

TAP Foliar N Trial – Year Two Results

Project aim

In 2018, The Aquifer Partnership began working with Agrovital, Bodle Bros and BD Harris Farm Trust to trial the use of foliar-applied nitrogen (N) through a product called Efficie-N-t 28. The aim is to test whether a foliar-applied N product can;

- 1) Improve nitrogen use efficiency
- 2) Reduce nitrate leaching through the soil profile
- 3) Be financially viable for the farm

Location of trial plots

A field near Truleigh Hill, north of Shoreham, was selected and Bassett grade 3 milling wheat was grown under four fertiliser programmes.

Monitoring

The crop has been monitored using:

- Spring and autumn Soil Mineral Nitrogen (SMN) sampling
- Yield and grain quality
- Crop tissue testing
- Aerial photography
- Porous pots (over the winter of 2020/21)



The crop was harvested on 2nd August 2020. The results of year two of the trial are presented below.

Summary of results (columns ordered by total N applied):

Plot number	Plot 3	Plot 4 (control)	Plot 1	Plot 2
Type of application	3 granular	3 granular; 1 foliar	2 granular; 2 foliar	2 granular; 2 foliar
Total N applied (kg N/ha)	205	168.88	146.75	132.75
Total N applied as Efficie-N-t 28 (Kg N/ha)	0	7	28	14
Yield (t/ha)	10.5	10.55	10	10.3
Milling protein achieved?	Yes	No	No	No
Gross margin incl fert costs (£/ha)*	£1,535	£1,485.76	£1,344.04	£1,457.02
Nitrogen Use Efficiency (NUE)**	51.23	62.47	68.14	77.59
Post-harvest Soil Mineral Nitrogen (SMN) (Kg available N/ha)	38.5	61.3	42.9	60

*Value of grain – cost of inputs. Adjusted for number of field operations required for fertiliser

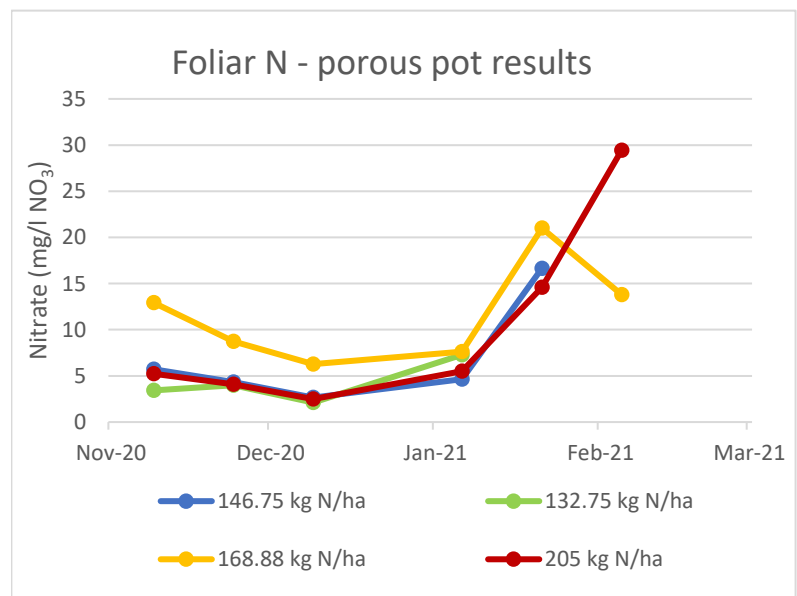
**NUE = Kg grain/ha divided by kg N applied/ha

Detail of treatments on plots (granular in green, foliar in red):

Plot 1	Plot 2	Plot 3	Plot 4 (control):
Two application of granular fertiliser followed by two applications of foliar N Total N: 146.75 kg N/ha of which 28kgN/ha as E28	Two applications of granular fertiliser followed by two applications of foliar N** Total N: 132.75 kg N/ha of which 14kgN/ha as E28	100% granular N in three applications to mirror common practice Total N: 205 kg N/ha of which all granular	Standard practice on the farm Total N: 168.88 kg N/ha of which 7kgN/ha as E28
4/3/20: 32.5Kg N + S (ASN)	4/3/20: 32.5kg N + S (ASN)	4/3/20: 32.5Kg N + S (ASN)	4/3/20: 32.5Kg N + S (ASN)
15/4/20: 86.25 Kg N (Nitram)	15/4/20: 86.25 Kg N (Nitram)	15/4/20: 86.25 Kg N (Nitram)	15/4/20: 86.25 Kg N (Nitram)
		19/5/20: 86.25 Kg N (Nitram)	19/5/20: 43.13 Kg N (Nitram)
25/5/20: 14Kg N (40L Efficient 28) (T2)	25/5/20: 7Kg N (20L Efficient 28) (T2)		25/5/20: 7Kg N (20L Efficient 28) (T2)
9/6/20: 14Kg N (40L Efficient 28) (T3)	9/6/20: 7Kg N (20L Efficient 28) (T3)		

Key messages and next steps

- 1) Nitrogen use efficiency NUE is highest on plots receiving increased foliar N applications.
- 2) Nitrate leaching SMN results show highest residual N in the plots receiving E28. Porous pot results (graph to the right) show that N leaching was highest where autumn SMN was highest, but no clear correlation in the other plots.
- 3) Financial review The plot receiving 100% granular fertiliser had the highest gross margin in 2020.



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