

A Ute Guide:

chilean needle grass

Identification and Management



Australian Government





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- National Best Practice Management Manual Chilean Needle Grass
- Management Guide Chilean Needle Grass

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Edited by: Melanie Addinsall, Landcare Project Officer

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The Gecko CLaN is one of 5 Landcare networks in the Goulburn Broken Catchment Management Authority area. It consists of about 23 local Landcare groups, and operates to run larger network scale projects. The Gecko CLaN is proudly independent, but enjoys a strong working relationship with government agencies and other organisations.

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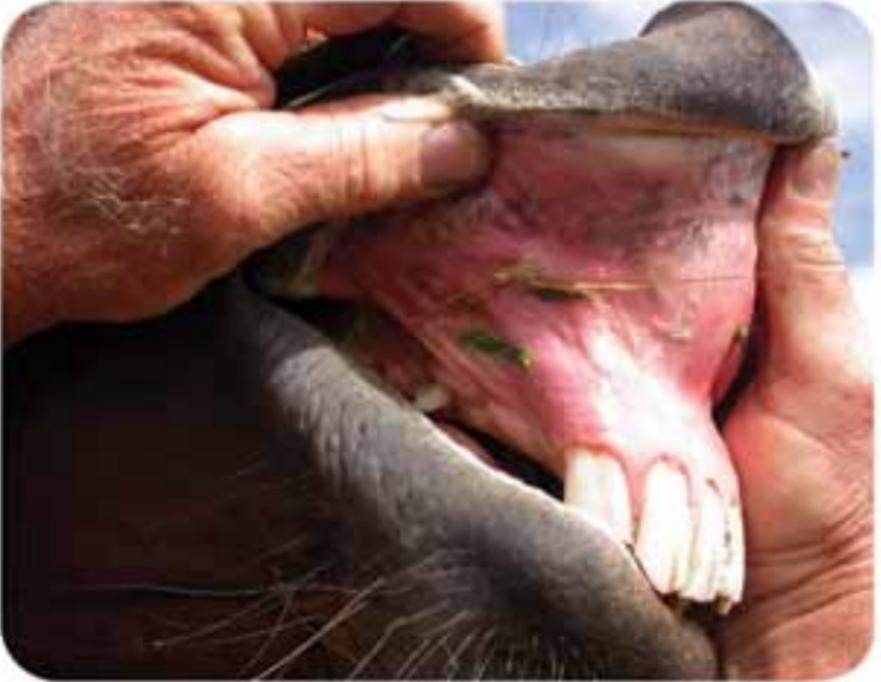
Chilean needle grass (*Nassella neesiana*) is a perennial tussock-forming grass, native to South America. A Weed of National Significance in Australia, Chilean needle grass is a vigorous competitor in agricultural, natural and urban environments.

Chilean needle grass is a 'Restricted' noxious weed in Victoria. This means Chilean needle grass, or any product contaminated with the seed, cannot be traded or transported.



Photos: Charles Grech

The presence of Chilean needle grass can have a devastating impact on agriculture. It can severely reduce pasture productivity, contaminate crops and hay, and the needle-like seed can injure animals as it burrows into their skin and cannot be easily removed.



Seeds attach to hooves and paws of different animals.
Photos: Charles Grech

Chilean needle grass' resilient reproductive system produces **three types of seed: panicle, stem and basal**. This allows for the development of a large and persistent seed bank.

Chilean needle grass grows in areas with annual rainfall of 450-1000 mm.

The **panicle seed** is the main seed head. It develops during spring. A single plant can produce as many as 22,000 seeds (Gardener, 1998).

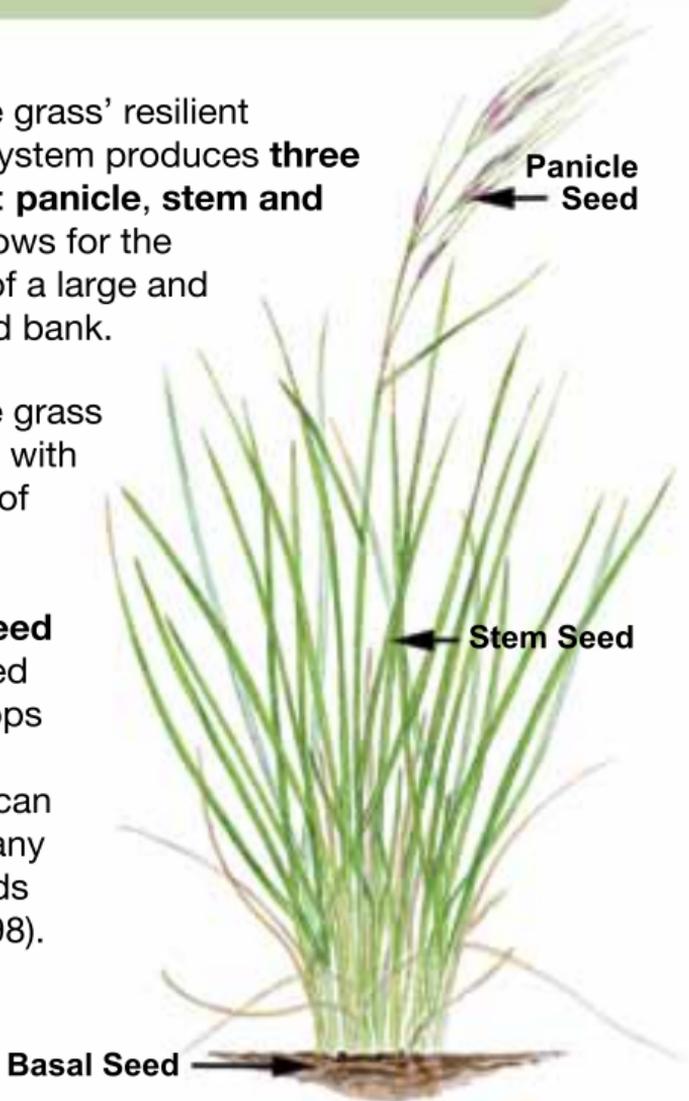


Illustration: Enid Mayfield

The panicle seed's ability to adhere to just about anything is the greatest cause of its spread. Seeds easily attach to animals (livestock, wildlife, domestic pets) and vehicles (utes, tractors, machinery). Seeds also spread easily in water, such as creeks and rivers. Flooding may cause extensive seed spread and it is important to monitor effected areas.



Photo: Charlie Sexton

The **stem seeds** form within the flowering stem after the panicle seeds. A single Chilean needle grass plant may produce 5-6,000 stem seeds (Gardener, 1998), which remain in the “straw”.



The **basal seed** forms very early in the plant's development, at the base of the tillers (in the crown, near the roots) and can mature within 12 months.



Identification

The best time to identify Chilean needle grass is in spring when the panicle seeds have distinctive purple glumes. Chilean needle grass can be difficult to identify when its panicle seed-heads are not present. It can easily be mistaken for other grasses such as tall fescue (*Festuca arundinacea*) and wallaby grasses (*Austrodanthonia* species), but especially spear grasses (*Austrostipa* species).

It is also advisable to learn how to identify Chilean needle grass when not in seed, to enable other options for control. This can be done by checking known sites at different times of the year (a painted marker or GPS coordinates can be useful).



Photo: Rural City of Wangaratta

Established Chilean needle grass tussocks in winter.



Photo: Charles Grech

Older plants form erect, robust tussocks up to 1 m in height and 1.5 m when flowering.

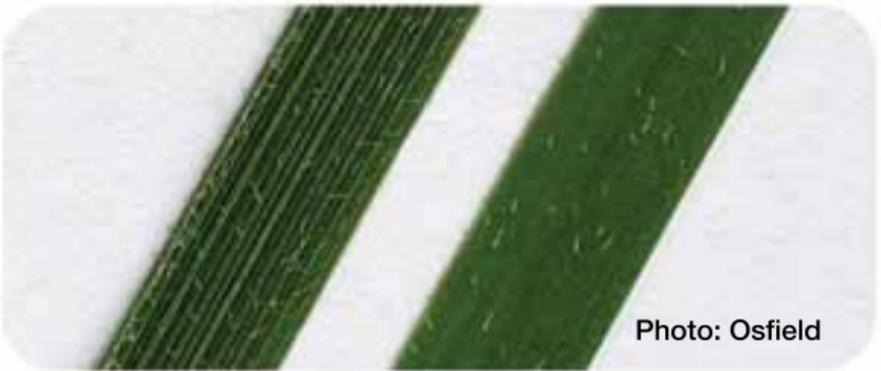


Photo: Osfield

The leaves are 1-5 mm wide, up to 300 mm long, flat and feel quite 'firm'. The upper side (left) has visible parallel lines with tiny hairs giving a rough feel. Softer hairs on the underside (right), give a slightly downy appearance. The leaves can roll inwards when under stress.

Flowering



Photo: Barry Oswald



Photo: Charles Grech

When flowering in spring, the distinctive purple glumes (containing the seed-heads) and long light green awns are clearly visible. They tend to hang to one side of the stem as if someone has combed them all neatly to one side.

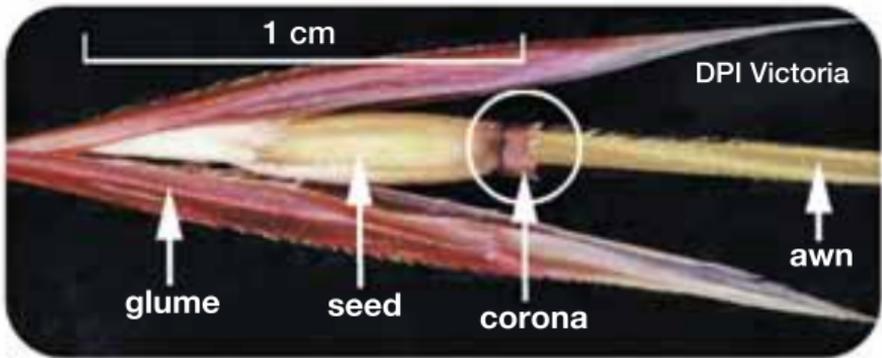
Panicle seed

The panicle seed is relatively large (up to 10 mm) with a very long awn of 40-85 mm in older mature seeds. This is longer than any native spear grass seed.

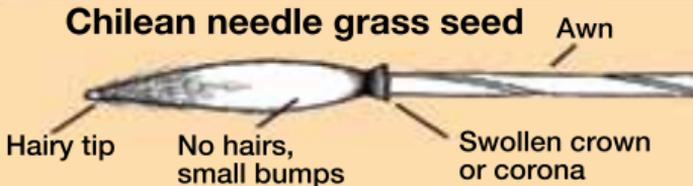


Illustration: Enid Mayfield

The panicle seed has a hard crown or collar-like corona, which does not occur in native grasses.



Chilean needle grass seed



Native spear grass seed



Illustration: Melanie Addinsall

Native spear grass seeds are similar to Chilean needle grass seeds except they lack the corona and generally have a hairier seed. When immature, Chilean needle grass seeds have a light green awn which turns straw coloured when mature. Native spear grass seeds generally have a dark rusty red coloured awn.

Stem seed

The stem seeds are concealed in the leaf sheaths.



Photos: Charles Grech

Basal seed

The basal seeds are located at the base of the plant in the crown.



Assess the site

- Map infestations
- Estimate density
- Check for new infestations in high risk areas (eg: high traffic areas, roadside drains, hay stack sites, flood limits)



Develop control plan

Prioritise sites and set achievable goals:

- **Prevent** spread of Chilean needle grass to weed-free areas
- **Eradicate** small isolated infestations (See Bradley Weeding Technique to maximise effectiveness – opposite)
- **Contain** established and widespread infestations where eradication is not feasible



Implement control plan

Control infestations by using a range of integrated control techniques.



Monitor

Always follow up any control activities with periodic monitoring. In areas where Chilean needle grass is thought to be eradicated, continue to monitor for several years.



Preventing Spread

Studies have identified that the movement of Chilean needle grass seed is the major cause of spread.

- Always work in weed-free areas first
- Clean down trap points on slashers, mowers and tractors with a hearth brush for dry material, and scraper or high pressure water/air for solidified vegetation material, mud or dried dirt
- Carefully choose a clean down area and always use the same place to clean down
- Avoid working or having farm animals, including dogs, in infested areas when Chilean needle grass seed is present (October to March)
- Note that seed readily sticks to wet machinery and vehicles
- Do not allow contractors on site unless clean and free from seed (consider using only WEEDSTOP accredited contractors)



Photo: Natasha Baldyga

Bradley Weeding Technique

- Begin control activities in least infested areas or around the edge of an infestation, as there is a very good chance that another species will colonise the area
- If you begin controlling in heavily infested areas then the spot will most likely be recolonised with Chilean needle grass, because of the immense quantity of seed already present
- Avoid soil disturbance because Chilean needle grass is an aggressive competitor, so will be the first to recolonise disturbed ground

The following control options are recommended and most commonly used:

Manual Removal

Manual removal by digging out Chilean needle grass is the most effective eradication technique. It is best for new or very small infestations. Remove the whole plant to ensure removal of any basal or stem seeds that may be present. Destroy or dispose of plant material carefully to avoid seed spread.

Spot Spraying

Spot spraying is an effective control for small or isolated infestations especially in high value and sensitive areas. It is advisable to use a marker dye mixed with the spray solution to increase accuracy.

Spot spraying can be done using the herbicides glyphosate, flupropanate or a combination:

- Glyphosate – Provides a quick knock down but is not selective and can result in off target damage.
- Flupropanate – Residual root uptake herbicide that is slow acting and selective. Off target damage to other grasses (pasture and native) can occur. For best results, mark infestations in spring when visible, then spot spray in May to June. Check site the following spring and follow up if necessary.
- Combination – A mix of glyphosate to prevent seed set and flupropanate to slowly kill adult plant (and prevent germination of seed for 2-3 years) can provide effective control when applied in spring. Read the label to determine correct rates for the mix.

Caution:

Do not spray year in, year out with flupropanate (group J chemical) as resistance is highly likely to develop. If Chilean needle grass reoccurs, spot spray with glyphosate or physically remove for 2 years before applying flupropanate again.

Chemical Note:

Flupropanate is currently the only registered chemical for Chilean needle grass control in Victoria. Glyphosate and Fluazifop-p could also be used off-label. Ask your local chemical retailer for instructions on appropriate use, and always check registration status and label prior to use.

For more information about chemical use off-label go to: www.dpi.vic.gov.au



Photo: DPI Victoria

Herbicide-use training is highly recommended. Accredited training courses are run by organisations such as AusChem Victoria Inc. and TAFE colleges.

Slashing

Slashing should be carried out when Chilean needle grass is flowering (see cover photo and page 7) to minimise panicle seed regrowth and reduce the risk of transporting viable seed. Chilean needle grass flowers for approximately two weeks before the seed becomes viable, so there is very little time for slashing to be effective. As the timing of flowering varies from year to year, check frequently from mid-October to mid-November.



Photo: Charles Grech

Slashing Chilean needle grass after flowering when seed becomes viable is not recommended.

The tractor and slasher are highly likely to become contaminated with viable panicle seed (see photo above). If slashing is conducted after seed set, use the highest standards of machinery clean down before leaving the site.

Slashing very frequently (at least every 2 weeks) may prevent panicle seed formation.

Be aware that in drought conditions even though Chilean needle grass may appear depleted, once rains arrive it will be the first to bounce back and quickly outcompete desirable species.

Integrated control

A range of integrated control techniques are required for different land use situations and rainfall zones.

In pasture, use **rotational/crash grazing** to reduce seeding and competition from Chilean needle grass, and to increase the effectiveness of chemicals. Set stocking favours Chilean needle grass because other species will be preferentially grazed leaving Chilean needle grass to prosper. Cattle are preferred over sheep, as seed does not attach as easily to cattle. Sheep should not be grazed at all once plants have started flowering.



Photo: Charles Grech

Before spring growth, **spot** or **boom spray** to prevent seed set and to kill existing plants. The choice of chemical and application method will depend on the situation.

Slashing or **cultivation** used in conjunction with spraying can improve the effectiveness of Chilean needle grass control.

Introduce a competitor by sowing a crop, pasture or native grass species to maintain a healthy cover of desirable competing plants. This can prevent new infestations in clean areas and slow growth of existing plants. Ensure that a range of species are present to maintain cover throughout the year.

Wick wiping can be used if a height differential between the pasture and Chilean needle grass occurs (for example, after light grazing).



Photo: Charles Grech

Spray topping and **burning** have also proven successful where land is not arable (for example, steep slopes, trees or rocky terrain).

Burning can be a useful management tool when integrated with other control options. Burning can provide a clearer indication of the level and pattern of infestation, which can then be controlled using spot spraying or manual removal.



Photo: Charles Grech

Quarantine livestock in holding paddocks if suspected of being contaminated with Chilean needle grass seed.

It is important to annually **monitor** all sites where control activities have been carried out for at least 10 years. Viable seed lasts in the soil for 6-8 years on average.

For further information about Chilean needle grass in your local area contact:

Gecko CLaN – Broken Catchment Landcare Network
(03) 5761 1560

Benalla Rural City Council
(03) 5760 2600

Greater Shepparton City Council
(03) 5832 9700

Rural City of Wangaratta
(03) 5722 0888

Or visit your local Department of Primary Industries Office
136 186

Further Information:

National Best Practice Management Manual Chilean Needle Grass
www.weeds.org.au/WoNS/Chileanneedlegrass/

3D Weed Management Meat and livestock Australia
http://images.wool.com/pub/3D_Weed_Guidelines_Chilean_NeedleGrassJune2009_lowresFINAL.pdf

Machinery Hygiene Guidelines
Baldyga, N. and Grech, C. (2005). Machinery hygiene guidelines for roadside managers – minimising the spread of Chilean needle grass. Department of Primary Industries, Bacchus Marsh, Victoria.

Department of Primary Industries Victoria
www.dpi.vic.gov.au

References:

Gardener, M. (1998). The biology of *Nassella neesiana* (Trin. and Rupr.) Barkworth (Chilean needle grass) in pasture on the Northern Tablelands of New South Wales: weed or pasture? PhD thesis, University of New England, New South Wales.

