Optimising
Irrigated Grains

Maize Trial Update – January 2020

Project Overview

The project 'Development and validation of soil amelioration and agronomic practices to realise the genetic potential of grain crops grown under a high yield potential, irrigated environment in the northern and southern regions' aims to maximise the profitability of irrigated farming systems in the Murray and Murrumbidgee region, South East South Australia and Tasmania.

The sites focusing on maize were sown in November 2019 aim to develop and evaluate the effectiveness of novel soil management technologies and crop specific agronomic management practices on system profitability. Key focus areas for the research include:

Nutrition - To start with the research team are planning to focus on maize establishment nutrition. Nitrogen application rates will explore levels of applied N up to 500kg N/ha under flood and overhead irrigation systems as well N timing, looking at the influence of in crop nitrogen on crop performance.

Crop establishment- Research is looking at crop establishment plant population and row spacing. In further work at Kerang and Boort specialist research seeding equipment will be used to investigate the interaction between plant population and row width.

Stay green effects - to examine whether experimental new generation fungicides have any influence on green leaf retention in Australian maize crops under irrigation. The work which is purely experimental at this stage will look at whether irrigation allows these newer fungicides to express greater green leaf retention and disease control than older more established standards.

Trials established under ICC management

Griffith - Two trials have been established looking at Potassium Use Efficiency (PUE) and Fungicides.

Kerang - Five trials have been established looking at Nitrogen Use Efficiency, K (Potassium) Use Efficiency, N rates x timing x products, N rates x Pop'n x Row spacing and fungicides

Most of the sites were sown 30th October and N treatments applied on 1st November. They were then irrigated up 4th November.

Trial Update

Griffith Site

Crop Stage: Tasselling

Irrigation: Beds in bays, 7 day scheduling

Trial 1: Potassium Use Efficiency

Variable rates of potassium (0-80 kg K/ha) to supplement soil K supply. A majority of the treatments were applied at 6 leaf stage, with a split treatment being completed at 8/9 leaf.

Trial 2: Fungicides

Four fungicide treatments: Propiconazole, Pyraclostrobin and Prothoconazole and a combination of Pyraclostrobin and Prothioconazole.

Two fungicide timings: 8 leaf (22/11) or Tasselling (29/12)

Kerang Site

Crop Stage: 9/10 leaf

Irrigation: Bordercheck, based on SMM (approximately 7 day scheduling)

Irrigation Events

Date	**Ml/ha**
4-Nov	1.1
22-Nov	0.9
9-Dec	0.8
17-Dec	0.8
23-Dec	0.7
30-Dec	0.7

Trial 1: Potassium Use Efficiency

Variable rates of potassium (0-80 kg K/ha) to supplement soil K supply.

A majority of the treatments were applied at 7 leaf stage, with a split treatment to be applied shortly.

Trial 2: Fungicides

Four fungicide treatments: Propiconazole, Pyraclostrobin and Prothoconazole and a combination of Pyraclostrobin and Prothioconazole.

Two fungicide timings: 8 leaf or Tasselling, timing one applied on 17/12

Trial 3: Nitrogen Use Efficiency

Variable rates of N ranging from 0 to 560 kg N/ha split 50/50 sowing and 8 leaf (8 treatments). Topdressing completed 17/12

Trial 4: Nitrogen Product and Timing

Treatments

Timing	**Sowing**	**V2**	**V4**	**V6**
Treatment Number	Kg N/ha	Kg N/ha	Kg N/ha	Kg N/ha
1	0	0	0	0
2	300	0	0	0
3	200	0	0	100
4	100	100	100	0
5	100	0	100	100
6	100	66	66	66
7	200 (50/50 Entec 1 and urea)	0	0	100
8	200 (50/50 Entec 2 and urea)	0	0	100

Treatments applied at V2, V4 and V6 corresponded with irrigations on 22/11, 9/12, 23/12

Trial 4: Row Spacing x Population x N

Treatments

Treatments	**Spacing (“)**	**Pop'n (‘000/ha)**	**N Rate (kgN/ha)**
1	20	90	300
2	20	90	450
3	20	120	300
4	20	120	450
5	30	90	300
6	30	90	450
7	30	120	300
8	30	120	450

N split 50/50 sowing and 8 leaf. Topdressing completed 17/12