APPENDICES

Meteorological Data

Peechelba East, Victoria

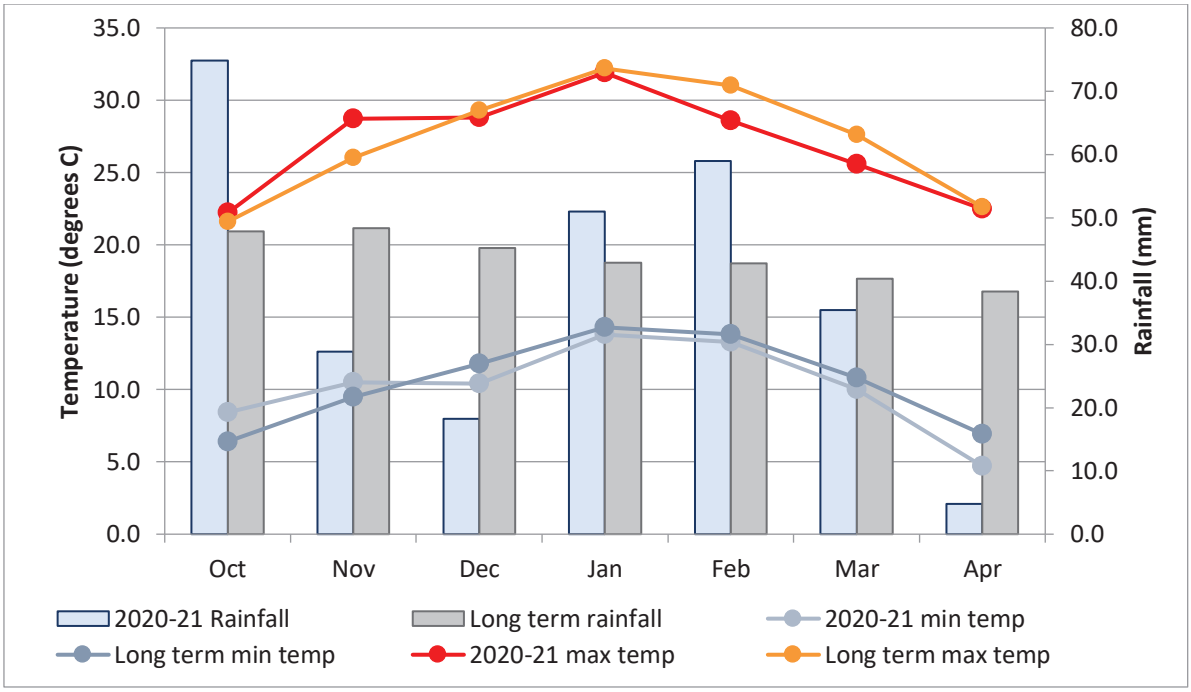

Figure 1. 2020/2021 growing season rainfall and long-term rainfall (1930-2021) (recorded at Peechelba East), 2020/2021 min and max temperatures and long-term min and max temperatures recorded at Wangaratta (1987-2021) for the growing season (October - April).

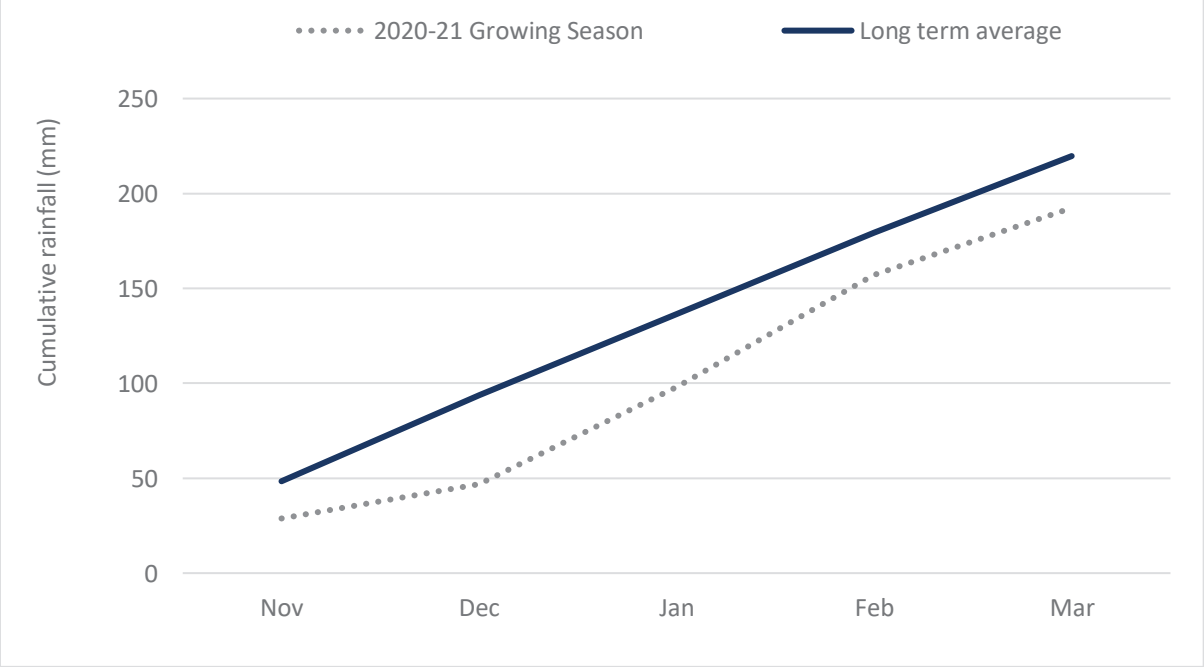

Figure 2. Cumulative growing season rainfall for 2020/21 2020/21 and the long-term average for the growing season (November-March).

Kerang, Victoria

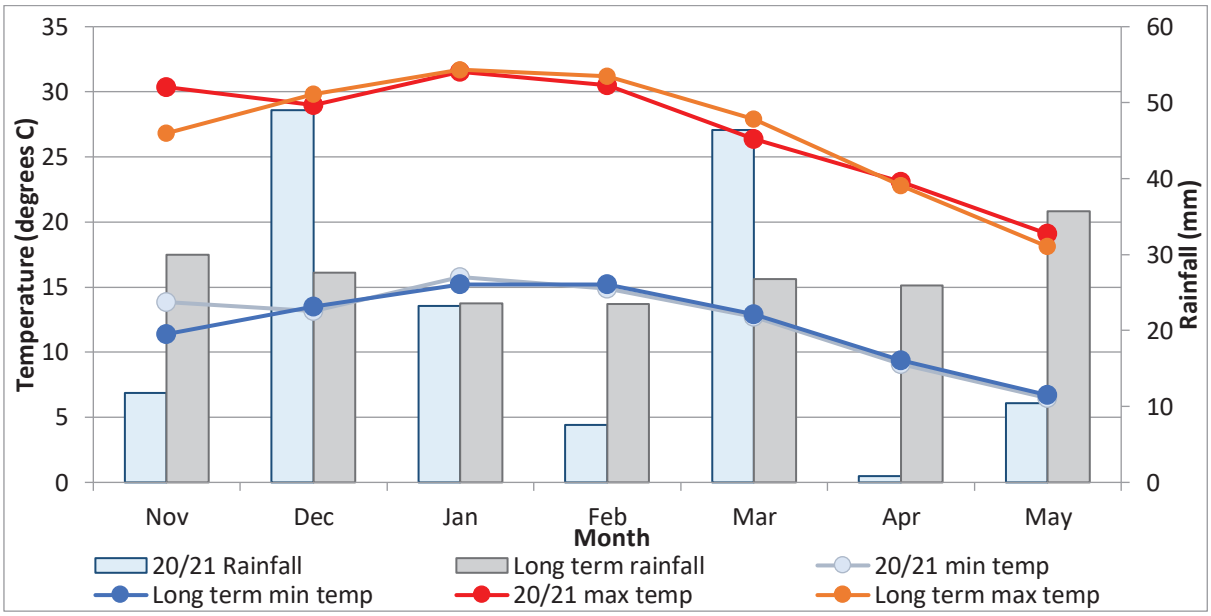

Figure 3. 2020/2021 growing season rainfall and long-term rainfall (1881-2020) (recorded at Kerang, VIC), 2019/2021 min and max temperatures and long-term min and max temperatures recorded at Kerang (1910-2021) for the growing season (November-March).

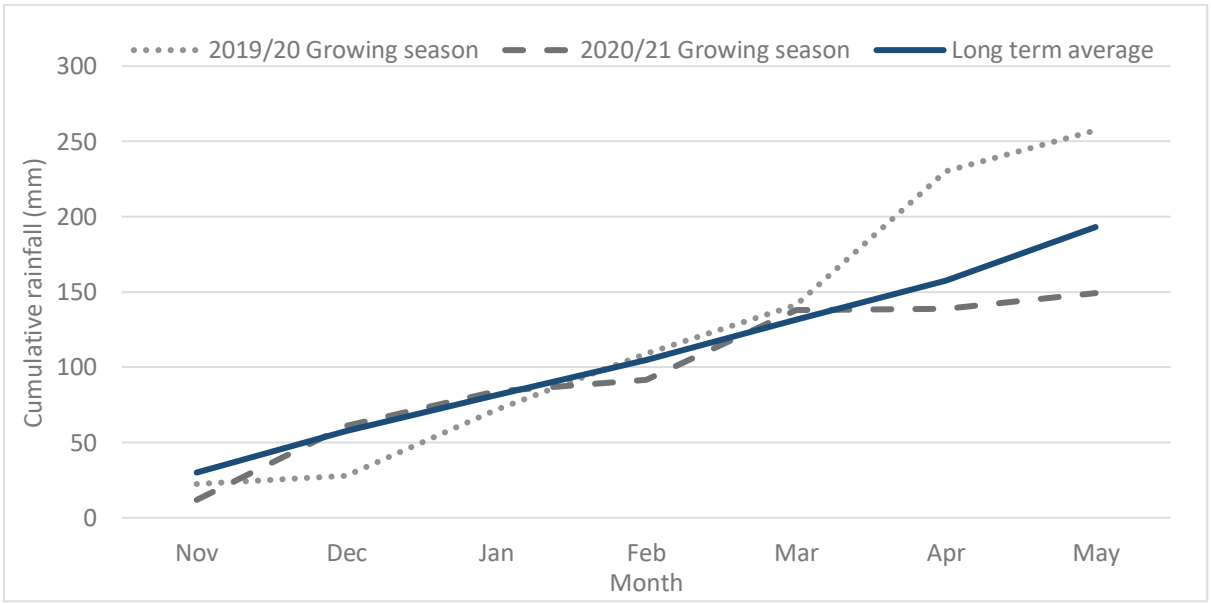

Figure 4. Cumulative growing season rainfall for 2019/2020, 2020/2021 and the long-term average for the growing season (November-March).

Site Details

Peechelba East, Victoria

Paddock and Irrigation records

GPS Location	-36.169247, 146.271604	**Irrigation Type**	Overhead pivot
Sown	4 November 2020	**Frequency and Rate**	Daily 6.35mm
Hybrid	Pioneer 1756	**First Applied**	4-Nov-20
Harvested	5-May-20	**Last Application**	19-Mar-21
Soil Type	Red loam over clay	**Total Water applied**	5.1 ML/ha
Previous Crop	Grain Maize		

Crop Nutrition

Date	Product	Rate	Placement	Crop Stage
31-Oct-20	Urea	300 kg/ha	Spread	Pre Plant
4-Nov-20	DAP	220 Kg/ha	In Furrow	At Plant
4-Nov-20	Worm Juice	10 L/ha	With Seed	Pre Plant
4-Nov-20	Cotton Starter	40 L/ha	With Seed	Pre Plant
20-Nov-20	Urea	100 kg/ha	Fertigation	V4
13-Dec-21	Worm Juice	5 L/ha	Foliar Spray	V7
13-Dec-21	TE8	3 L/ha	Foliar Spray	V7
13-Dec-21	MOP 25	250 ml/ha	Foliar Spray	V7
20-Dec-21	Urea	150 kg/ha	Fertigation	V8
15-Jan-21	Urea	250 kg/ha	Fertigation	V16

Crop Protection

Date	Product	Rate	Placement	Crop Stage
5-Nov-19	Dual Gold	1 L/ha	Foliar Spray	Post sow - Pre Emerg
5-Nov-19	Atrazine	2.5 Kg/ha	Foliar Spray	Post sow - Pre Emerg
5-Nov-19	Lorsban	1 L/ha	Foliar Spray	Post sow - Pre Emerg
3-Nov-20	Glyphosate	2.5 L/ha	Foliar Spray	Post sow - Pre Emerg
9-Jan-21	Altacor	70 g/ha	Foliar Spray	V14
9-Jan-21	Paramite	350 ml/ha	Foliar Spray	V14

Irrigation

3.5 Mega litres was applied between 4/11/20 and 20/1/21. The remaining 1.6 Mega litres was applied after 20/1/21. The water was applied in daily applications of 6.35 mm (1/4")

Fertigation

All trials received a standard input of nitrogen applied through the irrigation system. Any differences in N levels for this site were achieved with differential amount of prilled solid urea (46%).
Post sowing nitrogen (230 N) was applied via fertigation with applications on V4 (46N), V8 (69N), pre-tasselling (115 N) on 20 Nov, 20 Dec and 15 Jan

Kerang, Victoria

Paddock and Irrigation

GPS Location	-35.706588 143.812190	**Irrigation Type**	Border check
Sown	3-Nov-2020	**Frequency and Rate**	8 days 0.8Ml/ha
Hybrid	Pioneer 1756	**First Applied**	4-Nov-2020
Harvested	20-May-21	**Last Application**	17-March-21
Soil Type	SM grey clay	**Total Water applied**	11.6 ML/ha

Previous Crop	Grass pasture		

Crop Nutrition

Date	Product	Rate	Placement	Crop Stage
26-Oct-20	Superfect	650 kg/ha	Spread	Pre Plant
26-Oct-20	Gypsum	2.0 t/ha	Spread	Pre Plant
3-Nov-20	Urea	325 kg/ha	Pre-drilled	Pre-Plant
27-Dec-20	Urea	325 kg/ha	Spread	V8

Crop Protection

Date	Product	Rate	Placement	Crop Stage
3-Dec-20	Gesaprim	1.2 kg/ha	Foliar Spray	V2

	Date	Mega Litres/ha
Irrigation	4 November	1.6 Ml/ha
	23 November	0.7 Ml/ha
	4 December	0.8 Ml/ha
	16 December	0.8 Ml/ha
	27 December	0.8 Ml/ha
	5 January	0.8 Ml/ha
	12 January	0.8 Ml/ha
	20 January	0.8 Ml/ha
	28 January	0.8 Ml/ha
	8 February	0.7 Ml/ha
	16 February	0.8 Ml/ha
	24 February	0.8 Ml/ha
	5 March	0.7 Ml/ha
	17 March	0.7 Ml/ha
Total Irrigation		**11.6 Ml/ha**

Soil Test Reports – 2021 & 2020

Peechelba East, Victoria (0 – 30cm) – soil tested at sowing 2021 taken 13 October 2020

Nutrient		Result	
pH (water)		**5.80**	
pH (CaCl2)		**4.80**	
Sulphur	MCP	**0.00**	mg/kg
Chloride		**17.00**	mg/kg
Copper	DTPA	**1.10**	mg/kg
Zinc	DTPA	**2.50**	mg/kg
Manganese	DTPA	**54.00**	mg/kg
Iron	DTPA	**42.00**	mg/kg
Phosphorus	Colwell	**82.00**	mg/kg
Available Potassium	Amm-acet	**100.00**	mg/kg
Total Cation Exchange Capacity			
Potassium	Amm-acet	**0.26**	meq/100g

Calcium	Amm-acet	**1.80**	meq/100g
Magnesium	Amm-acet	**0.77**	meq/100g
Sodium	Amm-acet	**0.34**	meq/100g
Aluminium	KCL	**0.17**	meq/100g
CEC		**3.32**	meq/100g
Organic Carbon		**0.68**	%
Sodium % of cations		**10.00**	%
Aluminium saturation		**5.20**	%
EC		**0.08**	dS/m
Ca:Mg Ratio		**2.30**	

Deep Soil N test (2020/21)			
Depth	**0-30 cm**	**30-60 cm**	**Total (0 – 60cm)**
mg/kg N	12.60	16.0	
kg/ha N	**49**	**62**	**111**

Peechelba East 2020 Soil Test Results (from same paddock)

Analyte	Units	Result	Optimal Range	Status
pH (H_2O)	(pH)	6.599	6 - 7	Slightly Acidic
pH ($CaCl_2$)	(pH)	5.716	5.4 - 6.5	Slightly Acidic
EC*	dS/m	0.067	0 - 0.15	Satisfactory
Lime requirement	t/ha			
ESI	units	0.011	value >0.05	Low
Total Carbon*	%	1		
Total Nitrogen	%	0.113		
Carbon: Nitrogen Ratio	(ratio)	8.92		
Organic Matter	%	1.5	3.25 - 5.2	Very Low
M3 PSR	(ratio)	0.17	0.06 - 0.23	Satisfactory
Mehlich Phosphorus	ppm	123.45	40 - 90	Very High
Potassium	ppm	114.85	195 - 320	Low
Sulphur	ppm	11.77	12 - 45	Low
Calcium	ppm	713.31	1300 - 2200	Low
Magnesium	ppm	196.71	165 - 330	Satisfactory
Sodium	ppm	88.13	16 - 63	Very High
Chloride	ppm	16.7	0 - 200	Satisfactory
Zinc	ppm	7.07	1.6 - 8	Satisfactory
Copper	ppm	2.02	2.5 - 10	Low
Boron	ppm	0.52	1.7 - 4	Very Low
Manganese	ppm	164.11	18 - 70	Very High

Iron	ppm	92.41	30 - 200	Satisfactory
CECe	meq/100g	7.1		
Calcium	meq/100g	3.6 (50.7%CEC)	6.5 - 11.0	Low
Potassium	meq/100g	0.3 (4.2%CEC)	0.5 - 0.8	Low
Magnesium	meq/100g	1.6 (22.5%CEC)	1.4 - 2.7	Satisfactory
Sodium	meq/100g	0.4 (5.6%CEC)	0.1 - 0.3	High
Base Saturation	%	83	80 - 87	Satisfactory
Exchangeable Acidity	meq/100g	1.2 (17.0%CEC)	13 - 20 %CEC	Satisfactory
Aluminium Saturation	%			
Ca:Mg Ratio	(ratio)	2.25	3 - 5	Low
K:Mg Ratio	(ratio)	0.187	0.3 - 0.5	Low

Kerang, Victoria 2021

Analyte	Units	Result	Optimal Range	Status
pH (H_2O)	(pH)	7.5	6 - 7	Slightly Alkaline
pH ($CaCl_2$)	(pH)	6.7	5.4 - 6.5	Slightly Acidic
EC*	dS/m	0.221	0 - 0.15	Satisfactory
Total Nitrogen	ppm	16		
Nitrate N 0-30cm	ppm	10		
Nitrate N 30-60cm	ppm	7		
Ammonium N 0-30cm	ppm	5		
Ammoinium N 30-60cm	ppm	3		
Organic Matter	%	1.39	3.25 - 5.2	Very Low
Colwell Phosphorus	ppm	59	40 - 90	Satisfactory
Potassium	ppm	573	195 - 320	High
Sulphur	ppm	46.6	12 - 45	High
Zinc	ppm	1.38	1.6 - 8	Low
Copper	ppm	2.12	2.5 - 10	Low
Boron	ppm	2.39	1.7 - 4	Satisfactory
Manganese	ppm	13.341	18 - 70	Low
Iron	ppm	27.5	30 - 200	Low
CECe	meq/100g	7.1		
Calcium	meq/100g	15.26 (60.7%CEC)	6.5 - 11.0	High
Potassium	meq/100g	1.52 (6.1%CEC)	0.5 - 0.8	High
Magnesium	meq/100g	27.16 (28.5%CEC)	1.4 - 2.7	Satisfactory
Sodium	meq/100g	1.04 (4.3%CEC)	0.1 - 0.3	High
Aluminium	meq/100g	0.13 (0.5%CEC)	<5.0% CEC	Satisfactory
Ca:Mg Ratio	(ratio)	2.16	3 - 5	Low
K:Mg Ratio	(ratio)	0.21	0.3 - 0.5	Low

Site Photos

Kerang Harvest Processing – May 2021

Peechelba East, Victoria – 18 December 2020

Peechelba Field Day, Victoria – 29 January 2021

Kerang Field Day, Victoria -28 January 2021

Kerang harvest, Victoria – May 20 2021

Kerang surface irrigation, Victoria – December 2020