

BLACK UREA V WHITE UREA

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AIM

To look at the potential of black urea in terms of lifting yields through better nitrogen efficiency.

BACKGROUND

Black urea is normal chemical urea coated with humic acid. This humic acid coating aims to reduce much of the nitrogen losses that occurs from application to plant uptake. 'Advanced Nutrients', who developed the product, claim the coating helps by holding the nitrogen content of the urea in place, potentially reducing losses through ammonium volatilisation, nitrate leaching and biological denitrification. The coating also potentially stimulates biological activity in the soil, allowing the urea nitrogen to be converted to ammonia and nitrate (plant available nitrogen forms) more quickly and efficiently, hence accelerating the uptake process. Once the plant has acquired the nitrogen, the coating, being an energy source may increase plant conversion of nitrogen to amino acids. Pot trials using black urea have so far been very successful. This experiment aims to test the effectiveness of black urea against that of conventional white urea in a field demonstration.

The demonstration was designed to test different rates of the two types of fertilizer against a control of no (additional) fertilizer. Advanced nutrients recommended rate for black urea is of 75% of what would normally be applied of white urea at. So consequently the two rates used were 75 kg/ha and 100 kg/ha and this then allows a direct comparison to be made between the two products and the two rates.

TRIAL DETAILS

Property	Anton Wilson, west Buntine
Plot size & replication	150m x 18m x 3 replications
Soil type	Sandy Loam
Sowing date	20/6/07
Seeding rate	80 kg/ha Stirling barley
Fertiliser (kg/ha)	20/6/07: 80 kg/ha AgFlow (75%) + AgNP (25%)
Paddock rotation	2005 = Wheat; 2006 = Lupins
Herbicides	20/6/07: 1.2 L/ha Trifluralin 20/9/07: 800 mL/ha MCPA LVE
Growing Season Rainfall	130mm

RESULTS

Table 1: Yield and grade of barley sown at Buntine.

Variety	Yield (t/ha)	Gross Return (\$/ha)	Variable Costs (\$/ha)	Gross Margin (\$/ha)
Black Urea 100 kg/ha	1.27a	387.35	207.52	179.83
Control (No Urea)	1.21b	369.05	134.52	234.53
White Urea 75 kg/ha	1.20b	366.00	175.92	190.08
Black Urea 75 kg/ha	1.15c	350.75	189.72	161.03
White Urea 100 kg/ha	1.15c	350.75	189.72	161.03
LSD (P=0.05)	0.04			

Means follow by same letter do not significantly differ

Based on Feed Barley price of \$305/t on the 27/12/07. Variable costs based on the Farm Budget Guide 2008 – *Farm Weekly*.

COMMENTS

Table 1 showed there was no benefit in applying black urea at 75 kg/ha or white urea at 75 or 100 kg/ha over the control. There was a small yield benefit over the control when black urea was applied at 100 kg/ha (Table 1). The dry season severely affected the outcome of this trial and plant demand never outstripped soil supply so there was little demand for applied nitrogen, Hence the highest gross margin was achieved for the control of nil urea (Table 1). The dry finish (34mm in August, September & October) was further detrimental to accurately achieving the aim of this project to assess the effectiveness of black urea as an alternative to conventional white urea. Further testing of this product is required in a better season.

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