HGCA Recommended List® winter wheat 2012/13

MARKET OPTIONS AND GRAIN QUALITY

	New										New								New								New	New					
	Crusoe	Gallant	Solstice	KWS Sterling	Ketchum	Panorama	KWS Podium	Cordiale	Battalion	Einstein	Torch	Cocoon	Invicta	Tuxedo	KWS Target	Warrior €	Scout	Claire	Gravitas	Horatio	Beluga	Denman	Viscount	Alchemy	KWS Santiago	Conqueror	KWS Gator	Relay	JB Diego	Duxford	Stigg	Grafton	Humber	Average LSD (5%)
End-use group	nabim Group 1			nabim Group 2							nabim Group 3								Soft Group 4						Hard Group 4									
Scope of recommendation	UK	UK	UK	UK	UK	UK	UK	UK	UK	UK	UK	E&W	UK	UK	UK	Sp	UK	UK	UK	UK	UK	UK	UK	UK	E&W	UK	UK	E&W	UK	UK	UK	UK	UK	
UK treated yield (% control 10.3 t/ha)	99	99	97	103	102	101	99	98	98	97	105	104	104	103	102	101	99	98	105	105	104	104	103	100	108	107	106	105	104	102	102	101	100	2.5
Main market options (The specific attributes of varieties are different so, whenever possible, varieties should not be mixed in store)																																		
UK bread-making	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
UK biscuit, cake-making	-	-	-	-	-	-	-	-	-	-	Y	Y	Y	Y	Y	Y	Y	Y	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
UK distilling	-	-	-	-	-	-	-	-	-	-	-	-	[Y]	[Y]	-	-	-	[Y]	[Y]	[Y]	Y	Y	Y	[Y]	-	-	-	-	-	-	-	-	-	
ukp bread wheat for export	[Y]	Y	Y	[Y]	-	[Y]	[Y]	Y	-	Y	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
uks soft wheat for export	-	-	-	-	-	-	-	-	-	-	[Y]	[Y]	[B]	[Y]	[Y]	-	Y	Y	[Y]	[B]	[Y]	[B]	[B]	B	-	-	-	-	-	-	-	-	-	
Grain quality																																		
Endosperm texture	Hard	Hard	Hard	Hard	Hard	Hard	Hard	Hard	Hard	Hard	Soft	Soft	Soft	Soft	Soft	Soft	Soft	Soft	Soft	Soft	Soft	Soft	Soft	Soft	Hard	Hard	Hard	Hard	Hard	Hard	Hard	Hard	Hard	
Protein content (%)	12.2	12.0	11.9	11.1	11.3	11.4	12.2	12.2	12.1	11.9	10.6	10.9	10.8	10.9	11.2	11.2	11.4	11.2	10.4	10.9	10.7	10.7	10.7	11.0	10.8	10.6	10.6	11.0	11.0	10.8	11.3	11.5	11.5	0.3
Hagberg falling number	266	307	266	280	261	257	279	318	219	278	248	234	243	283	214	207	234	244	214	238	159	212	172	246	146	200	182	269	305	274	306	287	308	17
Specific weight (kg/hl)	78.1	77.9	78.0	76.4	78.0	77.7	78.7	79.5	75.6	77.8	76.4	76.2	75.7	75.4	76.9	75.5	78.7	77.1	77.0	76.4	75.7	75.9	76.1	77.5	75.0	75.5	75.6	77.1	77.8	76.7	74.7	78.8	77.2	0.7
1000 grain weight (g)	-	54.0	50.0	[49.5]	53.1	49.2	-	46.4	[48.3]	51.2	-	-	[46.9]	-	-	[45.2]	46.6	46.6	-	-	[55.7]	-	49.6	49.2	-	46.6	-	-	50.5	47.5	-	50.4	47.0	2.3
Chopin alveograph W	232	242	200	223	208	210	[266]	[269]	[178]	176	98	107	80	104	99	134	100	102	93	[78]	95	[69]	90	[71]	-	-	-	-	-	[182]	-	[146]	-	27
Chopin alveograph P/L	[0.6]	0.7	0.6	0.8	0.8	0.7	[0.6]	[0.7]	[0.7]	0.5	0.5	[0.4]	0.3	[0.4]	[0.3]	0.4	0.3	0.3	[0.4]	[0.3]	0.4	[0.3]	0.3	[0.6]	-	-	-	-	-	[0.8]	-	[0.8]	-	0.2
Status in RL system																																		
Year first listed	12	09	02	10	09	09	11	04	07	03	12	11	10	11	11	10	09	99	11	12	10	11	09	06	11	10	12	12	08	08	11	09	07	
RL status	P1	-	C	-	*	-	P2	-	*	C*	P1	P2	-	P2	P2	-	C	-	P2	P1	-	P2	-	C	P2	-	P1	P1	-	-	P2	-	*	

P1, P2 = first and second year of recommendation * = variety no longer in trials [ ] = limited data

C = yield control (Oakley was also a control but is no longer on the Recommended List)

Y = suited to that market [Y] = may be suited to that market B = suitable for blending into export cargoes [B] = may be suitable for blending into export cargoes

UK = recommended for the UK Sp = specific recommendation E&W = recommended for the East and West regions

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

€ = Warrior is a specific recommendation for growers wanting a variety with good disease resistance

Varieties no longer listed: Cassius, Gladiator, Glasgow, Istabraq, Kingdom, Oakley and Robigus

HGCA Recommended List® winter wheat 2012/13

YIELD, AGRONOMY AND DISEASE RESISTANCE

	New										New								New								New	New					
	Crusoe	Gallant	Solstice	KWS Sterling	Ketchum	Panorama	KWS Podium	Cordiale	Battalion	Einstein	Torch	Cocoon	Invicta	Tuxedo	KWS Target	Warrior €	Scout	Claire	Gravitas	Horatio	Beluga	Denman	Viscount	Alchemy	KWS Santiago	Conqueror	KWS Gator	Relay	JB Diego	Duxford	Stigg	Grafton	Humber	Average LSD (5%)
End-use group	nabim Group 1			nabim Group 2							nabim Group 3								Soft Group 4						Hard Group 4									
Scope of recommendation	UK	UK	UK	UK	UK	UK	UK	UK	UK	UK	UK	E&W	UK	UK	UK	Sp	UK	UK	UK	UK	UK	UK	UK	UK	E&W	UK	UK	E&W	UK	UK	UK	UK	UK	
Fungicide treated grain yield (% treated control)																																		
United Kingdom (10.3 t/ha)	99.3	99.1	96.5	103.1	101.6	101.3	98.8	98.4	97.7	97.0	104.9	104.3	103.9	103.3	102.4	101.4	98.6	98.3	104.9	104.6	104.4	103.6	103.4	100.1	108.3	106.9	105.6	105.4	104.3	102.1	102.0	101.1	99.7	2.5
East region (10.4 t/ha)	99	99	96	104	101	102	99	99	98	97	106	105	105	104	103	103	98	99	105	105	104	103	104	100	108	108	105	105	104	103	102	101	100	1.8
West region (10.3 t/ha)	101	100	97	103	103	102	97	98	99	97	103	104	104	103	101	101	99	97	104	104	105	104	102	101	108	106	106	106	106	101	103	102	100	2.9
North region (10.3 t/ha)	-	97	96	102	100	99	99	97	95	99	[101]	100	102	102	102	98	98	98	104	[104]	103	104	104	100	106	108	[106]	[103]	101	101	96	102	96	3.5
Untreated grain yield (% treated control in comparable trials)																																		
United Kingdom	89	83	79	84	87	89	83	83	88	84	85	87	90	90	87	94	88	82	91	92	85	90	90	87	87	87	90	91	91	84	98	90	83	4.7
Agronomic features																																		
Resistance to lodging without PGR	7.0	6.9	7.7	7.4	5.7	7.7	7.5	7.3	6.8	5.6	6.9	5.3	7.0	7.6	7.5	7.2	7.9	6.8	5.4	6.2	8.8	5.3	6.8	6.9	6.6	5.9	7.1	6.9	6.8	8.3	7.6	8.8	8.5	1.6
Resistance to lodging with PGR	7.1	7.6	8.3	8.4	6.7	8.6	7.9	8.1	8.2	6.7	8.3	6.5	7.4	8.2	8.2	7.7	8.4	7.3	7.0	7.6	8.2	7.4	6.9	7.4	7.2	7.4	8.6	7.9	7.5	8.6	8.4	9.2	8.7	1.1
Height without PGR (cm)	85	84	93	79	93	90	82	80	85	86	91	96	91	84	84	84	88	89	90	89	80	83	83	93	88	86	87	83	89	91	82	77	81	1.8
Ripening (days +/- Solstice, -ve = early)	+1	-2	0	0	+1	+2	0	-2	0	-1	0	+5	+3	+2	+1	+1	+2	0	+2	+1	0	0	+1	+3	+2	+2	+2	+1	0	+2	+2	-2	0	0.9
Resistance to sprouting	-	6	7	5	7	7	-	6	5	6	-	-	6	-	-	5	6	5	-	-	4	-	4	6	-	6	-	-	7	7	-	5	6	1.4
Disease resistance																																		
Mildew	9.0	5.4	4.2	7.1	8.1	7.4	5.8	6.3	7.9	6.3	2.8	7.1	4.4	6.5	4.1	7.8	5.5	4.1	6.6	6.9	4.3	5.1	6.8	6.9	5.3	3.2	5.8	5.7	5.9	5.8	7.7	7.4	4.6	1.1
Yellow rust	8.7	4.9	4.1	8.6	4.8	8.7	6.8	6.6	7.0	5.6	4.4	7.6	7.9	8.9	8.9	8.4	8.9	8.5	7.3	7.8	8.5	6.9	4.0	8.4	5.5	6.5	8.9	8.9	7.9	4.8	9.0	8.0	7.5	[1.2]
Brown rust	7.0	3.6	3.9	7.9	5.0	4.8	6.1	2.5	8.4	4.7	9.0	8.6	7.0	7.9	4.9	8.4	8.5	5.4	6.7	5.5	4.1	4.6	8.1	4.5	4.9	5.6	2.8	5.3	3.8	3.4	8.7	2.7	4.9	[2.1]
Septoria nodorum	-	5.3	5.0	5.8	5.2	5.9	5.4	5.2	6.5	6.4	[6]	6.2	6.4	7.6	7.4	6.4	7.5	5.9	6.4	[6]	5.4	6.6	7.4	6.1	[6]	7.2	[6]	[6]	6.3	5.3	6.4	5.5	4.9	2.9
Septoria tritici	6.5	4.6	4.7	4.4	5.7	5.6	5.1	5.3	5.1	4.7	5.8	5.1	5.4	5.9	5.5	6.5	5.3	5.2	6.1	5.8	4.9	5.4	4.9	5.9	4.7	4.2	4.8	5.6	5.3	4.7	7.0	5.2	5.6	0.7
Eyespot	5.3	5.1	4.2	5.9	4.6	4.4	3.8	4.0	7@	4.9	4.6	6.2	4.4	5.7	6.2	5.5	8.3	5.3	5.5	5.1	6.8	4.9	6.2	5.7	3.3	3.6	3.8	5.3	4.0	5.3	6.2	8@	6.6	1.8
Fusarium ear blight	5.8	5.4	5.8	5.9	6.2	6.6	6.1	5.7	5.5	6.0	5.1	7.0	6.2	5.6	5.8	5.6	6.1	6.3	5.9	5.7	6.0	5.9	5.9	6.3	6.2	5.9	6.2	6.8	6.0	5.8	6.0	5.3	5.7	-
Orange wheat blossom midge	-	-	-	-	-	-	R	-	-	-	R	-	-	-	R	R	R	-	R	R	-	R	R	-	R	R	R	-	-	-	-	-	-	

[ ] = limited data

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

UK = recommended for the UK Sp = specific recommendation

E&W = recommended for the East and West regions

€ = Warrior is a specific recommendation for growers wanting a variety with good disease resistance

R = believed to be resistant to orange wheat blossom midge (OWBM) but this has not been verified in RL tests

@ Battalion and Grafton are believed to carry the Rendezvous resistance gene to eyespot but this has not been verified in RL tests

Comparisons of varieties across regions are not valid

On the 1-9 scales high figures indicate that a variety shows the character to a high degree (e.g. high resistance)

HGCA Recommended List® winter wheat 2012/13

SUPPLEMENTARY DATA

			New									New								New									New	New				
	Crusoe	Gallant	Solstice	KWS Sterling	Ketchum	Panorama	KWS Podium	Cordiale	Battalion	Einstein	Torch	Cocoon	Invicta	Tuxedo	KWS Target	Warrior €	Scout	Claire	Gravitas	Horatio	Beluga	Denman	Viscount	Alchemy	KWS Santiago	Conqueror	KWS Gator	Relay	JB Diego	Duxford	Stigg	Grafton	Humber	Average LSD (5%)
End-use group	nabim Group 1			nabim Group 2							nabim Group 3								Soft Group 4						Hard Group 4									
Scope of recommendation	UK	UK	UK	UK	UK	UK	UK	UK	UK	UK	UK	E&W	UK	UK	UK	Sp	UK	UK	UK	UK	UK	UK	UK	UK	E&W	UK	UK	E&W	UK	UK	UK	UK	UK	
Breeder/ UK contact																																		
Breeder	Lim	Syn	Lim	KWS	Syn	Lim	KWS	KWS	RAGT	Lim	RAGT	Sec	Lim	RAGT	KWS	RAGT	Sen	Lim	Lim	Lim	Sen	Syn	KWS	Lim	KWS	KWS	KWS	RAGT	Bruen	Syn	Lim	KWS	KWS	
UK contact	Lim	Syn	Lim	KWS	Syn	Lim	KWS	KWS	RAGT	Lim	RAGT	Agr	Lim	RAGT	KWS	RAGT	Sen	Lim	Lim	Lim	Sen	Syn	KWS	Lim	KWS	KWS	KWS	RAGT	Sen	Syn	Lim	KWS	KWS	
Annual yield (% control)																																		
2007 (9.8 t/ha)	-	103	96	102	98	100	-	98	[91]	98	-	-	102	-	-	98	99	97	-	-	105	-	104	99	-	104	-	-	104	100	-	102	96	3.8
2008 (11.6t/ha)	-	102	98	103	101	102	100	101	98	99	-	100	102	102	104	101	98	99	104	-	105	106	102	100	108	106	-	-	105	103	104	103	99	2.9
2009 (10.7 t/ha)	98	93	96	101	102	101	101	95	99	96	105	106	104	106	104	101	99	[100]	106	105	[104]	103	103	100	110	106	105	107	102	102	103	101	100	3.2
2010 (9.8 t/ha)	100	99	97	103	104	102	100	[98]	[100]	98	106	104	102	102	101	103	99	[96]	104	104	105	103	103	99	106	108	107	106	104	102	101	101	[103]	2.7
2011 (9.5 t/ha)	100	97	96	106	-	[99]	97	98	-	95	104	108	107	105	102	102	98	[99]	107	105	103	103	105	102	110	111	106	105	105	103	101	99	-	3.2
Rotational position																																		
First cereal (10.7 t/ha)	99	99	96	103	101	101	99	98	97	97	105	104	104	103	103	101	98	98	105	105	104	104	103	100	108	107	105	105	104	101	102	101	99	2.6
Second and more (9.0 t/ha)	98	98	98	103	104	102	98	99	101	99	103	105	102	103	100	101	99	96	103	103	105	101	104	99	108	106	108	106	104	103	100	103	100	3.4
Sowing date (most trials were sown during October)																																		
Before 6 Oct (10.6 t/ha)	100	99	96	103	101	101	100	98	97	97	105	102	104	103	102	102	99	99	105	104	104	104	104	101	108	108	104	105	104	102	103	102	99	2.5
Late autumn (8.9 t/ha)	-	100	96	[102]	[105]	101	-	[96]	100	-	-	-	[104]	-	-	[101]	99	-	-	-	[103]	-	104	100	-	109	-	-	105	101	-	[96]	104	6.9
Soil type (about 50% of trials are on medium soils)																																		
Light soils (10.0 t/ha)	-	97	96	102	100	100	99	98	95	98	[102]	103	103	103	101	100	99	96	104	[107]	104	103	104	100	105	108	[108]	[105]	105	101	99	101	100	3.8
Heavy soils (10.7 t/ha)	100	99	97	103	101	102	99	99	99	97	106	105	105	103	103	102	99	98	105	104	105	103	104	100	109	107	105	105	104	102	103	103	99	2.8
Agronomic features																																		
Lodging % without PGR	4.2	4.6	2.0	2.9	12.3	2.2	2.5	3.3	5.1	13.2	4.6	17.9	4.3	2.4	2.5	3.4	1.7	4.9	15.6	8.7	0.4	17.9	5.0	4.5	6.0	10.8	3.7	4.6	4.9	1.1	2.4	0.4	0.8	
Lodging % with PGR	7.2	4.5	2.2	1.9	10.2	1.4	3.5	2.7	2.5	10.7	2.1	12.2	5.3	2.5	2.5	4.3	1.9	6.3	8.2	4.4	2.4	5.5	8.7	5.4	6.7	5.4	1.4	3.4	5.0	1.5	1.8	0.6	1.3	
Latest safe sowing date #	-	End Jan	End Jan	End Jan	End Feb	End Feb	[Mid Feb]	End Jan	End Jan	End Jan	-	[End Jan]	Mid Feb	[Mid Feb]	[Mid Feb]	Mid Feb	End Jan	End Feb	[End Feb]	-	End Jan	[Mid Feb]	End Jan	End Jan	[End Jan]	Mid Feb	-	-	End Jan	End Feb	[End Jan]	End Jan	End Jan	-
Speed of development to growth stage 31 (days +/- average)																																		
Early Sep sown	-	-4	+1	+1	-4	-2	-2	-4	-1	-6	-	+5	0	+2	-3	-1	+4	+6	-1	-	0	+2	0	0	+8	-3	-	-	0	-3	0	+3	-3	7.2
Early Oct sown	-	-7	-2	-5	0	-2	-9	-9	0	-7	-	+7	0	0	-4	+3	-1	+4	-7	-	-1	0	+1	+3	+1	-5	-	-	-1	+1	-5	+1	-2	8.6
Early Nov sown	-	-4	-1	-2	+1	0	-1	-3	-1	-2	-	+4	+2	+1	-3	+3	+2	+4	+3	-	+1	+1	+3	+3	+0	-2	-	-	+1	+2	-1	+1	-1	4.0

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

[ ] = limited data

Key to Breeder and UK contact codes

Agr = Agrii (www.agrii.co.uk)
Breun = Saatzucht Josef Breun, Germany
KWS = KWS UK (www.kws-uk.com)
Lim = Limagrain UK (www.limagrain.co.uk)
RAGT = RAGT Seeds (www.ragt.co.uk)
Sec = Secobra, France
Sen = Senova (www.senova.uk.com)
SU = Saaten Union UK (www.saaten-union.co.uk)
Syn = Syngenta Seeds (www.newfarmcrops.co.uk)

= Latest safe sowing date is the advised latest sowing time to give a sufficient cold period for flowering. A dash indicates that there is insufficient data to give a comment and NOT that the variety does not have a vernalisation requirement.