CHEMICAL CONTROL OF BARLEY GRASS

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Summary

Ten treatments were applied in June (early), August (early), and September (mid.) 1969, at the Tokanui Hospital Farm. Results of the three trials have shown that (1) carbetamide, RH315 and TCA controlled barley grass (*Hordeum murinum*) (2) 2,2-DPA and paraquat had a measure of control of barley grass. (3) No decreases in pasture dry matter production resulted from the treatments 2,2-DPA, TCA and carbetamide. (4) The above five treatments all resulted in pasture composition changes.

INTRODUCTION

THE three experiments are situated at Tokanui Hospital Farm in the Southern Waikato Region in an area of 50 in. rainfall per annum. The sites selected are on Otorohanga silt loam on a westerly aspect unaffected by trees or shelterbelts.

The pasture composition prior to the laying down of the first experiment was general over the whole area at that time. The pasture was mainly ryegrass (*Lolium* spp.) 45%, associated with white clover (*Trifolium repens*) 28%, other grasses 9% — these were *Poa pratensis* (*Poa pratensis*), *Poa trivialis* (*Poa trivialis*), Yorkshire fog (*Holcus lanatus*), bromus mollis (*Bromus mollis*), browntop (*Agrostis tenuis*), cocksfoot (*Dactylis glomerata*) — barley grass (*Hordeum murinum*) 16%, and other weeds 2%.

METHOD

All treatment rates are expressed as lb active ingredient per acre. They were applied with an Oxford precision sprayer to 5 ft × 30 ft plots using 34 gal of water per acre. The experiment was replicated in time and space.

RESULTS

Tables 1, 2 and 3 include only six treatments — the other treatments (methachlor, delachlor, MSMA and propanil) had no significant effect on either barley grass or pasture dry matter production.

EFFECT ON BARLEY GRASS

RH315, TCA and carbetamide gave total control of barley grass for the whole of the 1969-70 season. Paraquat gave good initial control but barley grass had re-established within three months. 2,2-DPA at no stage completely controlled barley grass.

EFFECT ON OTHER SPECIES

2,2-DPA gave an increase in the incidence of ryegrass and other weeds but had a serious adverse effect on the white clover percentage. TCA did not control many of the other weed grasses, but an increased per-

TABLE 1: TRIAL 1
Sprayed June 10, 1969

Treatment (lb)	% Composition at 4th cut 24/10/69					Total Yield 29/1/70 DM lb/ac
	Ryegrass	Barley Grass	Other Grasses	Clover	Other spp.	
2,2-DPA 2	42.3 aA	0.6	21.8 cdBCD	10.0 efD	22.1	4640 aA
paraquat 1	31.8 aAB	0.0	26.0 bcABC	23.7 cdCD	16.7	4260 aAB
TCA 10	5.4 cB	3.1	8.3 eD	67.6 bB	8.2	2850 cC
RH315 3	7.3 bcAB	0.0	10.0 fE	98.9 aA	1.0	2350 cC
carbetamide 3	41.7 aA	0.0	12.7 deCD	35.6 cC	8.9	4610 aA
Control	17.1 abcAB	16.8	46.3 aA	15.9 defDE	0.9	4170 aAB
CV%						9.3

TABLE 2: TRIAL 2
Sprayed August 6, 1969

Treatment (lb)	% Composition at 5th cut 24/10/69					Total Yield 21/1/70 DM lb/ac
	Ryegrass	Barley Grass	Other Grasses	Clover	Other spp.	
2,2-DPA 2	60.9 aA	4.2 cdCD	13.3 bBCD	4.9 deD	14.2 AA	5050 aA
TCA 10	55.4 aAB	0.8 cdD	18.0 bABC	13.0 dD	9.8 abAB	4920 aA
paraquat 1	22.8 bC	7.6 bcBCD	1.5 cCD	57.1 bB	4.4 abcdAB	2830 eD
RH315 3	0.6 cD	0.1 dD	0.4 cD	87.3 aA	7.5 abcdAB	2360 fE
carbetamide 3	31.5 bABC	4.7 cdBCD	4.5 bcCD	33.4 cC	8.1 abcAB	4680 abcAB
Control	15.4 bC	1.4 aA	44.4 aA	4.6 deD	0.4 cdAB	4410 bcB
CV%						5.7

TABLE 3: TRIAL 3

Sprayed September 17, 1969

Treatment (lb)	% Composition 4th cut 7/1/70					Total Yield last 3 cuts 29/1/70 DM lb/ac
	Ryegrass	Barley Grass	Other Grasses	Clover	Other spp.	
2,2-DPA 2	50.2 abcA	1.5	4.1 bcdBCD	39.0 bcdeBC	2.3 cAB	3390 aA
TCA 10	55.7 aA	0.0	15.2 abABC	24.3 cdeBC	3.7 bcAB	3100 abA
paraquat 1	0.6 eC	5.4	0.0 dD	63.1 abAB	17.3 abA	1490 eD
RH315 3	0.0 eC	0.0	0.7 dDE	81.1 aA	16.9 abA	1720 eCD
carbetamide 3	20.6 dB	0.4	2.7 cdBCD	52.0 bcABC	21.2 aA	2470 cdB
Control	36.2 bcAB	0.6	12.0 abcABC	39.9 bcdeBC	8.7 abcAB	2920 bAB
CV%						9.6

centage of white clover resulted. RH315 and paraquat had rather severe effects on all grasses except cocksfoot which is tolerant of RH315. This material also resulted in a substantially higher clover percentage and fewer other weeds. Carbetamide gave the most balanced sward in addition to controlling weeds and weed grasses. 2,2-DPA, TCA and carbetamide consistently yielded higher than the untreated controls but this increase was not significant.

EFFECT OF TIMES OF TREATMENT

RH315 controlled barley grass at each time of application. All the other treatments were slightly variable in their results on barley grass although the early treatment gave the best control and recovery of the pasture.

EFFECT OF MOWING

By mid-January 1970, as a result of regular mowing and a clippings discarded technique to prevent contamination of clean plots by barley grass seed, the incidence of barley grass was greatly reduced, and by April 1970 only 0.4% was left in the control plots. The regular mowing had also caused the clover percentage to increase in all the plots.

PRESENT SITUATION

All treatments will go into the winter with no barley grass present, for the aforementioned reasons. In areas around the trial where barley grass was allowed to seed under a grazing situation, the incidence of barley grass seedlings is 50% of the complete sward. The RH315 plots are still 98% white clover.

DISCUSSION

The effects of all these treatments were shown without the influence of the grazing animal and without taking the grazing and camping preferences into account. Under free-grazing situations, interactions may take place because of palatability and digestibility of the species remaining in the treated areas. Although RH315 in the reported trials gave a pure clover stand, apart from this being desirable from a lamb fattening point of view, it would also give an ideal situation to re-establish grasses in subsequent seasons. The cost in materials and pasture production must be compared with the direct cost in materials and products, productivity, and the indirect cost of having grasses in the sward which produce at a lower level than the most desirable species present.

CONCLUSIONS

Carbetamide at the 3.0 lb level selectively controlled barley grass and some other weed grasses in these experiments leaving ryegrass and cocksfoot in association with white clover to out-produce the original pasture in pounds dry matter per acre. RH315 also controlled barley grass at the 3.0 lb level at the cost of ryegrass and some other grasses, excluding cocksfoot which has a high degree of tolerance to this material.

ACKNOWLEDGEMENTS

To J. F. Porter for field assistance, M. Boyer and G. Saunders for their co-operation and assistance, and Biometrics Section, Department of Agriculture, for the analyses.