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79/R/CS/41 Cultivations and Soil Invertebrates - Old Grass, New Grass

Rothamsted Research

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79/R/CS/41

CULTIVATIONS AND SOIL INVERTEBRATES

Object: To study the effects of cultivations on yield of grass and on populations of soil animals - Road Piece.

Sponsor: C.A. Edwards.

The 11th year, old grass, new grass.

For previous years see 69/R/CS/41(t), 70/R/CS/41(t) and 71-78/R/CS/41.

Design: 4 blocks of 8 plots, randomisation restricted.

Whole plot dimensions: 6.40 x 7.32.

Treatments: Cultivations and reseeded:

CULTIVATION

0	No treatments to old grass (two plots per block)
	Grass ploughed up:-
SF	In spring 1969, reseeded after fewest cultivations needed to produce a seedbed
SM	In spring 1969, reseeded after many seedbed cultivations
AM	In autumn 1969, reseeded spring 1970 after many seedbed cultivations
SFR	Every spring since 1969, reseeded each year after fewest cultivations needed to produce a seedbed
SMR	Every spring since 1969, reseeded each year after many seedbed cultivations
AMR	Every autumn since 1969, reseeded every following spring after many seedbed cultivations

Basal applications: Manures: Chalk at 7.5 t. (0:14:28) at 500 kg. (25:0:16) at 440 kg in the spring and at 220 kg after each of the first two cuts.

Standard applications: To AMR, SMR, SFR plots: Weedkillers: Benazolin, MCPA and 2,4D-B (as 'Legumex Extra' at 7.0 kg) in 220 l.

Seed mixture for 1979: RvP Erecta timothy at 7 kg. S215 meadow fescue at 14 kg. New Zealand Huia white clover at 3 kg. Mixture sown at 24 kg.

Cultivations, etc.: Basal PK applied: 16 Nov, 1978. Chalk applied: 14 Dec. AMR plots ploughed: 22 Jan, 1979. NK applied: 5 Mar, 13 June, 26 July. SFR and SMR plots ploughed: 15 Mar. Cut (excluding AMR, SMR, SFR plots): 31 May. AMR, SMR & SFR plots rotary harrowed: 5 June. AMR and SMR plots disc harrowed twice; AMR, SMR, SFR plots rotary harrowed and sown: 11 June. Weedkillers applied to AMR, SMR and SFR plots: 10 July. AMR, SMR and SFR plots topped: 19 July. All plots cut: 24 July, 28 Sept.

NOTE: Soil cores were taken to assess total soil fauna and quadrats were sampled on each plot for earthworms in autumn and spring.

79/R/CS/41

1ST CUTTING OCCASION (31/5/79) DRY MATTER TONNES/HECTARE

***** TABLES OF MEANS *****

CULTIVTN	0	SF	SM	AM	MEAN
	4.29	4.26	3.59	4.08	4.10

***** STANDARD ERRORS OF DIFFERENCES OF MEANS *****

TABLE	CULTIVTN	
SED	0.560	MIN REP
	0.485	MAX-MIN

CULTIVTN
 MAX-MIN O V ANY OF REMAINDER
 MIN REP ANY OF REMAINDER

***** STRATUM STANDARD ERRORS AND COEFFICIENTS OF VARIATION *****

STRATUM	DF	SE	CV%
BLOCK.WP	13	0.792	19.3

1ST CUTTING OCCASION MEAN DM% 15.8

2ND CUTTING OCCASION (24/7/79) DRY MATTER TONNES/HECTARE

***** TABLES OF MEANS *****

CULTIVTN	0	SF	SM	AM	MEAN
	2.39	2.53	2.57	2.91	2.56

***** STANDARD ERRORS OF DIFFERENCES OF MEANS *****

TABLE	CULTIVTN	
SED	0.316	MIN REP
	0.274	MAX-MIN

***** STRATUM STANDARD ERRORS AND COEFFICIENTS OF VARIATION *****

STRATUM	DF	SE	CV%
BLOCK.WP	13	0.447	17.5

2ND CUTTING OCCASION MEAN DM% 18.7

79/R/CS/41

3RD CUTTING OCCASION (28/9/79) DRY MATTER TONNES/HECTARE

***** TABLES OF MEANS *****

CULTIVTN	0	SF	SM	AM	SFR	SMR	AMR	MEAN
	2.74	2.27	2.45	2.39	2.25	1.79	1.92	2.32

***** STANDARD ERRORS OF DIFFERENCES OF MEANS *****

TABLE	CULTIVTN
SED	0.307 MIN REP 0.266 MAX-MIN

***** STRATUM STANDARD ERRORS AND COEFFICIENTS OF VARIATION *****

STRATUM	DF	SE	CV%
BLOCK.WP	22	0.434	18.7

3RD CUTTING OCCASION MEAN DM% 23.8

TOTAL OF 3 CUTTING OCCASIONS DRY MATTER TONNES/HECTARE

***** TABLES OF MEANS *****

CULTIVTN	0	SF	SM	AM	SFR	SMR	AMR	MEAN
	9.42	9.06	8.61	9.38	2.25	1.79	1.92	6.48

***** STANDARD ERRORS OF DIFFERENCES OF MEANS *****

TABLE	CULTIVTN
SED	0.742 MIN REP * 0.642 MAX-MIN * 0.274 **

* ONLY FOR LEVELS 0, SF, SM AND AM OF CULTIVTN

** ONLY FOR LEVELS SFR, SMR AND AMR OF CULTIVTN

***** STRATUM STANDARD ERRORS AND COEFFICIENTS OF VARIATION *****

STRATUM	DF	SE	CV%
BLOCK.WP*	13	1.049	11.4
BLOCK.WP**	6	0.387	19.5

TOTAL OF 3 CUTTING OCCASIONS MEAN DM% 20.1

PLOT AREA HARVESTED 0.00074