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FURTHER ASSESSMENTS OF AMENITY GRASS MIXTURES FOR USE IN LOW- MAINTENANCE SITUATIONS

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FURTHER ASSESSMENTS OF AMENITY GRASS MIXTURES FOR USE IN LOW MAINTENANCE SITUATIONS

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SUMMARY

A field trial was sown in the spring of 1987 at Long Ashton Research Station, to compare the growth of three amenity-type grass mixtures differing in perennial rye grass and red fescue cultivars.

Assessments taken in the second season are reported. As in 1987, mixture 'B' required less mowing, and produced far less dry matter yield when measured at mid-season and end of season; the distinction between 'A' and 'C' in terms of grass yield was less apparent than in the first season.

The trial will continue for a further 2 years. Results obtained during the first year were published in LARS Technical Report No. 103.

INTRODUCTION

MIXTURE 'A'

Cultivars traditionally used for non-sportsfield areas

60% Kent Perennial Ryegrass
35% Boreal Creeping Red Fescue
5% Highland Browntop Bent

MIXTURE 'B'

Containing two cultivars with the highest rating for short growth in the Sports Turf Research Institute Turfgrass Seed Guide

60% Lorina Perennial Ryegrass
35% Logro Slender Creeping Red Fescue
5% Highland Browntop Bent

MIXTURE 'C'

Containing good quality Amenity Grass cultivars

60% Elka Perennial Ryegrass
35% Dawson Slender Creeping Red Fescue
5% Highland Browntop Bent

(% Constituents are by weight)

Assessments of average grass height were made at the end of season. Grass yields were measured at mid season and end of season. Frequency of cutting was assessed on a weekly basis.

METHODS AND MATERIALS

The grass mixtures were sown on 28 April 1987 in eight randomised blocks on a silty clay loam at Long Ashton Research Station. Each 12 m x 12 m main plot was divided into three sub-plots (4 m x 2 m) to allow three cutting regimes. All mixtures were broadcast with an Oyjord drill at a seed rate of 35 kg/ha.

In 1988 all plots were evenly trimmed on 15 April 1988 to ensure that any past differences in grass height were removed.

The plots received a maintenance dressing of 20 N : 40 P : 40 K kg/ha of fertiliser on 24 May 1988.

Cutting Regime X

Grass was assessed each week from 12 May 1988 until early November when grass growth effectively ceased. A graduated 'stick' was used to measure grass height (20 places in each plot). Immediately after each assessment, plots were mown to 7.6 cm (3") if it was recorded that 10% of the grass had reached a height of 15.2 cm (6"). The last date that a plot required cutting was 26 October 1988, thus giving 25 weeks during which when a plot could possibly be cut.

Cutting Regime Y

Grass yield was assessed on sub-plots left uncut until flowering. Yield assessments were made on 26 June 1988, by cutting the centre 2 m strip of each plot with a Haldrup grass harvester to 5 cm (2") high. The grass was weighed fresh and sub-samples taken for oven dry matter determination. The final end-of-season assessment was made on 2 November 1988 by cutting a 4 m x 0.4 m wide strip, uncut since 26 June 1988 to 5 cm (2") high. The grass was collected and weighed fresh; subsequently sub-samples were taken for oven dry matter determination.

Cutting Regime Z

The remaining sub-plots were left uncut all season and measurements of height and yield of grass were taken on 2 November 1988, as in regime Y.

Weed Control

The ingress into the plots of broadleaved weeds, particularly white clover (trifolium repens) were controlled by a spray of Banlene Plus at 5 l/ha on 13 May 1988.

RESULTS

Throughout this report, the LSDs quoted give the minimum difference which is statistically significant ($p = 0.05$) between any pair of means of the three grass mixtures (A, B and C).

Frequency of Cutting (Regime X)

The number of plots cut (out of 8) on each of the 25 6 - 8 day intervals occasions during the season is shown in Table 1.

TABLE 1

Date	No. of Plots cut (out of 8) Grass mixture		
	A	B	C
12th May	8	7	8
19th May	0	0	0
26th May	8	1	0
1st June	0	0	5
8th June	8	7	3
15th June	0	1	0
22nd June	0	0	4
29th June	6	3	4
7th July	2	5	0
14th July	4	0	0
21st July	4	0	4
29th July	4	0	4
4th August	2	3	1
11th August	3	0	2
18th August	4	4	4
25th August	0	0	0
31st August	0	0	1
8th September	7	2	4
16th September	4	4	5
22nd September	3	0	2
30th September	5	4	2
6th October	2	2	3
13th October	2	0	2
20th October	4	0	0
26th October	0	0	0
All dates (total)	80	43	58

An analysis of variance was done on the actual number of cuts per season expressed as a percentage of the possible total. If a grass plot was cut once per season this would represent 1 out of 25 or 4%. The results are summarised in Table 2.

TABLE 2

Grass mixture	No. Cuts (as % total possible cuts)
A	40.0
B	21.5
C	29.0
SED (14df)	1.75
LSD	3.76
CV%	11.6

'A' required cutting significantly more often than 'B' or 'C', the difference between 'B' and 'C' also being significant.

In terms of number of cuts per season to reduce the height from 15.2 cm (6") to 7.6 cm (3"), the results are given in Table 3.

TABLE 3

Mixture	Average number of cuts per season
A	10.00
B	5.38
C	7.25
SED (14df)	0.438
LSD	0.94
CV%	11.6

Grass height

At the end of the season grass height was measured at 10 random points per plot for sub-plots in regimes Y and Z. Mean results are given in Table 4 below. (This measurement system is different from height assessment for weekly cutting of sub-plots in regime X, when a plot was cut if 10% of the scores for height were over 15 cm (6")).

TABLE 4

Grass mixture	Grass height end of season Cut mid-season (cm)	Uncut (cm)
A	24.5	38.8
B	12.0	26.3
C	18.8	38.4
SED (14df)	1.00	2.18
LSD	2.15	4.68
CV%	10.9	12.6

Differences in height between 'A', 'B' and 'C' at the end of season after a mid season cut are statistically significant. Without the mid season cut, 'A' and 'C' are similar at about 38 cm (15") but 'B' is significantly shorter at 26 cm (10").

Grass Yield

Cutting Regime Y. The mid-season grass yields on the sub-plots taken when the grass was heading on 26 June 1988 are given below in Table 5 and for the end of season cut on 2 November 1988 in Table 6.

TABLE 5

Grass mixture	Yield at mid-season cut (regime Y) Fresh weight t/ha	Moisture %	Dry matter t/ha
A	13.77	65.3	3.81
B	8.56	65.0	2.38
C	10.86	61.4	3.37
SED (14df)	0.684	1.91	0.246
LSD	1.47	n.s.	0.53
CV%	12.4%	6.0%	15.4%

The differences in fresh grass production are statistically significant between the mixtures with mixture 'B' yielding the least. Mixture 'B' gave a significantly lower dry matter uield than either 'A' or 'C'.

TABLE 6

Yield at end-of-season after mid-season cut (regime Y)

Grass mixture	Fresh weight t/ha	Moisture %	Dry matter t/ha
A	9.66	69.6	2.89
B	5.21	68.2	1.60
C	6.83	65.8	2.31
SED (14df)	0.933	2.22	0.236
LSD	2.00	n.s.	0.51
CV%	25.8%	6.6%	20.8%

In table 6 the fresh weight yield of mixture 'A' is significantly greater than mixtures 'B' or 'C', which when adjusted for % moisture give dry matter production figures which are statistically significant between all three mixtures. Mixture 'B' again yielded the lowest.

Cutting Regime Z. Results for sub-plots with a whole season's growth which were only cut on 2 November 1988 are given in Table 7.

TABLE 7

Yield at end-of-season cut (regime Z)

Grass mixture	Fresh weight t/ha	Moisture %	Dry matter t/ha
A	11.14	61.1	4.20
B	10.91	70.8	3.14
C	11.64	65.3	4.02
SED (14df)	0.716	1.76	0.199
LSD	n.s.	3.78	0.43
CV%	12.8%	5.4%	10.5%

In Table 7 the differences in fresh weights between the mixtures are not statistically significant, nor is the difference in dry matter production between mixtures 'A' and 'C'; however mixture 'B' is significantly lower yielding than either of them in terms of dry matter production per hectare.

CONCLUSIONS

Very similar results were found in this the second year. However some of the differences measured were not as distinct as they were in the first (establishment) year. Overall, mixture 'B' was significantly shorter than either mixtures 'A' or 'C'. It required far less cutting and the dry matter production at mid or end of season is significantly less than either mixtures 'A' or 'C'; however the differences between these two are becoming less distinct.

As in LARS Technicial Report NO. 103 a simple table of comparisons (Table 8) shows all measurements of 'B' as 100 and 'A' and 'C' expressed as a percentage of 'B'.

TABLE 8

Grass mixture	Frequency of cutting	Height at end of season		Dry matter yield End-of-season		
		After mid-season cut	No mid-season cut	Mid-season	After mid-season cut	No mid-season cut
B	100	100	100	100	100	100
C	139 (137)	157 (123)	146 (137)	142	144 (200)	128 (238)
A	186 (200)	204 (162)	148 (154)	160	180 (281)	134 (270)
LSD	17 (40)	18 (13)	18 (17)	22	32 (35)	14 (24)

The figures in brackets are the relevant percentages obtained in first season (1987). The figures for frequency of cutting and height are very similar, but the dry matter production figures although in a similar order show smaller differences between grass mixtures.

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Grass growth of each mixture shown at end of season (after mid-season cut).

Mixture 'A'

Mixture 'B'

Mixture 'C'