

# Control of Kikuyu in Couchgrass Turf Swards with Foramsulfuron

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## Introduction

Changing of turf surfaces from kikuyu (*Pennisetum clandestinum*) to couchgrass (*Cynodon dactylon*) often leaves ongoing maintenance problems with trying to control kikuyu plants which have regrown from vegetative material or seed. Current herbicide options include non-selective herbicides for spot spraying, pre-emergent herbicides to control germinating seed and selective post-emergent herbicides to control established plants.

In screening the sulphonyl urea herbicide foramsulfuron (Tribute®) it was discovered that the chemical was safe to couchgrass but very damaging to kikuyu. Trials were started to examine the control of kikuyu with foramsulfuron. These trials showed best control was achieved with repeat applications of foramsulfuron during the summer months (Kaapro and Hull, 2009). But these programs showed that control was not complete with some plants remaining alive at the end of the trial.

In an effort to improve the performance of foramsulfuron on kikuyu control a literature search discovered that the uptake and translocation of foramsulfuron can be increased by pre-treatment with MSMA (Henry *et al.*, 2008). It is known that in Australia both DSMA and MSMA can cause severe phytotoxicity to kikuyu.

## Methods

In 2010 trials were started at the University of Sydney to examine if pre-treatment of kikuyu with DSMA would improve kikuyu control when using foramsulfuron.

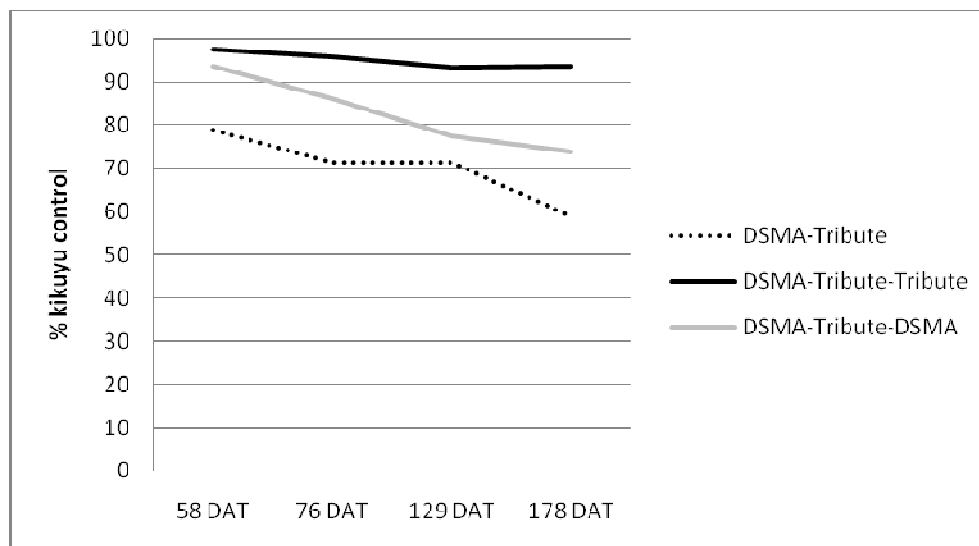
DSMA (220g/L) was applied at 60L/ha to kikuyu plots in a random block design with 4 replicates of each treatment. Treatments were applied 23/11/2010. Then a range of foramsulfuron and DSMA were applied in the schedule as shown in the table below. Foramsulfuron (22.5g/L) was applied at 2L/ha. All treatments were applied using a small plot research sprayer with 395L/ha of water. The entire trial site was treated with Ronstar (oxadiazon) at 200kg/ha to stop establishment of weed seedlings during the duration of the trial.

Treatment	Spray Dates		
	23/11/2010	7/12/2010	14/12/2010
1	Untreated Control		
2	DSMA	Foramsulfuron	
3	DSMA	Foramsulfuron	Foramsulfuron
4	DSMA	Foramsulfuron	DSMA

Table 1: Spray programme for kikuyu control with foramsulfuron and DSMA

## Results

The level of kikuyu cover in each plot was assessed regularly over the next 6 months. The graph below shows the change in kikuyu control in this trial when compared to the untreated plots. The results show that a 3 spray programme of DSMA followed by foramsulfuron followed by foramsulfuron gave the best kikuyu control.



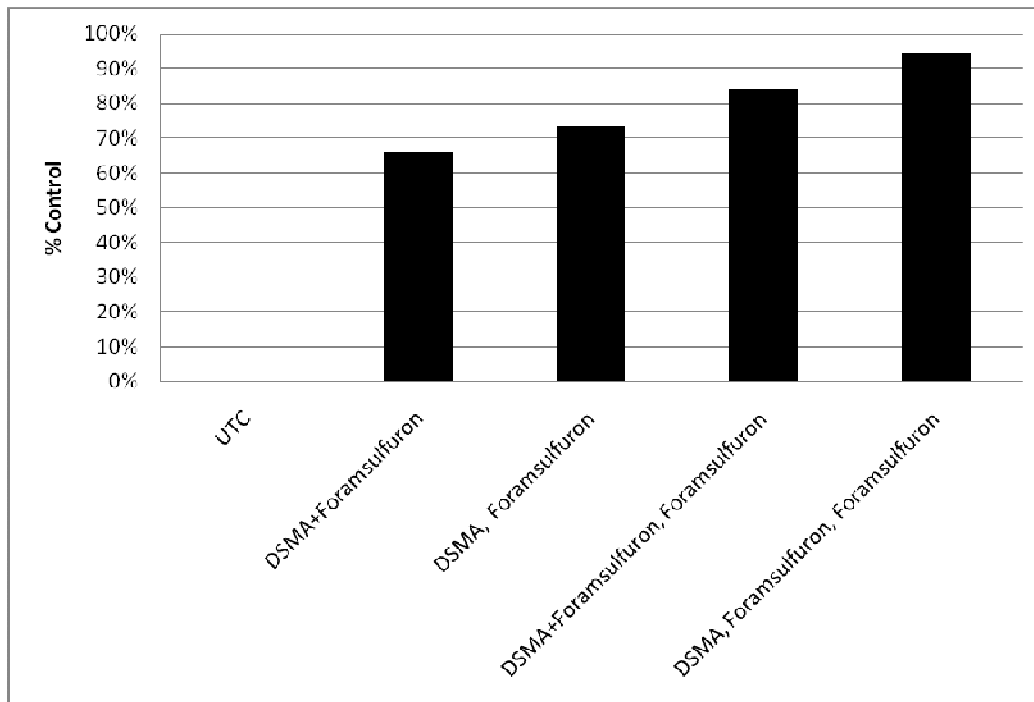
Graph 1: Percentage kikuyu control from spray programs of DSMA and Tribute. (DAT= days after treatment)

A further trial was initiated in February 2011 at the University of Sydney to see if there was any difference to tank mixing the two chemicals and making separate applications of DSMA and foramsulfuron as in the first trial. The treatments and spray dates are shown in the table below. A randomized block trial with three replicates was used for this trial. All chemicals were applied as previously with regards to rates, water volumes and equipment.

	1st	2nd	3rd
	10/02/2011	17/02/2011	24/02/2011
UTC			
DSMA+Foramsulfuron			
DSMA		Foramsulfuron	
DSMA+Foramsulfuron		Foramsulfuron	
DSMA		Foramsulfuron	Foramsulfuron

Table 2: Spray programme to compare tank mixing the two chemicals with separate applications of foramsulfuron and DSMA

The graph below shows the level of kikuyu cover in the plots at 50 days after spraying. The programs in which DSMA and foramsulfuron was tank mixed did not perform as well as when the products were applied separately.



Graph 2: Percentage kikuyu control at 50 days after treatment with separate applications of DSMA and foramsulfuron compared to tank mixing the two chemicals

**Conclusion**

These trials have shown that kikuyu control with foramsulfuron can be improved with pretreatment of DSMA. The programme which has shown the best results is an application of DSMA followed by foramsulfuron and finally another application of foramsulfuron.

When implementing a programme to remove kikuyu from a couchgrass sward consideration should also be given to treatment of areas with a pre-emergent herbicide. When the kikuyu is removed areas will be created which are susceptible to invasion by weeds from seeds present in the soil.

**References**

Henry G., Burton J., Richardson R. and Yelverton F., 2008. Absorption and translocation of foramsulfuron in Dallisgrass (*Paspalum dilatatum*) following preapplication of MSMA. *Weed Science*. 56:785-788.

Kaapro, J. and Hull J. (2009). Seasonal variation in the control of *Pennisetum clandestinum* with foramsulfuron. International Turfgrass Society Research Conference.