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

Rothamsted Research

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77/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 ninth year, old grass, new grass.

For previous years see 69/R/CS/41(t), 70/R/CS/41(t) and 71-76/R/CS/41.

Design: 4 blocks of 8 plots, randomisation restricted.

Whole plot dimensions: 6.40 x 7.32.

Treatments: Cultivations and reseeding:

CULTIVTN

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

Seeds mixture for 1977: S.48 timothy at 6.7 kg. S.215 meadow fescue at 13.5 kg. New Zealand white clover at 2.2 kg. Sown at 22.4 kg.

Basal applications: Manures: (0:14:28) at 500 kg in winter. (25:0:16) at 440 kg in spring and at 220 kg after the first two cuts. Weedkiller: MCPB ('Tropotox' at 7.0 l in 340 l) to SFR, SMR, AMR plots only.

Cultivations, etc.: AMR plots topped and ploughed: 1 Oct, 1976. Basal PK applied: 13 Dec. SMR and SFR plots ploughed: 28 Feb, 1977. Basal NK applied: 3 Mar. Cut (excluding AMR, SMR, SFR plots): 25 May, 21 July. Rotary cultivated AMR, SMR, SFR plots: 27 May. Discd AMR, SMR plots three times, SFR plots once, harrowed and rolled: 31 May. AMR, SMR, SFR plots sown, harrowed and rolled: 1 June. NK applied to all cut plots: 31 May, 29 July. Weedkiller applied: 27 July. All plots cut: 24 Nov.

NOTE: Soil cores were taken to assess total soil fauna and quadrats were sampled on each plot for earthworms in spring and early winter 1977.

77/R/CS/41

1ST CUT (25/5/77) DRY MATTER TONNES/HECTARE

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

CULTIVTN	O	SF	SM	AM	MEAN
	4.51	3.83	3.56	5.27	4.34

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

TABLE	CULTIVTN
SED	0.436 MIN REP 0.378 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	0.617	14.2

1ST CUT MEAN DM% 18.9

2ND CUT (21/7/77) DRY MATTER TONNES/HECTARE

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

CULTIVTN	O	SF	SM	AM	MEAN
	2.72	3.78	3.83	3.66	3.34

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

TABLE	CULTIVTN
SED	0.282 MIN REP 0.244 MAX-MIN

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

STRATUM	DF	SE	CV%
BLOCK.WP	13	0.399	11.9

2ND CUT MEAN DM% 25.6

77/R/CS/41

3RD CUT (24/11/77) DRY MATTER TONNES/HECTARE

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

CULTIVTN	O	SF	SM	AM	SFR	SMR	AMR	MEAN
	2.58	2.42	2.24	3.11	3.70	4.03	2.93	2.95

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

TABLE	CULTIVTN
SED	0.475 MIN REP 0.412 MAX-MIN

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

STRATUM	DF	SE	CV%
BLOCK.WP	22	0.672	22.8

3RD CUT MEAN DM% 22.7

TOTAL OF 3 CUTS DRY MATTER TONNES/HECTARE

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

CULTIVTN	O	SF	SM	AM	SFR	SMR	AMR	MEAN
	9.81	10.03	9.62	12.05	3.70	4.03	2.93	7.75

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

TABLE	CULTIVTN
SED	0.650 MIN REP 0.563 MAX-MIN

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

STRATUM	DF	SE	CV%
BLOCK.WP	22	0.919	11.9

TOTAL OF 3 CUTS MEAN DM% 16.8

PLOT AREA HARVESTED 0.00074