CONTROL OF CAREX SPECIES

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Summary

The Australian sedge (*Carex longibrachiata*) and the ecologically similar native species (*C. lucida*), commonly known as Glen Murray tussock, are both capable of becoming pasture weeds on the low fertility hill country of the North Island, especially on areas prone to droughty summers, such as in Northland. Chemical control has so far proved inadequate at economic rates of application. Both sedges can be killed with dichloropropionic acid and at 8.5 lb a.i. per acre a partial control is obtained. Glen Murray tussock is resistant to the butoxyethanol ester of 2,4-D. The Australian sedge is susceptible to 2,4-D and a fair measure of control is obtained with rates of 4 lb a.i. per acre, especially if regrowths are sprayed.

INTRODUCTION

THE Australian sedge (*Carex longibrachiata*) and Glen Murray tussock (*C. lucida*), like rushes (*Juncus* spp.), are rather unpalatable to stock, vigorous in growth habit, and, because of their strong root systems, can tolerate a wide range of soil moisture and fertility levels. Consequently, weak pastures on drought-prone, low fertility clay hill soils can offer little resistance to these weeds. Almost invariably infestations of Australian sedge and Glen Murray tussock, either on their own or in combination, are found on farms which have some time in the past been chronically overgrazed, have had insufficient or no fertilizer, and an apathetic or insolvent owner.

The failure to establish a tight, thrifty pasture because of inadequacies in seed, fertilizer, cultivation, and stock management produces a condition where sedges can readily become dominant if a source of infestation is present, such as a seed of Australian sedge as an impurity in paspalum (*Paspalum dilatatum*) seed. There is little doubt that this will explain the reason for the apparently isolated communities of this weed throughout Northland where paspalum seed is frequently sown in the establishment of pastures.

SPREADING OF SEDGES

Fortunately, these sedges can reproduce only by seed, which, though abundantly produced, is not of a shape suited for wide distribution from the parent plant. Most of the seed would fall on or immediately alongside the seeding plant, but it is likely that a certain amount is accidentally transferred elsewhere by stock. Seed could fall on the backs of sheep fossicking about bushes and could travel quite a distance before falling off. Other seed could be carried in the soil on the feet of stock in wet weather. These seeds, landing in a suitable place, would grow into the isolated plants which in time become yet another patch of sedge. The

patches extend from seed cast in their vicinity and more isolated plants appear and in time the patches finally merge. High fertility areas such as stock camps on ridges seem to remain fairly clear but in time infestation of sedges smother out all but the most vigorous of pasture species. Grasses which can survive with Australian sedge are cocksfoot (*Dactylus glomerata*), *Phalaris tuberosa*, tall fescue (*Festuca arundinacea*), and paspalum to a lesser degree.

CONTROL METHODS

Cultivation where possible is the best means of eradication of both these sedges. Small groups of plants could be dug out. Repeated mowings will certainly reduce Glen Murray tussock and proof of this can be seen on a farm at Dairy Flat where this method is used. No observations have been made on the effect of repeated mowings of Australian sedge. Past work has shown that dichloropropionic acid at rates of 8.5 to 17 lb (all rates in active ingredient per acre) and esters of 2,4-D at rates of 2 to 4 lb, will give a fair measure of control of Australian sedge. Little, or no, previous work has been done on Glen Murray tussock.

EXPERIMENTAL WORK

GLEN MURRAY TUSOCK

Two trials were put down at Silverdale.

Dichloropropionic acid at 8.5 lb in 40 gal water applied in January gave a 70% kill after six months.

Butoxyethanol ester of 2,4-D applied at 1.8, 3.6, and 5.4 lb in 40 gal water and also at 3.6 lb in 10 gal diesel oil in November, gave no control. Some marginal desiccation of leaves was noted soon after spraying but plants had fully recovered after about two months. This species appears to be almost immune to the effect of hormones.

AUSTRALIAN SEDGE

Two trials were conducted at Kohekohe.

A trial to determine the effects of various 2,4-D formulations and some other herbicides was put down in January, 1965, at Kohekohe near Waiuku. Results are given in Table 1. Markings were made on a 0-10 scale (0 = no effect and 10, complete brown off) for the period to June 4, 1965, and on percentage cover of live plants on January 6, 1966.

A non-ionic wetting agent was added to the carrier on half the plots but no differences in degree of herbicidal activity were noted. Plots were not burned nor was any attempt made to establish a pasture, and, therefore, these results show the effect of herbicides without the effects of subsequent management factors.

Butoxyethanol ester of 2,4-D and octyl ester of 2,4-D gave the greatest degree of browning and, therefore, plants sprayed with these herbicides would carry a better fire.

A second trial at Kohekohe compared the effects of ethyl ester of 2,4-D at 3.6 and 7.2 lb on mature plants and on regrowths following a burn and also picloram at 1.75 lb. Consequent regrowths were sprayed with 3.6 lb ethyl ester of 2,4-D and suitable seed and fertilizers were sown over the trial area. Picloram gave no control. 2,4-D at 7.2 lb was superior to 3.6 lb and the best results were obtained on the area where regrowths were sprayed.

TABLE 1: KOHEKOHE TRIAL—LAID DOWN JANUARY 7, 1965

Treatments	Means Marked Jan. 4, 1965		Means Marked Jan. 6, 1966	
	0-10 Scale		% Live Plants	
	Rates per acre			
	2 lb	4 lb	2 lb	4 lb
Butoxyethanol ester 2,4-D	3.8	8.5	70	48
Ethyl ester, 2,4-D	5.3	7.0	54	52
Ethyl hexyl ester 2,4-D	6.0	7.0	60	70
Butyl ester 2,4-D	6.5	6.8	83	50
Octyl ester 2,4-D	7.3	7.5	63	58
Amine salt 2,4-D	6.3	6.5	80	60
Dicamba 4 lb	2.0			75
Dicamba 6 lb	2.5			50
Sodium chlorate 160 lb as powder applied to bushes	3.5			90
Control	1.0			91

CONCLUSIONS

No cheap or easy method of chemical control of Australian sedge has been found. 2,4-D, particularly the butoxyethanol and octyl esters, seems to give the most economical results. Spraying of regrowths following a fire is more profitable than spraying mature bushes, but burning before spraying is not always practicable unless the season is particularly dry, whereas the mature bushes sprayed will burn quite readily after two or three months provided there has been a day or two of fine weather.

Burning appears to be very necessary to destroy the remains of bushes which take a long time to rot and which prevent a successful establishment of pasture. Burning also will destroy many seedlings and regrowths. Following burning, the establishment of a vigorous pasture, which will compete with regrowths and seedlings, is essential. Regrowths should be sprayed again during spring while they are relatively succulent.

Glen Murray tussock, being apparently more palatable to stock than Australian sedge, does not appear to cause a great deal of concern in the Glen Murray district where it is fairly prevalent. Apparently the farmers there do little, or nothing, about it. It provides some rough grazing for cattle during the winter and this allows better pasture species a chance to maintain their place in the sward.

The use of dichloropropionic acid would leave a tremendous amount of pasture damage requiring resowing and it is fairly obvious that this means of control would not be particularly economic.

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