## EVALUATION OF \$170 TALL FESCUE AT INVERMAY AGRICULTURAL RESEARCH CENTRE

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1. Use of Tall Fescue in Pasture Mixtures (R.B.A.; N.A.C.)

S170 tall fescue was compared with Ruanui ryegrass and Apanui cocksfoot in two mowing trials at Invermay from 1968 to 1971. One site was located on a fertile Wingatui recent alluvial silt loam soil, and the other on a Warepa series yellow-grey hill soil of medium-low fertility.

The seeding rates were ryegrass 16.8, cocksfoot 9.0, and tall fescue, 22.5 kg/ha. All treatments were sown with basal Huia whote clover and Turoa red clover, each at 3.4 kg/ha. A basal dressing of 630 kg/ha molybdenum-superphosphate, 250 kg/ha KCl, and 2 500 kg/ha lime was applied at each site, followed by annual maintenance applications.

Two cutting regimes we're imposed: frequent (2- to 3-week intervals), and infrequent (4- to 6-week intervals).

Establishment of seedlings was satisfactory, but an assessment 6 months after sowing showed that, although ryegrass had formed a dense swasd on both sites, cocksfoot and tall fescue cover was comparatively sparse.

The major features of the results were:

(1) Over the 3-year period there was little difference in total production between, the tall 'fescue and ryegrass treatments (Table 1). Under frequent cutting the yield's were almost identical, while under infrequent cutting ryegrass outyielded tall fescue by less than 5 %.

Total production from the cocksfoot treatment was simillar to that of the tall fescue under lower fertility conditions, but tall fescue was 12 to 14% more productive than cocksfoot under higher fertility.

At both sites the ryegrass treatment was significantly more productive than the tall fescue and cocksfoot in the first year under both cutting regimes (Table 1). In the second year there were no significant differences in production on the hill site, but the tall fescue treatment was significantly

PROCEEDINGS

ASSOCIATION

Total

Freq.

23 790

23 490

32 760

33 450

1970-71

Cl.

40

26

Freq.

Gr.

34

48

50

62

Infreq.

28 710

28 200

41880

<del>1</del>3 696

Infreq.

Cl.

59

59

45

31

36

22

Gr.

26

31

51

58

62

71

TABLE 1:	TOTAL HE	RBAGE DR	Y MATTER	PRODUCT	ION (kg/ha)
19	68-9	19	69-70	19	70-1
Freq.	Infreq.	Freq.	Infreq.	Freq.	Infreq.

\*Duncan's Multiple Range Test: values within each column at each site without a common letter differ significantly

TABLE 2: SOWN SPECIES % OF TOTAL DRY MATTER

Gr.

15

22

63

46

61

Freq.

	1968-9		1969-70		1970-l		
Site and Treatment	Freq.	Infreq.	Freq.	Infreq.	Freq.	Infreq.	
Hill:							

	1908-9		1909-70		1970-1	
Site and Treatment	Freq.	Infreq.	Freq.	Infreq.	Freq.	Infreq

6100b

14600b

17449a<sub>c</sub>

1968-9

Cl.

48

34

43

28

20

Infreq.

Cl.

38

Gr.

54 25

85

4.610 b\*

4970b

9 980 Ъ

18 8<del>7</del>6 ∂

Freq.

Gr.

14

53 17

67

74

Tall fesque

Ryegrass

Cocksfoot

Ryegrasat

Site and Treatment

Ryegrass

Cocksfoot

Ryegrass Cocksfoot

Tall fescue

Gr - grass. Cl - clover.

Hill: Tall fescue

Plain:

Plain: Tall fescue

(P < 0.05).

7 680 a 18 **979** a

10 400 a

10 900 a

97540bb

11830a 11**320 a** 

1969-70

Cl.

68

73 64

26

29

11 560 a

13 **050** a

11 460 b

<sup>8</sup>/<sub>7</sub> 860 a

11 700 â

Infreq.

Cl.

69

10

56

34

51

35

Gr.

21 37

60

10 770 a

14 240 a

11 880 a

10 540 a

14700°a

8120 a

more productive than ryegrass and cocksfoot on the plains site under both cutting regimes. There were no significant differences in production in the third year.

- (2) In the first year the percentage of sown grass was considerably higher and that of clover lower in the ryegrass treatment than in the tall fescue or cocksfoot treatments (Table 2). In the latter treatments there was a relatively high percentage of weed grasses and other species in the first year on the hill site. In the second year the sown grass percentage of the ryegrass treatments on both sites dropped considerably, while the clover increased.
- (3) An effect of soil fertility was evident in the proportions of sown grass and clover at each site. On the lower fertility site the percentage of sown grass was lower than that of the same treatment on the higher fertility, site, and the percentage of clover correspondingly higher.

Total dry matter production from the higher fertility site averaged 37% greater than that from the lower fertility site

(4) Frequency of cutting had little effect on the proportions of sown grass and clover in each season, but infrequent cutting resulted in an overall increase of approximately 25% in total dry matter production.

## CONCLUSIONS

Total dry matter production over three years at the higher fertility site was similar in the tall fescue and ryegrass swards, exceeding that of the cocksfoot sward. At the lower fertility site, total dry matter production was similar in the three swards.

## 2. Lucerne/Grass Mixures (N.A.C.)

Eight lucerne/grass mixtures and lucerne alone were compared at Invermay from 1957 to 1960. The companion grasses and their seeding rates were cocksfoot 1.8, timothy 0.9, S215 meadow fescue 1.8, N.Z. perennial ryegrass 2.7, short-rotation ryegrass 0.9, phalaris 4.5, S170 tall fescue. 3.6, and prairie grass 2.7 kg/ha.

All plots were sown with 0.9 kg/ha each of Moatgomery red clover and New Zealand white clover, and 7.1 kg/ha Wairau lucerne. The control lucerne plot was sown at 12.5 kg/ha. Lime at 2 000 kg/ha had been applied in 1956, and a basal dressing of

200 kg/ha lime-reverted superphosphate was applied, followed by annual maintenance applications. The grass/clover mixture and lucerne were drilled in alternate rows spaced at 180 mm.

The treatments were cut four times. per seasoa. Results': are shown in Table 3.

TABLE 3: TOTAL HERBAGE DRY MATTER PRODUCTION, AND SOWN GRASS CONTRIBUTION, OF GRASS/LUCERNE MIXTURES AND LUCERNE ALONE (kg/ha)

			1957-8	1958-9	1959-60	Total
Tall fescue:						
Total		1111	11280	6930	12630	30840
Grass		1111	6790	3180	3920	13 890
Perennial ryegr	ass:					
Total		011	10460	6470	11 690	28620
Grass		1111	8390	2 780	2 520	13690
Cocksfoot:						
Total			8 550	1180	11840	27570
Grass			4720	2740	4900	12 360
Prairie Grass:						
Total		111	10 740	6100	<b>10</b> 490	27330
Grass			7 270	1200	1 450	9 920
S.R. Rye:						
Total		***	11820	5 100	11710	28630
Grass		(1)	11380	2470	3960	17810
Timothy:						
Total		1111	7580	5 720	11900	25200
Grass		100	4430	1250	1 340	7020
Phalaris:						
Total		1,11	9 550	5920	11700	27170
Grass		1011	4 660	740	1 490	6 890
Meadow Fescu	e:					
Total			7990	7650	12620	28260
Grass			4 520	1030	420	<b>5</b> 970
Lucerne:						
Total	••••	1111	5820	6520	11590	23930
Lucerne	****	u + 1	3 loo	5580	10550	19230

Over the three-year period. \$170 tall fescue provided one of the best mixtures. Although the two ryegrass treatments were also highly productive, this was largely because of the high ryegrass content in the first year, and resulted in some suppression of the lucerne.

<sup>&</sup>quot;Results from this experiment were reported in more detail by N. A. Cullen, NZ. Jl agric. Res., 8: 613-34 (1965).

Little meadow fescue survived the three years and timothy, phalaris, cocksfoot and prairie' grass failed to show any outstanding attributes except that prairie grass was very productive during winter.

Although cocksfoot is widely sown as a companion grass with lucerne, in this trial \$170 tall fescue proved superior. Tall fescue was slow to establish, but winter and summer production from the well-established tall fescue mixture was good and weed infestation was low. Tall fescue is a non-aggressive species and consequently provided a good balance of sown grass and lucerne.

## CONCLUSION

In this experiment tall fescue proved a satisfactary companion grass with lucerne. The mixture proved superior to lucerne sown alone as it was moire productive in the first year, gave better weed control and provided extra winter production.