

[Landform \(landform-home\)](#)

[Land Use \(landuse-home\)](#)

[Soil \(soil-home\)](#)

[Land and Water Management \(landwatermgmt\)](#)

[Catchment Management \(lwm\\_catchment\\_mgt\)](#)

**[Invasive Plants \(lwm\\_pest\\_plants\)](#)**

[Full Listing of Weeds \(invasive\\_plants\\_common\\_a\)](#)

[Noxious Weed Listing \(weeds\\_noxious\)](#)

[Weeds Glossary \(weeds\\_glossary\)](#)

[Victoria's Noxious Weeds Review  
\(weeds\\_vic\\_nox\\_review\)](#)

[Invasiveness Assessment Report \(invasive\)](#)

[Land Degradation \(lwm\\_land\\_deg\)](#)




[Irrigated Agriculture \(irrigated\\_agriculture\)](#)


[Catchment Hydrology \(catchment\\_hydrology\)](#)


[Salinity Indicator Plants \(water\\_spotting\\_soil\\_salting\)](#)

[Salinity Management \(lwm\\_salinity\\_management\)](#)

[Declared Water Supply Catchments \(landuse-water-  
supply-catchments\)](#)

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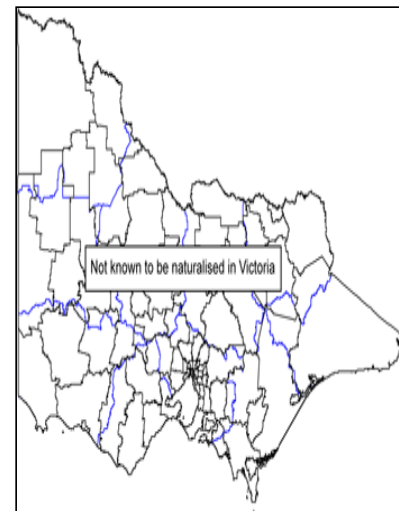
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## Puna grass (*Achnatherum brachychaetum*)

### Present distribution

**Scientific name:** *Achnatherum brachychaetum* (Godr.) Barkworth

**Common name(s):** puna grass



This invasive plant/weed is not known to be naturalised in Victoria

### Habitat:

Temperate grasslands of the Southern Hemisphere, in disturbed soils along roadsides, streambanks and waste places, run-down pastures (Parsons & Cuthbertson 1992). Is adversely affected by competition for light' (Hernandez 1969). Species not known as naturalised in Victoria (DSE 2004, ANH 2006).

### Potential distribution

Potential distribution produced from CLIMATE modelling refined by applying suitable landuse and vegetation type overlays with CMA boundaries

## Map Overlays Used

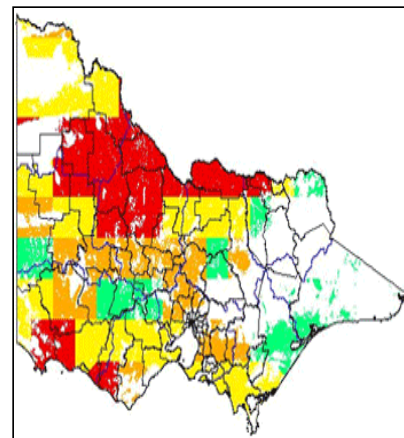
### Land Use:

Broadacre cropping; Horticulture; Pasture Dryland; Pasture irrigation

### Broad vegetation types

Coastal scrubs and grassland; coastal grassy woodland; grassland; plains grassy woodland; riverine grassy woodland

Colours indicate possibility of *Achnatherum brachychaetum* infesting these areas.



In the non-coloured areas the plant is unlikely to establish as the climate, soil or landuse is not presently suitable.

Red= Very high  
Orange = Medium High  
Yellow = High  
Green = Likely

## Impact

QUESTION	COMMENTS	RATING	CONFIDENCE
<b>Social</b>			
1. Restrict human access?	Densely tufted perennial with stems to 1m tall (CDFA 2004). Often found in waste places and run-down pastures. Unlikely to restrict human access.	L	mh
2. Reduce tourism?	Weed is found in waste places and old pastures (Parsons & Cuthbertson 1992). Does grow up to 1m tall so if in a recreational area then may have a minor effect on aesthetics.	ml	mh
3. Injurious to people?	Blades are 8-35 cm long, the upper surface slightly scabrous, the top somewhat sharp (CDFA 2004). Not documented but may cause some minor irritation.	ml	mh
4. Damage to cultural sites?	Unlikely to have an effect on indigenous or European cultural site.	l	mh
<b>Abiotic</b>			
5. Impact flow?	Terrestrial species. (Parsons & Cuthbertson 1992).	l	mh
6. Impact water quality?	Terrestrial species. (Parsons & Cuthbertson 1992).	l	mh
7. Increase soil erosion?	Shallow and fibrous roots. Present most of year. (CDFA 2004). Although roots are shallow, weed is present for most of the year and unlikely to leave bare soil exposed. Low probability of large scale soil movement.	l	mh
8. Reduce biomass?	In a trial done in lucerne plants it was found that <i>A. brachychaetum</i> contributed up to 22.5% of the aerial biomass (Ares 1972). It is often found in waste places and in run down pastures and can grow up to 1m in height. Biomass likely to increase.	l	mh
9. Change fire regime?	A grass which can grow up to 1m. Likely to add to fuel load and contribute to a minor increase fire intensity.	ml	m
<b>Community Habitat</b>			

10. Impact on composition (a) high value EVC	EVC=Plains grassland (BCS = E); CMA=North central; Bioreg=Victoria riverina; CLIMATE potential=VH. Drop in biodiversity in stipoid grass-dominated grasslands as litter accumulates and excludes shade intolerant species (Gardener & Sindel 1998). Minor displacement of some dominant species within the lower strata.	<b>ml</b>	<b>mh</b>
(b) medium value EVC	EVC=Grassy woodland (BCS = D); CMA=West Gippsland; Bioreg=Gippsland plain; CLIMATE potential=H. Drop in biodiversity in stipoid grass-dominated grasslands as litter accumulates and excludes shade intolerant species (Gardener & Sindel 1998). Minor displacement of some dominant species within the lower strata.	<b>ml</b>	<b>mh</b>
(c) low value EVC	EVC=Coastal tussock grassland (BCS = LC); CMA=West Gippsland; Bioreg=Gippsland plain; CLIMATE potential=H. Drop in biodiversity in stipoid grass-dominated grasslands as litter accumulates and excludes shade intolerant species (Gardener & Sindel 1998). Minor displacement of some dominant species within the lower strata.	<b>ml</b>	<b>mh</b>
11. Impact on structure?	Drop in biodiversity in stipoid grass-dominated grasslands as litter accumulates and excludes shade intolerant species (Gardener & Sindel 1998). Minor effect on lower strata.	<b>ml</b>	<b>mh</b>
12. Effect on threatened flora?	This species is not documented as posing an additional risk to threatened flora.	<b>mh</b>	<b>l</b>
<b>Fauna</b>			
13. Effect on threatened fauna?	This species is not documented as posing an additional risk to threatened fauna.	<b>mh</b>	<b>l</b>
14. Effect on non-threatened fauna?	Not documented to have an effect on non-threatened fauna spp.	<b>l</b>	<b>mh</b>
15. Benefits fauna?	Palatable when young but mature leaves are tough and rarely grazed by stock (Parsons & Cuthbertson 1992). Plants provide very little support to desirable species.	<b>h</b>	<b>mh</b>
16. Injurious to fauna?	Weed not documented to be harmful to fauna species.	<b>l</b>	<b>mh</b>
<b>Pest Animal</b>			
17. Food source to pests?	Palatable when young but mature leaves are tough and rarely grazed by stock (Parsons & Cuthbertson 1992). Weed not documented as a food source to pests.	<b>l</b>	<b>mh</b>
18. Provides harbor?	Grows in open and degraded areas. Not likely to harbour pest species.	<b>l</b>	<b>mh</b>
<b>Agriculture</b>			
19. Impact yield?	In Argentina and the U.S. <i>A. brachychaetum</i> is a serious weed in lucerne pastures (Gardener & Sindel 1998). Reduces yield (of lucerne) (Parsons & Cuthbertson 1992). Can result in the total loss of a pure stand (Rodriguez 1983). Often associated with alfalfa fields (CDFA 2004). Can have a major impact on quantity.	<b>mh</b>	<b>mh</b>
20. Impact quality?	Weed not documented to impact upon quality of yield.	<b>l</b>	<b>mh</b>
21. Affect land value?	Weed difficult to control as has cleistogamous seed which can remain in soil. However, not documented to affect land value.	<b>l</b>	<b>mh</b>
22. Change land use?	Weed not documented to change land use.	<b>l</b>	<b>mh</b>

23. Increase harvest costs?	Interferes with mowing (Parsons & Cuthbertson 1992). Difficult to control. May have a minor increase in time of harvesting.	<b>m</b>	<b>mh</b>
24. Disease host/vector?	Not documented as a host or vector for disease of agriculture.	<b>l</b>	<b>mh</b>

## Invasive

QUESTION	COMMENTS	RATING	CONFIDENCE
<b>Establishment</b>			
1. Germination requirements?	Germinates in autumn (Parsons & Cuthbertson 1992). Requires natural seasonal conditions for germination.	<b>nh</b>	<b>mh</b>
2. Establishment requirements?	Tends to be found in relatively open places and run down areas (Gardener & Sindel 1998). '.. this species is adversely affected by competition for light' (Hernandez 1969). Requires more specific requirements to establish.	<b>ml</b>	<b>mh</b>
3. How much disturbance is required?	Stipoid grasses generally invade highly degraded plant communities (Gardener & Sindel 1998). Establishes in highly disturbed natural ecosystems.	<b>ml</b>	<b>mh</b>
<b>Growth/Competitive</b>			
4. Life form?	Perennial grass (Gardener & Sindel 1998).	<b>mh</b>	<b>mh</b>
5. Allelopathic properties?	None described.	<b>l</b>	<b>mh</b>
6. Tolerates herb pressure?	Palatable when young but mature leaves are tough and rarely grazed by stock. 'heavy and continuous grazing, which leads to accelerated degeneration of pasture, must be avoided' (Parsons & Cuthbertson 1992). No bio control agents (CDFA 2004). Consumed but non-preferred.	<b>mh</b>	<b>mh</b>
7. Normal growth rate?	Grows slowly during winter and rate increases in spring (Parsons & Cuthbertson 1992). Grows faster than alfalfa (CDFA 2004). Moderately rapid growth.	<b>mh</b>	<b>mh</b>
8. Stress tolerance to frost, drought, w/logg, sal. etc?	Found in semi-arid regions (Hernandez 1969). Found in areas known to have light frosts. Plants have hard-coated cleistogamous seed (CDFA 2004) which may survive fires. Insufficient information on waterlogging and salinity. Tolerant of drought and frost and maybe fire.	<b>mh</b>	<b>m</b>
<b>Reproduction</b>			
9. Reproductive system	Reproduce through self-pollination or outcrossing (Gardener & Sindel 1998). 'May vegetatively reproduce from the crown but it is not stoloniferous or rhizomatous' (CDFA 2004). Sexual reproduction.	<b>ml</b>	<b>mh</b>
10. Number of propagules produced?	Flowering tillers of <i>A. brachychaetum</i> produce up to 18 cleistogenes (Gardener & Sindel 1998). Insufficient information to determine number of propagules produced per flowering event.	<b>m</b>	<b>l</b>
11. Propagule longevity?	Cleistogamous seed is hard-coated and can persist in soil for at least 2 years (CDFA 2004). Less than 5 years.	<b>l</b>	<b>mh</b>
12. Reproductive period?	Perennial grass (Gardener & Sindel 1998). Likely to produce viable propagules for greater than 2 years.	<b>mh</b>	<b>mh</b>

13. Time to reproductive maturity?	Germinates in autumn and flowers in late spring early summer (Parsons & Cuthbertson 1992). Reaches maturity and produces viable propagules in under a year.	<b>h</b>	<b>mh</b>
<b>Dispersal</b>			
14. Number of mechanisms?	Long distance dispersal of stipoid grasses is through adhering to coats of animals, clothing or machinery (Gardener & Sindel 1998). A small number may be moved in flowing water (Parsons & Cuthbertson 1992). Spread by water, animals and light vehicular traffic.	<b>mh</b>	<b>mh</b>
15. How far do they disperse?	Long distance dispersal of stipoid grasses is through adhering to coats of animals, clothing or machinery (Gardener & Sindel 1998). Through these dispersal mechanisms it is likely that many propagules will reach 200 -1000m.	<b>mh</b>	<b>mh</b>

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