

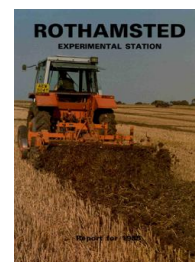
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Use of Fertilizers in England and Wales, 1985

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Use of fertilizers in England and Wales, 1985

J. I. ELSMERE

This series of annual surveys continued in 1985 as a collaborative project between ADAS soil scientists, representatives of the Fertiliser Manufacturers' Association and Rothamsted. Due to reduced resources, ADAS withdrew from the fieldwork this year, but the size of the survey was almost maintained at previous levels. A sample of 1187 farms was surveyed by Farm Research Limited on behalf of the Fertiliser Manufacturers' Association during June and July. A similar survey was again done in Scotland on a sample of 264 farms, and the results of this will be reported elsewhere.

Compared with 1984, the survey estimates for England and Wales show little change in total use of N, P and K per hectare crops and grass (Table 1). However there continues to be some increase in N use per hectare on tillage crops. Following the trend of recent years, use of N in compound fertilizers decreased, while that of straight N increased. This is particularly noticeable on winter wheat (Table 2) where use of compound N decreased sharply from 16 to 11 kg ha⁻¹; this was more than compensated for by an increase in use of straight N from 171 to 181 kg ha⁻¹. The proportion of winter wheat which got any N in compounds decreased from 67% in 1984 to 57% in 1985. Apart from the trend towards straight N, this change resulted from use of relatively more PK and relatively less low-N compound fertilizers. Unlike recent years, the percentage of winter-sown cereals remained about the same as for 1984 at about 84%. After estimated increases in 1984, use of P and K per hectare on tillage crops was about the same as in 1983.

TABLE 1

Fertilizer use on tillage crops and grassland (kg ha⁻¹), 1982–85

	Tillage crops				Grassland				All crops and grass			
	1982	1983	1984	1985	1982	1983	1984	1985	1982	1983	1984	1985
N Straight	99	116	128	134	71	69	71	70	85	91	99	102
Compound	42	37	34	27	52	57	61	61	47	48	48	44
Total	141	154	162	161	123	126	132	131	132	139	147	146
P ₂ O ₅	55	54	61	56	24	26	25	24	39	39	42	40
K ₂ O	61	60	68	63	28	28	33	32	44	44	50	48

TABLE 2

Fertilizer use on winter wheat and spring barley (kg ha⁻¹) 1982–85

	Winter wheat				Spring barley			
	1982	1983	1984	1985	1982	1983	1984	1985
N Straight	148	167	171	181	34	51	44	53
Compound	18	16	16	11	60	57	54	49
Total	166	182	187	192	94	107	98	102
P ₂ O ₅	51	51	56	54	38	39	39	38
K ₂ O	45	46	53	52	41	44	44	44

Average N use on sugar beet, well above general recommendations for some time, has recently tended to fluctuate from year to year, but was well down at 126 kg ha⁻¹ in 1985 compared with 148 kg ha⁻¹ the previous year. Estimated use of P and K on sugar beet was also less in 1985.

Recent years have shown small increases in lime use, but in 1984/5, 5.5% of the crops and grass area was treated with lime compared with 7.5% in 1983/4. The smaller use this year was probably because of unfavourable weather conditions in autumn 1984.

The average amounts of fertilizer nutrients used per hectare in 1985 on individual tillage crops, and on grassland classified according to utilization, and the proportions of each crop which got different amounts of nutrients are summarized in Tables 3–8 at the end of this paper.

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TABLE 3
Fertilizer use in England and Wales, 1985

Fields	Hectares (⁰⁰⁰)	Overall* (kg ha ⁻¹)				% Area receiving				Actual* (kg ha ⁻¹)			
		N	P ₂ O ₅	K ₂ O	FYM	N	P	K	FYM	N	P ₂ O ₅	K ₂ O	FYM
Spring wheat	43	145	45	52	26	99	95	95	26	146	48	55	
Winter wheat	3651	192	54	52	11	100	87	82	11	192	62	63	
Spring barley	1187	102	38	44	29	99	91	90	29	103	41	48	
Winter barley	1926	150	55	58	14	100	94	92	14	151	58	63	
Spring oats	60	70	35	39	36	96	93	93	36	73	37	42	
Winter oats	225	119	57	59	12	100	93	94	12	119	62	62	
Rye	46	130	41	53	26	97	80	87	26	135	52	61	
Maize	22	74	45	45	75	78	67	67	75	96	67	67	
Early potatoes	57	194	186	243	45	100	100	100	45	194	186	243	
Maincrop potatoes	331	198	209	278	41	99	100	100	41	201	210	278	
Sugar beet	455	126	56	137	33	99	93	99	33	127	60	138	
Oilseed rape	591	272	58	55	8	100	94	87	8	272	62	64	
Swedes (stock)	63	56	93	73	44	89	93	81	44	63	100	90	
Turnips (stock)	70	73	51	53	54	98	84	83	54	75	60	64	
Kale and cow cabbage	48	106	45	47	59	95	79	79	59	111	58	60	
Rape for stockfeed	28	94	50	43	8	100	65	81	8	94	76	53	
Beans for stockfeed	121	2	35	29	10	13	57	51	10	18	61	57	
Other stockfeed	83	73	52	61	38	71	87	83	38	102	61	74	
Peas for human consumption	296	4	23	31	8	18	44	48	8	21	53	63	
Runner and French beans	27	152	60	86	14	91	89	89	14	167	67	96	
Brussels sprouts	36	209	109	204	13	100	100	100	13	209	110	205	
Cabbages	58	175	71	152	28	98	86	92	28	178	83	166	
Cauliflower	47	192	106	193	35	92	93	93	35	209	113	207	
Onions	41	133	81	157	9	100	87	97	9	133	93	162	
Small fruit	45	48	19	81	4	76	50	81	4	63	38	100	
Top fruit	59	48	15	26	7	50	40	50	7	96	37	53	
All tillage	9954	161	56	63	16	95	88	86	16	169	64	74	
1 year leys	66	180	34	46	23	99	73	73	23	181	47	63	
2-7 year leys	2900	185	33	50	49	96	77	80	49	194	42	62	
Permanent grass	4131	102	19	22	36	79	59	58	36	130	32	38	
All crops and grass	17051	146	40	48	28	90	77	76	28	163	52	63	

* 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 (kg ha^{-1})

	Fields	0	<25	25-	50-	75-	100-	125-	150-	200-	250-	300-	400+
Spring wheat	43	1	0	3	2	8	13	22	47	4	0	0	0
Winter wheat	3651	0	0	0	0	2	4	9	37	40	6	1	0
Spring barley	1187	1	1	9	21	19	22	15	11	2	0	0	0
Winter barley	1926	0	0	1	2	6	13	28	41	8	1	0	0
Spring oats	60	4	3	24	34	28	3	2	2	0	0	0	0
Winter oats	225	0	0	2	7	14	36	20	18	1	0	0	0
Rye	46	3	4	1	5	8	26	23	15	10	4	0	0
Maize	22	22	8	12	4	21	15	11	8	0	0	0	0
Early potatoes	57	0	1	1	0	0	13	4	35	28	12	5	0
Maincrop potatoes	331	1	0	0	2	2	2	8	37	28	17	2	0
Sugar beet	455	1	1	3	4	12	25	32	20	2	0	0	0
Oilseed rape	591	0	0	0	0	1	0	1	2	22	44	29	0
Swedes (stock)	63	11	5	35	22	18	2	5	1	0	0	0	0
Turnips (stock)	70	2	7	34	13	21	9	9	5	0	0	0	0
Kale and cow cabbage	48	5	3	15	12	9	19	24	10	0	1	3	0
Rape for stockfeed	28	0	0	17	18	38	10	8	6	0	3	0	0
Beans for stockfeed	121	87	10	2	0	1	0	0	0	0	0	0	0
Other stockfeed	83	29	5	13	12	12	6	7	14	4	0	0	0
Peas for human consumption	296	82	15	1	2	0	0	0	0	0	0	0	0
Runner and French beans	27	9	0	0	0	0	18	11	58	2	3	0	0
Brussels sprouts	36	0	0	0	0	4	16	8	33	6	5	28	0
Cabbages	58	2	0	11	4	3	5	9	22	28	13	3	0
Cauliflower	47	8	0	3	7	0	22	3	9	7	26	15	0
Onions	41	0	0	8	9	27	19	0	13	9	15	0	0
Small fruit	45	24	24	10	6	4	29	0	2	0	0	0	0
Top fruit	59	50	1	19	4	4	0	8	13	0	0	0	0
All tillage	9954	5	1	2	4	6	9	14	28	21	6	2	0
1 year leys	66	1	0	6	7	6	13	8	25	13	8	8	4
2-7 year leys	2900	4	1	8	9	8	6	10	14	10	12	13	5
Permanent grass	4131	21	3	13	14	9	7	7	10	5	4	4	1
All crops and grass	17051	10	2	7	8	7	8	11	20	14	7	5	1

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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	43	5	11	47	34	1	2	0	0	0	0	0	0
Winter wheat	3651	13	3	17	52	12	2	0	1	0	0	0	0
Spring barley	1187	9	21	44	24	2	0	0	0	0	0	0	0
Winter barley	1926	6	5	23	54	10	1	0	1	0	0	0	0
Spring oats	60	7	33	43	14	4	0	0	0	0	0	0	0
Winter oats	225	7	4	13	66	8	1	0	0	0	0	0	0
Rye	46	20	14	16	42	7	0	0	0	0	0	0	0
Maize	22	33	9	31	13	0	6	0	8	0	0	0	0
Early potatoes	57	0	1	1	7	0	1	17	30	37	1	6	0
Maincrop potatoes	331	0	0	1	2	3	3	4	35	24	17	9	0
Sugar beet	455	7	7	35	29	13	5	0	2	0	0	0	0
Oilseed rape	591	6	2	16	62	23	2	0	0	0	0	0	0
Swedes (stock)	63	7	6	8	22	11	17	7	4	1	0	4	0
Turnips (stock)	70	16	30	17	14	9	10	1	0	2	1	0	0
Kale and cow cabbage	48	21	18	23	22	7	4	0	3	0	1	0	0
Rape for stockfeed	28	35	7	30	4	7	8	0	7	2	0	0	0
Beans for stockfeed	121	43	2	14	31	7	1	0	2	0	0	0	0
Other stockfeed	83	13	8	17	47	8	4	0	2	0	0	0	0
Peas for human consumption	296	56	1	16	24	1	1	1	0	0	0	0	0
Runner and French beans	27	11	6	15	50	11	0	0	8	0	0	0	0
Brussels sprouts	36	0	0	13	24	20	8	6	25	5	0	0	0
Cabbages	58	14	1	33	23	5	8	1	14	0	0	0	0
Cauliflower	47	7	0	4	32	17	5	11	18	7	0	0	0
Onions	41	13	1	10	45	8	3	8	6	6	0	0	0
Small fruit	45	50	27	11	4	8	0	0	0	0	0	0	0
Top fruit	59	60	20	16	3	1	0	0	0	0	0	0	0
All tillage	9954	12	6	22	45	9	2	1	2	1	0	0	0
1 year leys	66	27	22	30	7	10	2	2	0	0	0	0	0
2–7 year leys	2900	23	28	30	11	4	1	0	2	0	0	0	0
Permanent grass	4131	41	33	17	5	1	1	0	0	0	0	0	0
All crops and grass	17051	23	19	22	26	6	1	0	1	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	43	5	7	28	56	2	0	2	0	0	0	0	0
Winter wheat	3651	18	3	17	47	12	3	1	0	0	0	0	0
Spring barley	1187	10	13	36	36	3	1	0	0	0	0	0	0
Winter barley	1926	8	4	19	53	12	3	1	1	0	0	0	0
Spring oats	60	7	25	38	26	4	1	0	0	0	0	0	0
Winter oats	225	6	3	17	62	7	4	0	0	0	0	0	0
Rye	46	13	10	21	37	14	0	5	0	0	0	0	0
Maize	22	33	9	31	13	0	6	0	8	0	0	0	0
Early potatoes	57	0	1	0	0	0	2	6	16	46	3	25	0
Maincrop potatoes	331	0	1	0	1	1	1	3	7	22	29	34	2
Sugar beet	455	1	1	2	11	16	16	9	27	15	1	0	0
Oilseed rape	591	13	1	11	59	12	2	0	1	0	0	0	0
Swedes (stock)	63	19	6	3	20	33	5	10	2	0	0	0	0
Turnips (stock)	70	17	19	16	27	8	9	0	3	1	0	0	0
Kale and cow cabbage	48	21	18	10	34	6	10	0	0	0	0	1	0
Rape for stockfeed	28	19	7	37	25	3	3	5	0	0	0	0	0
Beans for stockfeed	121	49	1	16	28	4	1	0	0	0	0	0	0
Other stockfeed	83	17	3	16	34	15	4	5	2	2	0	0	0
Peas for human consumption	296	52	1	9	35	1	1	1	1	0	0	0	0
Runner and French beans	27	11	0	6	37	19	12	7	0	5	4	0	0
Brussels sprouts	36	0	0	0	0	2	11	8	17	55	7	0	0
Cabbages	58	8	0	0	2	7	19	18	16	14	14	0	0
Cauliflower	47	7	0	0	5	0	3	10	17	40	17	1	0
Onions	41	3	0	3	10	3	8	17	25	24	8	0	0
Small fruit	45	19	3	8	25	9	7	0	28	0	0	0	0
Top fruit	59	50	13	8	24	3	1	0	0	0	0	0	0
All tillage	9954	14	4	18	43	10	3	1	2	2	1	1	0
1 year leys	66	27	20	13	19	3	7	6	4	0	0	0	0
2-7 year leys	2900	20	20	21	16	7	7	6	3	0	0	0	0
Permanent grass	4131	42	27	19	7	2	2	1	0	0	0	0	0
All crops and grass	17051	24	14	19	27	7	3	2	2	1	0	0	0

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TABLE 7
Fertilizer use on grassland classified by utilization†

	Fields	% Grassland area	Overall* (kg ha ⁻¹)			% Area receiving					Actual* (kg ha ⁻¹)		
			N	P ₂ O ₅	K ₂ O	N	P	K	FYM		N	P ₂ O ₅	K ₂ O
Paddock grazed													
Not mown	121	2	181	15	22	83	46	49	30		217	33	45
Mown	95	1	209	26	44	95	68	74	60		219	38	60
All paddock grazed	216	4	192	20	31	88	55	59	42		218	36	53
Strip grazed													
Not mown	117	2	230	23	27	98	69	69	50		234	33	39
Mown	178	2	204	24	46	96	79	83	69		213	30	55
All strip grazed	295	4	216	23	37	97	74	77	60		223	31	48
Set stocked													
Not mown	905	13	161	24	23	89	67	66	29		181	35	35
Mown	851	11	188	33	57	95	79	82	64		197	42	70
All set stocked	1756	24	173	28	39	92	73	73	44		188	38	52
Other grazings													
Not mown	2512	39	80	19	17	74	57	55	25		108	34	31
Mown	1980	25	143	27	45	92	72	76	59		155	37	59
All other grazings	4492	64	105	22	28	81	63	63	38		129	35	44
All grazings	6759	95	130	24	31	85	66	66	41		153	36	47
Cut for seed													
Not grazed	22	0	149	59	69	94	87	76	14		158	68	91
All cut for seed	36	0	160	46	56	97	78	74	11		166	59	75
Cut for silage													
Not grazed	132	2	240	39	84	99	78	86	47		242	49	98
Grazed extensively	1090	13	192	33	62	98	79	84	67		196	41	74
Grazed intensively	757	10	230	36	66	100	85	89	70		230	42	74
All cut for silage	1979	25	211	34	65	99	82	86	67		213	42	76
Cut for hay													
Not grazed	119	1	112	12	18	95	33	45	37		118	35	39
Grazed extensively	834	11	84	21	25	84	65	66	49		100	32	38
Grazed intensively	409	5	103	18	25	85	60	63	51		120	31	39
All cut for hay	1362	17	91	19	25	85	62	64	49		107	32	38
All mowings	3377	42	163	28	49	93	74	77	59		174	39	64
Not stated/not used	108	2	68	23	19	62	48	47	13		109	48	40
All grass	7140	100	131	24	32	85	65	66	40		154	36	48

*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'.

†Note that fields which are both grazed and mown will appear in both the grazing and mowing sections of the table.

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TABLE 8
Percentages of grassland area getting different amounts of N (kg ha^{-1})

	Fields	0	<25	25–	50–	75–	100–	125–	150–	200–	250–	300–	400+
Paddock grazed													
Not mown	121	17	1	10	2	4	9	6	5	9	16	17	5
Mown	95	5	2	2	4	4	5	12	25	11	5	14	10
All paddock grazed	216	12	2	7	3	4	8	9	13	10	11	16	7
Strip grazed													
Not mown	117	2	0	3	12	4	6	8	13	5	10	26	10
Mown	178	4	2	2	4	5	3	13	14	18	16	13	5
All strip grazed	295	3	1	3	8	5	4	10	14	12	13	19	7
Set stocked													
Not mown	905	11	2	6	13	7	8	6	15	9	9	9	5
Mown	851	5	1	5	8	10	6	7	17	13	11	15	4
All set stocked	1756	8	1	6	11	8	7	6	16	10	10	12	4
Other grazings													
Not mown	2512	26	3	18	15	10	6	8	6	3	4	2	1
Mown	1980	8	1	11	13	10	7	9	15	9	8	7	2
All other grazings	4492	19	2	15	14	10	6	8	10	5	5	4	1
All grazings	6759	15	2	12	13	9	6	8	11	7	7	7	3
Cut for seed													
Not grazed	22	6	0	2	0	3	15	14	47	12	0	0	0
All cut for seed	36	3	0	1	4	12	14	8	34	16	6	2	0
Cut for silage													
Not grazed	132	1	0	1	4	4	12	12	10	12	7	33	5
Grazed extensively	1090	2	0	5	7	9	7	10	18	12	14	12	5
Grazed intensively	757	0	0	1	4	7	4	6	20	17	15	19	6
All cut for silage	1979	1	0	3	5	8	6	9	18	14	14	16	5
Cut for hay													
Not grazed	119	5	0	9	24	19	13	7	10	8	6	1	0
Grazed extensively	834	16	2	19	22	12	7	8	9	4	2	1	0
Grazed intensively	409	15	3	12	14	11	8	12	14	6	1	3	0
All cut for hay	1362	15	2	17	20	12	7	9	11	5	2	1	0
All mowings	3377	7	1	8	11	9	7	9	15	10	9	10	3
Not stated/not used	108	38	3	21	2	8	2	17	3	1	1	4	1
All grass	7140	15	2	12	12	9	6	8	11	7	7	7	3