

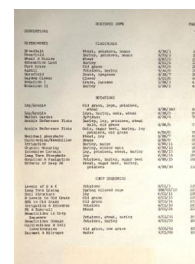
Thank you for using eradoc, a platform to publish electronic copies of the Rothamsted Documents. Your requested document has been scanned from original documents. If you find this document is not readable, or you suspect there are some problems, please let us know and we will correct that.



ROTHAMSTED
RESEARCH

Yields of the Field Experiments 1976

[Full Table of Content](#)



76/R/WW/2 and 76/W/WW/2 Aqueous N and Nitrification Inhibitors - W. Wheat

Rothamsted Research

Rothamsted Research (1977) *76/R/WW/2 and 76/W/WW/2 Aqueous N and Nitrification Inhibitors - W. Wheat* ; Yields Of The Field Experiments 1976, pp 256 - 259 - DOI:

<https://doi.org/10.23637/ERADOC-1-15>

76/R/WW/2 and 76/W/WW/2

WINTER WHEAT

AQUEOUS N AND NITRIFICATION INHIBITORS

Object: To study the effects of adding a range of nitrification inhibitors to aqueous urea and aqueous ammonia on the yield and nitrogen uptake of winter wheat - Rothamsted (R), Gt. Knott III and Woburn (W) Horsepool.

Sponsors: F.V. Widdowson, J. Ashworth, A. Penny, G.G. Briggs.

Design: 2 randomised blocks of 24 plots.

Whole plot dimensions: 2.44 x 12.2.

Treatments: All combinations of:-

1. N FORM Form of aqueous nitrogen:

AMMONIA	Aqueous ammonia 26% N
UREA	Aqueous urea 18% N

2. N RATE Rate of nitrogen (kg N):

(R)	(W)	(R)	(W)
70	60	70	60
100	90	100	90

3. NIT INHB Nitrification inhibitors added to aqueous fertiliser:

NONE	None
CS2	Carbon disulphide at 11 kg
NITRAPYR	Nitrapyrin ('N-Serve') at 1.25 kg
AMM TRI	Ammonium trithiocarbonate at 16 kg

plus eight extra treatments given solid fertiliser, 'Nitro-Chalk', (kg N):-

NITRO CH

0	0
50	50 (Woburn only)
60	60
70	70
80	80
90	90
100	100
110	110
120	120 (Rothamsted only)

NOTE: Aqueous nitrogen was applied by injectors spaced 30 cm apart 10.2 cm deep.

76/R/WW/2 and 76/W/WW/2

Basal applications:-

Gt Knott III (R): Manures: (0:20:20) at 310 kg, combine drilled.
Weedkillers: Paraquat at 0.42 kg ion in 220 l. Ioxynil at 0.53 kg plus mecoprop at 1.6 kg in 220 l. Growth regulator: Chlormequat at 1.7 kg in 220 l.

Horsepool (W): Manures: (0:20:20) at 250 kg, combine drilled.
Weedkillers: Ioxynil at 0.63 kg plus mecoprop at 1.9 kg in 280 l.
Growth regulator: Chlormequat at 1.7 kg in 280 l.

Seed: Gt Knott III (R): Maris Huntsman, sown at 200 kg.

Horsepool (W): Maris Huntsman, sown at 190 kg.

Cultivations, etc.:-

Gt Knott (R): Heavy spring-tine cultivated: 25 Sept, 1975. Paraquat applied: 6 Oct. Ploughed, rotary cultivated: 13 Oct. Seed sown: 14 Oct. Aqueous urea injected: 8 Mar, 1976. Aqueous ammonia injected: 9 Mar. Solid N treatments applied: 14 Apr. Ioxynil plus mecoprop applied: 22 Apr. Chlormequat applied: 7 May. Combine harvested: 22 July. Previous crops: Barley 1974, winter oats 1975.

Horsepool (W): Heavy spring-tine cultivated twice: 30, 31 Aug, 1975. Spring-tine cultivated: 3 Oct. Seed sown: 4 Oct. Aqueous urea and ammonia injected: 10 Mar, 1976. Solid N treatments applied: 13 Apr. Weedkiller applied: 21 Apr. Chlormequat applied: 4 May. Combine harvested: 23 July. Previous crops: Winter wheat 1974, beans 1975.

- NOTES: (1) Soil samples were taken during the growing season to estimate rates of nitrification.
- (2) Horsepool (W) after harvest the grain from one plot:- NITRO CH 70 was spilt, an estimated value was used in the analysis.

76/R/WW/2 GREAT KNOTT III (R)

GRAIN TONNES/HECTARE

***** TABLES OF MEANS *****

N RATE	70	100	MEAN						
N FORM									
AMMONIA	4.78	5.08	4.93						
UREA	4.99	5.27	5.13						
MEAN	4.89	5.18	5.03						
NIT INHB	NONE	CS2	NITRAPYR	AMM TRI	MEAN				
N FORM									
AMMONIA	4.92	4.93	4.99	4.88	4.93				
UREA	5.06	5.06	5.02	5.39	5.13				
MEAN	4.99	5.00	5.00	5.14	5.03				
NIT INHB	NONE	CS2	NITRAPYR	AMM TRI	MEAN				
N RATE									
70	4.92	4.87	4.78	4.98	4.89				
100	5.06	5.12	5.23	5.30	5.18				
MEAN	4.99	5.00	5.00	5.14	5.03				
N FORM	NIT INHB	NONE	CS2	NITRAPYR	AMM TRI				
AMMONIA	N RATE								
	70	4.80	4.83	4.78	4.72				
	100	5.04	5.03	5.21	5.04				
UREA	70	5.05	4.91	4.78	5.23				
	100	5.07	5.21	5.25	5.55				
NITRO CH	0	60	70	80	90	100	110	120	MEAN
	3.30	4.47	4.65	5.02	4.93	5.11	5.30	5.18	4.74

GRAND MEAN 4.94

***** STANDARD ERRORS OF DIFFERENCES OF MEANS *****

TABLE	NITRO CH	N FORM	N RATE	NIT INHB
-----	-----	-----	-----	-----
SD	0.197	0.070	0.070	0.099
TABLE	N FORM	N FORM	N RATE	N FORM
	N RATE	NIT INHB	NIT INHB	N RATE
				NIT INHB
-----	-----	-----	-----	-----
SD	0.099	0.139	0.139	0.197

***** STRATUM STANDARD ERRORS AND COEFFICIENTS OF VARIATION *****

STRATUM	DF	SE	CV%
BLOCK.WP	23	0.197	4.0
GRAIN MEAN DM%	85.4		
PLOT AREA HARVESTED	0.00186		

76/W/WW/2 HORSEPOOL (W)

GRAIN TONNES/HECTARE

***** TABLES OF MEANS *****

N RATE	60	90	MEAN						
N FORM									
AMMONIA	3.90	3.86	3.88						
UREA	4.15	3.97	4.06						
MEAN	4.02	3.91	3.97						
NIT INHB	NONE	CS2	NITRAPYR	AMM TRI	MEAN				
N FORM									
AMMONIA	3.81	3.84	4.06	3.79	3.88				
UREA	3.99	3.97	3.94	4.35	4.06				
MEAN	3.90	3.90	4.00	4.07	3.97				
NIT INHB	NONE	CS2	NITRAPYR	AMM TRI	MEAN				
N RATE									
60	3.98	3.95	3.98	4.19	4.02				
90	3.82	3.86	4.02	3.95	3.91				
MEAN	3.90	3.90	4.00	4.07	3.97				
N FORM	NIT INHB	NONE	CS2	NITRAPYR	AMM TRI				
AMMONIA	N RATE								
	60	3.64	3.84	4.06	4.05				
	90	3.99	3.84	4.06	3.53				
UREA	60	4.32	4.05	3.90	4.33				
	90	3.66	3.88	3.99	4.37				
NITRO CH	0	50	60	70	80	90	100	110	MEAN
	3.63	3.88	3.92	4.66	3.81	3.92	4.12	4.40	4.04

GRAND MEAN 3.99

***** STANDARD ERRORS OF DIFFERENCES OF MEANS *****

TABLE	NITRO CH	N FORM	N RATE	NIT INHB
SED	0.340	0.120	0.120	0.170
TABLE	N FORM N RATE	N FORM NIT INHB	N RATE NIT INHB	N FORM N RATE NIT INHB
SED	0.170	0.240	0.240	0.340

***** STRATUM STANDARD ERRORS AND COEFFICIENTS OF VARIATION *****

STRATUM	DF	SE	CV%
BLOCK.WP	22	0.340	8.5
GRAIN MEAN DM%	84.7		
PLOT AREA HARVESTED	0.00136		