

Effect of split nitrogen application on yield and protein content of wheat in northern New South Wales

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Recent experiments in northern NSW have revealed large and increasing responses to nitrogen fertilizer applied at or before seeding (1). This paper reports an experiment done to compare the effect on grain yield and protein content of wheat of split nitrogen application and nitrogen applied at seeding.

Methods

An experiment was sown on 27 June, 1988 on a black earth soil near Gunnedah (northern NSW) which was known to be deficient in nitrogen. Nitrogen was applied at rates of 0 - 108 kg N/ha, either as urea drilled between the rows at seeding, and or as a 24% (w/w) urea solution with a wetting agent at tillering and or at booting.

Results and discussion

The effects of various combinations of applications of 40 kg N/ha are shown in Fig 1. Grain yield increased linearly over the range 0, 20, 40 kg N/ha, applied at seeding, with maximum yield at the highest rate of 106 kg N/ha. Grain protein level was lower at 20 than at 0 or 40 kg N/ha. There was an increase in both yield and protein where nitrogen was applied after seeding [(a) c/f (f) and (g)], [(b) c/f (d) and (e)]. However, the increases were less than those given when all the nitrogen was applied at seeding (c). The later the nitrogen was applied, the lower was the yield, but the higher the grain protein level [(c) c/f (d),(e),(f) and (g)].

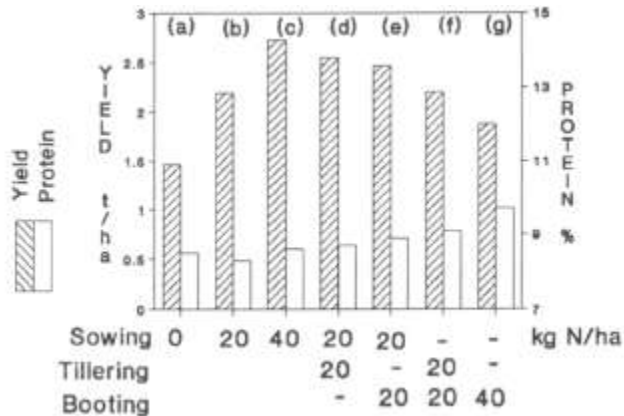


Figure 1 Effect of split nitrogen application on grain yield and protein

Results were consistent with those of a similar experiment conducted in 1987. These experiments indicate that although a yield and protein benefit can be obtained from post seeding nitrogen application in the region, yields will be lower than if the equivalent amount of nitrogen had been applied at seeding.

1. Doyle, A.D., and Holford, I.C.R. (1987). Proc 4th Australian Agronomy Conf. Melbourne. p. 242.