

Twin N on Winter Wheat

**ADAS Rosemaund
Preston Wynne
Herefordshire
England
2008**

OBJECTIVE

To investigate the effectiveness of the microbial product TwinN at supplying nitrogen to a crop of winter wheat, by comparing treatments to a range of mineral fertiliser rates demonstrating a nitrogen response, and measuring harvest.

“ MATERIALS & METHODS

“ Site Details

“ The experiment was done at an ADAS off-site field station in Breinton, Herefordshire, England in a typical argillic brown earth of the Bromyard series; a well drained reddish fine silty clay loam soil over silty shale and soft siltstone.

“ Experimental design

“ The experiment was a fully randomised complete block design, with 11 treatments, including an untreated control, and replicated four times (44 plots in total). A discard plot was sown in between each experimental plot to prevent the scavenging of nitrogen from adjacent plots. The trial was sown on 28th September 2007 at a seed rate of 275 seeds/m² using 2m x 24m plots of cv. Ambrosia, a soft milling Group 4 high yielding feed wheat, suited to growing as a second wheat and in late seasons. The soil mineral nitrogen level for the trial area measured in February was 79 kgN/ha and the crop was measured to contain a further 30 kgN/ha.

SUMMARY

- “ A field experiment was run by ADAS Rosemaund, Herefordshire, England in 2008 to investigate the effectiveness of the microbial product TwinN, at supplying nitrogen to a crop of winter wheat. TwinN claims to increase populations of nitrogen fixing organisms both in the soil and within the plant, enabling the provision of part of the nitrogen requirement normally provided by mineral nitrogen fertiliser. TwinN was tested alongside a range of fertiliser nitrogen rates used to demonstrate the nitrogen response for the crop at this site. Treatment effects were assessed by measuring crop yield and grain nitrogen content at harvest.
- “ The experiment demonstrated an excellent nitrogen response curve with the mineral nitrogen fertiliser, and was ideal for analysing the effectiveness of TwinN. The optimum nitrogen dressing was about 200kgN/ha giving a yield of 9t/ha of the feed wheat, cv. Ambrosia, measuring a grain nitrogen content of 1.8% (10.3% protein).
- “ Two applications of TwinN gave a statistically significant ($P=0.05$) yield response over and above an application of 100kgN/ha, as mineral nitrogen fertiliser.

“ **Harvest**

“ The trial was harvested on 28th August 2008 using a specialised plot combine harvester. Yield, grain moisture, and grain nitrogen content were recorded for each plot. Yields were calculated as tonnes per hectare (t/ha) adjusted to the trials standard of 15% moisture (85% dry matter), and compared to the untreated control.

“ **Statistical Analysis**

“ All data was analysed using randomised block analysis of variance (ANOVA) and treatments means were compared using the least significant difference (LSD) at a probability of 5% ($P = 0.05$); referred to as the 95% level of confidence. Also, a selection of treatments were analysed using a factorial design to strengthen comparisons between TwinN and fertiliser N strategies.

ADAS UK Wheat Trial 2008

