Yields of the Field Experiments 1964

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64/W/C/20 Soil Structure - Carrots and Red Beet

Rothamsted Research

64/C/20.1

SOIL STRUCTURE 2

Effects of peat and subsoiling - Woburn Stackyard Field, plot 6 of
   Continuous Barley site red beet 1963, carrots 1964.

Design: 4 randomised blocks of 5 plots each, with plots split in
   1964 for test of P.   Two blocks were subsoiled.

Area of each plot: Red beet 1963: 0.0016, carrots 1964: 0.0008.
Area harvested: Red beet 1963: 0.0011, carrots 1964: 0.0006.

Treatments.   All combinations of:-
   Blocks   1. Subsoiling: None (S0), subsoiled (S1) by hand to depth
                     of 20 inches in 1963.
   Whole plots 2. Peat: None (0) - 2 plots per block, 62.5 cwt peat
                     dry matter, applied to top 2 inches of soil alone
                     (Sb), or with peat dug in to a depth of 8 inches, either at
                     the same rate (Dg1) or at twice the rate (Dg2).
   Sub plots   3. P test (1964 only): None (P0), 0.6 cwt (P1) P2O5
                     as triple superphosphate.

Basal dressings: Monoammonium phosphate, potassium nitrate and
   magnesium sulphate to supply the following:-
   Red beet 1963: 200 lb N, 250 lb K and 500 lb Mg, all applied
      before digging except 82 lb N, applied as ammonium nitrate,
      half before and half after digging.
   Carrots 1964:   100 lb N, 75 lb P, 200 lb K and 50 lb Mg.   All
      Mg and four fifths NPK were dug in.   The remaining NPK was
      applied to seedbed.

Cultivations, etc.:
   Red beet 1963: Ground chalk applied at 30 cwt, basal dressings and
      half Dg2 peat applied, all plots rotary cultivated, remainder of
      Dg2 peat and all Dg1 applied, all plots rotary cultivated second
      time: Apr 18, 1964.   Plots dug, appropriate blocks subsoiled,
      ground chalk applied at 10 cwt: Apr 19.   Sb peat applied and
      pricked in: Apr 23.   Seedbed N applied, seed drilled at 15 lb:
      May 15.   Sprayed with DDT at 0.6 lb in 20 gals: June 7.
      Singled: July 2.   Sprayed with a mixture of menazon, DDT and
      gamma BHC at 1.5 fluid oz in 40 gals: July 31.   Lifted:
      Aug 8.   Variety: Detroit Globe.

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Carrots 1964: Dg peat and fertilisers applied, plots dug: Mar 6, 1964.
   Sb peat and fertilisers applied and worked in: Apr 23.   Seed
   drilled at 7 lb: Apr 27.   Sprayed with DDT at 0.6 lb in 20 gals:
   May 20.   Singled: June 4.   Sprayed 5 times with a mixture of
   menazon, DDT and gamma BHC at 1.5 fluid oz in 40 gals : June 25,
   July 14, 21 and 28, Aug 7.   Lifted: Sept 2.   Variety: Autumn
   King Red Cored.

NOTE: Soil samples were taken for PK analysis and crop samples for
   estimation of dry matter and chemical analysis.

Standard errors per plot.
   Red beet 1963
      Roots: 0.608 or 9.1% (8 d.f.)
      Tops: 0.376 or 8.6% (8 d.f.)
      Roots and tops: 0.974 or 8.8% (8 d.f.)
   Carrots 1964
      Roots: Whole plot: 0.563 or 3.5% (8 d.f.)
                          Sub plot: 0.915 or 5.6% (10 d.f.)
      Tops: Whole plot: 0.286 or 5.2% (8 d.f.)
                          Sub plot: 0.512 or 9.4% (10 d.f.)
      Roots and tops: Whole plot: 0.800 or 3.7% (8 d.f.)
                          Sub plot: 1.385 or 6.4% (10 d.f.)

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SUMMARY OF RESULTS

RED BEET 1963

	0	Sb	Sb+Dg1	Sb+Dg2	Mean
	ROOTS				
S0	(±0.304)* 5.63	7.43	(±0.430)* 6.66	7.49	6.57
S1	5.65	7.37	7.63	7.56	6.77
Mean	5.64 (±0.215)	7.40	7.14 (±0.304)	7.52	6.67
	TOPS				
S0	(±0.188)* 3.88	4.73	(±0.266)* 4.05	4.63	4.24
S1	4.04	4.80	4.57	4.88	4.47
Mean	3.96 (±0.133)	4.77	4.31 (±0.188)	4.76	4.35
	ROOTS AND TOPS				
S0	(±0.487)* 9.52	12.17	(±0.689)* 10.71	12.12	10.80
S1	9.69	12.17	12.20	12.45	11.24
Mean	9.60 (±0.344)	12.17	11.46 (±0.487)	12.28	11.02

* For use in horizontal and interaction comparisons only

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CARROTS 1964

	O	Sb	Sb+Dg1	Sb+Dg2	P0	P1	Mean
			ROOTS				
Mean	(±0.199) 15.58	15.97	(±0.282) 16.91	17.06			16.22
S0	(±0.282)* 15.09	15.68	(±0.398)* 16.92	17.09	(±0.289)* 15.97	15.97	15.97
S1	16.06	16.26	16.89	17.04	16.20	16.73	16.47
P0	(1)&(2) 15.47	15.72	(3)&(4) 16.55	17.21			(±0.205) 16.09
P1	15.68	16.21	17.26	16.92			16.35
			TOPS				
Mean	(±0.101) 5.50	5.53	(±0.143) 5.48	5.37			5.47
S0	(±0.143)* 5.34	5.30	(±0.202)* 5.35	5.20	(±0.162)* 5.29	5.32	5.30
S1	5.65	5.76	5.61	5.54	5.57	5.72	5.64
P0	(1)&(2) 5.40	5.59	(3)&(4) 5.30	5.44			(±0.115) 5.43
P1	5.58	5.47	5.66	5.30			5.52
			ROOTS AND TOPS				
Mean	(±0.283) 21.08	21.50	(±0.400) 22.39	22.43			21.69
S0	(±0.400)* 20.42	20.97	(±0.566)* 22.26	22.29	(±0.438)* 21.26	21.29	21.28
S1	21.72	22.02	22.51	22.58	21.77	22.45	22.11
P0	(1)&(2) 20.88	21.31	(3)&(4) 21.85	22.65			(±0.310) 21.52
P1	21.26	21.68	22.92	22.21			21.87

	ROOTS	TOPS	ROOTS & TOPS	
(1)	(±0.323)	(±0.181)	(±0.490)	For use in vertical and interaction comparisons
(3)	(±0.457)	(±0.256)	(±0.692)	
(2)	(±0.303)	(±0.163)	(±0.447)	For use in horizontal and diagonal comparisons
(4)	(±0.429)	(±0.231)	(±0.632)	

* For use in horizontal and interaction comparisons