

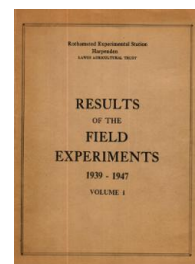
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BD/1 Highfield Grazing

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GRAZING EXPERIMENT

Highfield (begun in 1937)

The residual manurial value of feeding stuffs consumed on grassland

The experiment consisted of 3 blocks each of 3 plots. Each year one block began a new three-year cycle. In the first year of each cycle all three plots of the block were grazed with cattle only, additional feeding stuffs being fed on one plot. In the following winter or early spring another plot of each block received fertilizers estimated to be equivalent to the residual manurial value of the feeding stuffs consumed on the first plot in the previous year. The third plot of each block received neither feeding stuff nor fertilizer. In the second and third years of the cycle each of the plots was grazed by cattle and sheep which were weighed regularly.

Area of each plot, 5 acres.

Details of the design of the experiment are as given in the 1937 Station Report, pp. 24-27.

In order to obtain a single measure of the yield of a plot, the amount of starch equivalent produced on each plot in each year has been calculated. In this way it is possible to include in a single figure the energy value of the food required to produce the observed live-weight increases, together with the energy value required to maintain the animals. The calculations are based upon the tables of average composition given by Woodman, H.E., in "Rations for Livestock", Min. of Agric. and Fish. Bull. No. 48. H.M.S.O., 1948.

A full report of the experiment is given by Boyd, D.A., Crowther, E.M., Moffatt, J.R. and Yates, F. in a paper entitled "A grazing experiment on residual manurial value of feeding stuffs consumed on grass". J.R.A.S.E., 110 (1949), 104-114.

Herbage analyses were made by the Botany Department.

Amounts of Feeding Stuffs and Fertilizers applied

Year	Plot	Feeding Stuffs cwt. per acre			Year	Plot	Fertilizers cwt. per acre		
		1st Period	2nd Period	Total			N	P ₂ O ₅	K ₂ O
1938	4	3.00	5.98	8.98					
1938	2	3.38	6.74	10.12	1939	6	0.17	0.06	0.07
1939	7	3.06	3.78*	3.24	1939	3	0.19	0.07	0.07
1940	4	3.24	4.80	8.04	1940	8	0.17	0.05	0.05
1941	2	4.00	8.91	12.91	1941	6	0.16	0.05	0.06
1942	7	2.89	5.11	8.00	1942	3	0.25	0.09	0.09
1943	4	3.80	4.31	8.11	1943	8	0.16	0.06	0.05
1944	2	3.35	7.40	10.75	1944	6	0.17	0.07	0.07
1945	7	4.52	4.52	9.03	1945	3	0.25	0.09	0.10
1946	4	3.65	5.54	9.19	1946	8	0.18	0.07	0.06
					1947	6	0.19	0.08	0.07

*Plus 1.41 second-period ration fed during first period. Feeding stuffs; equal parts of flaked maize and undecorticated cotton cake (1st period) or decorticated groundnut cake (2nd period).

Starch Equivalent: lb. per acre

Plot	1		2		3		4		5		6		7		8	
	No Manure	Cake 1938,41, 44	No Manure	Cake 1938,41, 44	No Manure	Cake 1938,40, 43,46	No Manure	Cake 1938,40, 43,46	No Manure	Cake 1939,42, 45	No Manure	Cake 1939,42, 45	No Manure	Cake 1939,42, 45	No Manure	Equivalent Manures
1937	779	763	710	710	544	576	594	576	672	629	616	629	672	629	616	
	116	142	117	117	134	112	101	112	86	119	79	119	86	119	79	
1938									639	648	613	648	639	648	613	
									653	670	664	670	653	670	664	
1939	864	1033	985	985	917	1022	1059	1022	769	993	963	993	769	993	963	
	746	724	807	807	746	774	848	774	646	650	625	650	646	650	625	
1940	680	847	719	719					1027	976	950	976	1027	976	950	
	601	560	631	631					702	655	652	655	702	655	652	
1941					747	1108	792	1108	882	1195	1163	1195	882	1195	1163	
					598	713	629	713	908	999	863	999	908	999	863	
1942	780	849	768	768					1074	1399	945	1399	1074	1399	945	
	716	852	811	811					622	680	591	680	622	680	591	
1943	870	872	1086	1086												
	689	728	936	936												
1944					1182	1017	1408	1017								
					716	551	674	551								
1945	811	1231	1037	1037	1079	1006	1174	1006								
	445	680	743	743	696	624	731	624								
1946	1296	1627	1312	1312					1254	1799	1489	1799	1254	1799	1489	
	646	631	568	568					712	689	690	689	712	689	690	
1947					1549	1042	1625	1042								
					464	543	582	543								
									383	420	556	420	383	420	556	

Bd/1.2

Highfield Grazing Experiment

Live weight increase: lb. per acre

Plot	1		2		3		5		6		7		8	
	No Manure	Cake 1938,41, 44	No Manure	Cake 1938,40, 43,46	No Manure	Cake 1938,40, 43,46	No Manure	Cake 1938,40, 43,46	No Manure	Cake 1938,40, 43,46	No Manure	Cake 1939,42, 45	No Manure	Cake 1939,42, 45
1937	181	176	151	118	105	118	126	114	118	140	118	114	114	114
1938	3	13	6	6	14	6	4	-1	9	0	9	-1	114	114
1939	193	274	231	237	205	237	242	229	235	148	235	229	235	235
1940	114	100	123	107	115	107	130	96	111	84	111	96	111	111
1941	135	178	133	214	128	214	147	192	192	217	192	180	192	180
1942	91	74	95	79	89	79	101	74	74	91	74	72	74	72
1943	154	177	133	190	160	190	144	144	144	237	312	300	312	300
1944	104	145	127	96	135	96	124	124	124	108	113	79	113	79
1945	222	221	263	296	332	296	404	404	404	315	398	236	398	236
1946	69	84	108	30	54	30	19	19	19	52	31	29	31	29
1947	175	276	237	53	209	210	219	219	219	278	388	328	388	328
	38	54	68	215	74	53	67	67	67	66	63	56	63	56
	276	339	264	81	343	215	373	373	373	319	378	290	378	290
	62	59	48	81	46	81	73	73	73	38	48	90	48	90

Bd/1.3

2

Grazing days per acre

Plot	1		2		3		4		5		6		7		8	
	No Manure	Cake 1938,41, 44	No Manure	Cake 1938,40, 43,46	No Manure	Cake 1938,40, 43,46	No Manure	Cake 1938,40, 43,46	No Manure	Cake 1938,40, 43,46	No Manure	Cake 1938,40, 43,46	No Manure	Cake 1938,40, 43,46	No Manure	Cake 1938,40, 43,46
1937	74	74	74	63	62	63	63	66	66	66	63	66	66	66	66	66
1938	74	74	74	65	65	65	65	62	62	62	65	62	62	62	62	62
1939	107	110	114	120	113	120	126	113	113	113	126	126	126	126	126	126
1940	344	356	342	362	343	362	379	343	343	343	379	379	379	379	379	379
1941	96	122	112	153	119	153	147	119	119	119	147	147	147	147	147	147
1942	288	308	314	316	338	316	374	338	338	338	374	374	374	374	374	374
1943	115	121	121	92	113	92	127	113	113	113	127	127	127	127	127	127
1944	339	355	366	285	346	285	389	346	346	346	389	389	389	389	389	389
1945	96	96	125	115	131	115	149	131	131	131	149	149	149	149	149	149
1946	288	288	373	257	268	257	301	268	268	268	301	301	301	301	301	301
1947	92	133	112	106	154	106	149	154	154	154	149	149	149	149	149	149
	198	293	303	202	218	202	238	218	218	218	238	238	238	238	238	238
	122	155	132													
	259	259	267													

Bd/1.4