

# Nitrogen Response at Minnipa in 2009

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RESEARCH

**Best Practice**



**Location:**  
Minnipa Ag Centre

**Rainfall**  
Av. Annual: 325 mm  
Av. GSR: 242 mm  
2009 Total: 421 mm  
2009 GSR: 333 mm

**Yield**  
Potential: 5.2 t/ha (W)  
Actual: 4.6 t/ha (W)

**Paddock History**  
2008: Wheat  
2007: Wheat  
2006: Wheat

**Soil Type**  
Sandy loam

**Plot size**  
10 m x 45 m x 3 reps

**Yield Limiting Factors**  
Nitrogen deficiency

## Key message

- The airport paddock at MAC was starved for nitrogen in 2009.

## Why do the trial?

In late June, the airport paddock at MAC was starting to go a pale green, indicating nitrogen deficiency. The paddock has had a long history of cereal cropping with low protein levels being a characteristic of the grain harvested. The decision was made to measure the response to rates of top-dressed urea.

## How was it done?

The urea was broadcast using a snail bait spreader calibrated for delivering urea. The crop was past the tillering stage when the urea was applied on 7 July.

## What happened?

The plots were obvious from aerial photographs taken by John Heap with his model aircraft mounted camera in August. The nil plots were still quite pale and the heavier nitrogen rate plots were a darker green. Despite this, even the 100 kg/ha urea plots failed to be as visually green as other paddocks on the Minnipa Ag Centre.

Applying 25 kg/ha urea did not have any impact on grain yield compared to the plots with no urea. 50 kg/ha urea resulted in increased yield compared to the nil plots. 100 kg/ha urea resulted in the greatest increase in yield over the nil and an increase over 25 and 50 kg/ha of urea.

## What does this mean?

This season highlighted the importance of nitrogen in the farming system. Over the 2006-2008 period, lacking nitrogen was often a bonus to restrict crop growth and allow the crop to finish on minimal moisture.

The results of 2009 indicate that a base load of nitrogen through legume crops/pastures should be in the soil to help crops to yield well when the wet seasons do occur. Not many growers would be prepared to broadcast 100 kg/ha urea in low rainfall environments, given that the season could still come in hot and dry by the end and show no benefit for additional N.

Crops grown on the heavier soils on MAC possibly leached less nitrogen than the sandier airport paddock with the heavy rainfall in June, however those paddocks also had a strong medic pasture background which contributes to higher starting nitrogen levels.

The 100 kg/ha urea plots failed to raise protein levels above 8% which indicate that the plants were still lacking nitrogen, despite adding an increase in grain yield.

A break crop of field peas or medic pasture for the Airport paddock will help tidy up the increasing grass weed burden as well as add some extra nitrogen to the system.

## Acknowledgements

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Nutrition

Table 1 Grain yield and grain response to broadcast urea, Airport paddock 2009

Urea Rate (kg/ha)	Grain Yield (t/ha)	Protein (%)	Test weight (kg/hL)	Screenings (%)
0	2.11	8.6	80.4	0.6
25	2.35	8.4	80.4	0.7
50	2.86	8.2	80.7	0.8
100	3.75	8.2	79.8	0.6
LSD (P=0.05)	0.46	ns	ns	ns