

ECONOMIC EVALUATION OF NITROGEN FERTILISER ON OATS

Peter D Handson and **Nick Layne**

Victorian College of Agriculture and Horticulture, Dookie Campus, Dookie College, Victoria

Oats, for either hay or grain production, provide a reliable rotation crop between cereals or as a fallow crop option. The benefits include, reliable yields, tolerance to root rot and acid soils and providing a break crop if grass free. Unfortunately, the potential of this crop is often not achieved because of low nutrient inputs. Many growers in this region sow oats with low rates of double super phosphate or DAP or MAP and seldom apply urea to the crop. Consequently yields are often limited by lack of nitrogen.

METHODS

In 1993 top-dressing trials were established in two oat crops on the college farm was applied at the 4 to 6 leaf stage, as urea, at 5 rates 0, 30, 60, 90 and 120 kg N/ha with 3 replicates giving 15, 2.5 by 30 m plots in each trial. Dry matter cuts were taken at flowering and grain yields were measured at harvest. In 1995 five demonstration trials were established to provide realistic gross margin data and to act as a demonstration site for local growers. Five paddocks, were selected on the VCAH farm at Dookie. Each paddock was divided into four equal blocks and sown to oats. Two sections were sown with 100 kg/ha DAP, equivalent to 20 kg P/ha and 18 kg N/ha., the other two sections were sown with the same rate of DAP plus 100 kg urea/ha pre-drilled giving 20 kg P/ha and 64 kg N/ha. Apart from the different rate of N all blocks were managed similarly. A top-dressing trial, identical to the 1993 trials, was established in all blocks at the 4 to 6 leaf stage. Dry matter at flowering and grain yield and protein at harvest, will be measured Two paddocks will be cut for hay and 3 harvested for grain to provide a gross margin comparison of the two sowing treatments for hay and grain production.

RESULTS AND DISCUSSION

Results from the 1993 trials showed significant ($p < 0.05$) increases in dry matter and grain yield with increasing N applied, in both trials (Table 1). The optimum treatment was 60 kg N/ha which increased hay production by about 2 t/ah and grain yields by 1 t/ha., indicating the potential benefit of high N inputs for oats.

Table 1. Yield response of oats to top-dressed N at two trials in 1993

N Applied (kg N/ha)	Trial 1 Yield DM	Trial 2 Yield DM
0	3.5 5.5	2.1 6.7
30	4.2 6.7	2.7 7.9
60	4.8 7.9	3.1 8.3
90	5.3 9.5	3.3 8.6
120	5.8 10.9	3.1 9.7

Results from the 1995 trials were not available at the time of writing, but will be presented at the conference. There are strong visual and dry matter responses to both pre-sowing and top-dressed N in all paddocks irrespective of history or soil type. Given the experience in 1993 and the good season this year, yield and gross margin increases can be expected from all trials.

CONCLUSION

Preliminary data indicates the potential economic benefits in terms of dry matter and grain yield increases from applying nitrogen fertiliser at rates up to 120 kg N/ha to oat crops in this region. Visual responses in all trials this year are dramatic and should provide similar or even greater responses than those obtained in 1993.

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