Plant Growth Regulators in autumn sown cereals

FAR investigated plant growth regulator (PGR) rates for control of brackling in autumn sown barley, in 2014-15, and for control of lodging in autumn sown feed wheat, in 2015-16. The PGRs investigated were chlormequat (Cycocel® 750, Regulate, Stabilan® 750 SL) and trinexapac-ethyl (Agpro Candopa, Moddus®, Moddus Evo, Optimus® 175EC, Trexel®) and mepiquat chloride + chlorethepon (Align™, Holdup, Modula® and Terpal®) (Table 1-2).

In the 2014-15 barley trials, the addition of Terpal (1.0 L/ha) at GS 39, following an earlier application of Moddus at GS 31, significantly increased yield and reduced brackling compared with Moddus applied alone either at GS 31, GS 32 or GS 31 and GS32 (Table 1). There was no additional yield benefit or reduction in brackling when Cycocel was added to a Moddus followed by Terpal programme.

As part of the 20 t by 2020 programme, results from a 2015-16 wheat trial showed no significant yield differences if PGRs were applied at different rates, mixtures and timings (Table 2). There was no benefit to applying Terpal off label at GS 39.

Each of these trials only represent one season of work. Decisions around PGR application should always be made based on the lodging or brackling risk of the crop.

Table 1. Yield (t/ha) and brackling score (%) of autumn sown barley, cv Cassia at Milford, South Canterbury in 2014-15. Trial sown 13 April 2014.

Tmt	GS31 23.9.14	GS32 7.10.14	GS39 21.10.14	Yield (t/ha)		Brackling (%)	
1	nil	-	-	11.1	bc	27.5	ab
2	Moddus 0.2	-	-	11.3	bc	25.0	abc
3	-	Moddus 0.2	-	10.9	c	20.0	bcd
4	Moddus 0.2	Moddus 0.2	-	11.2	bc	25.0	abc
5	Moddus 0.4	-	-	11.4	b	42.5	a
6	Moddus 0.3	Moddus 0.3	-	11.1	bc	30.0	ab
7	-	-	Terpal 1.0	12.1	a	2.3	d
8	Moddus 0.2	-	Terpal 1.0	12.1	a	3.0	cd
9	Moddus 0.4	-	Terpal 1.0	12.0	a	1.8	d
10	Cycocel 2.0	-	Terpal 1.0	12.0	a	3.5	cd
11	Cycocel 1.0 + Moddus 0.1	-	Terpal 1.0	12.2	a	4.0	cd
12	Cycocel 2.0 + Moddus 0.2	-	Terpal 1.0	12.0	a	17.5	bcd
			Mean	11.6		16.8	
			Fpr	<0.001		0.01	
			LSD (p=0.05)	0.5		22.2	
			CV (%)	2.7		91.5	

Table 2. Yield (t/ha) and lodging score (%) of autumn sown wheat, cv Wakanui at Wakanui, Mid Canterbury in 2015-16. Trial sown 15 April 2015.

Tmt	25.9.15 GS30-31	21.10.15 GS32	18.11.15 GS39	Yield (t/ha)		Lodging (%)	
1	Untreated	-	-	16.3	de	20	a
2	Cycocel 1.0	-	-	16.9	a	4	b
3	Cycocel 1.0	Cycocel 1.0	-	16.7	abcd	2	b
4	Cycocel 2.0	-	-	16.6	abcd	2	b
5	Optimus 0.29	-	-	16.7	abcd	2	b
6	Optimus 0.29	Optimus 0.29	-	16.4	bcde	0	b
7	Optimus 0.58	-	-	16.5	abcde	0	b
8	Cycocel 1.0 + Optimus 0.29	-	-	16.7	abcd	0	b
9	-	Cycocel 1.0 + Optimus 0.29	-	16.8	ab	0	b
10	Cycocel 1.0 + Optimus 0.29	Cycocel 1.0 + Optimus 0.29	-	16.8	abc	0	b
11*	Cycocel 1.0 + Optimus 0.29	Cycocel 1.0 + Optimus 0.29	Terpal 1.0	16.2	e	0	b
12	Cycocel 2.0 + Optimus 0.58	-	-	16.4	cde	0	b
			Mean	16.6		3	
			Fpr	0.03		0.01	
			LSD (p=0.05)	0.4		9.9	
			CV (%)	1.8		280	

* mepiquat chloride + chlorethepon is registered for barley, ryecorn and triticale only.