BARLEY GRASS CONTROL

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Summary

The susceptibility of seedling barley grass (*Hordeum murimum*), perennial ryegrass (*Lolium perenne*) and white clover (*Trifolium repens*) pasture to several rates of grass-killing chemicals is assessed. Applications in spring and autumn failed to give complete control of barley grass though considerable reduction followed the use of up to 2 lb per acre of dichlorobutyric acid and dichloropropionic acid. Dichlorobutyric acid, however, caused severe clover suppression, while paraquat gave poor barley grass control coupled with marked perennial ryegrass suppression. Dichloropropionic acid, therefore, remains the most suitable, but not ideal, treatment for selective control of barley grass in pasture.

INTRODUCTION

THE CURRENT RECOMMENDATION for selective control of barley grass (*Hordeum murinum*) states that the weed must be sprayed at the seedling stage of growth. This stage in barley grass always coincides with a succulent stage of growth in pasture — a stage of high susceptibility to damage by herbicides.

EXPERIMENTS

In autumn last year three monthly applications of three grass-killing chemicals were made to a mature barley grass-infested perennial ryegrass (*Lolium perenne*)-white clover (*Trifolium repens*) pasture near Christchurch. Treatments were replicated twice in a randomized block design. A cut taken in October gave an indication of changes that had occurred in botanical composition. A trial with the same materials — plus some new ones — was laid down on the same area in the spring and a cut taken in December.

The tolerance of sown barley grass seedlings was also tested at Ruakura Agricultural Research Centre.

All yield data are expressed as pounds of dry matter per acre and rates of chemicals in terms of active ingredient. Where paraquat was used, a non-ionic wetting agent was added at the rate of 0.1%. Conditions existing when herbicides were applied to the Christchurch trials are set out in Table 1.

TABLE 1: TRIAL CONDITIONS

	Barley Grass	*Pasture*	*Weather*	*Soil*
March	2½ in.	2 to 3 in.	Fine	Moist
April	4 to 5 in.	2 to 4 in.	Overcast	Moist to wet
May	2 to 3 in. (grazed)	2 to 3 in.	Fine	Moist
October	2 to 4 in. (grazed)	2 to 4 in.	Fine	Moist

RESULTS

The March, April and May applications produced a similar general pattern of results. Dissection data for April are set out in Fig. 1 while those for the October application appear in Fig. 2.

PARAQUAT

At the rates of application used, paraquat gave poor control of barley grass at all times of application. Perennial ryegrass, however, was severely suppressed, statistical significance being reached at the 3 oz rate in March and both the 3 and 4 oz rates in April.

The selectivity of this material towards white clover was well illustrated. Inspected six weeks after mowing, plots which had received more than 1 oz per acre of paraquat were barley grass/white clover-dominant.

DICHLOROBUTYRIC ACID

Barley grass control with dichlorobutyric acid reached an estimated 80% to 90% at 1.5 to 2 lb. On no plot was control complete.

Marked suppression of white clover occurred. At the intermediate rate of 1.9 lb in April, and all three rates in March and May, clover yield was significantly reduced. On the other hand, perennial ryegrass was relatively tolerant of the rates used, there actually being a significant increase in yield from 1.9 lb in April.

DICHLOROPROPIONIC ACID

The degree of barley grass control with dichloropropionic acid was similar to that from equivalent rates of dichlorobutyric acid.

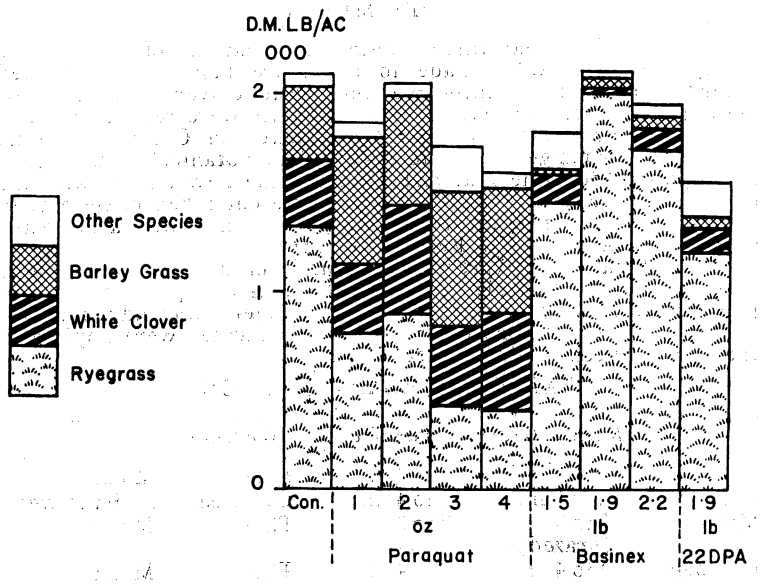

Fig. 1: Herbage yields, April application.

Damage to perennial ryegrass was greater with dichloropropionic acid than with dichlorobutyric acid but white clover was less seriously affected. Pasture suppression with dichloropropionic acid appeared to increase slightly with lateness of autumn application. This could be due to increased susceptibility (Leonard, 1962) or simply to the shorter period available for recovery before winter.

New Materials

Three carbamates were included in the spring trial. They gave poor barley grass control and caused serious damage to both ryegrass and white clover.

Ruakura Trial

Barley grass seeds were sown in rows at Ruakura Agricultural Research Centre in March and the seedlings sprayed a month later at the 4 to 5-leaf stage. There were three replicates and the reduction in plant numbers when assessed two months after treatment is set out in Table 2.

DISCUSSION AND CONCLUSION

Both paraquat and dichlorobutyric acid are unsuitable for selective control of barley grass in pasture. Treated at an actively-growing stage, ryegrass appears more susceptible to paraquat than

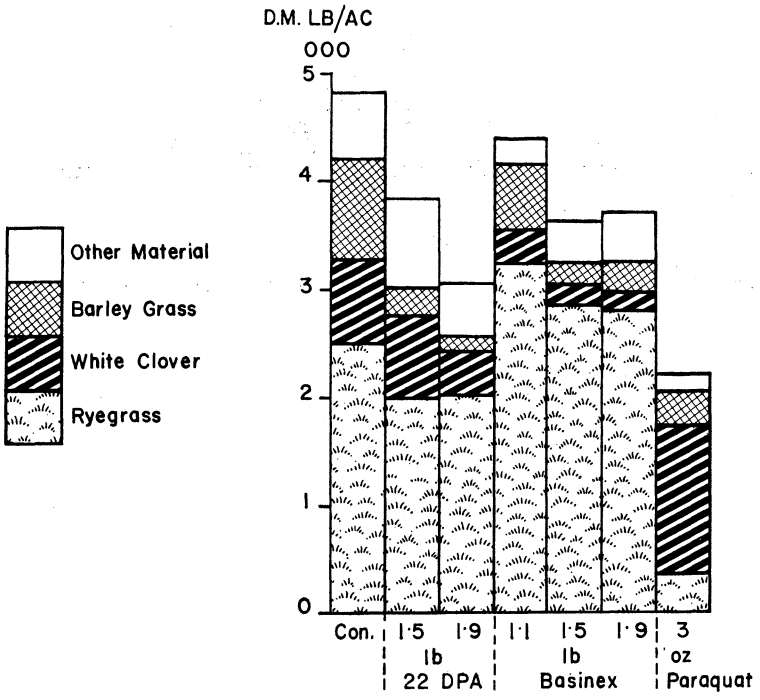

Fig. 2: Herbage yields, October application.

TABLE 2: RESULTS OF RUAKURA TRIAL

Treatment (*lb*)		% *Reduction*	*Treatment* (*oz*)		% *Reduction*
Dichloropro-pionic acid	2	77	Dichlorobutyric acid	8	33
„	1	57	„	4	7
„	½	28	Paraquat	4	76
„	¼	10	„	2	47
Dichlorobutyric acid	2	70	„	1	26
„	1	47			

Each untreated row contained an average of 36 surviving plants.

barley grass. Dichlorobutyric acid applied under the same conditions caused excessive suppression of white clover, though ryegrass tolerance was satisfactory and barley grass control reasonable.

Up to 2 lb of dichloropropionic acid gave incomplete control of barley grass but, bearing pasture tolerance in mind, it remains the most suitable of the materials tested. This herbicide is normally recommended for use at about 1.5 lb and 2 lb. While these trials revealed only one instance of pasture suppression by dichloropropionic acid, there are indications that these rates do reduce pasture production. This should be borne in mind when making recommendations, pending the development of a more suitable treatment.

ACKNOWLEDGEMENTS

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REFERENCE

Leonard, W. F., 1962: *Proc. 15th N.Z. Weed Control Conf.*, p. 39.