Hyper Yielding Cereal Project
A FEED GRAIN INITIATIVE

Protocol 4 – Early sown Barley Germplasm (5 April) - 2018 Yield Results (t/ha)

(Provisional)

Sown: 5 April 2018 **Harvested:** 3 January 2019

Rotation position: 1st Cereal Barley after chickpeas

Table 1. Influence of cultivar on grain yield (t/ha, % control) and grain quality results sown 5 April.

		Grain Yield		Grain Quality	
Cultivar	Classification	Yield (t/ha)	Site Mean (%)	Protein (%)	Test weight Kg/hl
RGT Planet	Spring	11.07 a	121.2 a	10.9 b	59.4 ab
Cassiopée	Winter	9.03 b	98.8 b	12.9 a	60.0 ab
Salamandre	Winter	8.64 b	94.5 b	12.9 a	59.5 ab
Maltesse	Winter	7.94 c	87.0 c	12.2 ab	58.8 b
Surge	Winter	9.01 b	98.6 b	11.0 b	60.9 a
Mean		9.27	100.0	12.0	59.71
LSD 0.05		0.66	7.01	1.50	1.97
P Val		<0.01	<0.01	0.03	0.24

Figures followed by different letters are considered to be statistically different (p=0.05)
Plot yields: To compensate for edge effect a full row width (20cm) has been added to either side of the plot.
All varieties are covered under variety license agreements.

Table 2. Influence of cultivar on % screenings and lodging/brackling scores at maturity (GS99)

		Grain Quality	Lodging	
Cultivar	Classification	Screenings (%)	Lodging Index (0-500)	Brackling (%)
RGT Planet	Spring	3 c	69 b	38.8 a
Cassiopée	Winter	4.5 bc	135 b	40 a
Salamandre	Winter	5.2 bc	306 a	21.3 a
Maltesse	Winter	8.5 a	209 ab	38.8 a
Surge	Winter	6.6 ab	206 ab	28.8 a
Mean		5.6	185.0	33.5
LSD 0.05		2.46	145.58	40.88
P Val		<0.01	0.04	0.82

Figures followed by different letters are considered to be statistically different (p=0.05)

Table 3. Phenology evaluation - Zadoks growth stage recorded at key points in the season (Zadoks GS00-99)

Cultivar		Jul-7	Sep-13	Oct-5	Oct-18	Nov-28
RGT Planet	Spring	22	49	69	81	89
Cassiopée	Winter	29	32.5	49	69	85
Salamandre	Winter	29	32	49	65	81
Maltesse	Winter	23	31	45	61	81
Surge	Winter	29	31	43	55	81

Issued: 21 January 2019

Table 4. Detail of management applied (kg, g, ml/ha).

Sowing date:		**5-April**
Plant population:		180 seeds/m^2
Sowing Fertiliser:		100kg MAP
Grazing:		Nil
Nitrogen:	8-Aug	60kg N/ha
	14-Sep	92kg N/ha
	26-Sep	46kg N/ha
PGR:	4-Sep	Moddus Evo 200ml/ha
Fungicide:	4-Sep	Prosaro 300ml/ha
	22-Oct	Radial 840ml/ha
Insecticide/Trace elements:	24 May	Karate Zeon 40ml/ha
		Kontrance 8 3L/ha
Irrigation:	28 September	10mm
	17 October	25mm
	1 November	25mm

Trial Notes:

- *Winter barleys require a period of vernalisation (a period of cooler weather) in order to transition from the vegetative phase to the reproductive phase.*
- *The spring barley RGT Planet does not have a vernalisation requirement and so develops earlier in the spring.*
- *5 April (10-12 April emergence) was too early for the spring variety RGT Planet which despite significantly higher yield than others cultivars was frosted at this sowing (emergence) date.*
- *Regrowth secondary heads in RGT Planet combined with the original frost affected heads to form a "double layer" of heads that out yielded the winter barley cultivars which were unaffected by the frost.*
- *The slowest developing winter cultivar, the UK cultivar Surge gave similar performance to the fastest developing French germplasm (Cassiopée) indicating that in this irrigated trial factors other than development/environment interaction may have been more responsible for the yield differences.*
- *Although winter barley cultivars were unaffected by the frost, as a result of their slower spring development, they were subject to higher levels of lodging than RGT Planet.*
- *This "double layer" of heads (primary and secondary) , along with superior standing, resulted in RGT Planet out yielding the winter barley cultivars, despite a sowing date that was too early for the spring germplasm resulting in frosting.*