Chilean needle grass – three years of best practice management

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Summary   Chilean needle grass (*Nassella neesiana* (Trin. & Rupr.) Barkworth) (CNG) has perennial characteristics that allow it to persist in pasture and outcompete more desirable species. Once reproductive, CNG produces numerous unpalatable flower stalks and little leaf material, reducing stocking rate and grazing utilisation. This summary describes an experiment that commenced in 2003, comparing sheep set stocking to strategic/rotational grazing of a CNG-dominated pasture with combinations of treatments including chemical control, fertilisation and pasture rehabilitation. The aim was to reduce the dominance of CNG in different climatic regions.

Set stock grazing (~12 DSE ha^{-1}) led to a shift in pasture composition to annual species with broadleaf weeds. Flupropanate application (1.5 L ha^{-1} 745 g a.i. L^{-1}) decreased the basal cover of CNG at all sites although the residual effect varied between the sites. Off-target damage by flupropanate was normally restricted to the season post-spraying although grazing management affected the recovery of desirable perennial species. Set stock grazing of flupropanate plots, as opposed to strategic/rotational grazing or lockup plots, shifted the pasture composition to annual grasses and broadleaf weeds which led to large areas of bare ground over summer. In flupropanate plots that had large areas of bare ground (typically set stock plots), the residual effect of the herbicide to stop CNG growing was less apparent, as CNG was able to re-establish within two seasons of treatment application.

Glyphosate was able to kill mature CNG plants and enable resowing of perennial pastures, where seasonal conditions were favourable for pasture establishment. CNG was able to re-invade resown plots within the following growing season due to low pasture competition, and the lack of residual herbicide activity.

The use of glyphosate at 'selective rates' (180 g a.i. ha^{-1}) led to increased bare ground and reduced pasture competition leading to more broadleaf weeds at Glen Innes.

Spraytopping at Glen Innes had minimal effect on desirable perennial species whilst reducing CNG basal cover, CNG standing panicle seed, and CNG panicle seed viability.

Timing of strategic/rotational grazing during the reproductive period was critical to reducing panicle seed maturation. Sheep stocked equivalent to 300 DSE ha^{-1} (within rotational grazing cell for ~3days) tended not to graze CNG stems once the panicle seed had emerged.

Keywords   Perennial pastures, set stocking, strategic grazing, herbicide control, flupropanate, glyphosate.