



IMPROVING NITROGEN USE EFFICIENCY

Application timing

- Delayed application of N can result in significant yield losses which can have negative effect on nitrogen use efficiency (Figure 1)
- 25 l/ha of Poly N Plus (8.75 kg N/ha) produced the same yield as 50 kg/ha of soil applied N in April, early May or late May
- If it had rained soon after fertiliser application, the 50 kg/ha of soil applied N could have better nitrogen use efficiency and yield
- In dry conditions 25 l/ha of Poly N Plus can substitute 50 kg/ha of soil applied N fertiliser. But it can be dependent on the weather, crop canopy size at the time of application, and rainfall and sunlight levels in May-June (Figure 2)
- In a three-split fertiliser programme, nitrogen use efficiency will be different
- The aim should be to apply 75% of total N by early April (GS31-32)

Nitrogen rate

- The optimum/appropriate N rate for achieving optimum yield was between 150-175 kg/ha (average across a three-year trials programme at NIAB Hampshire) (Figure 3)
- There was a significant effect of year on yield and protein (Figure 4)
- In 2019, the N-rate between 150 and 175 kg/ha was sufficient to produce 13% protein
- In 2020 and 2021, at the highest N-rate (300 kg/ha) N was not enough to produce 13% protein

Figure 1. Effect of application timing on grain yield of winter wheat (Crusoe). Total N: 50 kg/ha. 25 l/ha Poly N Plus = 8.75 kg N/ha

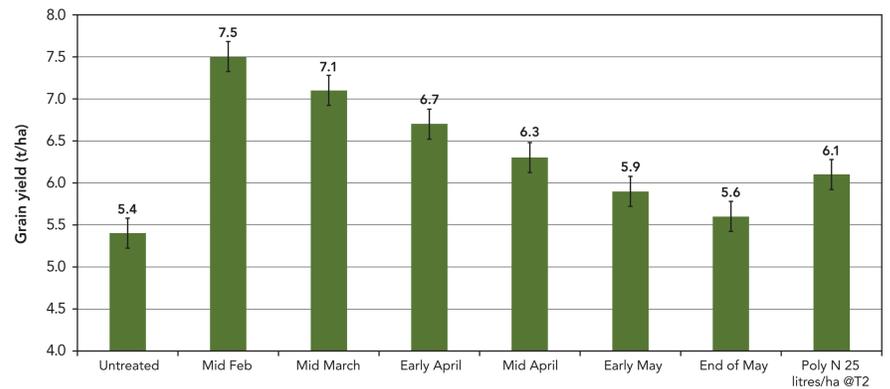


Figure 2. Effect of timing on nitrogen use efficiency. Total N: 50 kg/ha. 25 l/ha Poly N Plus = 8.75 kg N/ha

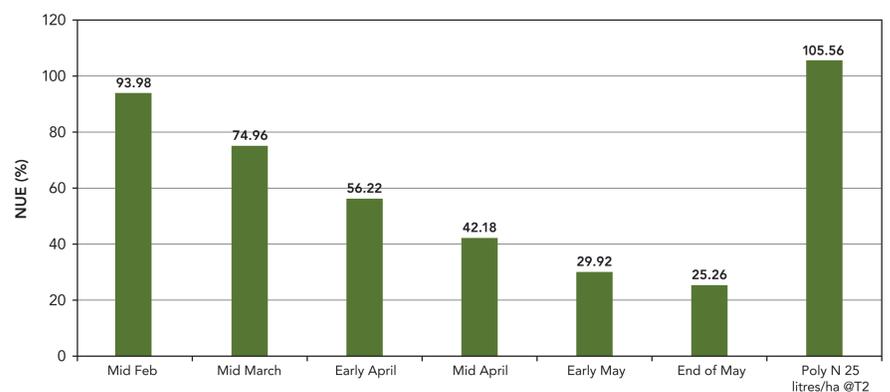


Figure 3. Effect of N-rate on grain yield of winter wheat (NIAB Hampshire)

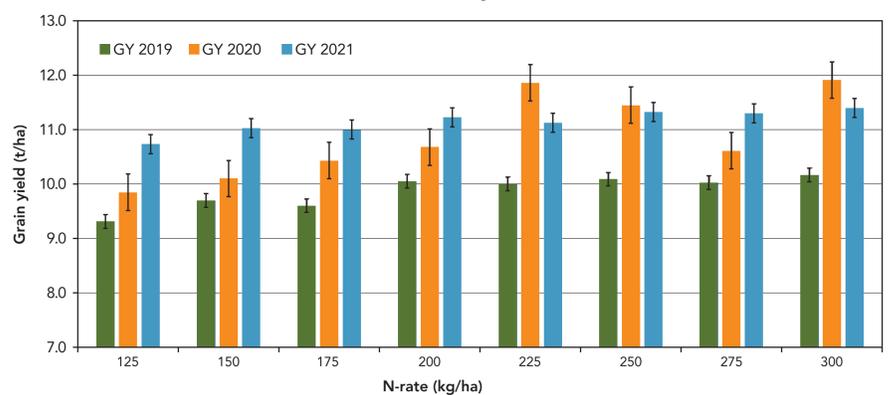
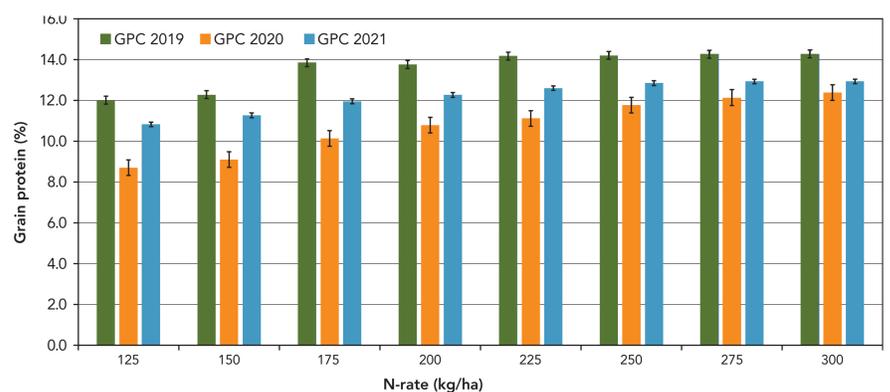


Figure 4. Effect of N-rate on grain protein content (%) (NIAB Hampshire)



NIAB TAG Membership

This is just one example of the research information, tools and advice delivered alongside NIAB TAG's extensive and exclusive member-funded field trials programme, supplying impartial cost-effective crop production strategies specifically for our members.