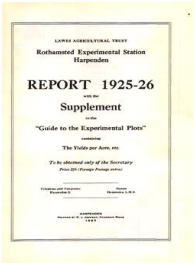
Report 1925-26 With the Supplement to the Guide to the Experimental Plots



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Replicated Experiments

Rothamsted Research

Rothamsted Research (1926) *Replicated Experiments ;* Report 1925-26 With The Supplement To The Guide To The Experimental Plots, pp 138 - 155 **- DOI: https://doi.org/10.23637/ERADOC-1-84**

REPLICATED EXPERIMENTS.

QUALITATIVE EXPERIMENT WITH POTASH.

Potatoes (Kerr's Pink).

1925, West Barnfield. S.E.

I	C	D	A	B
II	A	B	C	D
III	D	C	B	A
IV	B	A	D	C

1926, Stackyard Field. N.E.

I	C	B	A	D
II	B	D	C	A
III	D	A	B	C
IV	A	C	D	B

Repeated each year in a 4×4 Latin Square with plots of $\frac{1}{50}$ of an acre.

Actual Weight in lb.

Row	1925				1926			
	Basal A	Sulphate B	Muriate C	P.M.S. D	Basal A	Sulphate B	Muriate C	P.M.S. D
I	173	398	444	422	461.5	557.0	584.0	498.5
II	279	439	423	409	389.0	519.5	477.0	485.5
III	212	445	428	436	378.5	467.5	491.5	474.5
IV	237	453	393	410	464.0	492.0	511.0	507.0
Total	901	1735	1688	1677	1693.0	2036.0	2063.5	1965.5

Summary.

Year	Average Yield	Basal 6 cwt.Super. 2 cwt.Sulph. of Amm.	Basal + 2 cwt.Sulph. of Potash 1925--47.71% 1926--48.14%	Basal + equiv. Mur. of Potash 1925--52.11% 1926--52.11%	Basal + equiv. Pot. man. salts 1925--27.65% 1926--29.60%	Average	Standard Error
1925	Tons per acre	5.03	9.68	9.42	9.36	8.37	0.203
	Per cent.	60.1	115.6	112.5	111.8	100.0	2.43
1926	Tons per acre	9.45	11.36	11.52	10.97	10.82	0.210
	Per cent.	87.3	105.0	106.4	101.3	100.0	1.91

1925. Strong response to all potash applications, the sulphate showing some superiority.
1926. Only moderate response to potash; both sulphate and muriate superior to potash manure salts.

https://doi.org/10.23637/ERADOC-1-84

POTASH AND NITROGEN QUANTITIES.

Potatoes (Kerr's Pink). West Barnfield, 1925.

S.W.

I		II		III		IV	
A	*S*	*M*	*J*	*N*	*Q*	*T*	*S*
D	*T*	*N*	*Q*	*J*	*A*	*D*	*C*
R	*P*	*C*	*L*	*M*	*R*	*P*	*L*
C	*Q*	*R*	*A*	*S*	*D*	*N*	*J*
N	*J*	*S*	*D*	*P*	*L*	*A*	*R*
M	*L*	*P*	*T*	*C*	*T*	*M*	*Q*

Area of plots $\frac{1}{50}$ acre.

Basal Manure:—
Superphosphate
3 cwt. per acre.

Actual Weight in lb.

Block	Control *T*	Basal *A*	Basal + 2 cwt. S/Amm. *J*	Basal + 4 cwt. S/Amm. *N*	Basal + 2 cwt. S/Pot. *C*	Basal + 2 cwt. S/Pot. + 2 cwt. S/Amm *L*	Basal + 2 cwt. S/Pot. + 4 cwt. S/Amm. *P*	Basal + 4 cwt. S/Pot. *D*	Basal + 4 cwt. S/Pot. + 2 cwt. S/Amm. *M*	Basal + 4 cwt. S/Pot. + 4 cwt. S/Amm. *Q*	Basal + 6 cwt. S/Pot. + 4 cwt. S/Amm. *R*	Basal + 6 cwt. S/Pot. + 6 cwt. S/Amm. *S*
I	272	322	217	328	340	437	464	388	491	487	508	516
II	252	281	315	298	320	438	450	352	482	515	461	464
III	226	198	247	344	341	393	439	338	466	501	519	456
IV	234	191	157	185	298	377	472	342	449	461	475	441
Total	984	992	936	1155	1299	1645	1825	1420	1888	1964	1963	1877

Summary of Results.

Average Yield per Acre.	Control	Basal	Basal + 2 cwt. S/Amm.	Basal + 4 cwt. S/Amm.	Basal + 2 cwt. S/Pot.	Basal + 2 cwt. S/Pot. + 2 cwt. S/Amm.	Basal + 2 cwt. S/Pot. + 4 cwt. S/Amm.	Basal + 4 cwt. S/Pot.	Basal + 4 cwt. S/Pot. + 2 cwt. S/Amm	Basal + 4 cwt. S/Pot. + 4 cwt. S/Amm	Basal + 6 cwt. S/Pot. + 4 cwt. S/Amm.	Basal + 6 cwt. S/Pot. + 6 cwt. S/Amm.	General Average	Standard Error
Tons ...	5.491	5.536	5.223	6.445	7.249	9.180	10.184	7.924	10.536	10.960	10.954	10.474	8.346	0.3597
Per cent.	65.8	66.3	62.6	77.2	86.8	110.0	122.0	94.9	126.2	131 3	131.2	125.5	100	4.31

https://doi.org/10.23637/ERADOC-1-84

Potatoes (Kerr's Pink). Stackyard Field, 1926.

N.W.

N	J	F	A	D	O	K	A
K	Q	O	D	L	B	F	N
B	C	M	L	H	P	G	E
H	E	P	G	M	Q	C	J
A	L	J	C	P	Q	B	E
K	B	G	O	C	H	J	O
E	F	Q	D	N	M	A	D
N	H	P	M	F	G	K	L

SYSTEM OF REPLICATION :—Randomised blocks for all manurial combinations.

Plots $\frac{1}{50}$ acre.

Basal Dressing = 3 cwt. Superphosphate per acre.

Treatment	Actual Yield in lb.							
Nitrogen cwt.	0				1			
Potash cwt.	0	1	2	4	0	1	2	4
	A	B	C	D	E	F	G	H
I	317.5	363.0	368.0	381.5	314.0	383.0	434.5	447.5
II	404.5	308.0	356.0	439.0	318.0	434.0	402.0	422.0
III	351.5	367.5	383 5	316.0	357.5	381.5	455.5	354.0
IV	325.0	359.0	328.5	259.0	395.5	410.5	351.5	390.5
Total ...	1398.5	1397.5	1436.0	1395.5	1385.0	1609.0	1643.5	1614.0
Nitrogen cwt.	2				4			
Potash cwt.	0	1	2	4	0	1	2	4
	J	K	L	M	N	O	P	Q
I	302.5	444.5	471.5	449.0	332.0	450.0	527.0	568.0
II	456.0	544.5	483.5	504.0	468.0	533.5	500.0	561·5
III	443.0	472.5	495.5	474.5	385.5	502.5	496.5	531.0
IV	483.0	430.0	394.5	444.0	522.0	512.0	559.0	550.0
Total ...	1684.5	1891.5	1845.0	1871.5	1707.5	1998.0	2082.5	2210.5

Summary of Results.

	Average Yield in tons per Acre.				Average Yield per cent.			
	Cwt. per Acre, Sulph. of Potash.				Cwt. per Acre, Sulph. of Potash.			
Cwt. per acre Sulphate of Ammonia	0	1	2	4	0	1	2	4
0	7.80	7.80	8.01	7.79	82.3	82.3	84.6	82.2
1	7.73	8.98	9.17	9.01	81.6	94.8	96.8	95.0
2	9.40	10.56	10.30	10.44	99.20	111.4	108.7	110.2
4	9.53	11.15	11.62	12.34	100.5	117.7	122.6	130.1

Standard Error 0.519 tons, or 5.48 per cent.

https://doi.org/10.23637/ERADOC-1-84

QUALITATIVE EXPERIMENT WITH POTASH.

Sugar Beet. Woburn, 1926.

S.S.E.

C	*O*	*K*	*S*	*M*
O	*M*	*C*	*K*	*S*
K	*S*	*M*	*O*	*C*
M	*K*	*S*	*C*	*O*
S	*C*	*O*	*M*	*K*

System of Replication:—Latin square.

S=Sulphate of Potash
M=Muriate of Potash
K=30 per cent. Potash Salts
} +Basal.

C=Basal only (Super S/A+N/S)
O=No manure
Area of plots, $\frac{1}{80}$ acre

Actual Weights in lb.

C		O		K		S		M	
Roots	Tops	Roots	Tops	Roots	Tops	Roots	Tops	Roots	Tops
640	*465*	512	*294*	600	*341*	566	*423*	558	*378*
527	*412*	544	*358*	554	*422*	578	*421*	567	*413*
539	*424*	460	*342*	671	*546*	578	*417*	520	*392*
539	*454*	528	*366*	603	*555*	497	*352*	609	*507*
547	*457*	470	*307*	560	*444*	563	*440*	540	*471*
2792	*2212*	2514	*1667*	2988	*2308*	2782	*2053*	2794	*2161*

Summary of Results.

Average Yield per Acre.	S	M	K	C	O	General Mean	Standard Error
Roots—pounds	33384	33528	35956	33504	30168	33288	646.44
Tops—pounds	*24636*	*25932*	*27696*	*26544*	*19992*	*24960*	*946.8*
Roots—tons	14.90	14.94	16.05	14.96	13.47	14.86	.2886
Tops—tons	*11.0*	*11.58*	*12.36*	*11.85*	*8.93*	*11.14*	*0.42*
Roots—per cent.	100.29	100.72	107.71	100.65	90.63	100.0	1.942
Tops—per cent.	*98.70*	*103.85*	*110.96*	*106.35*	*80.10*	*100.0*	*3.793*

Significant response only to the Potash Manure Salts.

https://doi.org/10.23637/ERADOC-1-84

NITROGENOUS TOP DRESSING ON ROOTS.

Sugar Beet Experiment. Rothamsted, 1926.

W.N.W.

Rows	Columns I	II	III	IV
I	*12N*	*9N*	*6N*	*2N*
II	*9N*	*12N*	*2N*	*6N*
III	*6N*	*2N*	*12N*	*9N*
IV	*2N*	*6N*	*9N*	*12N*

System of Replication:—Latin Square, 4×4.

Plots $\frac{1}{145}$ acre.

Basal dressing Super. 3 cwt., Muriate of Potash 2 cwt., Sulphate of Ammonia 1½ cwt. (=2N).

Nitrate of Soda 4 cwt. (6N), 7 cwt. (9N), and 10 cwt. (12N), applied as top dressing.

Row	Actual Weights in lb.							
	12N		9N		6N		2N	
	Roots	Tops	Roots	Tops	Roots	Tops	Roots	Tops
I	316.0	*394.0*	284.5	*407.0*	275.5	*403*	229.0	*321.5*
II	273.5	*393.0*	297.0	*392.5*	231.0	*353*	280.0	*369.5*
III	267.0	*414.0*	236.5	*382.0*	298.0	*364*	277.5	*399.0*
IV	255.0	*385.0*	267.5	*422.5*	281.5	*442*	308.5	*394.0*
Total	1111.5	*1586.0*	1085.5	*1604.0*	1086.0	*1562*	1095.0	*1484.0*

Summary of Results.

Average Yield per Acre.	12N	9N	6N	2N	General Mean	Standard Error
Roots, pounds	40292	39349	39368	39694	39676	685
Tops, pounds	*57492*	*58145*	*56622*	*53795*	*56514*	*1163*
Roots, tons	17.99	17.57	17.57	17.72	17.71	0.31
Tops, tons	*25.67*	*25.96*	*25.28*	*24.02*	*25.23*	*0.52*
Roots, per cent.	101.6	99.2	99.2	101.1	100.0	1.73
Tops, per cent.	*101.7*	*102.9*	*100.2*	*95.2*	*100.0*	*2.06*

No significant response in roots, and scarcely in tops.

https://doi.org/10.23637/ERADOC-1-84

Sugar Beet. Woburn, 1926.

S.E.

3N	*N*	*O*	*2N*	*C*
2N	*3N*	*N*	*C*	*O*
N	*2N*	*C*	*O*	*3N*
O	*C*	*2N*	*3N*	*N*
C	*O*	*3N*	*N*	*2N*

System of Replication :—Latin square.
3N = Sulphate of Amm. + Double N/S
2N = „ „ + Single N/S } + Basal.
N = „ „ no N/S
C = Basal only (Super. + S/K)
O = No manure.

Actual Weight in lb.

3N		2N		N		C		O	
Roots	Tops	Roots	Tops	Roots	Tops	Roots	Tops	Roots	Tops
624	*578*	689	*634*	507	*430*	645	*371*	505	*356*
581	*467*	641	*524*	613	*373*	557	*294*	516	*307*
647	*525*	539	*406*	605	*349*	559	*355*	485	*395*
688	*535*	602	*380*	755	*522*	788	*462*	483	*331*
617	*454*	932	*632*	666	*355*	481	*488*	526	*467*
3157	*2559*	3403	*2576*	3146	*2029*	3030	*1970*	2515	*1856*

Summary of Results.

Average Yield per Acre.	3N	2N	N	C	O	General Mean	Standard Error
Roots, pounds	37884	40836	37752	36360	30180	36602	2396
Tops, pounds	*30708*	*30912*	*24348*	*23640*	*22272*	*26304*	*176*
Roots, tons	16.9	18.2	16.9	16.2	13.5	16.3	1.1
Tops, tons	*13.7*	*13.7*	*10.8*	*10.5*	*9.9*	*11.7*	*0.8*
Roots, per cent.	103.5	111.6	103.1	99.3	82.5	100.0	6.5
Tops, per cent.	*116.7*	*117.5*	*92.6*	*89.9*	*84.9*	*100.0*	*6.7*

https://doi.org/10.23637/ERADOC-1-84

Mangolds (Red Intermediate). West Barnfield, 1925.

N.E.

C	D	F	I
H	E	I	
A	B	G	
I	E	C	II
G	A	B	
F	H	D	

SYSTEM OF REPLICATION :—
Randomised blocks in duplicate.
Plots $\frac{1}{20}$ acre.
Basal Manure : Super., 3 cwt. per acre.
Kainit, 4 ,, ,,

	Control A	Basal B	Basal + 1 cwt. S/Amm. C	Basal + 1 cwt. S/Amm. Top Dress'd D	Basal + 1 cwt. S/Amm. + 1 cwt. S/Amm. Top Dress'd E	Basal + 2 cwt. S/Amm. F	Basal + 2 cwt. S/Amm. Top Dress'd G	Basal + 3 cwt. S/Amm. H	Basal + 3 cwt. S/Amm. Top Dress'd I
Roots—Actual Weights in cwt.									
I	15.04	18·47	13·84	18.64	13.60	19.81	20.02	13.60	22.77
II	17.53	18.65	12.35	17.46	19.96	15.92	18.15	14.76	17.95
Total	32.57	37.12	26.19	36.10	33.56	35.73	38.17	28.36	40.72
Leaves—Actual Weights in lb.									
I	593.0	663.5	498.0	767	552	687.0	784.5	506.0	877.0
II	618.5	689.0	436.5	684	705	619.5	666.0	536.5	700.5
Total	1211.5	1352.5	934.5	1451	1257	1306.5	1450.5	1042.5	1577.5

SUMMARY

Average Yield per Acre.	A	B	C	D	E	F	G	H	I	Mean	S.E.
Roots, tons	16.28	18.56	13.09	18.05	16.78	17.87	19.08	14.18	20.36	17.14	1.80
Tops, tons	*5.408*	*6.038*	*4.172*	*6.478*	*5.612*	*5.833*	*6.475*	*4.654*	*7.042*	*5.746*	*0.44*
Roots, per cent.	94.9	108.3	76.4	105.3	97.9	104.3	111.3	82.7	118.8	100.0	10.5
Tops, per cent.	*94.1*	*105.1*	*72.6*	*112.7*	*97.7*	*101.5*	*112.7*	*81.0*	*122.6*	*100.0*	*7.66*

https://doi.org/10.23637/ERADOC-1-84

TOP DRESSING ON CEREALS.

Oats (Grey Winter). Long Hoos Field, 1925.

N.

I	III	II	IV
A	C	F	B
E	D	C	A
D	B	E	G
C	A	B	D
F	E	A	C
B	G	D	E

SYSTEM OF REPLICATION: Four randomised blocks with additional plots F or G.

Plots, $\frac{1}{40}$ acre.

Basal Manure was:—
Super. 2 cwt. per acre.
M/Amm.. equivalent to 1 cwt. per acre S/Amm. for single dressing.
S/Amm., 1 cwt. per acre for single dressing.

Actual Weight in lb.

Columns	Basal A	Single S/Amm. Early B	Single S/Amm. Late C	Double S/Amm. Early D	Double S/Amm. Late E	Single M/Amm Early F	Double M/Amm Early G
Total Grain.							
I	53.00	69.75	73.00	73.00	83.75	60.50	—
II	55.75	61.50	67.00	78.75	75.75	—	64.50
III	43.00	56.75	68.75	67.50	63.50	68.75	—
IV	56.50	69.25	61.00	59.50	68.00	—	66.25
Total	208.25	357.25	269.75	278.75	291.00	129.25	130.75
Total Straw.							
I	65.5	94.0	94.5	101.0	97.5	88.5	—
II	70.5	87.0	83.0	111.0	100.0	—	109.0
III	64.0	85.5	82.5	93.0	93.0	89.5	—
IV	63.5	90.0	84.5	106.5	96.5	—	100.5
Total	263.5	356.5	344.5	411.5	387.0	178.0	209.5

Summary.

Average Yield per Acre.	Basal	Single S/Amm. Early	Single S/Amm. Late	Double S/Amm Early	Double S/Amm Late	Single M/Amm Early	Double M/Amm Early	General Average	Standard Error
Grain, pounds	2082	2492.5	2697.5	2787.5	2910	2585	2615	2608.3	116.7
Straw, pounds	*2635*	*3565*	*3445*	*4115*	*3870*	*3560*	*4190*	*3584*	*85.6*
Grain, bushels	49.57	59.35	64.23	66.37	69.29	61.55	62.26	62.10	2.778
Straw, cwt.	*23.53*	*31.83*	*30.76*	*36.74*	*34.55*	*31.79*	*37.41*	*32.00*	*0.764*
Grain, per cent.	79.8	98.6	103.4	106.9	111.6	99.1	100.3	100	4.47
Straw, per cent.	*73.5*	*99.5*	*96.1*	*114.8*	*108.0*	*99.3*	*116.9*	*100*	*2.39*
Total Produce, pounds ...	4717	6057.5	6142.5	6902.5	6780.0	6145.0	6805.0	6193	—

https://doi.org/10.23637/ERADOC-1-84 *pp 9*

Oats (Grey Winter). Long Hoos Field. Season 1926.

N

	OA	2ME	2SL	OB	2SL	OA	OB	1SE	
X	1SE	1ME	1ML	1SL	2ME	2ML	1ME	1ML	W
	OC	2ML	OD	2SE	OC	1SL	OD	2SE	
	2SE	2ME	OA	1ML	OA	2SE	2SL	2ML	
Y	OB	1SL	1SE	1ME	1ML	OB	OC	1SL	Z
	2ML	OC	2SL	OD	2ME	OD	1ME	1SE	
	2SE	2ML	1SE	2ME	2SL	2SE	2ME	OA	
K	OA	OB	1ML	OC	1ME	2ML	OB	1ML	J
	2SL	1ME	OD	1SL	OC	OD	1SE	1SL	
	2ME	1ME	2ML	2SL	1SE	OA	OB	1SL	
L	1SL	OA	OB	1ML	1ME	2SE	2ML	OC	M
	1SE	OC	2SE	OD	OD	2ME	2SL	1ML	

SYSTEM OF REPLICATION:—8 replicates each $\frac{1}{40}$ acre in randomised blocks of 12 plots.

QUANTITIES.—Sulphate of Ammonia applied at the rate of 1 cwt. and 2 cwts. per acre. Muriate of Ammonia (the equivalence of above in Nitrogen) applied at the rate of 94.5 lb. and 189 lb. per acre.

Early dressing applied when 50% of the plants are tillering. Late dressing applied when the shoot number reaches its maximum.

O=No Top Dressing.
E-L=Early or Late application.
S-M=Sulphate or Muriate of Ammonia.
1-2=Single or Double dressing.

Actual Weights in lb., Total Grain.

	OA	OB	OC	OD	1SE	1SL	1ME	1ML	2SE	2SL	2ME	2ML
Block X	61.375	65.5	68.125	72.125	77.5	80.5	65.375	75.125	83.0	64.25	68.75	65.125
,, W	79.25	83.5	83.25	84.875	80.75	93.125	89.125	86.625	86.625	79.625	88.5	82.625
,, Y	75.5	74.875	62.75	86.125	85.125	67.75	85.75	85.625	83.25	87.125	82.875	74.25
,, Z	91.5	86.25	88.75	82.5	80.5	88.875	86.0	89.25	64.5	88.75	84.125	91.25
,, K	78.625	79.0	83.875	77.75	88.25	88.125	86.5	87.375	82.0	79.125	83.875	78.125
,, J	84.625	84.5	87.875	79.625	76.875	79.625	76.5	87.125	82.875	74.375	78.25	80.5
,, L	68.875	79.5	63.25	83.75	69.0	67.875	79.375	87.625	82.125	87.125	81.875	93.125
,, M	81.25	80.5	89.625	84.75	90.75	80.75	93.5	93.25	85.375	89.0	83.875	93.375

Actual Weights in lb., Total Straw.

	OA	OB	OC	OD	1SE	1SL	1ME	1ML	2SE	2SL	2ME	2ML
Block X	83.0	96.0	93.5	98.5	121.0	133.5	107.5	106.0	161.0	100.0	130.0	101.5
,, W	122.0	140.5	121.5	166.5	160.5	191.0	165.0	146.0	185.0	130.5	159.0	137.5
,, Y	102.0	104.0	99.0	138.0	130.5	100.5	149.0	132.5	142.0	129.5	133.0	103.5
,, Z	149.5	144.0	155.0	139.5	158.5	158.0	190.5	127.5	161.5	180.5	170.0	165.5
,, K	110.0	115.5	133.5	113.0	127.5	140.0	150.0	119.0	116.0	117.0	181.0	114.5
,, J	144.0	145.5	121.5	136.5	165.5	142.5	147.0	154.5	196.5	129.0	200.0	133.0
,, L	100.5	113.0	90.5	140.5	108.0	100.0	128.0	141.5	175.5	153.0	138.0	138.0
,, M	126.0	128.5	157.0	122.0	147.5	154.5	142.0	162.0	181.5	188.0	192.5	164.0

Summary of Results.

Average Yield per Acre	None	Single	Double	Standard Error	Sulphate early	Muriate early	Sulphate late	Muriate late	Single early	Double early	Single late	Double late	Standard Error	Mean
				(*a*)									(*b*)	
Grain—per cent. ...	97.5	102.0	100.5	1.39	100.0	101.2	99.8	104.0	101.0	100.3	103.1	100.7	1.972	100
Grain—bushels ...	75.4	78.9	77.7	1.08	77.3	78.2	77.2	80.4	78.0	77.5	79.7	77.9	1.525	77.3
Straw—per cent. ...	89.3	101.9	108.7	2.218	110.3	112.3	101.7	97.1	104.0	118.6	99.9	98.9	3.137	100
Straw—cwt. ...	44.1	50.3	53.7	1.095	54.5	55.4	50.2	47.9	51.3	58.6	49.3	48.8	1.549	49.3

(*a*) Refers to means of 32 plots, *e.g.*, Single v. Double, or Sulphate v. Muriate.
(*b*) Refers to means of 16 plots, *e.g.*, Early Sulphate v. Late Sulphate or Single Early v. Double Early.

In the grain in spite of a very small standard error, the Single dressing alone produced a significant increase in yield, and this equally whether the dressings were of Sulphate or Muriate applied either early or late. The Double dressing produced no further significant increase.

In the straw the Double dressing produced a significant increase, this being entirely due to those plots which received the dressing early. The early dressed plots yielded significantly more than those where the dressing was applied late.

https://doi.org/10.23637/ERADOC-1-84

Wheat. Great Harpenden Field, 1926.

N.E.

A	OA	1ME	1ML	2SE	OA	1ME	OB	1SL	B
	1SE	2ME	OB	2SL	2SE	OC	1SE	2ML	
	OC	2ML	OD	1SL	OD	2SL	2ME	1ML	
C	OA	1SL	2ME	1ME	2SL	OA	1ML	1SL	D
	1ML	OB	OC	1SE	2ME	2SE	OB	2ML	
	2SL	2SE	OD	2ML	1ME	1SE	OC	OD	

SYSTEM OF REPLICATION:—Four Randomised blocks.

Plots $\frac{1}{40}$ acre.

Sulphate of Ammonia at the rate of 1 and 2 cwt. per acre. Muriate of Ammonia the equivalence of 1 and 2 cwt. of Sulphate of Ammonia, at the rate of 92 lb. and 184 lb. per acre.

O=No top dressing.
E-L=Early or Late application.
S-M=Sulphate or Muriate of Amm.
1-2=Single or Double Dressing.

Total Grain—Actual Weights in lb.

Block	OA	OB	OC	OD	1SE	1SL	1ME	1ML	2SE	2SL	2ME	2ML
A	51.75	47.5	48.25	44.0625	34.0	55.125	59.375	56.875	58.5	56.5	57.25	54.875
B	55.375	56.25	53.0	56.125	59.75	57.75	65.75	60.0	61.375	59.5	60.25	54.75
C	35.25	28.875	30.5	25.25	30.0	38.625	49.5	33.125	29.125	30.125	56.0	29.875
D	39.25	34.0	21.375	20.875	23.0	45.5	37.5	56.375	35.625	46.25	48.5	37.5

Total Straw—Actual Weights in lb.

Block	OA	OB	OC	OD	1SE	1SL	1ME	1ML	2SE	2SL	2ME	2ML
A	112.0	122.0	116.0	132.5	129.0	129.0	123.5	130.0	143.0	133.0	143.0	122.5
B	129.5	135.0	133.5	136.5	144.0	142.5	153.5	138.0	138.5	155.5	156.5	140.5
C	100.5	91.5	111.5	87.5	115.5	101.0	135.5	94.5	100.0	103.5	129.5	105.5
D	136.0	120.0	96.0	92.0	101.0	130.5	107.0	139.5	135.5	131.0	134.5	114.5

Summary of Results.

Average Yield per acre	O	Single	Double	Standard Error	Early Sulphate	Early Muriate	Late Sulphate	Late Muriate	Single Early	Double Early	Single Late	Double Late	Standard Error	Mean
				(a)									(b)	
Grain, per cent. ...	88.9	104.7	106.5	3.51	91.0	119.2	106.9	105.3	98.6	111.7	110.8	101.4	4.96	100.0
Grain, bushels ...	27.0	31.8	32.3	1.066	27.7	36.2	32.5	32.0	30.0	33.9	33.6	30.8	1.508	30.4
Straw, per cent. ...	93.3	101.5	105.2	2.61	101.5	109.2	103.4	99.3	101.7	108.9	101.3	101.4	3.691	100.0
Straw, cwt.	41.3	45.0	46.6	1.16	45.0	48.4	45.8	44.0	45.1	48.3	44.9	44.9	1.640	44.3

(a) Refers to means of 16 plots.
(b) „ „ 8 „

Muriate beats sulphate, an effect entirely due to the early dressings; as regards quantity, double early and single late give the best returns in grain.

https://doi.org/10.23637/ERADOC-1-84

MALTING BARLEY.

Great Knott Field, 1925.

N.W.

II	*D*	*K*	*F*	*G*	*H*	*E*	*C*	*A*	*B*
I	*C*	*A*	*H*	*E*	*B*	*D*	*G*	*K*	*F*

	Control	1 cwt. S/Amm. + 168 lb. S/Pot. + 3 cwt. Super.	1 cwt. S/Amm. + 3 cwt. Super.	1 cwt. S/Amm. + 168 lb. S/Pot.	168 lb. S/Pot. + 3 cwt. Super.	1 cwt. S/Amm.	91 lb. M/Amm. + 168 lb. S/Pot. + 3 cwt. Super.	155 lb. M/Pot. + 1 cwt. S/Amm. + 3 cwt. Super.	2 cwt. S/Amm. + 168 lb. S/Pot. + 3 cwt. Super.
Total Grain.									
	A	B	C	D	E	F	G	H	K
I	23.5	23.0	28.0	31.0	29.75	43.75	36.0	36.5	43.25
II	32.0	41.5	36.25	25.25	22.25	34.75	36.75	35.0	29.25
Total	55.5	64.5	64.25	56.25	52.00	78.50	72.75	71.5	72.50
Total Straw.									
	A	B	C	D	E	F	G	H	K
I	27.5	36.5	33.5	39.5	32.5	51.5	43.5	39.0	51.5
II	39.0	56.0	41.5	25.0	26.5	38.0	41.0	40.5	37.5
Total	66.5	92.5	75.0	64.5	59.0	89.5	84.5	79.5	89.0

Summary.

Average Yield per Acre.	Control	1 cwt. S/Amm. + 168 lb. S/Pot. + 3 cwt. Super.	1 cwt. S/Amm. + 3 cwt. Super.	1 cwt. S/Amm. + 168 lb. S/Pot.	168 lb. S/Pot. + 3 cwt. Super.	1 cwt. S/Amm.	91 lb. M/Amm. + 168 lb. S/Pot. + 3 cwt. Super.	155 lb. M/Pot. + 1 cwt. S/Amm. + 3 cwt. Super.	2 cwt. S/Amm. + 168 lb. S/Pot. + 3 cwt. Super.	General Average	Standard Error*
Grain, pounds ...	1388	1613	1606	1406	1300	1963	1819	1788	1813	1632.6	257.9
Straw, pounds ...	*1663*	*2313*	*1875*	*1613*	*1475*	*2238*	*2113*	*1988*	*2225*	*1944.4*	*6.9*
Grain, bushels ...	26.69	31.02	30.88	27.04	25.00	37.75	34.98	34.38	34.87	31.397	4.96
Straw, cwt.	*14.85*	*20.65*	*16.74*	*14.40*	*13.17*	*19.98*	*18.87*	*17.75*	*19.87*	*17.3611*	*2.73*
Grain, per cent. ...	85.0	98.8	98.4	86.1	79.6	120	111.4	109.5	111	100	15.8
Straw, per cent. ...	*85.5*	*118.9*	*96.4*	*82.9*	*75.9*	*115.1*	*108.6*	*102.2*	*114.4*	*100*	*15.74*
Total Produce, pounds	3051	3926	3481	3019	2775	4201	3932	3776	4038	3577	

* Standard Error not of certain validity, but the best available estimate.

https://doi.org/10.23637/ERADOC-1-84

New Zealand Field, 1926.

I				N			II
D	*A*	*H*	*C*	*C*	*A*	*H*	*E*
F	*E*	*G*	*B*	*G*	*D*	*B*	*F*
H	*C*	*E*	*G*	*E*	*H*	*B*	*F*
B	*F*	*D*	*A*	*G*	*A*	*C*	*D*
III				IV			

SYSTEM OF REPLICATION: Randomised Blocks.

Area $\frac{1}{25}$ each plot.

Actual Weights in lb.

Block	*A* Super. + S/Amm. + S/Pot.	*B* Super. + S/Amm.	*C* S/Amm. + S/Pot.	*D* Super. + S/Pot.	*E* S/Amm.	*F* Super. + S/Pot. + M/Amm.	*G* Super. + S/Pot. + M/Pot.	*H* Control
Total Grain.								
I	104.625	93.375	94.75	111.625	101.25	103.625	91.625	103.00
II	92.625	94.75	89.625	92.25	74.5	89.5	97.625	67.375
III	95.125	97.875	106.375	111.25	90.25	105.625	96.5	109.00
IV	76.625	90.25	79.375	83.75	88.125	98.0	95.625	78.25
Total	369.000	376.25	370.125	398.875	354.125	396.75	381.375	357.625
Total Straw.								
I	182.5	189.5	180.0	182.0	185.5	192.5	193.0	169.0
II	161.5	168.5	162.0	159.5	150.0	162.5	169.5	128.5
III	179.0	199.0	208.5	178.5	173.5	191.5	187.0	171.0
IV	144.5	167.0	156.5	147.5	167.5	169.5	178.0	158.0
Total	667.5	724.0	707.0	667.5	676.5	716.0	727.5	626.5

Summary of Results.

Average Yield per Acre.	Super. + S/Amm. + S/Pot.	Super. + S/Amm.	S/Amm. + S/Pot.	Super. + S/Pot.	S/Amm.	Super. + S/Pot. + S/Amm.	Super. + S/Pot. + M/Pot.	Control	General Mean	Stand'd Error
Grain, pounds	2306	2352	2313	2493	2213	2480	2384	2235	2346.7	105.25
Straw, pounds	*4172*	*4525*	*4419*	*4172*	*4228*	*4475*	*4547*	*3916*	*4306.6*	*108.73*
Grain, bushels	44.35	45.22	44.49	47.94	42.56	47.69	45.84	42.98	45.13	2.02
Straw, cwt.	*37.25*	*40.40*	*39.45*	*37.25*	*37.75*	*39.96*	*40.60*	*34.96*	*38.45*	*0.97*
Grain, per cent.	98.27	100.20	98.57	106.22	94.30	105.65	101.57	95.24	100	4.48
Straw, per cent.	*96.87*	*105.07*	*102.60*	*96.87*	*98.18*	*103.91*	*105.58*	*90.92*	*100*	*2.52*
Total Produce, pounds ...	6478	6877	6732	6665	6441	6955	6930	6151	6653.4	

https://doi.org/10.23637/ERADOC-1-84

Long Hoos. Winter Oats. Season 1926.

COMPARISON OF NITROGENOUS MANURES.

W.S.W.

Block 1				Block 2				Block 3			
A	*D*	*B*	*C*	*C*	*A*	*D*	*B*	*D*	*C*	*A*	*B*

SYSTEM OF REPLICATION :—Randomised Blocks.
Plots $\frac{1}{40}$ acre ; dressings equivalent to 1 cwt. of Sulphate of Ammonia.

Actual Total Weights in lb.

Block	S/Amm. rate of 1 cwt. per acre A		Equivalent Muriate of Amm. B		Equivalent Urea C		No Nitrogenous Dressing D	
	Grain	Straw	Grain	Straw	Grain	Straw	Grain	Straw
I	67.375	*105.5*	80.00	*116.5*	82.75	*129.5*	61.875	*107.0*
II	77.625	*102.0*	81.375	*118.5*	86.75	*134.0*	71.375	*95.5*
III	72.25	*111.5*	71.375	*107.5*	67.0	*100.5*	59.25	*84.0*
Total	217.25	*329.0*	232.75	*342.5*	236.5	*364.0*	192.5	*286.5*

Summary.

Average Yield per Acre.	S/Amm.	M/Amm.	Urea	Control	Mean	S. E.
Grain, pounds	2897	3103	3153	2567	2930	108.039
Straw, pounds	*4387*	*4567*	*4853*	*3820*	*4407*	*113.284*
Grain, bushels	68.97	73.89	75.08	61.11	69.76	2.572
Straw, cwt.	*39.17*	*40.77*	*43.32*	*34.11*	*39.35*	*1.011*
Grain, per cent.	98.86	105.92	107.62	87.60	100.00	3.687
Straw, per cent.	*99.55*	*103.63*	*110.14*	*86.69*	*100.00*	*2.551*
Total Produce, pounds ...	7284	7670	8005	6387	7357	—

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SEASONAL EFFECT OF PHOSPHATE AND NITROGEN.

Barley. Sawyer's Field, 1925.

Area of Plots $\frac{1}{20}$ acre.

S.W.

A	B	B	A	C	D	D	C
C	D	D	C	A	B	B	A
I		II		III		IV	

Total Weights in lb.

Block	1 cwt. Mur/Potash + 1 cwt. S/Amm.		1 cwt. Mur/Potash + 1 cwt. S/Amm. + 4 cwt. Super.		1 cwt. Mur/Potash		1 cwt. Mur/Potash + 4 cwt. Super.	
	A		B		C		D	
	Grain	Straw	Grain	Straw	Grain	Straw	Grain	Straw
I	127.25	*131.0*	135.25	*141*	98.0	*117.5*	110.25	*109.0*
II	112.0	*129.5*	131.0	*141*	103.75	*108.0*	104.50	*108.5*
III	122.75	*123.0*	136.25	*129*	97.25	*98.5*	99.25	*108.0*
IV	117.25	*106.0*	117.75	*125*	94.25	*104.5*	95.25	*102.0*
Total	479.25	*489.5*	520.25	*536*	393.25	*428.5*	409.25	*427.5*

Summary of Results

Average Yield per Acre.	1 cwt. Mur/Potash + 1 cwt. S/Amm. A	1 cwt. Mur/Potash + 1 cwt. S/Amm. + 4 cwt. Super. B	1 cwt. Mur/Potash C	1 cwt. Mur/Potash + 4 cwt. Super. D	General Mean	Standard Error*
Grain, pounds	2396	2601	1966	2046	2252	52.2
Straw, pounds	*2448*	*2680*	*2143*	*2138*	*2352*	*52.4*
Grain, bushels	46.08	50.02	37.81	39.35	43.32	1.0
Straw, cwt.	*21.86*	*23.93*	*19.13*	*19.09*	*21.0*	*0.5*
Grain, per cent.	106.4	115.5	87.3	90.8	100.0	2.3
Straw, per cent.	*104.1*	*114.0*	*91.1*	*90.9*	*100.0*	*2.2*
Total produce, pounds ...	4844	5281	4109	4184	4604.375	

* The Standard Error is not in this case of certain validity, but is the best available estimate.

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GREEN MANURING.

Oats (Grey Winter). Long Hoos, 1925.

Green Manures.

N.N.E.

A	B	C	F	D	E	b	III
						a	
D	E	A	B	C	F	b	II
						a	
C	F	D	E	A	B	b	I
						a	

Area of each plot $\frac{1}{80}$ acre

Actual Weight in lb.

Blocks		F.Y.M. A	Mustard B	Trifolium C	Oats D	Vetches E	Control F
Grain.							
I	a	55.0	59.5	51.5	40.0	61.5	60.5
	b	49.5	62.0	50.0	42.5	59.0	55.0
II	a	42.5	46.0	43.5	33.0	45.5	51.0
	b	51.5	54.0	50.0	31.0	56.0	59.0
III	a	47.5	45.5	47.5	38.5	57.0	51.0
	b	49.5	54.5	48.5	32.0	39.0	51.5
Total		295.5	321.5	291.0	217.0	318.0	328.0
Straw.							
I	a	111.5	104.0	109.5	87.5	104.5	111.5
	b	109.5	114.0	89.5	75.0	108.0	89.0
II	a	81.0	84.5	86.0	59.5	99.0	101.0
	b	86.0	90.5	86.5	61.0	93.0	104.5
III	a	79.0	79.5	80.0	67.5	97.0	81.0
	b	86.0	88.5	84.5	60.5	110.5	86.0
Total		553.0	561.0	536.0	411.0	612.0	573.0

Summary.

Average Yield per Acre.	F.Y.M.	Mustard	Trifolium	Oats	Vetches	Control	General Average	Standard Error*
Grain, pounds	2462.5	2679.2	2425	1808.3	3650	2733.3	2459.7	82.1
Straw, pounds	*4608*	*4675*	*4467*	*3425*	*5100*	*4775*	*4508.3*	*158.8*
Grain, bushels	58.63	63.79	57.74	43.05	63.10	65.08	58.56	1.96
Straw, cwt.	*41.14*	*41.74*	*39.88*	*30.58*	*45.54*	*42.63*	*40.25*	*1.418*
Grain, per cent.	100.1	108.9	98.6	73.5	107.7	111.1	100	3.34
Straw, per cent.	*102.2*	*103.7*	*99.1*	*76.0*	*113.1*	*105.9*	*100*	*3.52*
Total produce, pounds	7071	7354	6892	5233	7750	7508	6968	—

* The Standard Error is not in this case of certain validity, but is the best available estimate.

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CULTIVATION EXPERIMENT.

Sawyer's Field. Swedes, 1926.

S.W. ROOTS

S1
F1
N1
S2
F2
N2
S3
F3
N3

SYSTEM OF REPLICATION:—Triplicate strips. Plots ¼ acre.

S—prepared by Simar rototiller.

F—usual implements, flat seed bed.

N—usual implements, sown on ridges.

NOTE.—Each strip was lifted in five equal portions and the weight of each strip was separately recorded.

Actual Weight of Roots in lb. No. of Roots.

	S	F	N	Total	S	F	N	Total
1	5531	6858	6475	18864	3720	3572	2877	10169
2	5347	6068	7200	18615	4037	2962	2501	9500
3	4909	5634	6160	16703	4081	3334	2642	10057
Total	15787	18560	19835	54182	11838	9868	8020	29726

Summary.

Average Yield per Acre.	S	F	N	Mean	S.E.
Number of Roots ...	15784	13157	10693	13212	82.6919
Number per cent. ...	119.47	99.59	80.93	100	6.2200
Weight in pounds ...	21049	24747	26447	24081	902.7803
Weight in tons	9.40	11.05	11.81	10.75	0.4030
Weight per cent.	87.41	102.76	109.83	100	3.7500

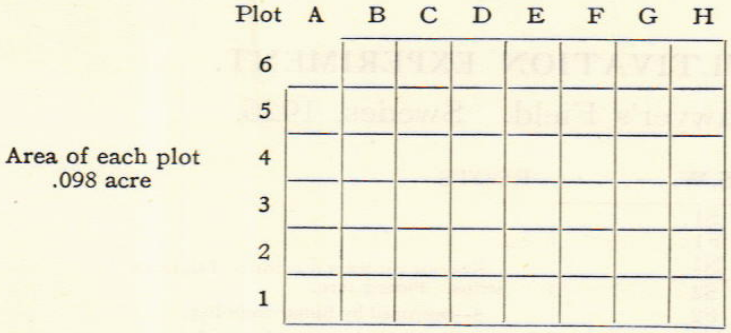
Plots cultivated with the Simar implement show significantly more roots, but a lower yield than the ridged land; flat cultivation is intermediate in both respects with yield not significantly less than the ridge cultivation.

https://doi.org/10.23637/ERADOC-1-84

UNIFORMITY TRIAL.

Wheat (Red Standard). Sawyer's Field, 1925.

S.W.



Area of each plot .098 acre

Actual Weight in lb.

Plot	A lb.	B lb.	C lb.	D lb.	E lb.	F lb.	G lb.	H lb.	Total lb.
				Total Grain.					
6	—	229.00	202.625	197.375	170.875	187.250	202.250	162.50	1351.875
5	196.375	191.50	172.500	147.125	75.250	141.250	150.750	131.50	1206.250
4	198.750	184.25	206.375	133.250	72.125	73.250	82.000	89.00	1039.000
3	191.500	196.50	166.375	168.625	117.375	113.750	88.375	134.50	1177.000
2	132.500	142.50	155.875	86.750	103.625	140.750	161.250	164.75	1088.000
1	195.500*	165.50	124.000	72.000	103.500	171.000	185.250	197.00	1018.250
Total	719.125	1109.250	1027.750	805.125	642.750	827.250	869.875	879.25	6880.375
				Total Straw.					
6	—	282.5	247.0	252.0	213.0	229.5	247.0	200.00	1671.0
5	253.0	230.5	215.0	200.0	104.5	192.0	193.0	174.00	1562.0
4	252.0	229.5	263.5	180.0	98.0	99.5	114.5	124.00	1361.0
3	248.0	245.0	211.5	219.0	146.5	151.0	114.5	180.50	1516.0
2	170.5	184.5	200.5	126.5	138.5	192.0	229.5	221.50	1463.5
1	205.5*	219.0	171.0	110.0	136.0	224.0	253.5	253.00	1366.5
Total	923.5	1391.0	1308.5	1087.5	836.5	1088.0	1152.0	1153.00	8940.0

* One of the weighings of Plot A1 was not recorded.

Summary.

	Grain. lb.	Grain. bushels.	Straw. lb.	Straw. cwt.
Average yield per acre	1526	25.4	1983	17.7
Standard deviation	65.2	1.09	77.0	0.69
Standard deviation per cent. ...	4.2		3.9	

https://doi.org/10.23637/ERADOC-1-84

Sawyers Field.
Uniformity Experiment, 1926. Swedes.

Plot	A	B	C	D	E	F	G	H
6	—	613.5	601.5	816.5	899.0	882.0	890.0	782.5
	—	*3608*	*3936*	*4372*	*4488*	*4464*	*4436*	*4120*
	—	**1716**	**1689**	**1688**	**1665**	**1737**	**1674**	**1841**
5	600.0	604.5	632.5	634.5	841.0	691.0	665.0	978.5
	4080	*4228*	*4452*	*4566*	*4594*	*4443*	*4504*	*4624*
	1559	**1559**	**1655**	**1667**	**1678**	**1694**	**1708**	**1540**
4	600.5	599.5	575.5	568.0	606.5	794.5	741.0	762.5
	4056	*3988*	*4188*	*4296*	*4327*	*4420*	*4402*	*4435*
	1507	**1593**	**1554**	**1528**	**1530**	**1596**	**1480**	**1499**
3	611.5	639.5	718.0	707.0	676.0	614.5	654.5	730.5
	4056	*4046*	*3996*	*4106*	*4292*	*4108*	*3950*	*4128*
	1506	**1448**	**1502**	**1448**	**1474**	**1542**	**1497**	**1484**
2	791.5	741.5	683.0	719.5	758.0	641.5	594.5	613.5
	4224	*4164*	*4228*	*4284*	*4276*	*4004*	*3956*	*4019*
	1497	**1416**	**1519**	**1482**	**1452**	**1438**	**1410**	**1362**
1	478.0	522.5	568.0	586.0	512.0	497.0	541.0	509.5
	3811	*4172*	*4019*	*4279*	*3547*	*3231*	*4143*	*3807*
	1360	**1362**	**1394**	**1379**	**1387**	**1355**	**1474**	**1534**

Figures in ordinary type = Actual Weight of Leaves in lb.
,, italics = ,, ,, Roots ,,
,, heavy type = ,, No. of Roots.

SUMMARY.

	Roots lb.	Roots tons	Leaves lb.	Leaves tons	Roots No.
Average Yield per acre ...	*41675*	*18.6*	6700	3.0	**15335**
Standard Deviation ...	*2793*	*1.2*	1100	0.4	**1179**
Standard Deviation per cent.	*6.7*		16.4		**7.7**

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