AN ASSESSMENT OF OVERGROWN PHALARIS TUBEROSA AS SHELTER FOR NEWBORN LAMBS

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Summary

Results are presented from an experiment which evaluated overgrown Phalaris tuberosa as shelter for Merino lambs born in August in western Victoria.

In each of four years an area of dense phalaris pasture was excluded from grazing between October and the following August. The area was equivalent to one hectare for each 250 ewes joined. During wet weather, strategic use of the area for lambing significantly reduced the mortality of twin lambs from birth to 48 h by about 50%.

It is concluded that overgrown phalaris is an effective alternative to traditional shelterbelts for use in lambing systems.

I. INTRODUCTION

Cold wet and windy conditions during spring in western Victoria are held to be responsible, indirectly at least, for excessive mortalities amongst newborn lambs. McLaughlin et al. (1970) and Egan et al. (1972) described the strategic use of cypress hedges to provide shelter from strong winds and demonstrated that lamb survival was markedly improved. However, on many properties the shelterbelts, if they exist, are either inadequate or inconveniently located for use at lambing.

This paper presents observations on the use of overgrown Phalaris tuberosa as a form of natural shelter for newborn lambs.

II. MATERIALS AND METHODS

(a) Location and animals

The observations were made in 1971-74 at the Pastoral Research Station, Hamilton, in western Victoria. During March each year a flock of Merino ewes, two to five years old, was joined to Merino rams fitted with crayons. Crayon marks were recorded twice weekly for two weeks and ewes not returning to service within four weeks were allocated to two groups according to mating date, age and live weight at joining.

(b) Experimental site

The observations were made on a total area of 4 ha of dense pasture which, in 1970, comprised in excess of 80% by dry weight of phalaris. Each year an area of' 0.5 ha within the larger area was closed to grazing from mid-October until the following lambing. The overgrown area was double fenced (1 m apart) to prevent trampling of the edges. By lambing in each year there was a dense growth of phalaris to a height of approximately 0.5 to 1.0 m.

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Prior to lambing the overgrown area was subdivided into five equal areas and tracks 2 m wide slashed in a zigzag pattern through the length of each small paddock to facilitate the-movement of sheep.

Similar subdivision of a grazed area was prepared for the control group of ewes.

(c) Treatment of groups

Immediately before lambing the ewes were separated into their groups and further split into drafts expected to lamb in each week of the experiment. Thereafter, each draft was introduced to the experiment two days before the first ewe was due to lamb.

(i) Sheltered group

During fine weather the ewes were drift lambed (Dun 1966; Giles 1968) in two paddocks each of 0.6 ha adjacent to the overgrown area. If rainfall was imminent during the day or likely overnight, unlambed ewes were moved into the sheltered area with not more than 40 ewes in each small paddock. Ewes with newborn lambs were also moved to one of the sheltered paddocks.

Each morning, ewes without lambs were released from the sheltered area unless wet conditions still prevailed. Ewes with lambs remained in the sheltered area until the lambs were 48 h old and then released to a collecting paddock.

(ii) Exposed group

The ewes in the exposed group lambed without shelter but otherwise under identical conditions of management.

(d) Observations

Both flocks were inspected twice daily at 0900 h and 1600 h and newborn lambs were identified and weighed. All dead lambs were autopsied and those without obvious aeration of the lungs were classified as dead at birth.

Daily wind travel 0.5 m above ground level was measured at a central site in the exposed area and at two sites in the overgrown area. Temperature and rainfall were recorded at a meteorological station immediately south of the experimental area.

III. RESULTS

(a) Weather

A summary of the weather conditions in each year of the experiment is presented in Table 1.

TABLE 1
Weather conditions during-experimental periods 1971-74

Year	Period	No. wet† days	Total rain (mm)	Mean max. temp. °C	Mean windspeed m sec^{-1}	
					Shelter	Exposed
1971	13/8-30/8	9	65.8	12.0	0.8	2.0
1972	15/8-3/9	5	24.8	15.0	1.3	2.8
1973	10/8-27/8	8	36.8	13.0	1.2	3.6
1974	6/8-23/8	10	46.6	13.2	1.4	3.6

† Rainfall >1.5 mm

Conditions for lambing were generally more severe in 1971 than in any of the subsequent years. Table 2 presents a description of the weather conditions for days on which rainfall exceeded 1.5 mm, defined for present purposes as wet days. The data illustrate the association between heavy rainfall and low temperatures in 1971.

TABLE 2

Mean rainfall, maximum temperature and windspeed on wet days†

Year	Mean rainfall (mm/day)	Mean max. temp (°C)	Mean daily windspeed m sec^{-1}	
			Shelter	Exposed
1971	7.1	11.2	1.1	2.4
1972	4.3	15.4	1.7	3.2
1973	3.8	13.1	1.3	3.8
1974	4.3	12.6	1.7	4.3

† Rainfall >1.5 mm

(b) Lamb birth weights

The mean birth weight of single lambs varied between years from 3.95 to 4.25 kg and of twin lambs from 3.06 to 3.50 kg. Within years there was no difference between treatments in the birth weight of single or twin lambs.

(c) Lamb deaths

Approximately 3.5% of all single lambs and 1.5% of twins were classified as dead at birth. Deaths from 48 h to marking at about three weeks average age totalled 4% of all single lambs and 10% of twin lambs. Some variation existed between years but there were no apparent differences between treatments.

In Table 3 the proportion of lambs born alive which died between birth and 48 h in both groups is presented for each year. In addition, the data have been pooled between years to examine the effect of shelter on the mortality of lambs born on wet days. Since only six twin lambs were born in the sheltered group in 1974 they have been excluded from the analysis.

TABLE 3

Mortality of lambs between birth and 48 h according to type of birth, year and rainfall during 24 h period in which lambs were born

Comparison	Single lambs (%)		Twin lambs (%)	
	Shelter	Exposed	Shelter	Exposed
1971	16.8 (24)†	24.6 (34)	24.5 (12) *	43.1 (28)
1972	5.5 (10)	6.3 (11)	15.6 (10) *	31.4 (16)
1973	6.3 (8)	5.1 (6)	16.3 (8)	17.9 (7)
1974	9.3 (9)	12.5 (14)		
Rain > 1.5 mm	13.5 (33)	18.5 (39)	18.2 (12) **	39.7 (27)
Rain < 1.5 mm	5.9 (18)	7.9 (26)	18.8 (18)	27.2 (24)
Total	9.3	12.0	18.5 **	32.7

† Numbers of lambs dying shown in parenthesis

* $P < 0.05$ ** $P < 0.01$

Distribution of deaths examined by chi-square

Significantly fewer twin lambs died in the sheltered group than in the exposed group in 1971 and 1972, but the survival of singles was not significantly improved by the provision of shelter in any year.

The pooled data reveal that the sheltering treatment resulted in a marked reduction in the mortality of twin lambs born on wet days; there was not a corresponding effect for single born lambs.

IV. DISCUSSION

It is concluded from measurements of windspeed and the distribution of lamb deaths that overgrown phalaris provides shelter which effectively reduces the mortality of newborn lambs. The average windspeed within the shelter was usually less than 50% of that outside and during wet weather the loss of twin lambs from birth to 48 h was reduced by half. We infer from these results that overgrown phalaris is potentially as useful as the cypress hedges tested by McLaughlin et al. (1970) and Egan et al. (1972).

In our experiment, maximum use was made of a limited area of shelter at the expense of capital for intensive subdivision and labour to manage many small flocks. Further work is required to incorporate overgrown phalaris into a simplified lambing system readily acceptable to sheepowners.

For some areas the possibility of deaths amongst ewes grazing phalaris cannot be discounted although these are thought to be rare during spring in western Victoria. However, for some situations the evaluation of alternative non-toxic species could be warranted.

V. ACKNOWLEDGMENT

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