.1 t/ha)	101	98	96	97	99	99	99	99	102	101	99	97	95	104	104	104	101	101	100	98	97	97	96	104	104	102	103	101	101	102	99	98	96	101	2.2	
2018 (10.4 t/ha)	98	98	96	97	102	101	99	99	102	99	98	100	98	103	103	100	101	101	102	102	98	96	98	97	104	103	104	101	103	101	101	102	100	101	101	2.0
2019 (11.3 t/ha)	97	96	100	95	102	100	101	100	103	102	100	99	99	105	104	103	101	101	99	99	99	94	98	94	107	105	104	102	103	103	104	101	101	99	100	2.1
Rotational position																																				
First cereal (11.6 t/ha)	98	97	96	95	101	100	99	100	102	101	100	98	97	105	103	103	101	101	100	100	99	97	97	96	105	104	103	103	102	102	102	100	100	99	100	2.1
Second and more (9.8 t/ha)	99	98	93	94	100	100	100	98	100	100	100	98	96	104	[103]	101	102	102	100	101	99	97	[[99]]	95	[[103]]	[[102]]	104	103	103	102	100	98	[[99]]	100	98	3.5
Sowing date (most trials were sown in October)																																				
Early sown (before 25 Sept) (11.2 t/ha)	[[104]]	98	95	97	-	102	-	[[103]]	[103]	98	100	100	98	-	-	103	102	100	100	[98]	[96]	[98]	[96]	96	-	[100]	103	[100]	-	[[105]]	100	[[97]]	[[101]]	101	99	6.6
Late sown (after 1 Nov) (9.6 t/ha)	97	97	94	95	[102]	100	[99]	100	[102]	100	97	98	99	[104]	[[107]]	[102]	101	[100]	99	100	97	100	[[99]]	[[97]]	[[110]]	[[103]]	104	103	104	98	[100]	102	[[100]]	99	100	4.2
Soil type (about 50% of trials are on medium soils)																																				
Light soils (11.1 t/ha)	97	97	94	92	103	99	99	100	101	102	99	97	98	105	[102]	101	101	101	98	99	98	98	99	95	[108]	[104]	102	103	102	102	100	99	-	99	98	4.1
Heavy soils (11.3 t/ha)	100	97	97	97	101	101	101	99	103	100	99	98	97	105	104	103	101	101	102	100	98	98	96	96	104	105	103	102	101	101	102	101	101	100	100	2.6
Agronomic features																																				
Lodging % without PGR	3	1	2	3	3	17	1	2	1	3	5	2	10	7	8	4	5	4	3	10	18	4	6	2	11	4	4	5	6	9	5	9	6	2	2	
Lodging % with PGR	1	2	3	1	2	7	4	2	1	2	3	1	8	11	4	2	10	2	3	12	20	2	3	3	4	4	4	7	9	11	3	8	2	1	2	
Latest safe sowing date #	End Jan	End Feb	End Jan	Mid Feb	[End Jan]	End Jan	[End Jan]	Mid Feb	[End Feb]	End Jan	End Jan	End Jan	End Feb	[End Jan]	[[End Jan]]	[End Feb]	End Jan	End Jan	End Jan	End Jan	End Jan	End Feb	Mid Feb	End Jan	[[End Jan]]	[[End Jan]]	Mid Feb	End Jan	End Jan	End Jan	End Jan	Mid Feb	[[End Jan]]	End Jan	End Jan	
Speed of development to growth stage 31 (days +/- average)																																				
Early sown (Sept)	-3	-3	0	+1	[-5]	-8	[+6]	-1	[-4]	+5	-2	-4	-1	[-5]	[+10]	[-6]	+5	+1	-6	+9	-3	-3	+1	+2	[-2]	[-4]	+8	+6	0	+2	+2	-5	[-3]	+5	-2	9.0
Med sown (Oct)	-4	-3	-1	+2	[-8]	-5	[+3]	-1	[-3]	0	+3	0	0	[0]	[+1]	[-3]	+3	-1	0	+4	-5	0	0	+4	[0]	[+9]	+3	+3	+3	0	0	-6	[-4]	+2	-2	7.1
Late sown (Nov)	-2	-2	-1	0	[-2]	-3	[+1]	+3	[+1]	+3	+2	-2	+1	[-4]	[0]	[-1]	+1	-1	-1	+3	0	0	+2	+3	[+2]	[-2]	+4	-2	0	0	-3	-5	[0]	+1	-2	4.2
Status in RL system																																				
Year first listed	17	14	12	16	19	16	19	15	19	16	18	16	16	19	20	19	18	18	17	17	17	13	09	13	20	20	18	18	17	17	16	16	20	17	15	
RL status	-	-	-	-	P2	-	P2	*	P2	-	-	*	*	P2	P1	P2	-	-	*	-	*	*	*	*	P1	P1	-	-	-	-	-	*	P1	*	-	

All yields in this table are taken from treated trials receiving a full fungicide and PGR programme.

UK = Recommended for the UK  
 E&W = Recommended for the East and West regions  
 N = Recommended for the North region  
 W = Recommended for the West region

C = Yield control (for current table). For this table KWS Santiago was also a yield control but is no longer listed.  
 \* = Variety no longer under test in RL trials  
 [ ] = Limited data  
 [[ ]] = Very limited data

# = Latest safe sowing date is the advised latest sowing time to give a sufficient cold period for flowering.  
 P1 = First year of recommendation  
 P2 = Second year of recommendation

DSV = DSV UK (www.dsv-uk.co.uk)  
 Els = Elsoms Seeds (www.elsoms.com)  
 ElsW = Elsoms Wheat Ltd (www.elsoms.com)  
 KWS = KWS UK (www.kws-uk.com)  
 Lim = Limagrain UK (www.lgseeds.co.uk)  
 LimEur = Limagrain Europe SA (www.lgseeds.co.uk)

Mom = Momont, France (www.kws-uk.com)  
 R2n = RAGT, France (www.ragt.co.uk)  
 RAGT = RAGT Seeds (www.ragt.co.uk)  
 Sen = Senova (www.senova.uk.com)  
 SyP = Syngenta Participations AG (www.syngenta.co.uk)  
 Syn = Syngenta UK Ltd (www.syngenta.co.uk)

LSD = Least significant difference  
 Average LSD (5%): Varieties that are more than one LSD apart are significantly different at the 95%