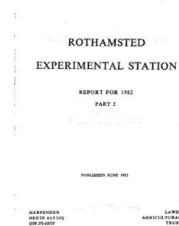


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# Rothamsted Experimental Station Report for 1982 Part 2



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## Use of Fertilizers in England and Wales, 1982

**B. M. Church**

B. M. Church (1983) *Use of Fertilizers in England and Wales, 1982* ; Rothamsted Experimental Station Report For 1982 Part 2, pp 161 - 168 - DOI: <https://doi.org/10.23637/ERADOC-1-34181>

## Use of fertilizers in England and Wales, 1982

B. M. CHURCH

Continuing the series of annual surveys done by staff of the ADAS Regional Soil Scientists, with representatives of the Fertiliser Manufacturers' Association and Rothamsted (Church and Lewis, 1977), a random sample of 1350 farms in England and Wales was surveyed during 1982. The survey estimates show small increases between 1981 and 1982 in use of N and P per hectare crops and grass, with a proportionately somewhat larger increase in use of K (Table 1).

Although metric units were officially adopted for agriculture in 1976, all but about 10% of farmers in 1982 chose to report fertilizer use in hundredweights or units per acre. It seems likely, however, that most farmers reckon 50 kg bags as hundredweights and this is assumed, perhaps belatedly, in reporting the 1982 results. Apart from sampling errors, Table 1 may therefore understate use in 1982 relative to that in 1981 by about 1½%.

**TABLE 1**  
*Fertilizer use on tillage crops and grassland (kg ha<sup>-1</sup>), 1979–82*

	Tillage crops				Grassland				All crops and grass			
	1979	1980	1981	1982	1979	1980	1981	1982	1979	1980	1981	1982
N Straight	66	77	92	99	71	69	74	71	69	73	83	85
Compound	46	44	43	42	45	50	51	52	45	47	47	47
Total	112	121	135	141	116	119	125	123	114	120	130	132
P <sub>2</sub> O <sub>5</sub>	49	49	51	55	25	27	25	24	36	37	38	39
K <sub>2</sub> O	53	54	56	61	26	26	26	28	38	40	41	44

**TABLE 2**  
*Fertilizer use on winter wheat and spring barley (kg ha<sup>-1</sup>), 1979–82*

	Winter wheat				Spring barley			
	1979	1980	1981	1982	1979	1980	1981	1982
N Straight	117	126	144	148	26	24	37	34
Compound	18	19	18	18	62	63	61	60
Total	135	145	162	166	88	87	98	94
P <sub>2</sub> O <sub>5</sub>	46	46	49	51	37	37	37	38
K <sub>2</sub> O	38	39	42	45	39	40	40	41

Increases in fertilizer use between 1981 and 1982 seem to have been mainly on the area in tillage cropping, with the estimated use of N per hectare on grassland marginally less on the farms surveyed in 1982. Estimated year to year changes in use of P and K have recently been only of the same order as the survey sampling errors, but estimates for the last 4 years are consistent with a gradual increase in use of these nutrients per hectare since 1979.

On individual tillage crops, use of straight N, and of P and K, per hectare on winter wheat have continued to increase, but on spring barley the increased use of straight N recorded in 1981 was no more than sustained in 1982 (Table 2). About 70% of the cereal area in 1982 was winter sown.

The average amounts of fertilizer nutrients used per hectare in 1982 on individual

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tillage crops, and on grassland classified according to utilization, and the proportions of each crop which got different amounts of nutrient are summarized in Tables 3–8 at the end of this paper.

### REFERENCE

CHURCH, B. M. & LEWIS, D. A. (1977) Fertilizer use on farm crops in England and Wales: Information from the Survey of Fertilizer Practice 1942–1976. *Outlook on Agriculture* 9, 186–193.

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TABLE 3  
Fertilizer use in England and Wales, 1982

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	N	P <sub>2</sub> O <sub>5</sub>	K <sub>2</sub> O
Spring wheat	67	123	30	30	100	75	69	123	40	44
Winter wheat	2743	166	51	45	99	88	80	167	58	55
Spring barley	1874	94	38	41	98	94	93	96	41	44
Winter barley	1506	145	51	54	100	92	91	145	56	59
Spring oats	130	67	35	39	92	91	91	73	39	43
Winter oats	184	111	56	52	100	94	93	111	59	56
Mixed corn	35	60	32	31	90	73	73	67	43	43
Rye	6	112	44	53	100	99	99	112	45	54
Early potatoes	83	189	192	234	100	100	99	190	192	237
Maincrop potatoes	373	199	199	267	99	99	99	200	201	269
Sugar beet	473	144	67	159	99	97	100	145	68	160
Swedes (stock)	110	55	99	68	90	98	90	61	100	76
Turnips (stock)	58	61	53	45	86	78	77	71	67	58
Kale and cow cabbage	94	112	45	51	98	85	88	114	53	58
Rape for stockfeed	26	90	61	47	93	85	85	97	72	55
Beans for stockfeed	98	13	27	21	14	41	36	87	66	59
Other stockfeed	85	71	54	53	77	82	78	92	65	67
Peas for human consumption	157	5	26	26	23	47	45	24	55	59
Broad beans	20	18	36	52	34	58	58	51	61	89
Runner and French beans	43	67	60	46	50	65	65	134	93	72
Brussels sprouts	54	20	246	181	100	93	99	246	112	183
Cabbages	57	10	96	153	97	92	92	192	104	166
Cauliflower	67	18	169	124	98	69	69	173	74	179
Onions	50	104	132	177	95	94	94	110	141	189
Small fruit	100	65	38	82	89	76	84	73	49	97
Top fruit	94	64	7	12	76	35	37	84	20	32
Oilseed rape	311	169	59	50	100	95	80	265	62	62
All tillage	9293	141	55	61	96	89	86	147	61	71
1 year leys	24	148	36	51	88	79	79	169	45	65
2-7 year leys	2949	173	31	41	93	73	73	185	43	56
Permanent grass	3682	96	19	20	77	54	54	125	36	38
All crops and grass	15948	8607	132	39	89	75	73	148	52	61

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

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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	0	0	7	8	8	31	16	28	0	0	0	0
Winter wheat	1	1	1	3	5	8	13	45	20	2	1	0
Spring barley	2	1	11	24	23	18	12	7	1	0	0	0
Winter barley	0	1	1	2	7	13	31	40	4	0	0	0
Spring oats	8	7	22	28	19	8	6	2	0	0	0	0
Winter oats	0	3	6	11	16	23	21	19	2	0	0	0
Mixed corn	10	6	32	30	8	13	0	0	2	0	0	0
Rye	0	0	32	2	0	24	24	2	16	0	0	0
Early potatoes	0	0	0	0	0	6	3	54	32	4	0	0
Maincrop potatoes	1	1	0	2	1	2	6	36	39	8	5	0
Sugar beet	1	0	2	2	6	13	41	29	4	2	0	0
Swedes (stock)	10	14	20	35	10	6	3	0	0	0	0	0
Turnips (stock)	14	2	23	25	27	5	3	1	0	0	0	0
Kale and cow cabbage	2	0	10	23	17	17	17	7	3	0	5	0
Rape for stockfeed	7	0	13	34	26	10	0	0	11	0	0	0
Beans for stockfeed	86	7	1	1	0	0	0	1	4	0	0	0
Other stockfeed	23	7	17	9	10	16	7	9	1	0	0	0
Peas for human consumption	77	15	7	1	0	0	0	0	0	0	0	0
Broad beans	66	16	5	4	5	4	0	0	0	0	0	0
Runner and French beans	50	8	0	0	0	8	15	17	2	0	0	0
Brussels sprouts	0	0	0	6	2	8	2	19	8	16	33	3
Cabbages	3	0	0	7	6	24	15	15	10	4	1	15
Cauliflower	2	0	0	1	0	13	30	35	3	10	6	0
Onions	5	0	8	32	12	5	20	4	10	2	1	0
Small fruit	11	0	38	6	30	6	5	3	0	1	0	0
Top fruit	24	11	8	8	31	5	8	6	0	0	0	0
Oilseed rape	0	0	0	2	1	2	1	6	16	38	33	0
All tillage	4	2	4	8	9	11	16	29	11	3	2	0
1 year leys	12	0	6	12	3	2	16	35	4	1	3	6
2-7 year leys	7	1	10	11	8	5	9	12	10	9	13	5
Permanent grass	23	2	16	12	11	6	7	9	5	3	5	1
All crops and grass	11	2	9	10	10	8	12	19	9	4	5	1

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**TABLE 5**  
Percentages of crop area getting different amounts of  $P_2O_5$  ( $kg\ ha^{-1}$ )

	0	<25	25-	50-	75-	100-	125-	150-	200-	250-	300-	400+
Fields	67	12	47	16	0	0	0	0	0	0	0	0
Spring wheat	25	12	28	48	8	1	0	1	0	0	0	0
Winter wheat	12	3	28	48	8	1	0	1	0	0	0	0
Spring barley	6	16	58	18	2	1	0	0	0	0	0	0
Winter barley	8	3	30	50	8	1	0	0	0	0	0	0
Spring oats	9	21	53	15	1	1	0	0	0	0	0	0
Winter oats	6	4	26	49	14	2	0	0	0	0	0	0
Mixed corn	27	7	41	23	2	0	0	0	0	0	0	0
Rye	1	34	32	13	16	4	0	0	0	0	0	0
Early potatoes	0	0	0	1	1	6	4	44	34	9	1	0
Maincrop potatoes	1	1	0	3	2	3	4	31	40	12	3	1
Sugar beet	3	6	16	44	24	2	2	3	0	0	0	0
Swedes (stock)	2	7	26	14	10	8	14	16	2	3	0	0
Turnips (stock)	22	21	21	7	11	4	13	1	0	0	0	0
Kale and cow cabbage	15	16	35	17	7	7	1	0	0	0	0	0
Rape for stockfeed	26	8	42	15	7	5	0	2	6	2	0	0
Beans for stockfeed	59	0	10	23	4	4	0	0	0	0	0	0
Other stockfeed	18	10	29	23	7	6	6	1	1	0	0	0
Peas for human consumption	53	2	23	17	2	3	0	0	0	0	0	0
Broad beans	20	0	7	44	6	0	0	0	1	0	0	0
Runner and French beans	35	0	6	32	6	6	2	11	0	0	0	0
Brussels sprouts	54	0	2	16	21	35	0	18	2	0	0	0
Cabbages	57	0	15	10	8	33	15	11	0	0	0	0
Cauliflower	67	0	11	28	23	4	3	1	0	0	0	0
Onions	50	2	1	13	6	5	15	45	6	1	0	0
Small fruit	100	24	31	21	2	0	5	1	0	0	0	0
Top fruit	94	32	1	1	0	1	0	0	0	0	0	0
Oilseed rape	311	1	23	61	5	3	2	1	0	0	0	0
All tillage	9293	6	32	38	7	2	1	2	2	0	0	0
1 year leys	24	13	36	27	3	0	0	0	0	0	0	0
2-7 year leys	2949	27	30	11	4	1	1	1	0	0	0	0
Permanent grass	3682	46	17	4	1	1	0	1	1	0	0	0
All crops and grass	15948	25	27	22	5	1	1	2	1	0	0	0

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**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	67	31	8	43	16	0	0	0	2	0	0	0	0
Winter wheat	2743	20	3	31	36	9	1	0	0	0	0	0	0
Spring barley	1874	7	12	53	26	2	1	0	0	0	0	0	0
Winter barley	1506	9	2	32	44	8	2	1	1	0	0	0	0
Spring oats	130	9	19	48	19	6	0	0	0	0	0	0	0
Winter oats	184	7	3	36	38	16	0	0	0	0	0	0	0
Mixed corn	35	27	7	44	20	2	0	0	0	0	0	0	0
Rye	32	1	28	17	32	18	4	0	0	0	0	0	0
Early potatoes	83	1	0	0	0	0	3	2	16	39	23	14	0
Maincrop potatoes	373	1	0	1	1	1	1	1	9	23	33	25	4
Sugar beet	473	0	0	1	5	14	13	15	22	22	7	0	0
Swedes (stock)	110	10	3	35	15	14	10	5	8	0	0	0	0
Turnips (stock)	58	23	20	14	25	11	4	0	2	0	0	0	0
Kale and cow cabbage	94	12	13	32	23	13	5	1	0	2	0	0	0
Rape for stockfeed	26	15	12	43	20	7	0	0	0	4	0	0	0
Beans for stockfeed	98	64	0	16	14	5	1	0	0	0	0	0	0
Other stockfeed	85	22	8	24	21	13	9	1	0	2	1	0	0
Peas for human consumption	157	55	2	17	19	3	3	0	0	0	0	0	0
Broad beans	20	42	0	3	24	6	20	0	5	1	0	0	0
Runner and French beans	43	35	0	5	44	10	3	3	0	0	0	0	0
Brussels sprouts	54	1	0	0	0	7	29	1	9	34	18	0	0
Cabbages	57	8	0	7	3	4	14	8	21	33	2	1	0
Cauliflower	67	31	0	0	1	8	3	12	8	36	1	0	0
Onions	50	6	2	0	5	1	2	3	41	25	14	0	0
Small fruit	100	16	2	16	10	2	42	8	4	0	0	0	0
Top fruit	94	63	28	6	2	1	1	0	0	0	0	0	0
Oilseed rape	311	20	1	13	58	4	1	1	1	0	0	0	0
All tillage	9293	14	5	31	32	7	2	1	2	3	2	1	0
1 year leys	24	21	4	37	17	13	3	6	0	0	0	0	0
2-7 year leys	2949	27	18	23	16	6	4	4	2	1	0	0	0
Permanent grass	3682	46	25	18	6	2	2	1	0	0	0	0	0
All crops and grass	15948	27	14	25	20	5	2	1	0	1	1	0	0

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TABLE 7  
Fertilizer use on grassland classified by utilization

Fields	% Grassland			Overall* (kg ha <sup>-1</sup> )						% Area receiving				Actual* (kg ha <sup>-1</sup> )		
	area	N	P <sub>2</sub> O <sub>5</sub>	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	175	3	174	21	22	22	89	59	56	25	195	35	38			
Paddock grazed and mown	85	1	174	24	38	38	87	57	60	55	199	42	63			
Strip grazed	152	2	201	21	23	23	94	68	68	54	213	31	34			
Strip grazed and mown	149	2	188	29	50	50	99	74	80	62	191	39	62			
Set stocked	771	13	172	21	24	24	86	59	58	31	199	35	41			
Set stocked and mown	426	6	180	29	49	49	96	73	78	58	188	40	63			
Cut for seed	26	0	136	43	53	53	87	66	72	10	156	65	74			
Cut for dried grass	26	0	279	10	18	18	99	30	25	52	280	33	72			
Cut for silage	1058	14	201	37	63	63	99	82	87	65	204	45	72			
Cut for hay	96	1	82	14	18	18	75	46	46	11	108	31	39			
Cut for hay and grazed†	1069	14	82	23	25	25	91		71	58	90	33	35			
Other grazings	2541	41	76	20	15	15	71	51	48	24	107	40	32			
Not stated/not used	135	3	61	18	9	9	62	37	33	23	99	47	27			
All grass	6709		123	24	28	28	83	61	61	39	148	39	46			

\* The average application of any fertilizer 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.



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**TABLE 8**  
*Percentages of grassland area by utilization getting different amounts of N (kg ha<sup>-1</sup>)*

Fields	0	<25	25-	50-	75-	100-	125-	150-	200-	250-	300-	400+
Paddock grazed	11	1	13	10	7	3	7	14	9	3	16	8
Paddock grazed and mown	13	0	2	19	1	4	4	12	16	13	12	4
Strip grazed	6	0	2	7	6	9	11	11	13	8	23	4
Strip grazed and mown	1	0	2	6	6	9	15	26	7	12	14	1
Set stocked	14	2	8	9	9	4	8	9	9	8	14	7
Set stocked and mown	4	1	9	10	9	4	9	14	10	13	14	4
Cut for seed	13	0	6	5	10	6	17	31	2	5	6	0
Cut for dried grass	1	0	7	0	1	0	0	3	15	28	26	18
Cut for silage	1	0	4	6	8	6	9	21	14	12	17	2
Cut for hay	25	3	8	8	18	8	17	4	7	1	1	0
Cut for hay and grazed*	9	2	24	19	17	10	9	6	3	1	0	0
Other grazings	29	3	18	14	10	5	6	6	4	2	3	1
Not stated/not used	38	11	12	4	12	5	7	7	1	0	3	0
All grass	17	2	14	12	10	6	8	10	7	5	8	2

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