ROTHAMSTED RESEARCH

Yields of the Field Experiments 1949

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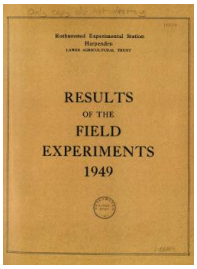

49/BD/1 Green Manuring - Woburn

49/BD/1 Green Manuring - Woburn, Rothamsted Research (1950) Yields Of The Field Experiments 1949, pp 43 - 48

49/Bd/1.1

GREEN MANURING EXPERIMENT

Woburn, Stackyard Series A – 1949

Treatments as given in 1936 Report, p.203, with the exceptions that from 1946 onwards lupins replaced tares, and rape replaced mustard as green manuring crops, while kale has been replaced by winter cabbages as a testing crop. From 1944 to 1948 a top dressing of 1½ cwt per acre of sulphate of ammonia has been applied to half the plots under barley and from 1946 to 1948 this dressing was repeated on the same plots to the green manuring crops. In 1949 this dressing was applied to the fallow, lupin and clover plots; the rape and ryegrass plots which had received top dressing when under barley in 1948 were dressed with 3 cwt per acre sulphate of ammonia, and those which had received no top dressing in 1948 were dressed with 1½ cwt per acre sulphate of ammonia. Since 1944 the experiment has been a half replicate, according to the identity I ≡ (R + C – M – F – T)DSNA, A representing the top dressing of sulphate of ammonia.

Cultivations, etc.:

Lower Half. Cabbages.

Dorset Marl clover and Italian Ryegrass undersown in barley: Apr 16, 1948. Harrowed in: Apr 23. Rolled: Apr 26. Ploughed (except ryegrass and clover plots): Sept 6–14. Second ploughing: Nov 22–25, Jan 17. Springtined three times (except ryegrass and clover plots) Feb 19, Mar 3, 28. Harrowed (except ryegrass and clover plots), lupin plots rolled, rape plots ring rolled, sulphate of ammonia applied: Mar 31. Lupins and rape sown on appropriate plots, rape plots harrowed, lupin, and rape plots ring rolled: Apr 1. Lupin plots hoed at intervals: Apr 19 – June 15. Rape destroyed by flea beetle. Rape plots thistle-barred: Apr 27. Rape plots harrowed: Apr 28. Rape resown, harrowed and rolled: Apr 29. Rape plots twice dusted with D.D.T. powder: May 7, 25. Fallow plots thistle-barred three times, springtined twice, and harrowed three times: Apr 19 – July 12. Ryegrass and clover cut and carted off plots: June 28, 29. Dung and straw applied to appropriate plots: July 11, 18. Green manures ploughed in, whole area harrowed (clover and ryegrass plots harrowed twice) and rolled: July 19, 20. Basal manures applied: July 21. Sulphate of ammonia applied: July 22. January King cabbages transplanted: July 21 – 29. Many cabbages killed by drought. January King cabbages re-planted with water: Aug 2–5. January King cabbages re-planted with water: Aug 8–11. Gaps filled with Savoy cabbages: Aug 25, Sept 1–2, 24. Area surrounded by wire netting against rabbits: Aug 16–25. Hoed at intervals: Aug 29 – Sept 8. Cabbages watered: Sept 9.

Sprayed with nicotine: Sept 29-30. Harvested: Jan 4, 25, Feb 8-14, 21, Mar 1. Variety: January King, filled in with Savoy. Previous crop: Barley.

Upper Half. Barley.
Ploughed: Mar 12-17. Lime at 3 cwt per acre CaO applied: Mar 21-22. Springtined: Mar 22. Sulphate of ammonia applied, harrowed, seed drilled, Broad Red Clover and Italian ryegrass undersown on appropriate plots: Mar 23. Harrowed and rolled: Mar 24. Weeded: June 2. Harvested: Aug 9. Variety: Plumage Archer. Previous crop: Cabbages.

Standard errors per plot:
Cabbages: total yield, 0.568 tons per acre or 12.9%
Barley: grain, 2.25 cwt per acre or 11.9%
straw, 3.09 cwt per acre or 13.9%

All standard errors from 9 degrees of freedom.

Lower Half – Cabbages

	None	Lupins	Clover	Rape	Rye-grass	Mean
Total weight: tons per acre			(±0.284)			(±0.127)
No Dung	5.53	4.92	3.90	3.18	3.22	4.15
Dung	5.86	5.59	3.86	3.64	4.28	4.65
No Straw	5.76	5.39	4.14	3.31	4.04	4.53
Straw	5.63	5.12	3.64	3.50	3.45	4.27
Sulph. amm. 2 cwt per acre	5.55	5.14	3.70	3.15	3.58	4.23
Sulph. amm. 4 cwt per acre	5.83	5.37	4.07	3.66	3.92	4.57
Sulph. amm. to barley* Low	5.67	5.47	3.87	3.59	3.47	4.41
Sulph. amm. to barley* High	5.72	5.05	3.90	3.22	4.03	4.38
Mean (±0.201)	5.69	5.26	3.88	3.41	3.75	4.40
Total number: thousands per acre	(±0.21)					(±0.09)
No Dung	17.7	17.6	18.0	17.5	17.3	17.6
Dung	17.7	17.6	17.8	17.9	17.8	17.8
No Straw	17.5	17.5	17.9	17.9	17.6	17.7
Straw	17.9	17.7	18.0	17.5	17.5	17.7
Sulph. amm. 2 cwt per acre	17.8	17.8	18.1	17.8	17.1	17.7
Sulph. amm. 4 cwt per acre	17.6	17.5	17.8	17.6	18.1	17.7
Sulph. amm. to barley* Low	17.6	17.4	17.6	17.9	17.3	17.6
Sulph. amm. to barley* High	17.9	17.8	18.2	17.5	17.8	17.8
Mean (±0.15)	17.7	17.6	17.9	17.7	17.6	17.7

*Sulphate of ammonia to barley and green manure crops, 1948.

	Low	High
fallow, lupins, clover	0	3 cwt per acre
rape, ryegrass	1½	4½ " " "

Lower Half – Cabbages

Differential responses

	Mean	Dung Abs.	Dung Pres.	Straw Abs.	Straw Pres.	Sulph. amm. cwt per acre 2	Sulph. amm. cwt per acre 4	Sulph. amm.* to barley Low	Sulph. amm.* to barley High
				Total weight: tons per acre					
	(±0.180)			(±0.257)					
Dung	0.50	–	–	0.64	0.35	0.58	0.41	0.85	0.14
Straw	−0.26	−0.11	−0.40	–	–	−0.20	−0.31	−0.23	−0.28
Sulph. amm.	0.35	0.43	0.26	0.40	0.29	–	–	0.38	0.32
Sulph. amm.* to barley	−0.03	0.32	−0.38	0.0	−0.05	0.0	−0.06	–	–
				Total number: thousands per acre					
	(±0.13)			(±0.19)					
Dung	0.1	–	–	0.1	0.0	0.0	0.0	0.3	−0.1
Straw	0.0	0.0	0.0	–	–	0.0	0.0	0.2	−0.2
Sulph. amm.	0.0	0.0	0.0	0.0	0.0	–	–	0.0	0.0
Sulph. amm.* to barley	0.3	0.5	0.0	0.5	0.0	0.2	0.3	–	–

* Sulphate of ammonia to barley and green manure crops, 1948

	Low	High	
fallow, lupins, clover rape, ryegrass	0	3	cwt per acre
	1½	4½	cwt per acre

Upper Half – Barley

Green Manure Crops	None	Lupins	Clover	Rape	Rye-grass	Mean
Grain:	cwt per acre (±1.12)					(±0.50)
No Dung to cabbages 1948	19.1	19.8	15.0	15.7	17.7	17.5
Dung to cabbages	21.3	21.6	19.3	19.9	19.6	20.3
No straw to cabbages 1948	21.6	20.8	17.1	17.6	17.5	18.9
Straw to cabbages	18.8	20.6	17.3	17.9	19.8	18.9
Sulph.amm.to cabbages 1948						
2 cwt per acre	21.9	19.2	16.5	17.8	17.1	18.5
4 cwt per acre	18.4	22.2	17.8	17.8	20.2	19.3
Sulph.amm.to barley						
Nil	17.1	17.8	15.7	13.7	14.6	15.8
1½ cwt per acre	23.3	23.6	18.6	21.9	22.7	22.0
Mean (±0.79)	20.2	20.7	17.2	17.8	18.6	18.9
Straw:	cwt per acre (±1.54)					(±0.69)
No Dung to cabbages 1948	20.8	22.4	19.0	17.5	22.6	20.5
Dung to cabbages	24.4	26.4	21.9	24.1	23.4	24.1
No straw to cabbages 1948	23.7	24.3	20.6	20.6	22.0	22.2
Straw to cabbages	21.5	24.6	20.3	21.0	24.0	22.3
Sulph.amm.to cabbages 1948						
2 cwt per acre	23.8	24.0	19.1	19.6	21.3	21.6
4 cwt per acre	21.5	24.9	21.8	22.0	24.7	23.0
Sulph.amm.to barley						
Nil	18.8	19.1	17.6	15.4	17.3	17.6
1½ cwt per acre	26.4	29.8	23.3	26.2	28.7	26.9
Mean (±1.09)	22.6	24.4	20.5	20.8	23.0	22.3

Upper Half – Barley

Differential responses

	Mean	Dung to Cabbages Abs.	Dung to Cabbages Pros.	Straw to Cabbages Abs.	Straw to Cabbages Pros.	Sulph. amm. to cabbages cwt per acre 2	Sulph. amm. to cabbages cwt per acre 4	Sulph. amm. to barley cwt per acre 0	Sulph. amm. to barley cwt per acre 1½
Grain: cwt per acre									
	(±0.71)			(±1.02)					
Dung to Cabbages 1948	2.9	–	–	4.5	1.2	3.9	1.8	4.2	1.5
Straw to Cabbages 1948	0.0	1.6	-1.6	–	–	0.6	-0.6	-0.2	0.2
Sulph. amm. to cabbages 1948	0.8	1.8	-0.2	1.4	0.1	–	–	1.7	-0.1
Sulph. amm. to barley	6.2	7.5	4.8	5.9	6.4	7.1	5.2	–	–
Straw: cwt per acre									
	(±0.98)			(±1.40)					
Dung to Cabbages 1948	3.6	–	–	5.1	2.0	3.4	3.7	5.4	1.7
Straw to Cabbages 1948	0.0	1.5	-1.5	–	–	0.0	0.0	-0.5	0.5
Sulph. amm. to cabbages 1948	1.4	1.2	1.5	1.3	1.4	–	–	1.6	1.1
Sulph. amm. to barley	9.2	11.0	7.3	8.6	9.7	9.4	8.9	–	–