SELECTIVE CONTROL OF BARLEY GRASS IN LUCERNE

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Summary

Several triazine based herbicides were evaluated in a logarithmic trial for control of barley grass (*Hordeum* spp.) in lucerne stands in the Maniototo area. The effects of treatment on both crop and weed are discussed and the results indicate that a high degree of barley grass control can be achieved from a single application.

INTRODUCTION

MANY of the lucerne stands in Central Otago are heavily infested with barley grass (*Hordeum murinum*). Lucerne is particularly important in the province since it is the only improved species which will give high summer production in an area where annual rainfall is less than 20 in. The arid conditions and the poor competitive ability of lucerne favour the growth and spread of barley grass.

Barley grass not only contributes to the deterioration of the lucerne stand, but also causes considerable loss by damage to pelts and flesh of grazing animals (Loughnan, 1964).

Seed studies carried out in the Maniototo Basin show that only part of the autumn seedfall germinates in autumn and much lies dormant in the soil through the winter. Although of low viability, this over-wintered seed is present in such quantities that severe infestations from the spring germination do occur. Germination usually commences in August and carries through to mid-October (Meeklah, 1964).

Grass killers such as dichloropropionic acid and paraquat will kill barley grass, but for a number of reasons eradication is seldom achieved. Autumn application will not control the spring germination and spring applications need to be made after mid-October to control all the late germinating seedlings. Under these conditions earlier germinating plants may already have set viable seed.

With these difficulties, it seemed that soil residual herbicides (such as the triazines) could have a place, particularly for treatment in late winter or early spring.

This paper gives results of a trial put down to assess the performance of some triazines applied under such conditions.

EXPERIMENTAL

The trial was situated in the Maniototo Basin on a lucerne stand with heavy barley grass infestation. Treatments were applied with a Chesterford Mini-log sprayer using a peak dose of 5 lb (all rates in active ingredient per acre) for the triazines. Paraquat was applied at a linear rate.

The plot size was 3 ft × 50 ft with buffer strips between. Two replicates were used.

RESULTS

Table 1 gives details of the results obtained over the six months following treatment. Application rates shown in the table are in pounds.

TABLE 1: RESULTS OBTAINED OVER SIX MONTHS FOLLOWING TREATMENT

<i>Treatment</i>	<i>Effect on Barley Grass</i>		<i>Effect on Lucerne</i>	
	<i>100% Control</i>	<i>90% Control</i>	<i>Slight Symptoms</i>	<i>No Symptoms</i>
Atrazine	2.5	1.5	3.5	2.5
Prometryne	3.5	1.7	3.8	2.3
Simazine	>5	3.0	4.0	3.5
Simazine/Paraquat 6 oz	1.0	0.6	3.0	1.8
Paraquat 6 oz	60-70% control		Very slight	

ATRAZINE

At 2.5 lb, complete control of barley grass is obtained with no visual effect on the crop, while 90% control was obtained at 1.5 lb. With the lower rate there is close to a two times safety factor by visual estimation on lucerne but little margin of safety with the 2.5 lb rate.

PROMETRYNE

A higher rate is needed to obtain 100% control, as prometryne has a much shorter soil life than atrazine. The rate required to give 90% control is similar to atrazine but overall crop tolerance is less and the safety factor more marginal.

SIMAZINE

Because of failure to control adequately already emerged seedlings, presumably from an autumn germination, the 100% control level is in excess of 5 lb. The 90% control level was obtained at 3 lb. Overall crop tolerance is higher than with atrazine and prometryne, but barley grass control poor.

SIMAZINE/PARAQUAT 6 oz

With 1 lb simazine included, 100% control is achieved and for as little as 0.6 lb, 90% control. There is a safety factor of at least two by visual estimation.

PARAQUAT

Barley grass control was 60 to 70% and only slight crop damage was evident.

The simazine/paraquat treatment gave the best results with the least amount of triazine. Simazine alone fails to control barley grass adequately because of lack of knockdown of established plants.

Atrazine and prometryne give adequate knockdown but at lower rates the soil residual life is inadequate to control late germinating plants. In future trials these treatments will be tested at lower rates and later times of application. A mixture containing low amounts of prometryne and simazine will also be included.

REFERENCES

- Loughnan, R. J. M., 1964: *Proc. 17th N.Z. Weed & Pest Control Conf.*: 40.
Meeklah, F. A., 1964: *Proc. 17th N.Z. Weed & Pest Control Conf.*: 28.