

Regional best-practice management of Chilean needle grass (*Nassella neesiana*): an emerging weed on the southern tablelands of New South Wales

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Introduction

Chilean needle grass is native to temperate South America. It is tolerant of drought and repeated defoliation (grazing and mowing) and has become a serious weed where stock selectively graze more palatable species, significantly reducing the carrying capacity of pastures. Infestations have developed on moderately fertile soils on the slopes and tablelands of southeastern Australia with extensive and well-established infestations on the New England tablelands (Gardener, 1998) and on the plains around Port Phillip but patchier and less well-recognised infestations on the central and southern tablelands of New South

Wales. Climate matching analyses indicate that Chilean needle grass has the potential to expand its range to almost 32 million ha in Australia (McLaren *et al.*, 1998), and it is classified as a Weed of National Significance.

Chilean needle grass produces two types of seed: 'normal' seeds in panicles and stem seeds (clitogones) located at the nodes of flowering stems (Storrie and Gardener, 1998). This enables the plant to set seed, even if all vulnerable seedheads are removed by slashing, spraytopping, or grazing. Panicle seeds are large, sharp-pointed, and barbed and can damage the skin and eyes of grazing animals. Chilean needle grass

forms a persistent seedbank, and it has high seedling survival, enabling it to invade relatively dense, vigorous swards of both exotic pastures and native grasslands. Medium- and long-distance dispersal of the seeds is primarily through animal or human movement, aided by the barbed shape of the seeds.

When vegetative, Chilean needle grass is easily confused with the pasture grass tall fescue (*Festuca arundanacea*); and when in seed, it resembles native spear grasses (*Austrostipa* spp.). Correct identification of Chilean needle grass is one of the major hurdles to be overcome in raising awareness of the invasion and implementing any strategic control program.

Trials

A number of control strategies for Chilean needle grass have been tested, including pasture establishment, grazing management, spraying with glyphosate and flupropanate, baling, slashing, and chipping. At best, the success of these options has been moderate. As Chilean needle grass does have some feed value (13% to 17% crude protein and 58% to 66% digestible dry matter), managing Chilean needle grass using grazing strategies to reduce spread and to obtain some grazing value from infested pastures is an option. In response to the lack of understanding of the costs and benefits of control options, five trials have been set up in eastern Australia to identify and demonstrate regional best-practice management of Chilean needle grass in pastures. These trials are being conducted by CSIRO Entomology in conjunction with NSW Agriculture and the Victorian Department of Primary Industries with funding from the National Heritage Trust Weeds of National Significance program.

Treatments at the trial sites combine a range of approaches, including the use of herbicides to remove Chilean needle grass and techniques aimed at reducing the competitive advantage of Chilean needle grass due to preferential grazing and increasing the competitiveness of associated desirable pasture grasses to reduce the risk of Chilean needle grass reinfestation (e.g., adjusting fertility, grazing pressure, and species composition).

The trials are still in the process of being established, with treatments being imposed and baseline measurements having been taken at several sites. While it will take some years for meaningful results to emerge, the aims are to demonstrate best-practice management options and to develop appropriate extension packages to help land managers identify and control or manage Chilean needle grass.

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