



## Chilean Needle Grass: Slasher Cover for Reducing Chilean Needle Grass Spread

November 2007

AG1312

ISSN 1329-8062

Ljubomir Erakovic<sup>1</sup>, Aleksander Subic<sup>1</sup> and David McLaren<sup>2</sup>

<sup>1</sup>RMIT University, School of Aerospace, Mechanical and Manufacturing Engineering

<sup>2</sup>Department of Primary Industries, Frankston

### Introduction

*This information note provides practical information about the design and use of slasher covers to reduce Chilean needle grass (Nassella neesiana, CNG) spread along linear reserves.*

### The issue

Slashing of CNG is a common occurrence along roadsides and within agricultural areas for purposes of fuel reduction and pasture management.

The movement of tractors and slashers in agriculture and roadside management is a major factor in the spread of CNG. Machinery operators are inadvertently spreading CNG into clean linear reserves and paddocks through daily slashing routines. The potential for weed spread has also increased with the use of vehicles and equipment that travel long distances between jobs.

Slashing has also been known to encourage the formation of dense flat CNG swards as upright plants are eliminated.



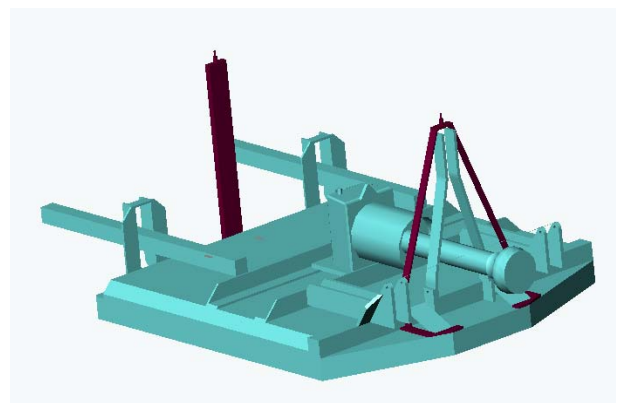
*Figure 1 - Assessing CNG seed contamination to a slasher at Sunbury*

### Legislation

The relevant State legislation related to machinery hygiene is Section 70A of the *Catchment and Land Protection Act 1994*. This section prohibits the movement of prescribed vehicles, machinery, equipment, hay, grain, fodder or livestock onto or off land without taking reasonable precautions to ensure they are free from noxious weed contamination. CNG is a proclaimed noxious weed throughout Victoria and Australia.

### Trial setup and treatments

A RMIT Mechanical Engineering Masters project sponsored by the Commonwealth Weeds of National Significance program investigated slasher modifications to reduce weed spread. A model was developed using Computational Fluid Dynamics (CFD) to assess the best possible shape for a slasher cover to reduce CNG spread.



*Figure 2 - Design changes (brown) to slasher deck (blue) for attachment of slasher cover*

The design changes are simple to build and make no changes to the original slasher (fig 2.) A linear reserve site severely infested with CNG was selected at Sunbury to investigate slashing CNG (Fig 1). Three 200 meters transect lines of CNG were chosen to assess slasher CNG seed hygiene performance with and without the slasher modifications. The number and density of CNG plants and number of panicle seeds per plant was assessed before

slashing. The trial occurred during peak seeding in summer. This enabled an estimation of the total potential number of CNG seeds in the areas being slashed.



Figure 3 - Slasher with fitted cover being trialed at Sunbury

**Results**

- A “proof of concept” slasher cover has been developed to reduce slasher CNG seed contamination and spread (Figures 2 and 3).
- Within each 200 meter transect being slashed at Sunbury were approximately 1.5-2.0 million CNG panicle seeds.
- Without a cover, more than 16,000 CNG seeds were recovered from the slasher deck (Figure 4, Table 1).
- Adding a cover to the slasher resulted in a 99% reduction in CNG contamination with only 122 CNG seeds being recovered from the slasher deck (Table 1).

**Table 1- Number of CNG panicle seeds recovered from slasher deck after slashing 200 meters of dense seeding CNG**

Slasher modification	Number of recovered CNG seeds from slasher	% CNG seed reduction.
None	16,212	0
Cover	122	99

**Management implications**

- When CNG is slashed at seeding, slashers can become major vectors for CNG seed dispersal.
- A slasher cover and other modifications can reduce CNG seed collection on the slasher deck by more than 99%.
- Land managers and slasher contractors are encouraged to fit covers to their slashers to reduce weed spread.
- Slasher operators/contractors should be trained in CNG/weed identification and machinery hygiene.
- Slasher operators/contractors should have workplans to slash “CNG/weed” areas last and to protect ‘clean’

areas and avoid working in weather when seeds will stick to machinery.

- Slasher operators/contractors should have appropriately located and monitored brushdown points where contaminated machinery is cleaned.



Figure 4 - CNG panicle seeds on slasher after slashing without cover

**Further reading:**

- Baldyga, N. & Grech, C. (2006) ‘Machinery hygiene guidelines for roadside managers – Minimising the spread of Chilean need grass.’ DPI Victoria. ISBN 74146 610 5.
- Grech C., McLaren D.A., Chapman D.F. & Sindel B.M. (2005) Chilean needle grass (*Nassella neesiana*) - Integrated grazing for success. In ‘Tussock Terminators Research Forum’, Albury, pp. 11-14.
- Grech C. (2007) Chilean needle grass: Managing seed production by slashing. AgNote AG1308. Department of Primary Industries, Victoria.
- Tyers, G., Grech, C. & Baldyga, N. (2004) ‘Machinery Hygiene,’ Department of Primary Industries, Victoria, *Landcare Note* LC0425.

**Acknowledgments**

The Weeds of National Significance program through the Natural Heritage Trust for funding the project. The Hume City Council for use of their slasher and trial site management. The CRC for Australian Weed Management.

Photos: David McLaren.

The advice provided in this publication is intended as a source of information only. Always read the label before using any of the products mentioned. The State of Victoria and its employees do not guarantee that the publication is without flaw of any kind or is wholly appropriate for your particular purposes and therefore disclaims all liability for any error, loss or other consequence which may arise from you relying on any information in this publication.