

Invasive plants and animals



## Gamba grass

*Andropogon gayanus*

DECLARED CLASS 2



Gamba grass beside a road in the New Mapoon area of Cape York, Queensland (photo courtesy B Waterhouse, AQIS)

Gamba grass is an introduced weed that competes strongly with native pasture. Its high biomass can fuel intense bushfires, damaging ecosystems and threatening the safety of people and property.

Gamba grass has a broad natural distribution in Africa but is a serious environmental problem in the Northern Territory, and it is climatically suited to north Queensland.

### Species

Gamba grass in northern Australia is an artificial cultivar, known as Kent. It was developed by crossing *Andropogon gayanus* var. *squamulatus* and an unknown variety specifically for use as a pasture grass.

More than 10 other cultivars have been developed for cattle fodder in other countries.

# Description

Gamba grass is a perennial species introduced from Africa. It has the following key features:

- mature plants grow up to 4 m tall with tussocks up to 70 cm in diameter
- leaves are 30–60 cm long and up to 3 cm wide, with a distinctive white midrib and covered with soft hairs
- stems are robust and covered in soft hairs
- the root system spreads up to 1 m from the tussock, close to the soil surface
- it reproduces from seed
- seeds are contained in a fluffy V-shaped seed head consisting of up to six groups of branches, each containing 2–18 primary branches
- the plant flowers in April.

# History

Gamba grass first appeared under cultivation in Queensland in 1942, although trials and plantings occurred in the Northern Territory as early as 1931. It was bred as an improved pasture species and sold by seed merchants. Gamba grass has adapted extremely well to the seasonal droughts, fires and low-nutrient soils of Australia's savannas.

# The problem

Gamba grass infestations have spread extensively across various landscapes where it has significantly altered soil-nutrient cycles, water cycles and fire regimes in the following ways:

- Gamba grass-infested landscapes carry up to 8 times higher fuel loads than native forest and pastures.
- Bushfires are extensive with increased intensity and heat, which affects the tree canopy, transforming woodlands to grasslands. This also poses a serious threat to people and property.
- The changing demands for nutrients and water over a large area can alter catchment hydrology and downstream wetlands and watercourses.



**Gamba grass fire in the Northern Territory. Note the person in the lower right corner** (photo courtesy Sue Lamb, NT Bushfires Council)



**Trees killed by intense fires fuelled by gamba grass in the Northern Territory** (photo courtesy M Douglas, Charles Darwin University, NT)

# Life cycle and dispersal

Gamba grass reproduces by seed and spreads rapidly where the natural vegetation has been disturbed.

The plant grows actively in the wet season and flowers in April. Seeds develop from May to June and set in July and August.

Plants can produce up to 244 000 seeds/plants each year with 65% viability. The seeds are light and easily dispersed by the wind, although 90% fall within 5 m of the parent plant.



**Seeds of gamba grass** (photo courtesy John Clarkson, EPA)

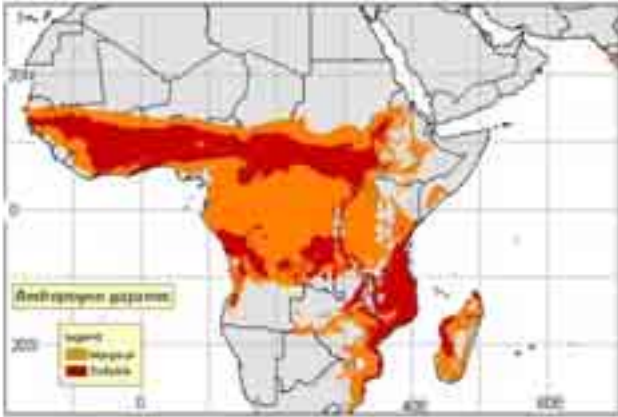
Dispersal has been aided by the sale and distribution of the plant as a commercial pasture plant. Gamba grass has also been spread when transported as hay and on roadside slashers.

# Distribution

Almost all known locations of gamba grass lie in areas that have between 400 mm and 1500 mm of annual rainfall and below an altitude of 980 m.

Gamba grass is native to the tropical and sub-tropical savannas of Africa, from Senegal on the west coast to Sudan in the east, south to Mozambique, Botswana and South Africa. Extended dry seasons are a feature of much of this region.

Gamba grass has been introduced to many parts of the world, particularly tropical America, for use as an improved pasture plant. It has naturalised in South America and northern Australia.



Areas of Africa considered suitable for growth of gamba grass as a pasture (Cook *et al.* 2005). The red and orange zone broadly reflects the species' native range (as published by Bowden 1964).

In Queensland, gamba grass currently exists as scattered populations (estimated total of 60 000 ha) across the north, with most sites on Cape York Peninsula.

## Declaration details

Gamba grass is a declared Class 2 plant. Declaration requires landholders to control declared pests (plants and animals) on their land. A local government may serve a notice upon a landholder requiring control of declared pests.

## Control

### Prevention

**The sale of declared species is illegal and should be reported to the Department of Primary Industries and Fisheries.**

Public awareness of gamba grass, with its vigorous growth and alarming potential as a fire hazard, is increasing.

### Pasture management

Gamba grass should be grazed with enough stock to keep it below a height of 90 cm so that seed production and potential spread is limited. This ensures that plants do not become tall and rank in the dry season, and reduces potential fire hazards. Stocking rates to achieve this may be as high as five animals per ha during the peak wet season.

Maintaining pastures in good condition with high crown and foliage cover will provide some resistance against gamba grass invasion, and spread of existing infestations. Pastures that are in poor condition or overgrazed are at a greater risk of invasion by gamba grass due to bare soil and reduced vigour of existing grass species.

### Physical control

Hand pulling or digging out isolated plants is an effective control method. Ensure excess soil is shaken from the roots to prevent regrowth. Slashing to reduce seed set or to remove old rank growth should be done before seeding and after seeds have dropped to reduce the risk of seed spread. This will also improve the effectiveness of applied herbicides and reduce fire hazards. Weed seed hygiene protocols must be observed for machinery, vehicles and people working in gamba grass areas.

### Burning

Gamba grass is tolerant to fire at any time of the year. Burning gamba grass in the dry season can be hazardous to property, people and livestock due to the high fuel loads and height of the plants, which create an extremely intense fire. Gamba grass should be burnt only to reduce fire hazard, limit seed set and remove old rank growth. This will also improve herbicide control.

Low intensity burns early in the wet season can remove old rank growth and promote new growth suitable for herbicide application. These fires can also control young gamba grass seedlings, reducing the establishment of new plants. Gamba grass should not be burnt when plants have mature seeds as the updrafts caused by the fire can spread the light fluffy seeds across large distances.

### Chemical control

Gamba grass should be sprayed early in the wet season (when leaves are at least 40 cm long) or well before May to prevent seeding and potential spread. Spraying early makes herbicide application easier as plants are smaller, less herbicide is required and good coverage is achieved. Every part of the plant should be sprayed to ensure adequate herbicide uptake. Slashing or burning old rank plants will promote fresh growth enabling more effective herbicide application.

Plants should be sprayed with glyphosate (360 g/L) at 1 L/100 L of water. An anionic wetting agent should be added to the spray mix to improve the efficacy of the herbicide. See Table 1 below for more detail.

Care should be taken to limit overspray as glyphosate is non-selective and considerable damage can be caused to non-target plants.

## Further information

Further information is available from the vegetation management, weed control or environmental staff at your local government office.



**TABLE 1—HERBICIDES REGISTERED FOR THE CONTROL OF GAMBA GRASS**

Situation	Herbicide	Rate	Comments
Non-agricultural, bushland, forests, wetlands, coastal and adjacent areas.	*Glyphosate (360 g/L) (*covered under PERMIT 7485)	1 L/100 L of water plus anionic wetter applied as a spot spray  10 L/ha plus anionic wetter applied using a boom spray	Spot spray: ensure every part of the plant is covered  Boom spray: apply to fresh growth following slashing or burning of dense infestations

Read the label carefully before using glyphosate and always adhere strictly to the directions on the label. It is a requirement of permit 7485 that anyone using products covered under the permit comply with the details and conditions listed in the permit. Permit 7485 can be accessed at <<http://permits.apvma.gov.au/PER7485.PDF>>.



**Gamba grass infestation** (photo courtesy John Clarkson, EPA)



**Gamba grass seed head** (photo courtesy John Clarkson, EPA)



**Gamba grass** (photo courtesy John Clarkson, EPA)

Fact sheets are available from DPI&F service centres and the DPI&F Information Centre phone (13 25 23). Check our website [www.dpi.qld.gov.au](http://www.dpi.qld.gov.au) to ensure that you have the latest version of this fact sheet. The control methods referred to in this fact sheet must be used in accordance with the restrictions (federal and state legislation and local government laws) directly or indirectly related to each control method. These restrictions may prevent the use of one or more of the methods referred to, depending on individual circumstances. While every care is taken to ensure the accuracy of this information, the Department of Primary Industries and Fisheries does not invite reliance upon it, nor accept responsibility for any loss or damage caused by actions based on it.