



EXPRESS RESULTS:

Wheat Germplasm Screening – Yielded Elite screen and un yielded entries 2019/20 SA Crop Technology Centre Yield Results (*Provisional*)

Sown: 18 April 2019

Harvested: 13 January 2020 (Elite Screening Trial only)

Rotation position: 1st Cereal after Broad Bean

Soil Type: Neutral-slightly alkaline Organosol (Peat soil) – high organic matter (0-30cm)

Key Messages:

- *The unyielded wheat screening trial was set up to look at potential candidates suitable for early sowing (mid-April) in the HRZ. The trial looked primarily at phenology, disease resistance and standing power in the absence of fungicides and PGRs. The trial was not taken to yield.*
- *Where elite candidates were taken to yield and treated with fungicides the breeding line SFR86-090 produced the highest yield with a yield of 10.30t/ha, in comparison to the commercially available control Manning, which yielded 9.29t/ha.*
- *The earliest cultivar to flower was V11079-092 (16-Sep) and the latest was CS170 (11 Nov) from this mid – April sowing.*
- *Several cultivars exhibited good Septoria tritici blotch (STB) resistance. These were SFR86-090, SFR86-087, SFR86-092 LPB17-1107, LPB Kittyhawk, GS-18-107-FW and Sorrial hybrid wheat which were marginally better than Annapurna and Manning.*
- *The aim for further testing in 2020/2021 will be to select some of the cultivars/lines that had good green leaf retention in the absence of fungicides, the right flowering period and good standing power for April sowing.*

a) Screening Trial entries (not taken to yield)

Table 1. Phenology - stem elongation development of 50 different wheat lines / cultivars (Zadoks growth stage reached for each entry on 11 July, 20 August & 18 October).

Cultivar	11-July	20-August	18-Oct
Manning (control)	24	31	57
Revenue (control)	23	31	59
CS170	24	31	49
Annapurna	27	31	61
BX7932-039	25	33	71
RAC2484	30-31	45	72
WAGT734	30	38	72
V11128-018	30	37	72
V12005-001	24	32-33	71
V12069-076	26	37	71
V12159-046	30	32-33	69
V12159-096	30	32	59
SUN862I	30	47	72
SUN883H	31	41	72
SUN886C	30	41	72
SUN944O	30	38	72
SUN945A	31	39	71
SUN966A	30	38	72
BX7940-063	30	39	72
V11002-017	30	45	71
V11018-024	30	45	71
V11079-003	30	47	71
V11079-092	30	47	72
BX7915-014	30	45	71
V12011-006	30	38	71
LRPB Kittyhawk	30	32	69
LPB14-0012	30	37	69
LPB14-0392	30	37	71
LPB16-0511	30	37	72
LPB16-0555	30	38	61
LPB16-0582	30	33	59
LPB16-0598	24	32-33	59
LPB16-0611	30	32-33	58
LPB17-1004	24	32	59
LPB17-1058	30	32-33	59
LPB17-1076	30	33	71
LPB17-1098	30	33	72
LPB17-1107	30	37	71
LPB17-1116	30	37	72
LPB17-5299	30	37	71
SFR86-071	27	31	55
SFR86-090	29	31	71
SFR86-088	31	55	72
SFR86-087	30	47	71
SFR86-086	30	39	72
SFR86-092	29	30-31	57
Sorrial	26	31	57
GS-18-105-FW	26	32	58
GS-18-107-FW	31	49	72
GS-18-106-FW	31	59	72

Table 2. Development phenology – date of head emergence and anthesis (flowering) of 50 different wheat lines/ cultivars.

Cultivar	Head Emergence (GS59)	Anthesis (GS65)
Manning (control)	28-Oct	30-Oct
Revenue (control)	21-Oct	21-Oct
CS170	5-Nov	11-Nov
Annapurna	14-Oct	21-Oct
BX7932-039	8-Oct	14-Oct
RAC2484	16-Sep	28-Sep
WAGT734	30-Sep	10-Oct
V11128-018	30-Sep	16-Oct
V12005-001	8-Oct	10-Oct
V12069-076	30-Sep	10-Oct
V12159-046	14-Oct	21-Oct
V12159-096	21-Oct	24-Oct
SUN862I	16-Sep	4-Oct
SUN883H	16-Sep	28-Sep
SUN886C	16-Sep	23-Sep
SUN944O	30-Sep	7-Oct
SUN945A	30-Sep	7-Oct
SUN966A	16-Sep	23-Sep
BX7940-063	16-Sep	30-Sep
V11002-017	16-Sep	30-Sep
V11018-024	16-Sep	23-Sep
V11079-003	9-Sep	30-Sep
V11079-092	3-Sep	16-Sep
BX7915-014	23-Sep	28-Sep
V12011-006	30-Sep	8-Oct
LRPB Kittyhawk	30-Sep	13-Oct
LPB14-0012	30-Sep	8-Oct
LPB14-0392	30-Sep	10-Oct
LPB16-0511	30-Sep	8-Oct
LPB16-0555	8-Oct	29-Oct
LPB16-0582	21-Oct	28-Oct
LPB16-0598	21-Oct	27-Oct
LPB16-0611	28-Oct	28-Oct
LPB17-1004	21-Oct	25-Oct
LPB17-1058	21-Oct	26-Oct
LPB17-1076	30-Sep	8-Oct
LPB17-1098	23-Sep	6-Oct
LPB17-1107	30-Sep	8-Oct
LPB17-1116	8-Oct	10-Oct
LPB17-5299	30-Sep	8-Oct
SFR86-071	28-Oct	26-Oct
SFR86-090	21-Oct	27-Oct
SFR86-088	26-Aug	30-Aug
SFR86-087	16-Sep	30-Sep
SFR86-086	23-Sep	3-Oct
SFR86-092	25-Oct	28-Oct
Sorrial (Hybrid winter wheat)	22-Oct	27-Oct
GS-18-105-FW	28-Oct	31-Oct
GS-18-107-FW	9-Sep	26-Sep
GS-18-106-FW	26-Aug	30-Aug

Table 3. Severity of Septoria Tritici Blotch (STB) (% plot infection) on 20 August and 18 October different wheat lines/ cultivars (in the absence of fungicide application).

Cultivar	August 20	October 18
Manning (control)	1	10
Revenue (control)	7.5	60
CS170	10	60
Annapurna	1.5	10
BX7932-039	1	70
RAC2484	4	100
WAGT734	1	60
V11128-018	15	75
V12005-001	0.25	45
V12069-076	4	50
V12159-046	3	35
V12159-096	3	20
SUN862I	20	90
SUN883H	0.5	90
SUN886C	7.5	90
SUN944O	2	90
SUN945A	1	80
SUN966A	1.5	90
BX7940-063	25	100
V11002-017	7.5	90
V11018-024	12.5	80
V11079-003	10	100
V11079-092	10	100
BX7915-014	1	70
V12011-006	1	60
LRPB Kittyhawk	0.1	5
LPB14-0012	1	80
LPB14-0392	3	90
LPB16-0511	0.25	40
LPB16-0555	2.5	35
LPB16-0582	1.25	15
LPB16-0598	2.5	65
LPB16-0611	8	65
LPB17-1004	3	25
LPB17-1058	20	70
LPB17-1076	0.5	80
LPB17-1098	5	90
LPB17-1107	1	5
LPB17-1116	0.1	20
LPB17-5299	7.5	85
SFR86-071	1.25	10
SFR86-090	0.1	5
SFR86-088	2	100
SFR86-087	0	1
SFR86-086	1	15
SFR86-092	0.1	1
Sorrial (Hybrid winter wheat)	0.2	3
GS-18-105-FW	1	15
GS-18-107-FW	0.1	5
GS-18-106-FW	2.5	70

b) Yield screening trial – Elite lines and European winter wheat controls

When treated with fungicides the elite lines and European feed wheat cultivars yielded between 2.52 – 10.30 t/ha. Spring wheat coded lines and short season winter wheats such as Longsword were badly frosted due to very early spring development resulting from the 16 April sowing date.

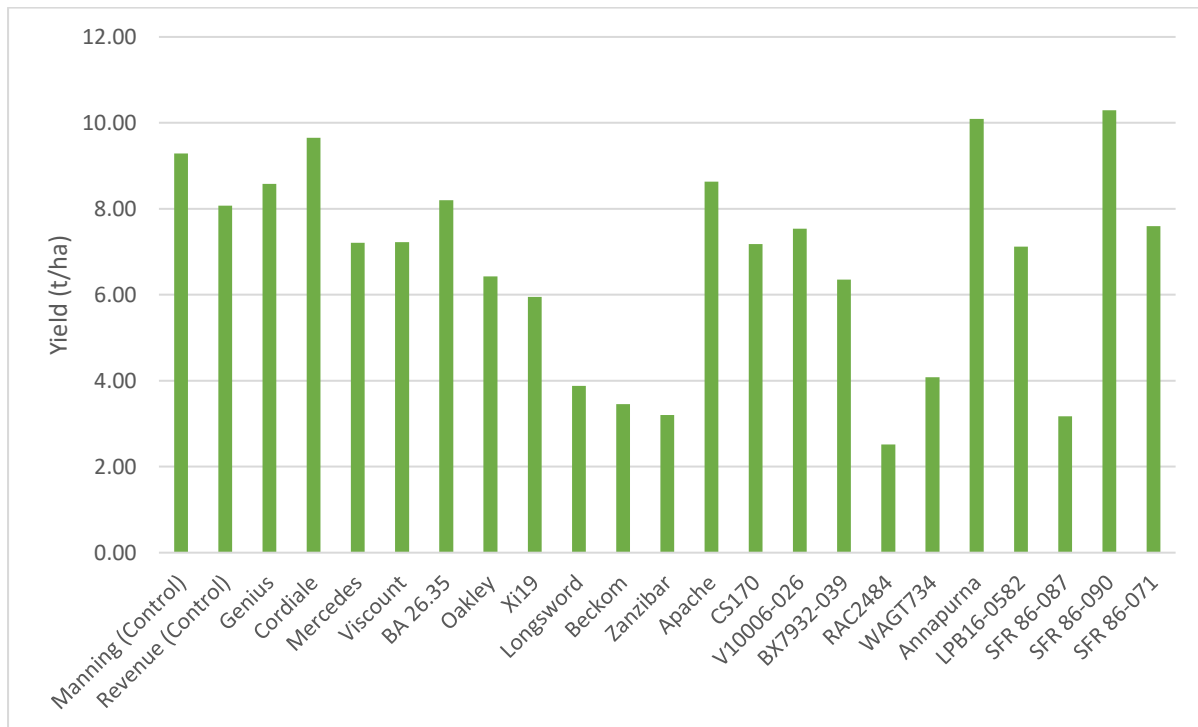


Figure 1. Grain Yield (t/ha) of 23 different elite and European wheat breeding lines.

Table 4. Trial input and management details (kg, g, ml/ha).

Plant pop'n:	180 seeds/m ² (150 plants/m ² target)	
Seed treatment:		Vibrance/Gaucho
Basal Fertiliser:	18 April	145kg MAP
Nitrogen:	1 August	87 kg Urea (40 N)
	30 August	87 kg Urea (40 N)
Fungicide*:	GS31	Opus 500mL/ha
	GS39	Radial 840mL/ha
	GS65	Prosaro 300mL/ha

Available Soil Nitrogen (10th April) – 445.1 kg N/ha (0 – 60cm) prior to sowing All inputs of insecticides and herbicides were standard across the trial. *Fungicides were as per growth stage with cultivars split into winter and spring varieties.

Meteorological Data- SA Crop Technology Centre

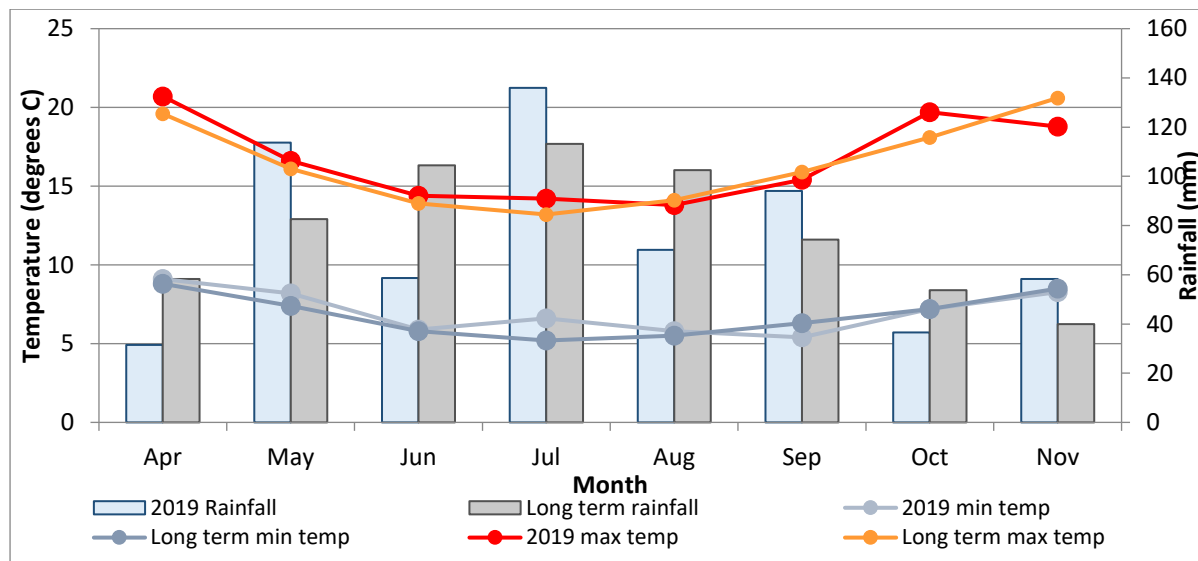


Figure 2. 2019 growing season rainfall and long-term rainfall (1877-2019) (recorded at Millicent), 2019 min and max temperatures and long-term min and max temperatures recorded at Mount Gambier (1941-2019) for the growing season (April-November). *Rainfall April to November= 598.8mm.*

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