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Yields of the Field Experiments 1951

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51/BD/1 Green Manuring - Woburn

Rothamsted Research

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GREEN MANURING EXPERIMENT

Woburn Stackyard - 1951, the 15th year

For details of treatments etc. see Appendix Z 1950.

Cultivations, etc.:

Green manures (Lower half). Clover and ryegrass undersown in barley: Mar 22. Ploughed fallow, lupin and rape plots: Aug 30, Oct 20 and Mar 21. Sulphate of ammonia applied, lupins and rape sown: Apr 19. Rape dusted with D.D.T: May 12 and 26.

Cabbages (Lower half). Dung and straw applied to fallow, clover and ryegrass plots, and ploughed in: June 8. Basal fertilizers applied, cabbages planted and watered in, on 'early' half plots of fallow, lupins and ryegrass: June 13. Owing to dry weather the cabbages on 'early' half plots failed, and decision was made to replant: July 9. Dung and straw applied to lupin and rape plots and ploughed in: July 10. Reploughed rape plots: July 12.

Basal fertilizers applied to remaining plots, cabbages planted and watered in on all plots: July 25. Harvested: Jan 9.

Variety: January King.

Barley (Upper half). Ploughed: Mar 29 Ground chalk ($44\frac{1}{2}$ cwt per acre) applied: Apr 5. Seed drilled at 3 bushels per acre: Apr 16. Ground chalk (43 cwt per acre) applied: Apr 17. Sulphate of ammonia applied, clover and ryegrass undersown: Apr 18. Harvested: Sept 3. Variety: Plumage Archer.

Standard errors per plot:

Cabbages, weight of headed cabbages: 0.383 tons per acre or 20.4% (9 d.f.)

Barley, grain: 1.99 cwt per acre or 12.6% (7 d.f.)²

²2 missing values.

51/Bd/1,2

Summary of Results

Lower Half - Cabbages

	Green Manure					Rye- grass	Mean
	None	Lupins	Clover	Rape			
Weight of headed cabbages: tons per acre (± 0.192)							(± 0.086)
No Dung	1.36	1.74	2.43	0.84	1.62	1.60	
Dung	1.84	2.81	3.03	0.82	2.28	2.15	
No Straw	1.52	2.23	2.85	1.08	2.10	1.96	
Straw	1.67	2.33	2.61	0.58	1.80	1.80	
Sulph. amm.							
2 cwt per acre	1.09	1.88	2.61	0.42	1.32	1.46	
4 cwt per acre	2.11	2.67	2.85	1.24	2.58	2.29	
Sulph. amm. to barley [#]							
Low	1.37	2.28	2.65	0.70	1.64	1.73	
High	1.83	2.27	2.81	0.95	2.26	2.02	
Mean (± 0.135)	1.60	2.28	2.73	0.83	1.95	1.88	

Total produce: tons per acre

No Dung	4.44	5.26	5.83	3.87	4.86	4.85
Dung	4.88	6.22	6.42	3.62	5.61	5.35
No Straw	4.59	5.64	6.50	4.43	5.47	5.33
Straw	4.72	5.83	5.75	3.05	5.01	4.87
Sulph. amm.						
2 cwt per acre	3.89	5.28	5.72	3.04	4.61	4.51
4 cwt per acre	5.42	6.20	6.53	4.44	5.86	5.69
Sulph. amm. to barley [#]						
Low	4.33	5.60	5.94	3.78	4.93	4.92
High	4.98	5.87	6.31	3.70	5.54	5.28
Mean	4.66	5.74	6.13	3.74	5.24	5.10

[#]Sulphate of ammonia to barley and green manure crops, 1950.

51/Ba/1.3

Lower Half - Cabbages
Green Manure

	None	Lupins	Clover	Rape	Rye-grass	Mean
Headed cabbages as percentage of total number						
No dung	20.2	24.4	30.2	12.6	23.1	22.1
Dung	25.0	33.9	36.5	12.0	27.6	27.0
No Straw	21.0	30.3	34.8	15.1	27.2	25.7
Straw	24.2	28.0	32.0	9.5	23.5	23.4
Sulph. amm. 2 cwt per acre	17.2	26.1	33.6	7.5	20.1	20.9
4 cwt per acre	27.9	32.2	33.2	17.1	30.6	28.2
Sulph. amm. to barley*						
Low	21.0	30.0	34.2	10.9	21.5	23.5
High	24.2	28.4	32.6	13.6	29.2	25.6
Mean	22.6	29.2	33.4	12.3	25.4	24.6

Differential Responses

Response to	Mean	Dung		Straw		Sulph. Amm. cwt per acre		Sulph. Amm. Barley*	
		Abs.	Pres.	Abs.	Pres.	2	4	Low	High

Weight of headed cabbages: tons per acre

	(±0.121)			(±0.173)					
Dung	0.56	-	-	0.62	0.50	0.33	0.79	0.65	0.47
Straw	-0.16	-0.10	-0.22	-	-	-0.09	-0.23	-0.34	0.02
Sulph. amm.	0.82	0.59	1.05	0.89	0.75	-	-	0.87	0.77
Sulph. amm. to barley*	0.30	0.39	0.21	0.12	0.48	0.35	0.25	-	-

Total produce: tons per acre

Dung	0.50	-	-	0.66	0.34	0.47	0.53	0.50	0.50
Straw	-0.46	-0.30	-0.62	-	-	-0.38	-0.54	-0.57	-0.35
Sulph. amm.	1.19	1.16	1.22	1.27	1.11	-	-	1.20	1.18
Sulph. amm. to barley*	0.37	0.37	0.37	0.26	0.48	0.38	0.36	-	-

Headed cabbages as percentage of total number

Dung	4.9	-	-	5.9	3.9	3.8	6.0	6.4	3.4
Straw	-2.2	-1.2	-3.2	-	-	-1.2	-3.2	-4.0	-0.4
Sulph. amm.	7.3	6.2	8.4	8.3	6.3	-	-	7.4	7.2
Sulph. amm. to barley*	2.1	3.6	0.6	0.3	3.9	2.2	2.0	-	-

*Sulphate of ammonia to barley and green manure crops, 1950

51/Bd/1.4

Upper Half - Barley

Green Manure

	None	Lupins	Clover	Rape	Rye-grass	Mean
Grain: cwt per acre (± 1.00)						(± 0.45)
No Dung to cabbages 1950	13.7	18.7	14.4	14.2	13.5	14.9
Dung to cabbages	17.1	17.2	17.0	16.7	16.0	16.8
No straw to cabbages 1950	13.4	17.4	15.0	15.1	13.1	14.8
Straw to cabbages	17.3	18.5	16.4	15.8	16.4	16.9
Sulph. Amm. to cabbages 1950						
2 cwt per acre	16.0	17.4	15.1	15.3	12.2	15.2
4 cwt per acre	14.7	18.5	16.4	15.6	17.4	16.5
Sulph. Amm. to barley						
Nil	12.5	14.4	14.7	12.1	13.6	13.5
$1\frac{1}{2}$ cwt per acre	18.2	21.5	16.7	18.8	16.0	18.2
Mean (± 0.71)	15.4	18.0	15.7	15.4	14.8	15.9

Straw: cwt per acre

No Dung to cabbages 1950	14.0	15.2	16.8	14.4	13.8	14.8
Dung to cabbages	16.8	17.6	18.5	15.4	16.4	17.3
No straw to cabbages 1950	14.2	16.1	19.8	14.2	14.4	15.7
Straw to cabbages	16.6	18.6	15.5	15.5	15.8	16.4
Sulph. Amm. to cabbages 1950						
2 cwt per acre	14.7	19.0	18.7	15.5	14.0	16.4
4 cwt per acre	16.2	15.7	16.6	14.3	16.2	15.8
Sulph. Amm. to barley						
Nil	13.2	15.4	15.0	11.5	14.4	13.9
$1\frac{1}{2}$ cwt per acre	17.7	19.3	20.3	18.3	15.8	18.3
Mean	15.4	17.3	17.6	14.9	15.1	16.1

51/Ba/1.5

Upper Half - Barley

Differential Responses

Response to	Mean	Dung to Cabbages		Straw to Cabbages		Sulph. amm. to cabbages		Sulph. amm. to barley	
		Abs. Pres	Abs. Pres.	Abs. Pres.	Abs. Pres.	cwt per acre	cwt per acre	cwt per acre	cwt per acre
						2	4	0	1½

Grain: cwt per acre

	(± 0.63)			(± 0.90)					
Dung to cabbages 1950	1.9	-	-	1.9	1.9	2.9	0.9	0.3	3.5
Straw to cabbages 1950	2.1	2.1	2.1	-	-	2.7	1.5	0.8	3.4
Sulph. amm. to cabbages 1950	1.3	2.3	0.3	1.9	0.7	-	-	1.6	1.0
Sulph. amm. to barley	4.8	3.2	6.4	3.5	6.1	5.1	4.5	-	-

Straw: cwt per acre

Dung to Cabbages 1950	2.5	-	-	1.2	3.8	2.6	2.4	2.3	2.7
Straw to Cabbages 1950	0.7	-0.6	2.0	-	-	0.7	0.7	1.2	0.2
Sulph. amm. to cabbages 1950	-0.6	-0.5	-0.7	-0.6	-0.6	-	-	0.8	-2.0
Sulph. amm. to barley	4.4	4.2	4.6	4.9	3.9	5.8	3.0	-	-