

Brighton ChaMP Nitrogen Reduction Trial

Project Aim:

In 2018, the Brighton ChaMP team began working with S. Woodley Crop Services and Bevendean Farm to understand and measure the impact of reduced nitrogen application on;

- 1) Nitrogen use efficiency
- 2) Nitrate leaching through the soil profile
- 3) Financial viability for the farm.

Location of trial plots

A field near Woodingdean was selected and a crop of grade 1 milling wheat was grown under five fertiliser programmes.



Monitoring

The crop has been monitored using:

- Spring and autumn SMN sampling
- Yield and grain quality
- Crop tissue testing
- Aerial photography
- Localised weather station
- Porous pots (underway – results available spring 2020)

The crop was harvested on 11th August and the first set of results are now in!

Results:

Plot number	1	2	3	4	5
Treatment (% reduction N)	0% (control)	5%	10%	15%	20%
Total N applied (kg N/ha)	206	196	185	175	164
Nitrogen use efficiency*	53.39	56.12	53.51	62.29	62.80
Yield (t/ha)	11	11	9.9	10.9	10.3
13% Milling protein achieved?	N	N	N	N	N
Gross margin incl fert costs (£/ha)	£1,512	£1,519	£1,361	£1,518	£1,435
Difference between spring & autumn SMN results (kg available N/ha)	14.5	4.1	-0.4	22.1	7.1

*Nitrogen use efficiency = kg grain/ha divided by kg N applied/ha

Key messages and next steps:

- 1) **Nitrogen use efficiency (NUE)** was higher on plot 2, 3 and 5 receiving 5%, 10% and 20% reductions in N applications
- 2) **Nitrate leaching** potential measured by the difference between spring and autumn SMN was generally lower with reduced N applications with the exception of the 15% reduction plot. Porous pot monitoring is underway to measure nitrate leaching from these plots this winter.
- 3) **Yield** differences were negligible except for plot 3 (10% reduction) which resulted in a yield reduction of 1 t/ha. **Gross margins** were similar for control, 5% and 15% reduction plots but lower for 15% and 20% reduction plots.

The trials will continue for an additional two years.

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