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# Rothamsted Experimental Station Report for 1980 Part 2



[Full Table of Content](#)

## Use of Fertilisers in England and Wales, 1980

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## Use of Fertilisers in England and Wales, 1980

B. M. CHURCH

Continuing the series of surveys done by staff of the ADAS Regional Soil Scientists in collaboration with representatives of the Fertiliser Manufacturers' Association and with Rothamsted (Church & Lewis, 1977), a sample of 1342 farms in England and Wales was surveyed during 1980. Comparative estimates of average fertiliser use per ha on tillage crops and grassland for the last 3 years are shown in Table 1.

Because of a change in the population sampled in 1980, and to improve comparability with the latest results, figures quoted for 1978 and 1979 in Table 1 differ somewhat from those in the previous paper (Church, 1980a); this will be discussed further in the full report on the 1980 survey which should be available shortly after this paper appears. Meanwhile, these data show a continuing increase in N use per ha crops and grass in 1980. As in the previous year, use of straight N per ha on the area in tillage cropping has increased by as much as a sixth and there has also been some increase in N applied in compound fertilisers to grassland (Table 1). Again, use of P and K per ha shows little change over the past year.

TABLE 1

*Fertiliser use on tillage crops and grassland (kg ha<sup>-1</sup>), 1978-80*

	Tillage crops			Grassland			All crops and grass		
	1978	1979	1980	1978	1979	1980	1978	1979	1980
N Straight	53	66	77	67	71	69	60	69	73
Compound	51	46	44	45	45	50	47	45	47
Total	104	112	121	112	116	119	107	114	120
P <sub>2</sub> O <sub>5</sub>	51	49	49	26	25	27	37	36	37
K <sub>2</sub> O	56	53	54	24	26	26	39	38	40

TABLE 2

*Fertiliser use on winter wheat and spring barley (kg ha<sup>-1</sup>), 1978-80*

	Winter wheat			Spring barley		
	1978	1979	1980	1978	1979	1980
N Straight	106	117	126	21	26	24
Compound	19	18	19	62	62	63
Total	125	135	145	83	88	87
P <sub>2</sub> O <sub>5</sub>	44	46	46	38	37	37
K <sub>2</sub> O	37	38	39	39	39	40

Much of the increased use of straight N on tillage crops is due to winter cereals. The proportion of the total cereal area winter sown is estimated at 64% in 1980 compared with 59% in 1979. The average total N dressing on winter wheat was 145 kg ha<sup>-1</sup> in 1980 (126 kg ha<sup>-1</sup> as straight N and the rest as compound fertiliser in the seedbed) compared with 135 kg ha<sup>-1</sup> in 1979 (Table 2). About 40% of this crop now gets two or more top dressings (Church, 1980b).

## ROTHAMSTED REPORT FOR 1980, PART 2

Estimates of the average use of fertilisers on individual farm crops and of the proportions of crop area getting different amounts of nutrients in 1980 are given in Tables 3–6. Table 7 shows the proportion of the grassland area which is utilised in different ways, and average fertiliser applications for each pattern of utilisation. Table 8 shows the proportions of grassland, classified by utilisation, which got different amounts of N per ha during 1980 and demonstrates very clearly the association between grassland utilisation and N use per ha.

### REFERENCES

- CHURCH, B. M. & LEWIS, D. A. (1977) Fertiliser use on farm crops in England and Wales: Information from the Survey of Fertiliser Practice 1942–1976. *Outlook on Agriculture* 9, 186–193.
- CHURCH, B. M. (1980a) Use of fertilisers in England and Wales, 1979. *Rothamsted Experimental Station. Report for 1979*, Part 2, 105–110.
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USE OF FERTILISERS IN ENGLAND AND WALES, 1980

TABLE 3  
Fertiliser use in England and Wales, 1980

Fields	Hectares ('000)	Overall* (kg ha <sup>-1</sup> )			% Area receiving				Actual* (kg ha <sup>-1</sup> )		
		N	P <sub>2</sub> O <sub>5</sub>	K <sub>2</sub> O	N	P	K	FYM	N	P <sub>2</sub> O <sub>5</sub>	K <sub>2</sub> O
Spring wheat	107	106	37	35	98	86	82	8	108	43	43
Winter wheat	2326	145	46	39	99	86	76	13	146	53	51
Spring barley	2073	86	37	40	98	95	94	22	88	39	42
Winter barley	1262	129	48	45	100	92	87	11	129	52	51
Spring oats	161	68	31	32	89	83	82	21	77	37	39
Winter oats	185	99	51	44	97	92	86	13	101	55	52
Early potatoes	77	171	178	227	99	99	99	52	173	180	229
Maincrop potatoes	377	185	185	259	98	98	98	48	188	188	264
Sugar beet	457	137	65	144	93	91	91	25	148	72	158
Swedes (stock)	77	55	109	71	84	90	84	42	65	121	85
Turnips (stock)	70	65	61	48	98	74	71	39	66	83	67
Kale and cow cabbage	164	115	53	54	94	90	87	53	122	59	62
Rape for stockfeed	31	98	84	45	89	82	81	27	110	103	56
Beans for stockfeed	103	41	6	19	17	45	31	7	36	66	63
Other stockfeed	89	86	62	54	96	91	90	44	89	68	60
Peas for human consumption	178	99	6	28	28	51	51	5	22	46	54
Runner and French beans	30	58	55	42	44	72	55	9	131	77	76
Brussels sprouts	28	228	110	156	86	86	86	21	266	128	181
Cabbage	53	125	42	75	83	59	61	18	150	71	124
Cauliflower	69	128	45	112	66	65	65	20	193	69	172
Onions	38	130	87	121	89	72	72	11	146	120	167
Small fruit	74	65	30	67	75	50	72	25	87	60	93
Top fruit	107	106	9	30	78	33	41	7	137	27	73
Oilseed rape	154	254	51	38	99	92	67	4	256	55	57
All tillage	8767	121	49	54	95	88	83	18	127	56	65
1 year leys	23	152	40	44	98	58	55	20	155	69	80
2-7 year leys	2967	167	35	37	93	70	70	43	178	50	53
Permanent grass	3395	93	21	20	73	52	51	36	127	41	39
All crops and grass	15152	120	37	40	87	73	70	28	138	51	57

\* The average application of any fertiliser component over all fields including those receiving none is termed 'overall'. The average excluding fields with none of the component is termed 'actual'.

ROTHAMSTED REPORT FOR 1980, PART 2

TABLE 4

Percentages of crop area getting different amounts of N ( $\text{kg ha}^{-1}$ )

Fields	0	<25	25-	50-	75-	100-	125-	150-	200-	250-	300-	400+
Spring wheat	2	2	2	10	39	14	12	18	1	0	0	0
Winter wheat	1	1	1	3	7	12	24	46	5	1	0	0
Spring barley	2	1	6	19	38	22	7	4	0	0	0	0
Winter barley	0	0	1	3	12	24	32	25	1	1	0	0
Spring oats	11	0	10	30	34	8	4	2	0	0	0	0
Winter oats	3	1	10	18	19	22	10	14	3	0	0	0
Early potatoes	1	0	0	3	6	4	6	66	14	1	1	0
Maincrop potatoes	2	1	0	1	1	5	5	50	24	9	1	0
Sugar beet	7	0	1	1	9	12	28	31	8	1	0	0
Swedes (stock)	16	0	34	20	17	7	3	0	0	0	0	0
Turnips (stock)	2	1	19	43	27	6	1	0	1	0	0	0
Kale and cow cabbage	6	0	4	11	20	21	15	12	4	7	0	0
Rape for stockfeed	31	0	0	32	17	15	6	8	9	0	2	0
Beans for stockfeed	83	8	3	6	0	0	0	0	0	0	0	0
Other stockfeed	4	2	15	23	24	11	11	8	2	0	0	0
Peas for human consumption	178	22	3	1	1	1	0	0	0	0	0	0
Runner and French beans	30	7	0	0	2	15	3	17	1	0	1	0
Brussels sprouts	28	0	0	0	15	0	0	13	5	0	1	0
Cabbage	53	0	3	5	15	11	17	16	4	13	26	14
Cauliflower	69	0	3	6	8	2	5	11	4	4	8	0
Onions	38	0	3	8	22	14	8	14	14	5	12	0
Small fruit	74	25	19	18	8	2	3	2	15	0	5	0
Top fruit	107	10	4	6	16	3	8	8	3	8	0	0
Oilseed rape	154	1	1	3	0	1	23	9	16	47	1	0
All tillage	8767	5	1	8	17	16	18	25	4	2	1	0
1 year leys	23	0	0	29	15	0	5	13	21	12	2	0
2-7 year leys	2967	7	1	11	12	7	11	13	10	8	12	4
Permanent grass	3395	27	0	16	12	5	9	8	4	3	4	4
All crops and grass	15152	13	1	12	15	11	14	17	5	4	4	1

USE OF FERTILISERS IN ENGLAND AND WALES, 1980

TABLE 5

Percentages of crop area getting different amounts of  $P_2O_5$  ( $kg\ ha^{-1}$ )

	Fields	0	<25	25-	50-	75-	100-	125-	150-	200-	250-	300-	400+
Spring wheat	107	14	7	52	27	0	0	0	0	0	0	0	0
Winter wheat	2326	14	3	28	45	8	0	0	0	0	0	0	0
Spring barley	2073	5	8	68	17	2	0	0	0	0	0	0	0
Winter barley	1262	8	3	33	48	7	0	0	0	0	0	0	0
Spring oats	161	17	11	58	12	1	0	0	0	0	0	0	0
Winter oats	185	8	4	28	40	17	1	1	0	0	0	0	0
Early potatoes	77	1	0	0	2	9	12	7	40	16	10	2	1
Maincrop potatoes	377	2	1	0	1	3	3	5	53	23	6	3	0
Sugar beet	457	9	1	14	42	20	5	3	6	0	0	0	0
Swedes (stock)	77	10	3	8	17	15	14	4	17	4	6	3	0
Turnips (stock)	70	26	7	25	6	7	7	6	13	1	0	1	0
Kale and cow cabbage	164	10	5	29	34	15	4	2	1	0	0	0	0
Rape for stockfeed	31	18	0	16	36	3	1	7	7	1	11	0	0
Beans for stockfeed	103	55	2	5	29	4	1	2	2	0	0	0	0
Other stockfeed	89	9	14	29	17	18	4	2	3	3	3	0	0
Peas for human consumption	178	49	7	17	23	4	1	0	0	0	0	0	0
Runner and French beans	30	28	0	0	23	44	5	0	1	0	0	0	0
Brussels sprouts	28	14	0	2	5	37	8	10	1	23	0	0	0
Cabbage	53	41	0	7	29	15	4	4	0	0	0	0	0
Cauliflower	69	35	1	10	32	12	10	0	0	0	0	0	0
Onions	38	28	0	0	20	15	1	11	14	11	0	0	0
Small fruit	74	50	9	14	8	14	0	4	1	0	0	0	0
Top fruit	107	67	24	3	3	3	0	0	0	0	0	0	0
Oilseed rape	154	8	3	17	66	3	1	0	1	0	0	0	0
All tillage	8767	12	5	37	34	7	1	1	2	1	0	0	0
1 year leys	23	42	1	16	17	19	0	2	2	0	0	0	0
2-7 year leys	2967	30	15	30	13	5	3	1	2	1	0	0	0
Permanent grass	3395	48	16	24	6	2	1	1	1	0	0	0	0
All crops and grass	15152	27	10	31	21	5	1	1	2	1	0	0	0

ROTHAMSTED REPORT FOR 1980, PART 2

TABLE 6

Percentages of crop area getting different amounts of  $K_2O$  ( $kg\ ha^{-1}$ )

Fields	0	<25	25-	50-	75-	100-	125-	150-	200-	250-	300-	400+
Spring wheat	18	4	54	24	0	0	0	0	0	0	0	0
Winter wheat	24	4	34	31	7	1	0	0	0	0	0	0
Spring barley	6	5	63	24	3	0	0	0	0	0	0	0
Winter barley	13	3	37	41	7	1	0	0	0	0	0	0
Spring oats	18	6	63	12	2	0	0	0	0	0	0	0
Winter oats	14	2	34	37	13	0	0	0	0	0	0	0
Early potatoes	1	0	0	2	1	4	9	20	15	29	18	1
Maincrop potatoes	2	0	1	0	0	1	1	7	18	40	29	0
Sugar beet	9	0	2	7	8	16	8	21	20	7	1	0
Swedes (stock)	16	0	17	21	20	12	6	7	2	0	0	0
Turnips (stock)	70	5	24	7	24	8	1	0	1	0	0	0
Kale and cow cabbage	164	3	29	35	8	7	3	2	1	0	0	0
Rape for stockfeed	31	3	28	38	9	0	4	0	0	0	0	0
Beans for stockfeed	103	0	7	17	3	1	2	0	0	0	0	0
Other stockfeed	89	9	35	21	14	5	2	0	2	1	0	0
Peas for human consumption	178	2	18	22	8	1	2	0	0	0	0	0
Runner and French beans	30	0	14	7	26	3	1	2	1	0	0	0
Brussels sprouts	28	0	0	0	2	11	14	18	30	1	8	0
Cabbage	53	0	1	11	9	5	13	18	3	1	0	0
Cauliflower	69	1	3	1	3	10	6	13	24	0	4	0
Onions	38	0	0	1	0	3	29	19	16	0	4	0
Small fruit	74	0	16	10	18	7	7	14	1	0	0	0
Top fruit	107	0	7	21	9	0	2	3	0	0	0	0
Oilseed rape	154	5	12	46	2	2	1	0	0	0	0	0
All tillage	8767	3	37	28	6	2	1	2	2	2	1	0
1 year leys	23	1	8	9	23	8	6	0	0	0	0	0
2-7 year leys	2967	30	28	15	8	4	2	2	0	0	0	0
Permanent grass	3395	49	13	26	7	1	0	0	0	0	0	0
All crops and grass	15152	30	8	32	18	2	1	1	1	1	0	0

USE OF FERTILISERS IN ENGLAND AND WALES, 1980

TABLE 7  
Fertiliser use on grassland classified by utilisation

Fields	% Grassland area	Overall* (kg ha <sup>-1</sup> )			% Area receiving			Actual* (kg ha <sup>-1</sup> )			
		N	P <sub>2</sub> O <sub>5</sub>	K <sub>2</sub> O	N	P	K	FYM	N	P <sub>2</sub> O <sub>5</sub>	K <sub>2</sub> O
Paddock grazed	108	212	20	20	89	47	48	34	238	42	42
Paddock grazed and mown	57	201	40	38	100	61	62	62	201	65	62
Strip grazed	193	213	27	28	96	62	61	40	221	44	46
Strip grazed and mown	166	171	29	43	97	74	79	81	176	39	55
Set stocked	520	179	26	25	90	55	56	33	199	47	45
Set stocked and mown	176	195	37	48	96	78	80	54	204	47	60
Cut for seed	44	181	55	51	100	96	93	5	181	57	55
Cut for silage	983	200	39	55	98	81	84	63	203	48	66
Cut for hay	131	65	16	15	73	34	32	20	89	46	47
Cut for hay and grazed†	1336	88	26	24	88	62	61	51	100	42	39
Other grazings	2563	75	22	15	66	50	46	23	114	43	33
Not stated/not used	122	80	34	17	64	50	40	23	124	68	43
All grass	6413	119	27	26	80	59	58	38	148	45	45

\* The average application of any fertiliser component over all fields including those receiving none is termed 'overall'. The average excluding fields with none of the component is termed 'actual'.

† Excluding fields intensively grazed as in the first 6 categories above.



ROTHAMSTED REPORT FOR 1980, PART 2

TABLE 8  
Percentages of grassland area by utilisation getting different amounts of N ( $\text{kg ha}^{-1}$ )

Fields	0	<25	25-	50-	75-	100-	125-	150-	200-	250-	300-	400+
Paddock grazed	11	0	4	6	15	2	3	6	16	8	23	7
Paddock grazed and mown	57	0	0	6	13	16	11	8	19	3	21	3
Strip grazed	193	4	4	5	6	6	11	16	12	10	18	8
Strip grazed and mown	166	3	1	9	8	9	14	20	7	13	10	3
Set stocked	520	10	0	14	11	3	9	11	8	8	17	6
Set stocked and mown	176	4	0	9	9	3	17	15	6	18	14	4
Cut for seed	44	0	0	0	1	17	26	23	11	13	9	0
Cut for silage	983	2	1	6	8	7	12	19	15	10	16	4
Cut for hay	131	27	8	21	24	5	7	5	2	0	0	0
Cut for hay and grazed†	1336	12	8	27	19	9	10	8	2	2	2	0
Other grazings	2563	34	0	14	12	5	9	7	2	3	3	0
Not stated/not used	122	36	7	9	14	8	4	6	11	0	3	0
All grass	6413	20	0	15	12	6	10	10	6	5	7	2

† Excluding fields intensively grazed as in the first 6 categories above.