

Herbicide control of kikuyu grass  
(*Pennisetum clandestinum*)  
without damaging *Lepidium*  
*oleraceum*

A M Dugdale  
National Institute of Water & Atmospheric Research Ltd  
PO Box 11-115  
Hamilton  
New Zealand

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# Abstract

The ability of herbicides and additives to selectively control kikuyu grass (*Pennisetum clandestinum*) without damaging Cook's scurvy grass (*Lepidium oleraceum*) was investigated.

Four herbicides in combination with the additives Uptake®, Conqueror® crop oil, or without additive were trialed on potted plants of kikuyu and *L. oleraceum*.

No damage to *L. oleraceum* was noted for any treatment. Several treatments effectively controlled kikuyu, and Gallant® with Uptake® is the recommended option for control. A knapsack rate of 60 mL Gallant® and 100 mL Uptake® in 10 L water is recommended with a water rate of 55 L/ha.

Because this was an unreplicated trial it is recommended that a small test plot of kikuyu *L. oleraceum* be treated in the field prior to any larger scale applications to ensure there will be no adverse effects on the *Lepidium*, although this would appear to be unlikely.

## 1. Introduction

This is a report in answer to the question: 'What grass-specific herbicide/wetting agent combination can be used to control kikuyu grass, without damaging *Lepidium oleraceum*?'

## 2. Method

Kikuyu (*Pennisetum clandestinum*) shoots were collected and established in pots for 3 weeks so that new shoots were actively growing prior to herbicide application. Eleven potted *Lepidium oleraceum* (Cook's scurvy grass) plants were provided by Department of Conservation to carry out the tests. *L. oleraceum* is a category B endangered native species. At the time of application many of the lower leaves were yellowing and all of the leaves were infected by the fungus *Albugo candida*, and most of the plants were flowering.

Four grass-specific herbicides and two wetting agent additives were selected to be tested; the combinations and concentrations used are shown in Table 1. For each treatment there were duplicate kikuyu plants and a single *L. oleraceum* plant. Six kikuyu and one *L. oleraceum* were left untreated as control plants. The herbicides were applied on 6 Dec99 with a 1 L hand-held sprayer until the plant was completely wet.

## 3. Results

### ***Lepidium oleraceum* (Cook's scurvy grass)**

Thirty-two days post-application there was no visible damage to any *L. oleraceum* plants from any treatment (Figure 1). Some leaves had dropped on all specimens, including the control. This was probably related to flowering and the effects of *Albugo candida*, which was present on all plants for the duration of the trial.

### ***Pennisetum clandestinum* (kikuyu grass)**

Thirty-two days post-application four treatments provided complete foliar death to kikuyu (Figures 2 and 3). These are shown with a superscript symbol in Table 2. These plants were brown all over with dry wilted leaves; under the sheath the stem was turgid with a pale yellow colour.

## 4. Conclusions and recommendations

It is clear that all of these herbicides have some effectiveness in controlling kikuyu without affecting *L. oleraceum*. Particularly good control is provided by Targa®, Centurion® with Conqueror® crop oil, Gallant® with Uptake® and Fusilade® with Conqueror® crop oil. Because Gallant® was the only herbicide tested with label directions for treatment of kikuyu it is recommended that this be used with Uptake® at the following rates to control kikuyu.

Gallant® concentrations; Knapsack, 60 mL/10 L with 100 mL/L Uptake®

Water rate of 500 L/ha

(NZ agrichemical manual 1998/99)

Because of the low number of *L. oleraceum* plants available, a replicated experimental design was not possible. The results presented here therefore do not give any indication of any natural variation in resistance or susceptibility to the herbicide treatments. Also these results do not take into consideration any stresses that might operate in a field situation, e.g. drought, competition and grazers. Therefore any field treatments of kikuyu - *L. oleraceum* sites should be tested on a small scale prior to any larger-scale applications to ensure there are no adverse effects on *L. oleraceum* caused by the herbicide.

## Appendix

	No additive	Conqueror Crop Oil 10 ml L <sup>-1</sup>	Uptake 10 ml L <sup>-1</sup>
Control	✓		
Fusilade 10 ml L <sup>-1</sup>	✓	✓	
Gallant 6 ml L <sup>-1</sup>	✓	✓	✓
Centurion 5 ml L <sup>-1</sup>	✓	✓	✓
Targa 10 ml L <sup>-1</sup>	✓		✓

Table 1. Herbicide and wetting agent combinations used and concentrations of each chemical.

	No additive	Crop oil	Uptake
Targa	brown*		yellow brown new shoots dead
Centurion	brown or yellow-green no new shoots	brown*	yellow brown new shoots dead
Gallant	brown	yellow brown new shoots dead	brown**
Fusilade	1-3 healthy lvs per shoot	brown*	
Control	5-7 healthy lvs per shoot and new shoots		

Table 2. Kikuyu descriptions 32 days after herbicide application. Asterisks indicate treatments where complete foliar death occurred, double asterisks represent the recommended treatment.



Figure 1. Post-trial photograph of the *Lepidium oleraceum* plants for each herbicide treatment. The pots are arranged in three columns and five rows. The rows from front to back are; Targa, Gallant, Fusilade, Centurion and the control plant. The columns are from left to right; no additive, Uptake and crop oil.



Figure 2. Post-trial photograph of the duplicate kikuyu plants for each herbicide treatment. The pots are arranged in three columns and five rows as in Table 1. The rows from front to back are; Targa, Centurion, Gallant, Fusilade and controls. The columns are from left to right; no additive, crop oil and Uptake. A clear difference can be seen between the controls and the treated plants. Note: Green plants in treated pots are broadleaf weeds unharmed by herbicide application.

