

Trial 3: HYC Winter Wheat GEM – May sowing (FAR SAC W22-03-2)

Key Points:

- Grain yields in this season's GEM May sown trial were inferior to the results collected from the earlier time of sowing with Scepter and Rockstar yielding an average of 4 t/ha or less.
- RGT Accroc (mean 5.44 t/ha) was higher yielding than both Rockstar (3.66 t/ha) and Scepter (4.07 t/ha).
- The most significant management effects were again those observed due to fungicide management with the three cultivars giving an average increase of 0.64 t/ha to three units of fungicide compared to one flag leaf spray.
- All varieties were, despite fungicide application, affected by the new strain of stripe rust (pathotype 239).
- Milling wheat quality (protein, test weight and screenings) was not achieved with any management approaches due to poor test weight.
- The higher yielding feed wheat RGT Accroc was subject to higher than normal disease pressure, however even with three units of fungicide it was the more profitable to grow, as milling wheats never reached the quality criteria to secure a premium and were 1.5-2.0 t/ha t/ha lower yielding.
- There were no significant differences in yield and protein levels when comparing 150 and 225kg N/ha applied.
- The only quality criteria affected by management was fungicide input which affected screening % and overall N level which increased grain protein when applied N input was increased from 150 – 225kg N/ha.
- The most profitable management approach with all three varieties was result of 150kg N/ha and three fungicide applications.

Management Treatments

Treatment ID	Fungicide	Kg Nitrogen (N)
1. Standard (Std) Fungicide	Standard (cheaper) ¹	150
2. Standard (Std) Fungicide + N	Standard (cheaper) ¹	225
3. Higher input Fungicide	Higher input ²	150
4. Higher input Fungicide + N	Higher input ²	225

¹ Single/Standard spray program – 1 X foliar fungicide: FAR F1-19 750ml/ha at GS39.

² Increased disease management – Systiva seed treatment plus 2 x foliar fungicides: Prosaro. 300ml/ha, FAR F1-19 750ml/ha at GS31 and 39 respectively.

Table 1. Influence of disease pressure, management strategy and cultivar on grain yield (t/ha).

		Rockstar		Scepter		RGT Accroc		Mean
Cultivar		3.66	c	4.07	b	5.44	a	4.39
	LSD	0.24				P-Value		<0.001
Disease Pressure								
Single Spray Program		3.41	-	3.83	-	4.97	-	4.07 b
3 unit Fungicide Program		3.91	-	4.31	-	5.91	-	4.71 a
Fungicide	LSD	0.39				P-Value		0.014
Fungicide x Cultivar	LSD	ns				P-Value		0.104
Canopy Management								
No Intervention - 150N		3.60	-	4.18	-	5.53	-	4.44 -
No intervention – 225N		3.72	-	3.96	-	5.35	-	4.34 -
Canopy Management	LSD	ns				P-Value		0.261
Cultivar x Canopy Mgmt	LSD	ns				P-Value		0.314
Fungicide Management x Canopy Mgmt.								
Single Spray Program								
No Intervention - 150N		3.39	-	3.88	-	4.98	-	4.08 -
No intervention – 225N		3.44	-	3.78	-	4.96	-	4.06 -
Full Fungicide Program								
No Intervention - 150N		3.82	-	4.48	-	6.08	-	4.79 -
No intervention – 225N		4.00	-	4.14	-	5.75	-	4.63 -
Fungicide Management x Canopy Mgmt.	LSD	ns				P-Value		0.395
Fungicide Management x Canopy Mgmt. x Cultivar	LSD	ns				P-Value		0.637

Table 2. Influence of treatment on grain protein %.

		Rockstar		Scepter		RGT Accroc		Mean	
Cultivar		13.9	a	14.0	a	12.4	b	13.4	
	LSD	0.27				p-Value		<0.001	
Fungicide Management									
Single Spray Program		14.0	-	14.0	-	12.6	-	13.5	-
Full Fungicide Program		13.8	-	14.0	-	12.3	-	13.4	-
Fungicide	LSD	ns				p-Value		0.279	
Fungicide x Cultivar	LSD	ns				p-Value		0.688	
Canopy Management									
No Intervention - 150N		13.8	-	13.7	-	12.2	-	13.2	b
No intervention – 225N		14.0	-	14.2	-	12.7	-	13.6	a
Canopy Management	LSD	0.18				p-Value		0.002	
Cultivar x Canopy Mgmt	LSD	ns				p-Value		0.231	
Fungicide x Canopy Mgmt.									
Single Spray Program									
No Intervention - 150N		13.9	-	13.7	-	12.5	-	13.4	-
No intervention – 225N		14.0	-	14.3	-	12.7	-	13.6	-
Full Fungicide Program									
No Intervention - 150N		13.8	-	13.7	-	11.9	-	13.1	-
No intervention – 225N		13.9	-	14.2	-	12.7	-	13.6	-
Fungicide x Canopy Mgmt	LSD	ns				p-Value		0.289	
Fungicide x Canopy Mgmt x Cultivar	LSD	ns				p-Value		0.277	

Table 3. Influence of treatment on grain test weight (Kg/hL).

	Rockstar		Scepter		RGT Accroc		Mean	
Cultivar	64.9	b	69.3	a	70.3	a	75.4	
LSD	1.31				p-Value		<0.001	
Fungicide Management								
Single Spray Program	64.3	-	69.1	-	68.7	-	67.4	-
Full Fungicide Program	65.5	-	69.5	-	71.8	-	68.9	-
Fungicide	LSD	<i>ns</i>			p-Value		0.060	
Fungicide x Cultivar	LSD	<i>ns</i>			p-Value		0.100	
Canopy Management								
No Intervention - 150N	64.4	c	70.4	a	70.5	a	68.4	-
No intervention – 225N	65.4	c	68.1	b	70.0	a	67.8	-
Canopy Management	LSD	<i>ns</i>			p-Value		0.267	
Cultivar x Canopy Mgmt	LSD	1.86			p-Value		0.046	
Fungicide x Canopy Mgmt.								
Single Spray Program								
No Intervention - 150N	63.1	-	69.6	-	68.5	-	67.1	-
No intervention – 225N	65.4	-	68.7	-	68.9	-	67.6	-
Full Fungicide Program								
No Intervention - 150N	65.6	-	71.3	-	72.5	-	69.8	-
No intervention – 225N	65.4	-	67.6	-	71.2	-	68.1	-
Fungicide x Canopy Mgmt	LSD	<i>ns</i>			p-Value		0.052	
Fungicide x Canopy Mgmt x Cultivar	LSD	<i>ns</i>			p-Value		0.888	

Table 4. Influence of treatment on grain screening %.

		Rockstar		Scepter		RGT Accroc		Mean	
Cultivar		4.3	a	2.9	b	3.9	a	1.0	
	LSD	0.58				p-Value		<0.001	
Disease Pressure (Fungicide application)									
Single Spray Program		4.6	-	3.0	-	4.7	-	4.1	a
Full Fungicide Program		4.0	-	2.8	-	3.2	-	3.3	b
Fungicide	LSD	0.67				p-Value		0.032	
Fungicide x Cultivar	LSD	ns				p-Value		0.083	
Canopy Management									
No Intervention - 150N		4.5	-	2.7	-	3.7	-	3.6	-
No intervention – 225N		4.2	-	3.1	-	4.2	-	3.8	-
Canopy Management	LSD	ns				p-Value		0.481	
Cultivar x Canopy Mgmt	LSD	ns				p-Value		0.304	
Fungicide x Canopy Mgmt.									
Single Spray Program									
No Intervention - 150N		5.0	-	2.9	-	4.6	-	4.2	-
No intervention – 225N		4.3	-	3.1	-	4.8	-	4.1	-
Full Fungicide Program									
No Intervention - 150N		3.9	-	2.5	-	2.8	-	3.1	-
No intervention – 225N		4.0	-	3.1	-	3.6	-	3.6	-
Fungicide x Canopy Mgmt	LSD	ns				p-Value		0.279	
Fungicide x Canopy Mgmt x Cultivar	LSD	ns				p-Value		0.902	

Table 5. Details of the management levels.

Sowing date:		20 May
Plant population:		180 seeds/m ²
Basal fertiliser:		100 kg/ha MAP
Nitrogen:	13 July	50kg N/ha
	2 Sept	+ 25kg N/ha
	5 Sept	100kg N/ha
	26 Sept	+50kg N/ha
Fungicide:	GS00	Systiva
	GS31	Prosaro 300ml/ha
	GS39	Revy Star 750ml/ha