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7 TABLES

Table 3.1 : Total annual yield of dry matter (gm^{-2}) 1965–1988 for each cutting treatment.

Year	A cut once	B cut twice	C cut thrice	'F' test	S.E.D
1965	186.9	244.4	236.8	–	22.2
1966	211.7	180.2	151.7	–	19.6
1967	281.7	269.2	234.5	–	21.5
1968	210.1	180.0	152.5	–	18.2
1969	284.5 a	213.6 b	175.5 b	**	17.6
1970	209.8 a	146.2 b	113.4 c	***	11.5
1971	192.5 a	191.7 a	145.1 b	**	8.0
1972	302.9 a	228.4 b	190.6 b	**	20.4
1973	175.4 a	125.7 b	115.8 b	**	12.8
1974	164.7 a	138.9 a,b	104.1 b	*	16.9
1975	184.0 a	157.3 b	115.4 c	***	8.5
1976	141.8 a	86.5 b	71.1 b	***	8.3
1977	202.8	213.2	195.1	–	13.2
1978	219.0 a	168.9 b	130.5 c	**	12.7
1979	122.5	125.6	109.6	–	14.9
1980	154.2	145.7	143.9	–	19.2
1981	146.1 a	193.7 b	169.1 b	**	9.4
1982	232.0	224.1	176.0	–	19.8
1983	165.7	171.0	159.3	–	11.0
1984	178.2 a	163.1 a,b	138.9 b	*	10.6
1985	218.6	210.6	203.0	–	20.4
1986	124.4	106.7	84.6	–	12.4
1987	129.8	129.9	126.5	–	18.6
1988	218.1	221.8	201.2	–	20.7

Means with the same letter are not significantly different.

Table 3.2 : First cut yield of dry matter (gm^{-2}) 1965–1988 for each cutting treatment.

Year	A cut once	B cut twice	C cut thrice	'F' test	S.E.D
1965	186.9	193.3	151.3	–	21.8
1966	211.7 a	141.6 b	102.4 b	**	17.9
1967	281.7 a	195.5 b	149.5 b	**	19.8
1968	210.1 a	128.8 b	93.2 b	**	18.2
1969	284.5 a	163.5 b	118.5 c	***	17.1
1970	209.8 a	125.8 b	82.5 c	***	12.2
1971	192.5 a	141.1 b	98.0 c	***	8.3
1972	302.9 a	203.6 b	165.2 b	**	20.7
1973	175.4 a	118.4 b	75.8 c	***	12.2
1974	164.7 a	97.3 b	55.2 b	**	17.3
1975	184.0 a	133.2 b	95.4 c	***	9.3
1976	141.8 a	76.9 b	60.1 b	***	8.4
1977	202.8 a	164.5 b	140.5 b	**	11.2
1978	219.0 a	152.2 b	108.8 c	***	11.9
1979	122.5 a	78.6 b	54.5 b	**	10.0
1980	154.2 a	124.7 a,b	103.8 b	*	15.7
1981	146.1 a	104.8 b	71.0 c	***	9.1
1982	232.0 a	175.9 b	118.4 c	***	13.9
1983	165.7 a	119.8 b	98.6 b	**	12.3
1984	178.2 a	123.9 b	89.2 c	***	10.1
1985	218.6 a	178.7 a,b	149.1 b	*	17.5
1986	124.4 a	88.3 b	59.6 c	**	10.4
1987	129.8	104.0	91.9	–	16.2
1988	218.1 a	191.5 a,b	150.4 c	*	20.2

Means with the same letter are not significantly different

Table 3.3 : Second cut yield of dry matter (gm^{-2}), 1965–1988 for each cutting treatment.

Year	B cut twice	C cut thrice	'F' test	S.E.D
1965	51.2	42.3	–	5.2
1966	38.6	32.3	–	2.1
1967	73.6	72.4	–	3.8
1968	51.1	39.5	–	9.6
1969	50.1	48.5	–	3.4
1970	20.5	15.8	*	1.4
1971	50.6	42.8	–	5.1
1972	24.8	20.0	*	0.9
1973	7.3	4.3	–	1.1
1974	41.6	24.1	**	1.8
1975	24.1	16.3	***	0.6
1976	9.6	5.9	–	1.5
1977	48.8	44.8	–	3.4
1978	16.7	13.6	–	2.3
1979	47.0	46.0	–	5.8
1980	21.0	16.9	–	5.3
1981	89.0	85.1	–	5.8
1982	48.2	35.3	–	7.5
1983	51.2	49.4	–	7.3
1984	39.2	42.2	–	1.0
1985	31.9	32.9	–	2.7
1986	18.4	13.7	*	0.9
1987	25.9	16.7	*	2.8
1988	30.3	31.1	–	3.1

Table 3.4: Third cut yield of dry matter (gm^{-2}). 1965–1988.

Year	C cut thrice
1965	43.2
1966	32.0
1967	12.6
1968	19.8
1969	8.5
1970	15.1
1971	4.3
1972	5.4
1973	35.8
1974	24.7
1975	3.6
1976	5.2
1977	9.8
1978	8.1
1979	9.0
1980	23.2
1981	13.0
1982	22.4
1983	11.2
1984	7.6
1985	20.9
1986	11.3
1987	17.9
1988	19.6

Table 3.5 : Total annual yield of dry matter (gm^{-2}) 1965–1988 for each removal treatment.

Year	a (–) cuttings remove	b (+) cuttings returned	'F' test	S.E.D
1965	215.7	229.7	–	11.1
1966	180.1	182.3	–	10.7
1967	259.3	264.3	–	14.7
1968	172.9	188.8	–	8.2
1969	215.1	234.0	–	12.6
1970	150.0	162.9	–	7.5
1971	160.2	192.7	*	11.2
1972	233.6	247.7	–	9.1
1973	130.1	147.9	*	6.8
1974	128.1	143.7	–	10.5
1975	129.7	174.8	**	11.1
1976	86.7	112.9	**	6.3
1977	183.2	224.3	**	10.9
1978	152.5	193.2	**	9.8
1979	103.1	135.3	**	7.7
1980	124.1	171.7	**	11.4
1981	145.2	194.1	***	10.2
1982	176.8	244.6	***	12.9
1983	133.1	197.6	***	9.8
1984	137.6	182.5	**	10.3
1985	180.4	241.0	**	15.5
1986	93.0	117.4	*	10.7
1987	117.0	140.4	–	12.2
1988	197.0	230.4	–	17.8

Table 3.6 : First cut yield of dry matter (gm^{-2}) 1965–1988 for each removal/ return treatment.

Year	a (–) cuttings remove	b (+) cuttings returned	'F' test	S.E.D
1965	169.9	184.4	–	10.1
1966	149.3	154.5	–	8.4
1967	207.7	210.2	–	10.7
1968	140.2	147.9	–	7.4
1969	181.0	196.7	–	11.6
1970	134.4	144.3	–	8.4
1971	128.6	159.1	*	11.6
1972	217.2	230.6	–	8.8
1973	113.7	132.8	*	5.9
1974	100.1	111.3	–	9.4
1975	116.2	158.9	**	10.8
1976	80.0	105.8	**	5.9
1977	151.6	187.0	**	9.6
1978	141.8	178.3	**	9.4
1979	74.4	96.0	**	5.6
1980	108.1	147.0	**	8.3
1981	89.6	125.0	**	9.5
1982	146.3	204.6	***	11.2
1983	101.7	154.4	***	7.7
1984	112.1	148.7	**	8.8
1985	154.2	210.1	**	15.1
1986	79.6	101.9	*	8.7
1987	97.5	119.7	–	10.5
1988	171.8	201.5	–	17.3

Table 3.7 : Second cut yield of dry matter (gm^{-2}) 1965–1988 for each removal/ return treatment.

Year	a (–) cuttings remove	b (+) cuttings returned	'F' test	S.E.D
1965	47.8	45.7	–	3.7
1966	37.2	33.7	–	3.8
1967	71.5	74.6	–	6.0
1968	38.8	51.9	–	5.4
1969	47.4	51.2	–	2.3
1970	16.3	20.0	–	2.4
1971	45.1	48.3	–	4.0
1972	21.9	22.9	–	2.2
1973	4.7	6.8	–	0.9
1974	29.6	36.1	–	5.7
1975	18.6	21.9	–	2.1
1976	7.6	7.9	–	0.5
1977	42.7	50.8	–	3.8
1978	12.5	17.8	**	1.2
1979	38.8	54.2	**	4.1
1980	15.3	22.6	–	4.4
1981	78.5	95.6	*	5.7
1982	36.7	46.8	*	3.1
1983	42.0	58.6	**	3.7
1984	35.3	46.2	*	3.3
1985	30.6	34.3	*	1.4
1986	14.0	18.1	–	3.9
1987	21.2	21.4	–	2.6
1988	28.9	32.6	–	1.6

Table 3.8 : Third cut yield of dry matter (gm^{-2}) 1965–1988 for each removal/return treatment.

Year	a (–) cuttings remove	b (+) cuttings returned	'F' test	S.E.D
1965	41.8	44.5	–	6.0
1966	17.9	16.1	–	3.4
1967	12.0	13.2	–	3.5
1968	20.5	19.1	–	6.5
1969	7.4	9.5	–	2.3
1970	14.3	15.9	–	2.5
1971	4.4	4.1	–	1.2
1972	5.6	5.2	–	1.6
1973	39.9	31.6	–	4.9
1974	24.6	24.9	–	4.2
1975	3.4	3.9	–	0.4
1976	4.7	5.6	–	2.4
1977	9.4	10.2	–	1.0
1978	7.1	9.1	–	2.2
1979	8.6	9.5	–	2.7
1980	17.4	28.9	–	5.7
1981	9.7	16.3	–	4.0
1982	18.2	26.5	–	6.1
1983	10.2	12.2	–	1.9
1984	5.9	9.2	–	1.4
1985	17.5	24.3	–	2.6
1986	12.2	10.4	–	2.5
1987	16.4	19.5	–	3.4
1988	17.8	21.4	–	1.8

Table 3.10 : The effects of various cutting treatments on species composition after 7 and 23 years of treatment. Summary of ANOVA based on above ground dry matter.

	Randomised Block		Split plot					
	Treat		Treat		Subtreat		T x S	
	71	87	71	87	71	87	71	87
Brachypodium sylvaticum	–	**	–	.	–	.	–	.
Briza media	***	***	**	–	–	–	–	–
Bromus erectus	***	***	**	*	–	***	–	***
excl. infl.	.	***	.	*	.	***	.	**
infl. only	.	***	.	*	.	***	.	***
Dactylis glomerata	–	–	–	–	–	–	–	–
Festuca arundinacea	–	.	–	.	–	.	–	.
Festuca ovina	***	***	–	*	–	*	–	*
Helictotrichon pratense	–	***	–	*	–	–	–	–
Koeleria gracilis	***	***	–	–	–	–	–	–
Lolium perenne	.	–	.	–	.	–	.	–
Sieglingia decumbens	**	***	–	–	–	–	–	–
Carex caryophyllea	–	***	–	–	–	***	–	–
Carex flacca	***	***	–	–	–	**	–	–
Asperula cynanchica	***	***	*	**	–	*	–	–
Campanula glomerata	**	**	–	–	–	*	–	–
Campanuala rotundifolia	–	–	–	–	–	*	–	***
Carlina vulgaris	–	–	–	–	–	–	–	–
Centaurea nigra	–	**	–	–	–	**	–	–
Centaurea scabiosa	.	*	.	–	.	–	.	–
Chrysanthemum leucanthemum	–	**	–	–	–	–	–	*
Cirsium acaulon	–	***	–	–	–	–	–	–
Crataegus monogyna	**	***	–	–	–	–	–	–
Filipendula vulgaris	***	***	–	–	–	–	–	–
Galium verum	*	***	–	–	*	–	*	–
Gentianella amarella	–	.	–	.	–	.	–	.
Helianthemum chamaecistus	***	–	–	–	–	–	–	–
Hieracium pilosella	–	***	–	–	–	–	–	–
Hippocrepis comosa	*	***	–	–	–	–	–	**
Hypochoeris maculata	–	–	–	–	–	–	–	–
Leontodon hispidus	*	***	–	–	–	*	–	–
Linum catharticum	*	***	–	–	–	*	–	***
Lotus corniculatus	–	–	–	–	–	*	–	*
Onobrychis viciifolia	–	***	–	–	–	*	–	***
Picris hieracioides	–	–	–	–	–	–	–	–
Pimpinella saxifraga	–	***	–	–	–	*	–	–

Table contd

	Randomised Block		Split plot					
	Treat		Treat		Subtreat		T x S	
	71	87	71	87	71	87	71	87
Plantago lanceolata	–	–	*	–	–	*	–	–
Plantago media	–	**	–	–	–	–	**	–
Polygala vulgaris	**	***	*	–	–	–	–	**
Poterium sanguisorba	***	***	–	–	–	–	–	*
Primula veris	***	–	–	–	–	–	–	–
Prunella vulgaris	*	–	–	–	–	–	–	–
Pulsatilla vulgaris	–	–	–	–	–	–	–	–
Quercus robur	–	–	–	–	–	–	–	–
Ranunculus bulbosus	***	***	*	*	–	–	–	–
Rhamnus cathartica	.	**	.	.	.	.	.	.
Rosa canina	*	***	–	–	–	–	–	–
Scabiosa columbaria	**	***	–	–	–	**	–	–
Senecio integrifolius	–	.	–	.	–	.	–	.
Senecio jacobaea	–	–	–	–	–	–	–	–
Sonchus oleraceus	.	**	.	–	.	–	.	**
Succisa pratensis	–	***	–	–	–	*	–	*
Thymus pulegioides	***	***	*	–	–	–	–	***
Trifolium pratense	–	.	–	.	–	.	–	.
Viola hirta	*	***	–	–	–	–	–	–
Total	***	***	**	–	*	***	–	*
without shrubs	***	***	***	–	–	***	–	***
Dead	***	***	–	–	*	–	–	–
Live	***	***	**	–	–	***	–	***
Grasses	***	***	**	–	–	***	–	***
Forbs	***	***	–	–	–	–	–	–
Sedges	***	***	–	*	–	***	–	–
Mosses	***	***	–	–	–	**	–	***
No. species	***	***	*	–	–	–	–	–

* = P < 0.05 ** = P < 0.01 *** = P < 0.001 – = not significant . = not recorded

Table 3.11 : Summary of significant treatment effects on species subjected to various cutting treatments after 7 (1971) and 23 years (1987) respectively. A = cut once in May; B = cut twice in May and June; C = cut three times in May, June and July.

	---- 1971 ----	------- 1987 -------
Brachypodium sylvaticum		CUT71 > B C A CUT87
Briza media	C > B A **CUT71**	C > **B** A CUT71 CUT87
Bromus erectus	A **CUT71** **B** > C	CUT71 CUT87 > A B C
excl. infl.		CUT87 CUT71 > A B C
infl. only		CUT71 > CUT87 A B C
Festuca ovina	C B > A CUT71	C > B A CUT71 CUT87
Helictotrichon pratense		C > B A CUT87 CUT71
Koeleria gracilis	C B > A CUT71	B C > A CUT71 CUT87
Sieglingia decumbens	C > **B** A CUT71	B A C > CUT87 CUT71
Carex caryophyllea		C A B > CUT87 CUT71
Carex flacca	CUT71 > A C B	CUT71 CUT87 > A C B
Asperula cynanchica	C B > A CUT71	C > B A CUT71 CUT87
Campanula glomerata	C > B A CUT71	C > **B** A **CUT71 CUT87**
Centaurea nigra		CUT71 > CUT87 C A B
Centaurea scabiosa		CUT87 > **CUT71** **A C B**
Chrysanthemum leucanthemum		C > CUT87 A B CUT71
Cirsium acaulon		C > B CUT71 A CUT87
Crataegus monogyna	CUT71 > A B C	CUT87 > CUT71 A B C
Filipendual vulgaris	CUT71 > C B A	CUT71 CUT87 > B A C
Galium verum	CUT71 > **A** **C B**	A > CUT71 CUT87 C B
Helianthemum chamaecistus	CUT71 > C A B	
Hieracium pilosella		C > A B CUT71 CUT87
Hippocrepis comosa	C > **B** **A** **CUT71**	C > A **B** **CUT87** CUT71
Leontodon hispidus	C > **B** **A** **CUT71**	**A** **B** C > CUT71 CUT87
Linum catharticum	C B A > CUT71	**A** **B** C > CUT87 CUT71
Onobrychis viciifolia		B > A C CUT71 CUT87
Pimpinella saxifraga		B A C CUT71 > CUT87
Plantago media		C > B A CUT71 CUT87
Polygala vulgaris	C > B A **CUT71**	C **B** **A** > CUT71 CUT87
Poterium sanguisorba	CUT71 > A C B	CUT71 CUT87 > A C B
Primula veris	CUT71 > A C B	
Prunella vulgaris	C > **B** **A** **CUT71**	
Ranunculus bulbosus	C > B A CUT71	C B > A CUT87 CUT71
Rhamnus cathartica		CUT87 > CUT71 A B C
Rosa canina	CUT71 > B C A	CUT87 > CUT71 A B C
Scabiosa columbaria	C B A > CUT71	B C > A CUT71 CUT87
Sonchus oleraceus		B > C A CUT71 CUT87
Succisa pratensis		C > B **A** **CUT71** **CUT87**

Table contd

Thymus pulegioides	**B C** > A CUT71	B C **A** > CUT71 CUT87
Viola hirta	A > **C B CUT71**	CUT87 > **CUT71** A C B
Total	CUT71 > A B C	CUT87 > CUT71 A B C
excl. shrubs	CUT71 > A B C	CUT71 CUT87 > A B C
Dead	CUT71 > A B C	CUT87 CUT71 > A C B
Live	CUT71 A > B C	CUT87 > CUT71 A B C
Grasses	A CUT71 B > C	CUT71 CUT87 > A B C
Forbs	CUT71 > C B A	CUT87 > CUT71 C B A
Sedges	CUT71 > A C B	CUT71 CUT87 > A C B
Mosses	CUT71 > A B C	CUT71 A CUT87 > B C
No. species	C B > A CUT71	B C A > CUT71 CUT87

if adjacent treatments in boldface or underlined then not significantly different to each other

Table 3.12 : Summary of significant treatment effects of returning (+) or removing (−) clippings on species subjected to various cutting treatments (A = cut once; B = cut twice; C = cut three times) after 7 (1971) and 23 (1987) years respectively. Based on above ground dry weights.

	----- Treatment -----		Subtreatment	
	1971	1987	1971	1987
Briza media	C > B A			
Bromus erectus	A > B C	A > B C		+ > −
excl. infl.		A > B C		+ > −
infl. only		A > B C		+ > −
Festuca ovina		C B > A		− > +
Helictotrichon pratense		C > B A		
Carex caryophyllea				+ > −
Carex flacca				+ > −
Asperula cynanchica	C > B A	C B > A		− > +
Campanula glomerata				+ > −
Campanula rotundifolia				+ > −
Centaurea nigra				+ > −
Galium verum			+ > −	
Leontodon hispidus				+ > −
Linum cathartica				− > +
Lotus corniculatus				− > +
Onobrychis vicifolia				− > +
Pimpinella saxifraga				+ > −
Plantago lanceolata	C B > A			+ > −
Polygala vulgaris	C > B A			
Ranunculus bulbosus	C B > A	C B > A		
Scabiosa columbaria				− > +
Succisa pratensis				− > +
Thymus pulegioides	B > C A			
Total	A > B C		+ > −	+ > −
excl. shrubs	A > B C			+ > −
Dead			+ > −	
Live	A > B C			+ > −
Grasses	A > B C			+ > −
Sedges		A C > B		+ > −
Mosses				+ > −
No. species	C B > A			

if adjacent treatments in **boldface** or underlined then not significantly different to each other

Table 3.13: The number of species per 1.85 m^{-2} plots receiving the following treatments: (i) Cut in May each year (A); (ii) cut in May and June each year (B); (iii) cut in May, June and July each year (C); (iv) not cut for 17 years; (v) not cut for 23 years. Half the plots cut annually had the cut material returned (+), half had the cut material removed (−). Recorded June, 1987.

Block	Not cut for 23 years		Not cut for 17 years		Cut once annually (A)		Cut twice annually (B)		Cut three times annually (C)		L.S.D.
	x	y	x	y	+	−	+	−	+	−	
1	17	16	16	22	33	37	29	32	30	24	
2	18	10	17	16	26	24	32	30	30	28	
3	14	18	18	20	26	28	30	30	32	31	
4	16	13	18	15	27	31	31	31	30	30	
Mean	15.25[B]		17.75[B]		29.00[A]		30.62[A]		29.37[A]		2.79

Means with the same letter are not significantly different at $p<0.05$.
There were no significant differences between plots in which the cut material was returned or removed.

Table 3.14: Composition in June 1987 of plots cut once a year (in May). Species are listed in descending order of dry weight contribution. Based on 8, 1.85 m^{-2} plots.

Species	g m^{-2} dry weight	%	Running total (%)
Bromus erectus	83.13	79.70	79.70
Helianthemum chamaecistus	3.17	3.04	82.74
Carex flacca	2.64	2.52	85.26
Poterium sanguisorba	1.99	1.90	87.16
Festuca ovina	1.54	1.48	88.64
Cirsium acaulon	1.29	1.23	89.87
Thymus pulegioides	1.13	1.08	90.95
Centaurea nigra	1.02	0.97	91.92
Helictotrichon pratense	0.95	0.91	92.83
Pimpinella saxifraga	0.91	0.87	93.70
Leontodon hispidus	0.77	0.74	94.44
Carex caryophyllea	0.77	0.74	95.18
Scabiosa columbaria	0.53	0.51	95.69
Filipendula vulgaris	0.53	0.51	96.20
Campanula rotundifolia	0.53	0.51	96.71
Viola hirta	0.51	0.48	97.19
Asperula cynanchica	0.45	0.43	97.62
Koeleria gracilis	0.40	0.39	98.01
Lotus corniculatus	0.33	0.31	98.32
Sieglingia decumbens	0.26	0.25	98.57
Hippocrepis comosa	0.24	0.23	98.80
Galium verum	0.22	0.21	99.01
Polygala vulgaris	0.21	0.20	99.21
Plantago lanceolata	0.16	0.16	99.37
Linum catharticum	0.15	0.14	99.51
Succisa pratensis	0.11	0.10	99.60
Briza media	0.08	0.08	99.69
Crataegus monogyna	0.07	0.07	99.76
Ranunculus bulbosus	0.05	0.05	99.81
Onobrychis viciifolia	0.04	0.04	99.85
Picris hieracioides	0.03	0.03	99.88
Centaurea scabiosa	0.03	0.03	99.91
Campanula glomerata	0.03	0.03	
Hieracium pilosella	0.02		
Prunella vulgaris	0.01		
Primula veris	0.01		
Plantago media	0.01		
Hypochoeris maculata	0.01		
Rosa canina	0.01		
Senecio jacobaea	0.01		
Quercus robur	<0.01		

Table contd

Species	g m^{-2} dry weight	%	Running total (%)
Chrysanthemum leucanthemum	<0.01		
Lolium perenne	<0.01		
Sonchus oleraceus	<0.01		
Carlina vulgaris	<0.01		
Dactylis glomerata	<0.01		

Total 46 species

Table 3.15: Composition in June 1987 of plots cut twice a year (in May and June). Species are listed in descending order of dry weight contribution. Based on 8, 1.85 m^{-2} plots.

Species	g m^{-2} dry weight	%	Running total (%)
Bromus erectus	62.71	71.10	71.10
Festuca ovina	3.57	4.01	75.11
Cirsium acaulon	3.24	3.64	78.75
Helianthemum chamaecistus	2.72	3.05	81.80
Helictotrichon pratense	1.72	1.94	83.74
Thymus pulegioides	1.65	1.85	85.59
Asperula cynanchica	1.43	1.60	87.19
Carex flacca	1.42	1.59	88.78
Poterium sanguisorba	1.16	1.30	90.08
Pimpinella saxifraga	1.02	1.15	91.23
Koeleria gracilis	0.98	1.09	92.32
Centaurea nigra	0.88	0.99	93.31
Scabiosa columbaria	0.82	0.92	94.23
Carex caryophyllea	0.68	0.76	94.99
Leontodon hispidus	0.62	0.70	95.69
Filipendula vulgaris	0.56	0.63	96.32
Campanula rotundifolia	0.50	0.56	96.88
Polygala vulgaris	0.30	0.34	97.22
Sieglingia decumbens	0.27	0.30	97.52
Ranunculus bulbosus	0.24	0.27	97.79
Lotus corniculatus	0.24	0.27	98.06
Succisa pratensis	0.23	0.26	98.32
Plantago lanceolata	0.22	0.25	98.57
Hippocrepis comosa	0.22	0.25	98.82
Onobrychis viciifolia	0.19	0.22	99.04
Briza media	0.15	0.16	99.20
Linum catharticum	0.11	0.12	99.32
Sonchus oleraceus	0.07	0.08	99.40
Campanula glomerata	0.07	0.08	99.48
Senecio jacobaea	0.05	0.05	99.53
Viola hirta	0.04	0.04	99.57
Prunella vulgaris	0.03	0.03	99.60
Galium verum	0.02	0.02	
Hypochoeris maculata	0.02	0.02	
Plantago media	0.01	0.01	
Rosa canina	0.01	0.01	
Primula veris	0.01	0.01	
Pulsatilla vulgaris	0.01	0.01	
Crataegus monogyna	<0.01	<0.01	
Chrysanthemum leucanthemum	<0.01	<0.01	100.0

Total 40 species

Table 3.16: Composition in June 1987 of plots cut three times a year (in May, June and July). Species are listed in descending order of dry weight contribution. Based on 8, 1.85 m^{-2} plots.

Species	g m^{-2} dry weight	%	Running total (%)
Bromus erectus	46.79	60.82	60.82
Cirsium acaulon	4.38	5.70	66.52
Festuca ovina	4.34	5.65	72.17
Helianthemum chamaecistus	2.76	3.59	75.76
Carex flacca	2.48	3.22	78.98
Helictotrichon pratense	2.41	3.13	82.11
Asperula cynanchica	2.18	2.83	84.94
Thymus pulegioides	1.46	1.89	86.83
Poterium sanguisorba	1.19	1.56	88.39
Centaurea nigra	1.09	1.41	89.80
Koeleria gracilis	0.85	1.10	90.90
Pimpinella saxifraga	0.83	1.08	91.98
Scabiosa columbaria	0.79	1.02	93.00
Carex caryophyllea	0.78	1.01	94.01
Hippocrepis comosa	0.56	0.73	94.74
Campanula rotundifolia	0.54	0.70	95.44
Filipendula vulgaris	0.47	0.62	96.06
Leontodon hispidus	0.44	0.58	96.64
Succisa pratensis	0.39	0.51	97.15
Polygala vulgaris	0.37	0.48	97.63
Lotus corniculatus	0.31	0.40	98.03
Ranunculus bulbosus	0.28	0.36	98.39
Sieglingia decumbens	0.22	0.28	98.67
Briza media	0.20	0.26	98.93
Plantago lanceolata	0.19	0.24	99.17
Campanula glomerata	0.14	0.19	99.36
Hieracium pilosella	0.09	0.12	99.48
Linum catharticum	0.07	0.09	99.57
Viola hirta	0.07	0.09	
Plantago media	0.06	0.08	
Pulsatilla vulgaris	0.04	0.05	
Chrysanthemum leucanthemum	0.03	0.04	
Prunella vulgaris	0.03	0.04	
Galium verum	0.03	0.04	
Sonchus oleraceus	0.01	0.02	
Primula veris	0.01	0.02	
Carlina vulgaris	0.01	0.02	
Hypochoeris maculata	0.01	0.02	
Senecio jacobaea	0.01	0.02	
Picris hieracioides	0.01	0.02	100.0

Total 40 species

Table 3.17: Composition of control plots (not cut for 16 years) in June 1987. Species are listed in descending order of dry weight contribution. Based on 8, 1.85 m^{-2} plots.

Species	g m^{-2} dry weight	%	Running total (%)
Crataegus monogyna	133.13	45.90	45.90
Bromus erectus	105.95	36.53	82.43
Poterium sanguisorba	11.28	3.89	86.32
Carex flacca	10.42	3.59	89.91
Filipendula vulgaris	8.76	3.02	92.93
Helianthemum chamaecistus	6.45	2.22	95.15
Rosa canina	5.01	1.73	96.88
Centaurea nigra	2.23	0.77	97.65
Cirsium acaulon	1.47	0.51	98.16
Viola hirta	1.16	0.40	98.56
Rhamnus catharticus	1.01	0.35	98.91
Pimpinella saxifraga	0.76	0.26	99.17
Campanula rotundifolia	0.76	0.26	99.43
Centaurea scabiosa	0.25	0.08	99.51
Brachypodium sylvaticum	0.21	0.07	99.58
Primula veris	0.16	0.05	99.63
Lotus corniculatus	0.14	0.05	99.68
Galium verum	0.14	0.05	99.73
Dactylis glomerata	0.13	0.04	99.77
Plantago lanceolata	0.12	0.04	99.81
Leontodon hispidus	0.12	0.04	99.85
Polygala vulgaris	0.07	0.02	
Helictotrichon pratense	0.06	0.02	
Prunella vulgaris	0.04	0.01	
Asperula cynanchica	0.03	0.01	
Koeleria gracilis	0.03	0.01	
Picris hieracioides	0.02	0.008	
Thymus pulegioides	0.02	0.008	
Sieglingia decumbens	0.02	0.008	
Carex caryophyllea	0.01	0.004	
Campanula glomerata	0.01	0.004	
Linum catharticum	0.01	0.004	
Festuca ovina	0.01	0.004	
Scabiosa columbaria	0.01	0.004	
Hippocrepis comosa	0.01	0.004	
Succisa pratensis	0.01	0.004	100.0

Total 36 species

Table 3.18: Composition of control plots (not cut for 23 years) in June 1987. Species are listed in descending order of dry weight contribution. Based on 8, 1.85 m^{-2} plots.

Species	g m^{-2} dry weight	%	Running total (%)
Crataegus monogyna	839.56	75.10	75.10
Rosa canina	137.37	12.28	87.38
Bromus erectus	100.63	8.99	96.37
Poterium sanguisorba	9.99	0.89	97.26
Carex flacca	8.97	0.80	98.06
Filipendula vulgaris	7.57	0.68	98.74
Helianthemum chamaecistus	4.47	0.40	99.14
Rhamnus catharticus	4.21	0.38	99.52
Viola hirta	1.69	0.15	99.67
Centaurea nigra	1.18	0.10	99.77
Cirsium acaulon	0.80	0.07	99.84
Pimpinella saxifraga	0.33	0.03	99.87
Centaurea scabiosa	0.26	0.02	99.89
Primula veris	0.26	0.02	99.91
Plantago lanceolata	0.18	0.01	99.92
Lotus corniculatus	0.17	0.01	99.93
Carex caryophyllea	0.08	<0.01	
Helictotrichon pratense	0.08	<0.01	
Galium verum	0.06	<0.01	
Dactylis glomerata	0.06	<0.01	
Campanula rotundifolia	0.04	<0.01	
Leontodon hispidus	0.04	<0.01	
Hippocrepis comosa	0.03	<0.01	
Thymus pulegioides	0.02	<0.01	
Sieglingia decumbens	0.02	<0.01	
Picris hieracioides	0.02	<0.01	
Chrysanthemum leucanthemum	0.01	<0.01	
Koeleria gracilis	0.01	<0.01	
Linum catharticum	0.01	<0.01	
Festuca ovina	0.004	<0.01	
Campanula glomerata	0.004	<0.01	
Ranunculus bulbosus	0.002	<0.01	100.0

Total 32 species

Table 3.19: Summary of ANCOVA and tests for homogeneity of slopes for changes in chemical composition of vegetation with time for cutting frequency (once, twice or three times a year) and cutting date (May, June, July).

	Cutting date	Cutting frequency	Date x frequency	Slope	Time (year)
K	–	**	–	–	–
Ca	***	–	–	–	–
Mg	***	*	–	–	–
P	***	–	–	–	–
N	***	*	–	–	***

Table 3.20: Mean % Ca, Mg, P and N in vegetation from plots cut twice or three times a year, when cut in May, June, or July.

	Ca		Mg		P		N	
	Cut twice	Cut thrice	Cut once	Cut thrice	Cut once	Cut thrice	Cut once	Cut thrice
Cut May	1.02	1.13	0.16	0.17	0.12	0.12	1.73	1.83
Cut June	1.52	1.56	0.25	0.24	0.14	0.13	2.04	1.99
Cut July		1.85		0.28		0.14		2.05

Table 3.21: The amount ($gm^{-2}year^{-1}$) of K, Ca, Mg, P and N removed in vegetation cut once(A), twice(B) or three times(c) a year. Mean values for 23 years (1965–88).

		Cut 1	Cut 2	Cut 3	Treatment total	Mean
K	A	1.91	–	–	1.91	
	B	1.46	0.38	–	1.84	1.84
	C	1.22	0.38	1.17	1.77	
Ca	A	1.61	–	–	1.61	
	B	1.22	0.46	–	1.67	1.66
	C	1.03	0.43	0.22	1.68	
Mg	A	0.25	–	–	0.25	
	B	0.20	0.08	–	0.27	0.26
	C	0.16	0.07	0.04	0.26	
P	A	0.19	–	–	0.19	
	B	0.14	0.04	–	0.18	0.17
	C	0.11	0.04	0.02	0.17	
N	A	2.81	–	–	2.81	
	B	2.06	0.61	–	2.67	2.66
	C	1.66	0.56	0.27	2.49	

Table 3.22: The mean pH, Organic matter content, extractable Na, K, Mg, Mn and total P and N in the 0–5 cm zone of soils under 3 annual cutting treatments (cut once(A), cut twice(B) and cut thrice(C)) and a control in 1973, after treatments had been applied for 8 years.

	Control	A	B	C	Sign. level
pH	7.69	7.72	7.69	7.67	NS
L.O.I	14.17	14.49	14.51	14.94	NS
Na	31.82[a]	27.95[b]	28.08[b]	28.41[b]	***
K	13.21	12.53	13.05	13.96	NS
Mg	23.56[a]	19.72[b]	19.74[b]	19.49[b]	***
Mn	1.50[a]	1.31[b]	1.50[a]	1.57[a]	**
P	3.89[a]	3.36[b]	3.80[a]	3.62[a]	*
N	0.70[a]	0.74[b]	0.74[b]	0.73[b]	**

Means with the same letter are not significantly different.

Table 3.23: The mean pH, organic matter content, extractable Na, K, Mg, Mn and total P and N in the 0–5 cm. zone of soils under 3 annual cutting treatments (cut once(A), cut twice(B) and cut thrice(c)), control plots not cut for 23 years and plots cut 16 years previously. Sampled in May 1987 , 23 years after the experimen began.

	control not cut for 23 years	not cut for 16 years	A	B	C	Sign. level
pH	7.89^{a}	7.77^{b}	7.82^{a}	7.80^{b}	7.82^{a}	**
L.O.I	14.11^{a}	14.17^{a}	15.38^{b}	15.22^{b}	15.29^{b}	***
Na	9.53^{a}	9.06^{a}	8.32^{b}	9.06^{a}	8.75^{b}	***
K	11.53^{a}	11.57^{a}	13.41^{b}	14.23^{b}	13.59^{b}	*
Mg	26.02^{a}	25.02^{ab}	24.62^{ab}	23.88^{c}	23.55^{c}	**
Mn	1.58^{a}	1.63^{a}	1.80^{b}	1.99^{c}	1.96^{c}	***
P	1.68^{a}	1.81^{b}	1.58^{a}	1.82^{b}	1.56^{a}	**
N	0.74^{a}	0.70^{b}	0.74^{a}	0.72^{a}	0.73^{a}	*

Means with the same letter are not significantly different.

Table 3.24: The mean pH, organic matter content, extractable Na, K, Mg, Mn and total P and N in the 0–5 cm. zone of soils under 3 cutting treatments to which clipped material had been returned or removed for years (1973 analysis) and 23 years (1987 analysis)

	1973			1987		
	Returned	Removed	Sign. level	Returned	Removed	Sign. level
pH	7.65	7.74	***	7.81	7.82	NS
L.O.I	14.86	14.43	NS	15.48	15.11	NS
Na	25.64	30.66	***	8.49	8.93	*
K	12.82	13.54	NS	14.75	12.73	*
Mg	20.24	19.05	NS	23.18	24.85	**
Mn	1.53	1.39	**	1.85	1.97	*
P	4.04	3.15	***	1.68	1.62	NS
N	0.73	0.75	**	0.73	0.72	NS

Table 3.25: Mean number of inflorescences per m^{-2} of 18 species in (a) plots not cut for 24 years, (b) plots not cut for 17 years, (c) cut annually once a year (A), twice a year (B) and three times a year (C). Recorded May 17th, 1988.

	Not cut for 24 years	Not cut for 17 years	Cut annually			Significance Level
			A	B	C	
Carex caryophyllea	0^a	0^a	5.1^b	2.7^b	4.8^b	***
Carex flacca	21.9^a	44.8^b	24.3^a	6.0^c	9.0^c	***
Filipendula vulgaris	4.0^a	4.6^a	0.2^b	0.1^b	0^b	***
Hieracium pilosella	0^a	0^a	0^a	0.1^a	0.4^b	*
Hippocrepis comosa	0.4^a	0^a	5.6^b	7.4^b	17.6^b	***
Hypochoeris maculata	0.1	0	0	0.1	0.3	NS
Leontodon hispidus	0.4	0.1	0	0	0	NS
Leucanthemum vulgare	0.1^a	0.0^a	0.1^a	0.4^b	1.0^b	**
Picris hieracioides	0	0	0	0	0.1	NS
Plantago lanceolata	5.9	4.2	2.2	3.0	1.9	NS
Plantago media	0	0	0	0	0.1	NS
Polygala vulgaris	0.0^a	0.0^a	0.6^a	2.5^b	2.9^b	***
Primula veris	2.3	1.6	0.2	0.5	0.6	NS
Pulsatilla vulgaris	0	0	0.2	0.3	0	NS
Ranunculus bulbosus	0^a	0^a	0.6^a	2.5^b	2.9^b	***
Sanguisorba minor	20.9^a	28.6^a	5.5^b	2.6^b	2.3^b	***
Senecio integrifolius	0^a	0^a	0^a	0.3^b	0.4^b	**
Sonchus asper	0.1	0	0	0	0	NS

Table 3.26: Mean number of inflorescences per m^{-2} of species in (a) plots not cut for 24 years, (b) plots not cut for 17 years and (c) cut annually once a year (A), twice a year (B) and three times a year (C). Recorded August 1st, 1988.

	Not cut for 24 years	Not cut for 17 years	Cut annually			Significance Level
			A	B	C	
Campanula glomerata	0^a	0.1^a	0.8^b	0.1^a	0.4^b	*
Campanula rotundifolia	0.2^a	1.0^b	1.6^b	0.2^a	0^a	**
Carlina vulgaris	0	0	0	0.1	0	NS
Cirsium acaulon	0	0.2	0.3	0.5	0.4	NS
Centaurea nigra	4.2^a	5.0^a	4.7^a	0.4^b	0^b	***
Centaurea scabiosa	0.3	0.2	0	0	0	NS
Galium verum	2.3	0.7	0.3	0	0	NS
Gentianella amarella	0	0	0	0	0.1	NS
Helianthemum chamaecistus	0.2^a	0.6^a	0.1^b	0^b	0.1^b	*
Hieracium pilosella	0.3	0	0.1	0	0	NS
Leontodon hispides	0.4^a	1.1^a	8.1^b	4.9^b	4.7^b	***
Leucanthemum vulgare	0	0	0	0	0.3	NS
Lotus corniculatus	0^a	0^a	2.2^b	0.9^b	1.3^b	***
Onobrychis viciifolia	0	0.4	0	0.1	0	NS
Picris hieracioides	0.5^a	0.6^a	4.5^b	2.6^b	1.5^a	*
Pimpinella saxifraga	0.7	0.4	1.0	0.4	0.9	NS
Plantago media	0^a	0.1^a	0.7^a	2.2^b	3.3^b	***
Polygala vulgaris	0.3	0.4	0.4	0.3	0.2	NS
Prunella vulgaris	0.6	0.4	0.4	0.7	0.5	NS
Scabiosa columbaria	0^a	0.2^a	5.3^b	2.3^c	1.6^c	***
Senecio jacobaea	0	0	0	0.1	0	NS
Sonchus asper	0^a	0.1^b	0.1^b	0^a	0^a	*
Succisa pratensis	0.4	0.2	1.8	0.4	0.3	NS

Table 3.27: Effect of cutting once a year (in May), twice a year (in May and June), three times a year (cut in May, June, July) and not cut for 17 and 23 years on the number and weight of inflorescence of *Bromus erectus*. Recorded in May 1987 and 1988.

		Cut once	Cut twice	Cut thrice	Not cut 17 years	Not cut 23 years	Significance Level
1987	Number of inflorescences	104.5[a]	79.0[a]	28.4[b]	94.5[a]	73.0[a]	***
	Total weight (g)	22.5[a]	14.8[b]	4.8[b]	31.7[a]	24.9[a]	***
	Mean weight per tiller (g)	0.1822[a]	0.1695[a]	0.1350[a]	0.2786[b]	0.3247[b]	***
1988	Number of inflorescences	262.6[a]	168.7[a]	91.2[b]	ND	ND	*
	Total weight (g)	67.6[a]	40.1[a]	17.1[b]	ND	ND	*
	Mean weight per tiller (g)	0.2473	0.2134	0.1732	ND	ND	*

Means with the same letter are not significantly different.

Appendix 1 : Amount of Nitrogen (gm^{-2}) removed from plots cut once, twice and three times a year 1966–88.

Year	First Cut			Second Cut		Third cut	Total		
	Cut Once	Cut Twice	Cut Three Times	Cut Twice	Cut Three Times	Cut Three Times	Cut Once	Cut Twice	Cut Three Times
1969	4.50	2.71	2.00	0.96	0.91	0.15	4.50	3.67	3.06
1972	4.51	3.19	2.76	0.47	0.35	0.10	4.51	3.66	3.21
1973	2.35	1.67	1.10	0.10	0.08	0.78	2.35	1.77	1.96
1975	2.52	1.98	1.50	0.43	0.28	0.06	2.52	2.41	1.84
1976	2.02	1.09	0.87	0.15	0.10	0.09	2.02	1.24	1.06
1977	3.16	2.66	2.15	0.97	0.87	0.21	3.16	3.63	3.23
1978	3.15	2.45	1.82	0.29	0.23	0.12	3.15	2.74	2.17
1979	2.00	1.13	0.81	0.81	0.75	0.14	2.00	1.94	1.70
1980	2.20	1.74	1.51	0.33	0.28	0.40	2.20	2.07	2.19
1981	1.92	1.27	1.23	1.36	1.48	0.20	1.92	2.63	2.91
1982	3.02	2.26	1.73	0.77	0.66	0.36	3.02	3.03	2.75
1983	2.68	1.73	1.47	0.90	0.86	0.21	2.68	2.63	2.54
1985	3.31	2.93	2.37	0.71	0.72	0.40	3.31	3.64	3.49
1986	1.84	1.37	0.85	0.28	0.26	0.24	1.84	1.65	1.35
1987	1.97	1.84	1.45	0.56	0.36	0.38	1.97	2.40	2.19
1988	3.81	3.06	2.61	0.67	0.74	0.46	3.81	3.73	3.81
Mean	2.81	2.07	1.64	0.61	0.56	0.27	2.81	2.68	2.47

Appendix 2 : Amount of Potassium (gm^{-2}) removed from plots cut once, twice and three times a year 1966–88.

Year	First Cut			Second Cut		Third cut	Total		
	Cut Once	Cut Twice	Cut Three Times	Cut Twice	Cut Three Times	Cut Three Times	Cut Once	Cut Twice	Cut Three Times
1969	3.47	2.14	1.62	0.72	0.73	0.09	3.47	2.87	2.45
1972	3.54	2.56	2.27	0.38	0.30	0.06	3.54	2.94	2.64
1973	1.76	1.23	0.88	0.06	0.05	0.54	1.76	1.29	1.47
1975	1.85	1.44	1.22	0.27	0.18	0.03	1.85	1.71	1.43
1976	1.13	0.62	0.53	0.06	0.04	0.04	1.13	0.68	0.61
1977	1.79	1.65	1.45	0.57	0.55	0.12	1.79	2.22	2.12
1978	2.18	1.74	1.39	0.15	0.14	0.08	2.18	1.89	1.61
1979	1.10	0.71	0.56	0.50	0.53	0.08	1.10	1.21	1.17
1980	1.24	1.14	1.00	0.18	0.16	0.27	1.24	1.32	1.43
1981	1.29	0.87	0.86	0.80	0.95	0.12	1.29	1.67	1.93
1982	2.07	1.53	1.28	0.50	0.47	0.24	2.07	2.03	1.99
1983	1.53	1.03	0.89	0.53	0.54	0.12	1.53	1.56	1.55
1985	2.14	1.99	1.59	0.44	0.46	0.24	2.14	2.43	2.29
1986	1.26	1.01	0.63	0.19	0.18	0.16	1.26	1.20	0.97
1987	1.28	1.31	1.03	0.38	0.25	0.25	1.28	1.69	1.53
1988	2.75	2.43	1.97	0.41	0.48	0.28	2.75	2.84	2.73
Mean	1.89	1.46	1.19	0.38	0.38	0.17	1.90	1.85	1.75

Appendix 3 : Amount of Phosphorus (gm^{-2}) removed from plots cut once, twice and three times a year 1966–88.

Year	First Cut			Second Cut		Third cut	Total		
	Cut Once	Cut Twice	Cut Three Times	Cut Twice	Cut Three Times	Cut Three Times	Cut Once	Cut Twice	Cut Three Times
1969	0.30	0.18	0.13	0.06	0.06	0.01	0.30	0.24	0.20
1972	0.38	0.27	0.24	0.04	0.03	0.01	0.38	0.31	0.28
1973	0.19	0.14	0.09	0.01	0.01	0.06	0.19	0.15	0.16
1975	0.21	0.16	0.13	0.03	0.02	0.00	0.21	0.19	0.15
1976	0.13	0.07	0.06	0.01	0.01	0.01	0.13	0.08	0.08
1977	0.21	0.19	0.15	0.07	0.06	0.01	0.21	0.26	0.22
1978	0.21	0.16	0.12	0.02	0.02	0.01	0.21	0.18	0.15
1979	0.12	0.07	0.05	0.05	0.05	0.01	0.12	0.12	0.11
1980	0.13	0.11	0.09	0.02	0.02	0.03	0.13	0.13	0.14
1981	0.12	0.08	0.07	0.08	0.09	0.01	0.12	0.16	0.17
1982	0.18	0.13	0.09	0.04	0.04	0.02	0.18	0.17	0.15
1983	0.13	0.09	0.08	0.05	0.05	0.01	0.13	0.14	0.14
1985	0.20	0.20	0.15	0.05	0.05	0.03	0.20	0.25	0.23
1986	0.12	0.08	0.05	0.02	0.02	0.02	0.12	0.10	0.09
1987	0.12	0.11	0.09	0.04	0.02	0.03	0.12	0.15	0.14
1988	0.27	0.22	0.18	0.05	0.05	0.03	0.27	0.27	0.26
Mean	0.19	0.14	0.11	0.04	0.04	0.02	0.19	0.18	0.17

Appendix 4 : Amount of Calcium (gm^{-2}) removed from plots cut once, twice and three times a year 1966–88.

Year	First Cut			Second Cut		Third cut	Total		
	Cut Once	Cut Twice	Cut Three Times	Cut Twice	Cut Three Times	Cut Three Times	Cut Once	Cut Twice	Cut Three Times
1969	2.02	1.42	0.91	0.54	0.48	0.09	2.02	1.96	1.48
1972	4.14	2.51	2.39	0.36	0.28	0.12	4.14	2.87	2.79
1973	1.40	1.22	0.71	0.07	0.05	0.68	1.40	1.29	1.44
1975	1.39	1.07	1.09	0.45	0.40	0.13	1.39	1.52	1.62
1976	1.07	0.70	0.63	0.16	0.09	0.07	1.07	0.86	0.79
1977	1.40	1.36	1.12	0.5	0.49	0.14	1.40	1.86	1.75
1978	1.10	1.01	0.82	0.16	0.14	0.10	1.10	1.17	1.06
1979	1.98	0.79	0.54	0.98	0.73	0.21	1.98	1.77	1.48
1980	0.94	0.94	0.84	0.23	0.26	0.28	0.94	1.17	1.38
1981	0.87	0.75	0.68	1.07	1.25	0.15	0.87	1.82	2.08
1982	1.63	1.40	1.08	0.58	0.47	0.29	1.63	1.98	1.84
1983	1.08	0.78	0.79	0.65	0.66	0.22	1.08	1.43	1.67
1985	2.21	1.76	1.37	0.41	0.41	0.31	2.21	2.17	2.09
1986	0.96	0.77	0.51	0.19	0.19	0.22	0.96	0.96	0.92
1987	1.43	1.51	1.20	0.55	0.34	0.37	1.43	2.06	1.91
1988	1.99	1.50	1.50	0.38	0.57	0.26	1.99	1.88	2.33
Mean	1.60	1.22	1.01	0.46	0.43	0.23	1.60	1.67	1.66

Appendix 5 : Amount of Magnesium (gm^{-2}) removed from plots cut once, twice and three times a year 1966–88.

Year	First Cut			Second Cut		Third cut	Total		
	Cut Once	Cut Twice	Cut Three Times	Cut Twice	Cut Three Times	Cut Three Times	Cut Once	Cut Twice	Cut Three Times
1969	0.38	0.25	0.19	0.12	0.11	0.02	0.38	0.37	0.32
1972	0.36	0.31	0.24	0.07	0.05	0.01	0.36	0.38	0.30
1973	0.25	0.19	0.12	0.01	0.01	0.11	0.25	0.20	0.24
1975	0.23	0.18	0.14	0.06	0.04	0.01	0.23	0.24	0.19
1976	0.21	0.12	0.10	0.02	0.01	0.01	0.21	0.14	0.12
1977	0.32	0.28	0.23	0.11	0.09	0.03	0.32	0.39	0.35
1978	0.27	0.22	0.17	0.04	0.03	0.02	0.27	0.26	0.22
1979	0.17	0.10	0.07	0.09	0.09	0.02	0.17	0.19	0.18
1980	0.20	0.17	0.15	0.04	0.03	0.04	0.20	0.21	0.22
1981	0.17	0.12	0.11	0.20	0.21	0.03	0.17	0.32	0.35
1982	0.28	0.23	0.17	0.10	0.09	0.06	0.28	0.33	0.32
1983	0.20	0.14	0.12	0.12	0.12	0.03	0.20	0.26	0.27
1985	0.28	0.25	0.19	0.06	0.06	0.05	0.28	0.31	0.30
1986	0.14	0.11	0.07	0.03	0.03	0.03	0.14	0.14	0.13
1987	0.20	0.18	0.14	0.05	0.04	0.04	0.20	0.23	0.22
1988	0.40	0.30	0.25	0.07	0.08	0.05	0.40	0.37	0.38
Mean	0.25	0.20	0.15	0.07	0.07	0.04	0.25	0.27	0.26