



2020 - Hart Trial Results

Rebekah Allen, Hart Field-Site Group



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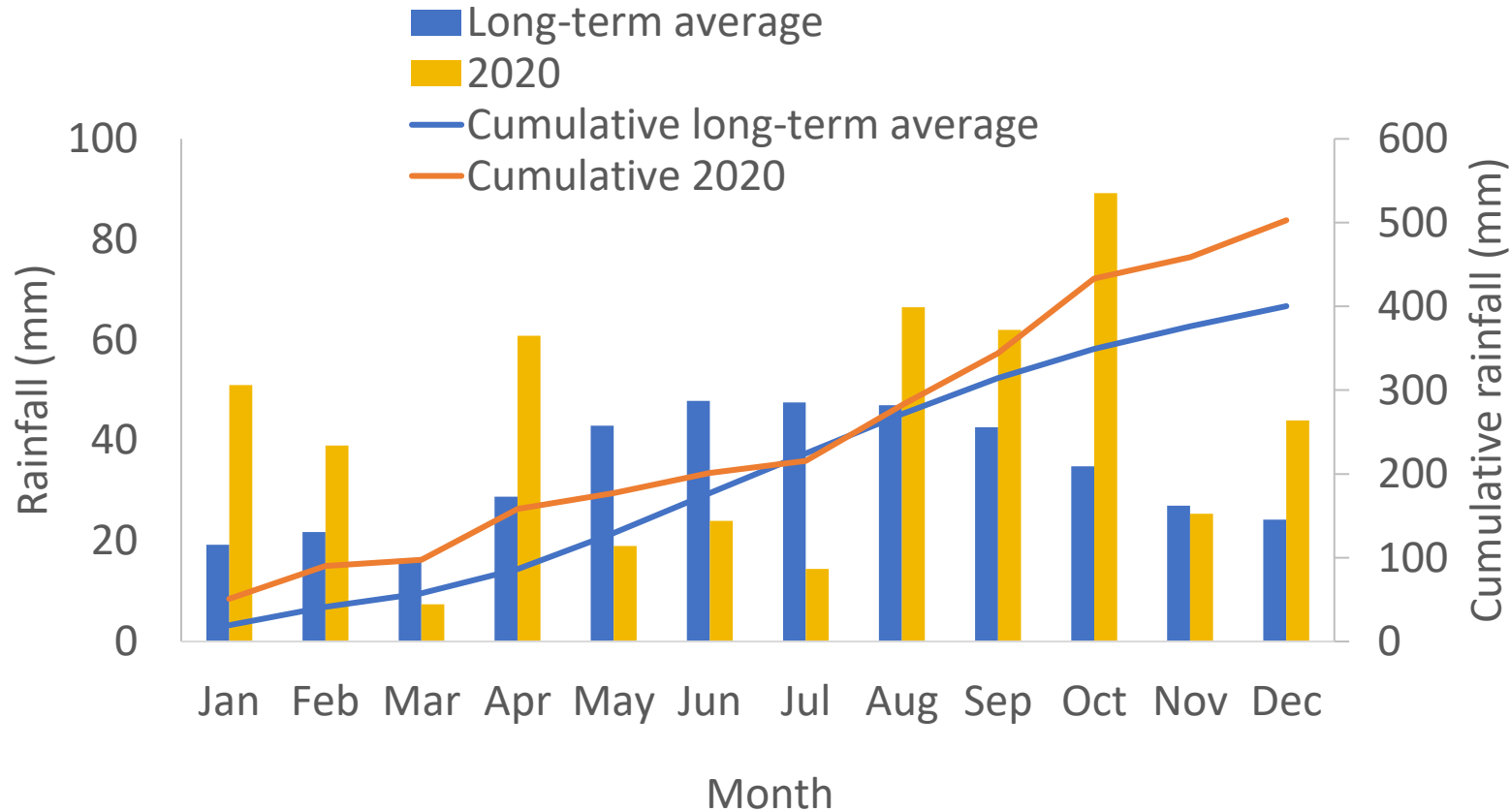
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What results will we cover today?

- ▶ Early sown winter and awnless wheat
- ▶ Wheat varieties
- ▶ Increasing vetch biomass with GA

The 2020 season at Hart



Why do the trial?



- ▶ **Evaluate new winter wheats in medium rainfall areas**
- ▶ **‘Management for Early Sown Wheats’ had a number of outcomes**
 - For sowing prior to April 20, winter varieties are required
 - Different winter wheats are required for different environments
- ▶ **Previously at Hart...**
 - Optimal flowering window, September 15 – 25
 - Winter wheats flowered within a period of 7-10 days
 - Mid-developing winter wheats (e.g. Illabo) were best suited
 - Never received a pre-April 20 break

Why did we include awnless wheats?

- ▶ Multi-use (grain, graze and hay)
- ▶ More variety options in frost prone areas
- ▶ Orion, was released 10 years ago
- ▶ Provide a better hay-cutting option and something with classification (AH/APW) for when the season is right

- ▶ To compare new awnless options from LongReach Plant Breeding (SAGIT project LPB117)

Early Sown Winter & Awnless Wheats



- ▶ TOS Seeding dates - April 20 and May 6

Variety	Development	Awnless
Illabo	Mid-fast winter	N
DS Bennett	Mid – Slow winter	Y
Nighthawk	Very slow spring	N
Catapult	Mid - slow spring	N
Denison	Slow – very slow spring	N
Orion		Y
LPB18-7982		Y
LPB18-7946		Y
Scepter	Fast spring	N

2020 Results

- ▶ This season highest yields were achieved from early May sowing
- ▶ Best performing winter wheat was not able to match these yields.
- ▶ Varieties ‘raced’ this season, better suited to faster maturing winter.

Variety	April 20	May 6	April 20	May 6
	Dry matter (t/ha)		Grain yield (t/ha)	
Catapult			2.13 ^{def}	2.92 ^{ab}
Denison			1.91 ^{ef}	2.43 ^{bcd}
Illabo			1.65 ^f	2.00 ^{def}
Scepter			1.65 ^f	3.03 ^a
Nighthawk			2.28 ^{cde}	1.97 ^{def}
	ns		LSD (P≤0.05) 0.50	

2020 Results



- ▶ Dry matter at watery ripe (GS71) was similar for all varieties
- ▶ LPB18-7982 was the highest yielding (similar to Catapult and Scepter)

Variety	April 20	May 6	April 20	May 6
	Dry matter (t/ha)		Grain yield (t/ha)	
DS Bennett	4.23	3.88	2.19 ^{cde}	2.25 ^{cde}
LPB18-7982	4.49	4.31	2.02 ^{def}	2.64 ^{abc}
LPB18-7946	4.27	4.81	1.98 ^{def}	2.04 ^{def}
Orion	4.46	4.03	2.06 ^{def}	2.00 ^{def}
	ns		LSD (P≤0.05) 0.50	

Key messages from this season

- ▶ This season, highest yields were achieved from early May sowing with Scepter and Catapult.
- ▶ Long season spring and winter wheats were unable to match the yield of Scepter sown in its optimal window
- ▶ Breeding line LPB18-7982 was the highest yielding (2.64 t/ha) awnless variety trialed.

Wheat Variety Trial

- ▶ A total of 18 wheat varieties were compared
- ▶ Sown on May 6
- ▶ New varieties included in 2020 :
 - AGT** – Ballista, Hammer CL Plus
 - Pacific Seeds-** Nighthawk



How did they perform in 2020?

Quality	Variety	Grain yield t/ha	Protein %	Test Weight kg/hL	Screenings %
AH	Ballista	2.38	10.3	81.6	3.4
	Catapult	2.68	11.2	84.0	2.8
	Devil	2.74	10.9	82.9	3.6
	Emu Rock	2.77	12.5	83.8	2.1
	Hammer CL Plus	2.66	12.0	83.6	2.5
	LongReach Scout	2.65	11.4	84.8	3.1
	Mace	2.49	11.8	84.0	2.0
	Rockstar	2.70	10.8	82.6	3.3
	Scepter	2.52	11.1	83.9	3.4
	Vixen	2.72	11.6	81.8	2.9
<i>AH1 receival standard</i>			>13.0	>76	<5.0

Top ten performing varieties – Spalding and Mintaro NVT 2020

How did they perform in 2020?

Quality	Variety	Grain yield t/ha	Protein %	Test Weight kg/hL	Screenings %
APW	Chief CL Plus	2.82	12	82.3	2.4
	Cutlass	2.02	11.6	83.3	2.4
	Grenade CL Plus	2.33	12	82.1	2.2
	Nighthawk	1.86	13.1	81.3	3.2
	Sheriff CL Plus	2.5	11.4	82.6	3.2
	Trojan	2.34	11.4	84.0	3.5
	<i>APW1 receival standard</i>		>10.5	>76.0	<5.0
ASW	Razor CL Plus	2.45	11.9	83.8	2.3
	<i>ASW1 receival standard</i>		>10.5	>76	<5.0
Unclassified	LRPB- 2485	2.45	11.4	83.9	2.6
	Site Average	2.5	11.6	83.1	2.8
	LSD (P≤0.05)	0.37	ns	0.95	0.9

Top ten performing varieties – Spalding and Mintaro NVT 2020

Hart Long-term yield data



						Grain yield (t/ha)	
Quality	Variety	2016	2017	2018	2019	2020	2020
AH	Ballista (RAC2598)					95	2.38
	Catapult				97	107	2.68
	Devil				104	109	2.74
	Emu Rock	99	98	104	104	111	2.77
	Grenade CLPlus	96	95	110	93	93	2.33
	Hammer CL Plus (OAGT0016)					106	2.66
	Mace	94	102	95	95	100	2.49
	Rockstar				104	108	2.70
	Scepter	106	111	113	106	101	2.52
	Longreach Scout	103	107	107	107	106	2.65
	Vixen				111	109	2.72
	Longreach Trojan	121	113	106	102	94	2.34
APW	Chief CL Plus			87	85	113	2.82
	Cutlass	119	104	117	98	81	2.02
	Nighthawk					74	1.86
	Sheriff CL Plus				96	100	2.50
ASW	Razor CLPlus		103	104	109	98	2.45
Unclass	LPB15-2485				98	98	2.45
Trial mean yield t/ha		3.87	3.83	2.13	1.50	2.50	
Sowing date		10th May	8th May	14th May	15th May	6th May	
Apr-Oct rain (mm)		356	191	160	162	336	
Annual rain (mm)		485	331	224	189	503	

Key messages

- ▶ All AH varieties performed similarly at Hart in 2020
- ▶ Chief CL Plus and Sheriff CL Plus best were the highest yielding APW varieties (2.82 and 2.50 t/ha)
- ▶ Scepter, Scout and Trojan have performed well across 5 seasons.

MANAGING VARIETIES
October 20, 2020

WHEAT AND DURUM VARIETY UPDATE

with Josh Reichstein, InterGrain
James Edwards, AGT and Colin Edmonson, LongReach

www.hartfieldsite.org.au



Increasing vetch dry matter production through the application of GA

- ▶ Three vetch varieties were compared with two rates of Gibberellic acid (GA)
- ▶ Seeding date: April 20th at 45 kg/ha + base fertiliser
- ▶ Varieties included: Timok (mid-maturing), Morava (late) and Studenica (early)

- ▶ Treatments
 1. Nil
 2. 10 g/ha Gibberellic acid
 3. 20 g/ha Gibberellic acid



Why use Gibberellic acid?

Gibberellic acid is used to promote plant growth and biomass production

► **Current use pattern**

- Currently used in horticulture to manipulate crop production and flowering dates.
- Stimulate production in highly intensive grazing systems in pastures such as perennial ryegrass
- Limited research

How did we apply GA?

- ▶ Applied to vetch 7 weeks post-seeding (June 11th)
- ▶ Biomass cuts were taken 4 weeks after application (July 9th)

Measurements

- ▶ Dry matter production (t DM/ha)
- ▶ Feed quality analysis



Application made at
branching

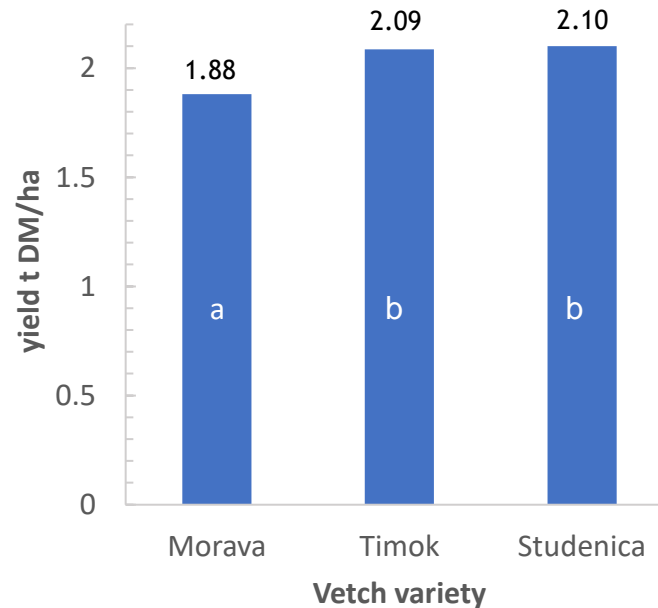
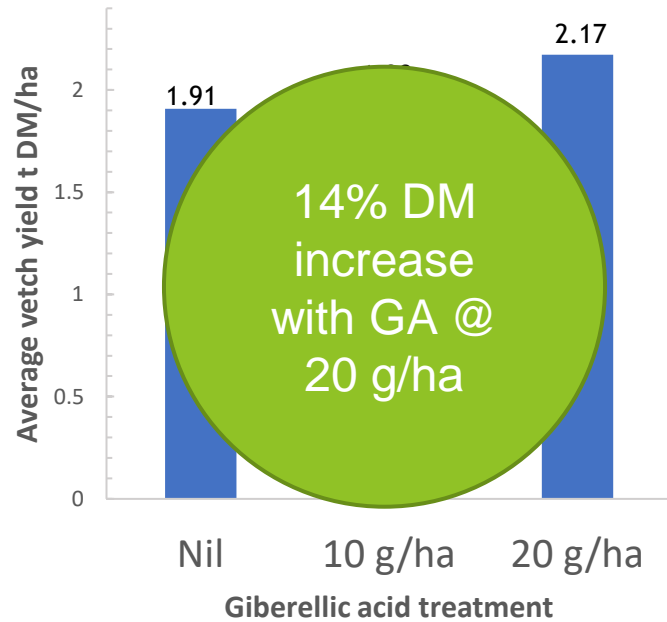
Results – 7 days



Morava (Nil treatment)

Morava + 20 g/ha GA

Results - Dry matter production



This equals 270 kg/ha

Feed analysis

- ▶ Nutritional values for GA treatments were similar to nil
- ▶ A slight increase in ADF% was observed, leading to higher indigestible fibres however this data is un-replicated

Treatment	Crude protein (CP) (%)	Acid detergent fibre (ADF) (%)	Neutral detergent fibre (NDF) (%)	Metabolisable energy (ME) (MJ/Kg DM)	Digestibility (%)
Nil	29.9	22.7	34.7	11.8	72.8
ProGibb @ 10 g/ha	29.9	24.8	34.1	11.9	73.5
ProGibb @ 20 g/ha	29.4	25.3	35.4	11.6	72.1

Key messages

- ▶ No single vetch variety was more responsive to GA
- ▶ Applications of GA at 20 g/ha increased vetch dry matter by 14%
- ▶ Timok and Studenica were the highest yielding vetch varieties (2.09 and 2.10 t/ha)

Acknowledgements

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