

Practice for Profit Trial - Into Fallow

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Key messages

- Mid way through the fallow period nitrogen levels in the soil were around 200 kg/ha for the top 0-40cm of soil.
- Large quantities of soil nitrogen are likely to be a combination of unused soil N from 2012 crop and mineralisation during fallow period.
- No yield data was collected from this trial in 2013.

Aim

To examine the difference in profitability between low and high input cropping practices over an extended period of time.

Background

The Practice for Profit trial is for the third year in a row located on the Mills' property east of Dalwallinu and for the next 5 years we compare the following two scenarios;

Low input treatments based on a farmer producing grain at the lowest possible cost, regardless of seasonal conditions.

High input treatments simulate a paddock with high yield potential matched with increased inputs to maximise yields and profitability.

However, in 2013 the set rotation was not able to be planted because a timing mismatch between rain and trial contractors resulting in the soil being too dry for the small trial seeding machinery to negotiate. The whole site was thus fallowed in 2013. Not wanting to lose an opportunity, the Liebe Group continued to soil sample the site to determine just how much nitrogen is left over from the 2012 season.

Trial Details

Property	Wenballa Farm, east Dalwallinu
Plot size & replication	8.8m x 12m x 3 replications
Soil type	Loamy clay
Soil pH	0-10cm: 5.5 10-20cm: 7.3 20-40cm: 8.0
EC (dS/m)	0.107
Paddock rotation	2010: wheat, 2011 and 2012: as per protocol (Table 1)
Herbicides	20/08/13: 3 L/ha Glyphosate 27/05/13: 2L/ha SpraySeed + 1 L/ha Lorsban
Growing Season Rainfall	180mm

Trial Layout

Table 1: Practice for Profit trial, rotation plan.

Treatment	2011	2012	2013	2014	2015	Input Level
1	Field Peas	Wheat	Fallow	Field Peas	Wheat	Low
2	Field Peas	Wheat	Fallow	Field Peas	Wheat	High
3	Wheat	Wheat	Fallow	Wheat	Wheat	Low
4	Wheat	Wheat	Fallow	Wheat	Wheat	High
5	Volunteer Pasture (Spraytopped)	Wheat	Fallow	Volunteer Pasture (Spraytopped)	Wheat	Low
6	Volunteer Pasture (Spraytopped)	Wheat	Fallow	Volunteer Pasture (Spraytopped)	Wheat	High
7	Canola	Wheat	Fallow	Canola	Wheat	Low
8	Canola	Wheat	Fallow	Canola	Wheat	High

Table 2: 2012 Practice for Profit treatments.

Treatment	Variety	Input	Sowing rate (kg/ha)	Gusto Gold banded (kg/ha)	Urea TD 6WA-S (kg/ha)	2011 Rotation
1	Mace	Low	30	Nil	45	Wheat low
2	Mace	High	80	75	90	Wheat high
3	Mace	Low	30	0	45	Canola
4	Mace	High	80	75	90	Canola
5	Mace	Low	30	0	45	Vol Pasture
6	Mace	High	80	75	90	Vol Pasture
7	Mace	Low	30	0	45	Field Peas
8	Mace	High	80	75	90	Field Peas

Results

The soil was sampled midway through the fallow period (July 2013) and found high levels of nitrogen in the soil. Ammonium nitrogen in the top soil ranged from 7 to 20 mg/ha although the levels did not vary significantly between treatments. Nitrate nitrogen ranged from 50 to 90 mg/kg. Figure 1 shows high fertiliser input in 2012 has resulted in higher nitrates in the top soil 12 months later.

The amount of soil nitrogen (ammonium and nitrate combined) in the 0-40cm depth of soil (Table 3) is over 200 kg/ha for high input rotations which is sufficient nitrogen for a 3 t/ha wheat crop (CSBP NULogic® recommendation).

Table 3: Nitrogen in top 0-40cm of soil for Practice for Profit trial, east Dalwallinu.

	Starting Soil N March 2012 (kg/ha)	N Applied in Fert 2012 (kg/ha)	2012 wheat yield (t/ha)	N left in soil July 2013 (kg/ha)
Low input Wheat/Wheat rotation	37	21	1	118
High input Wheat/wheat rotation	41	49	1	203
Low input wheat/canola rotation	39	21	1.2	169
High input wheat/canola rotation	61	49	1.2	212

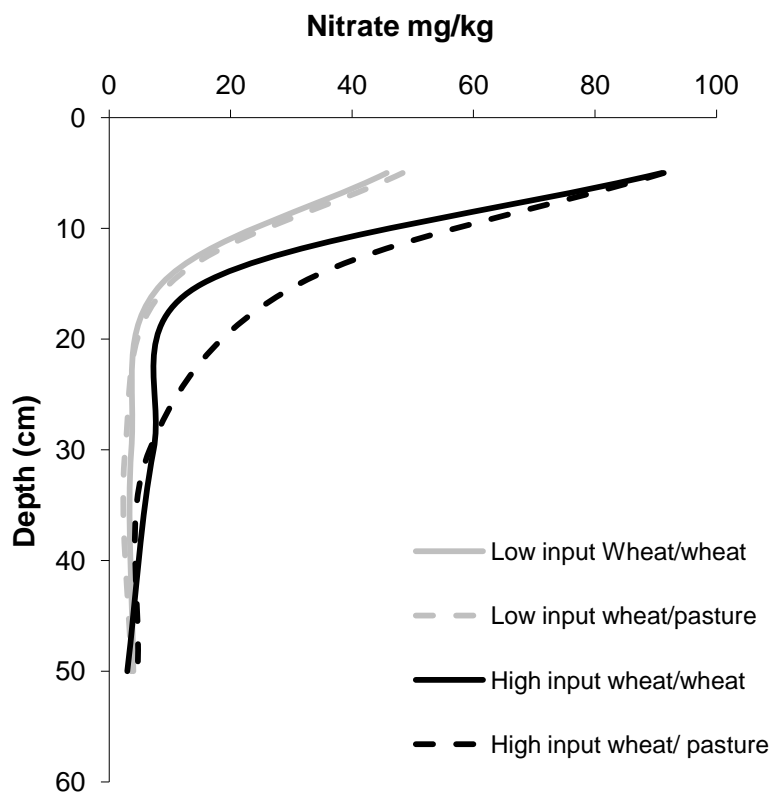


Figure 1: Soil nitrate nitrogen (mg/kg) as of July 2013 under different crop rotations and fertiliser inputs, east of Dalwallinu.

Comments

The fallow had a very low weed burden and low amounts of stubble cover over the 2013 season. It is unclear if the high quantities of soil nitrogen are left over from the previous season's low yielding crop or mineralisation during fallow period. Either way, this has contributed to a large nitrogen pool that the future crop can take advantage of.

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