Fact sheet
DECLARED CLASS 2 PEST PLANT

Giant rat's tail grass

and other weedy *Sporobolus* species

Sporobolus pyramidalis, S. natalensis, S. jacquemontii, S. fertilis and *S. africanus*

Weedy *Sporobolus* can out-compete desirable pasture grasses

One seed head of giant rat's tail grass can produce up to 85 000 seeds per year with initial seed viability of about 90%

Giant rat's tail grass and other weedy *Sporobolus* grasses are invasive grasses that can reduce pasture productivity, out-compete desirable pasture grasses and cause significant degradation of natural areas.

These species were originally introduced as contaminants in pasture seed and have now adapted well to large areas of eastern Australia.

Five species of introduced *Sporobolus* grasses are declared Class 2 plants in Queensland:

- giant rat's tail grass *(S. pyramidalis and S. natalensis*)
- American rat's tail grass *(S. jacquemontii)*
- giant Parramatta grass *(S. fertilis)*
- Parramatta grass *(S. africanus)*.

Declaration details

Under Queensland's *Land Protection (Pest and Stock Route Management) Act 2002*, landholders are required to control Class 2 declared pests on land and waters under their control. Local governments may serve notices to landholders requiring control of declared pests.

Description and general information

Weedy *Sporobolus* grasses are robust, tufted, perennial grasses growing up to 2 m tall. They are difficult to distinguish from other pasture grasses before maturity. However, their leaves are noticeably tougher than those of any other species.

They can also be difficult to distinguish from native *Sporobolus* grasses; however, the native grasses tend to be shorter and softer and have less dense seed heads than giant rat's tail grass. The seeds of all species are indistinguishable in pasture seed samples using current identification techniques.

Weedy *Sporobolus* seeds are spread:

- by livestock (up to 30 000 viable seeds/beast/day) in manure and on fur and hooves
- by feral and native animals
- on vehicles and machinery (especially slashers and earthmoving equipment)
- in hay and untested pasture seed

by fast-flowing water over turf.

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Giant rat's tail grass

Giant rat's tail grass grows to 0.6–1.7 m tall, with a seed head of up to 45 cm long and 3 cm wide. Seed head shape changes from a 'rat's tail' when young to an elongated pyramid shape at maturity. Unlike Parramatta grass and giant Parramatta grass, giant rat's tail grass does not develop 'sooty spike' on its seed heads.

Distribution of *S. natalensis*—Rockhampton (Queensland) to Port Macquarie (New South Wales).

Distribution of *S. pyramidalis*—Cooktown (Queensland) to Central Coast (New South Wales).

American rat's tail grass

American rat's tail grass grows to 50–75 cm tall, with a seed head of up to 25 cm long and 0.5–3 cm wide.

Distribution—Cape York (Queensland and Northern Territory) to South East Queensland.

Giant Parramatta grass

Giant Parramatta grass grows to 0.8–1.6 m tall, with a seed head of up to 50 cm long and 1–2 cm wide. The branches of the seed head are pressed against the axis and overlap, although lower ones generally spread at maturity.

Distribution—Mossman (Queensland) to Central Coast (New South Wales).

Parramatta grass

Parramatta grass grows to 0.15–1.1 m tall, with a seed head of up to 50 cm long and 1–2 cm wide. The leaves of mature plants are slender and erect, 6–18 cm long. Parramatta grass is not as invasive as giant Parramatta grass.

Distribution—Brisbane (Queensland) to Adelaide (South Australia).

Potential damage

Weedy *Sporobolus* grasses:

- have low palatability when mature
- are difficult to control
- can quickly dominate a pasture, especially following overgrazing or soil disturbance
- can affect cattle health and productivity (including finishing times, weaning percentages and weights)
- can set seed throughout frost-free periods (with a significant proportion of seed remaining viable for up to 10 years)
- can become a serious fire hazard in spring months.

Habitat and distribution

Giant rat's tail grass has adapted to a wide range of soils and conditions.

Ecoclimatic modelling suggests giant rat's tail grass is suited to conditions present in 30% of Australia (223 million ha) and 60% of Queensland (108 million ha), including areas receiving as little as 500 mm average annual rainfall.

Control

Prevention

Maintain vigorous, dense pastures and use higher grass seed sowing rates to reduce the chance of invasion and to increase competition against weedy *Sporobolus* seed establishment. Do not expect heavy grazing to control weedy *Sporobolus* grasses—research indicates that grazing may actually favour its spread.

When moving stock from infested areas into clean areas, spell the stock in yards for at least five days. Similarly, spell stock purchased from known or suspected infested areas before releasing them into larger paddocks. Alternatively, quarantine new stock in a densely pastured, well-monitored holding paddock. Move stock when there is no dew or rain, to decrease the amount of seed sticking to their coats (see Table 1).

Establish weed-free buffer strips along boundary or perimeter fences, drainage lines and roadsides to restrict the spread of weedy S*porobolus* grasses. Always clean machinery thoroughly after working in infested areas. Follow integrated control strategies using herbicides and other control methods, combined with good property hygiene.

Consider the attributes of replacement pasture grasses when deciding what to sow. If possible, choose grasses that are:

- well adapted to local environmental conditions and soil types
- stoloniferous or rhizomatous in growth habit
- resistant to heavy grazing
- palatable and productive
- competitive all year (i.e. do not open up in late winter/spring)
- not inclined to decline as soil fertility decreases
- fast to establish.

If a sown pasture species does not contain most of these attributes, it is unlikely to be successful as part of a weedy *Sporobolus* grass control program.

Some pasture species, while providing strong competition once established, are weak competitors with weedy S*porobolus* grasses in their early stages of establishment (e.g. Koronivia grass and Bisset creeping blue grass). These grasses are most successful against weedy *Sporobolus* when sown with other grasses that are vigorous when young and provide early competition against weedy *Sporobolus* grasses (e.g. Rhodes grass). See *Weedy Sporobolus grasses: best practice manual* (Queensland Department of Primary Industries, revised edition 2007) for further information about pasture species that can be used in particular situations.

Suppliers must not supply anything containing reproductive material of a plant that is a Class 1 or Class 2 pest under the Land Protection (Pest and Stock Route Management) Regulation 2003.

Management strategies

Always commence control programs in areas of light infestation, and work towards the denser infestations.

If, after considering the management options set out below, you choose to use a herbicide option, ensure you apply all herbicides strictly according to the directions on the label and the directions of any Australian Pesticides and Veterinary Medicines Authority (APVMA) permit. You **must** read APVMA permit 9792 if you wish to prepare or use products for the control of *Sporobolus* weeds in situations other than those specified on the product label.

Some herbicides permitted or registered for giant rat's tail grass control have withholding periods and significant ongoing management requirements in grazing and dairy farming. If you have or may have dairy or beef cattle on your property at any stage in the future, carefully consider these requirements when choosing herbicides for use on your property.

Some details of management options are provided below.

Scattered plants and light infestations

Choose **one** of the following options:

(a) Spot spray with glyphosate.

(b) Spot spray with flupropanate.

(c) Use glyphosate through a pressurised wick wiper.

(d) Hand chip, bag and remove stools from the paddock and burn them.

Dense infestations on arable land

(a) Cropping option

First summer (early)

1. Boom spray with glyphosate as per label or permit directions and burn prior to ploughing.
2. Spot spray or hand chip fence lines, headlands, drainage lines, shelter belts etc. for weedy *Sporobolus* grasses missed in cultivation. Plant a long-season forage sorghum variety using a recommended pre-emergent herbicide.
3. Spot spray or hand chip any surviving weedy *Sporobolus* grasses to prevent reseeding.

Second summer

1. Boom spray with glyphosate to control new seedlings and crop regrowth prior to cultivation.
2. Follow the same procedures and similar cropping as for the first summer.

Third summer

1. Boom spray with glyphosate to control crop regrowth and any weedy *Sporobolus* seedlings.
2. Plant paddocks with improved pastures using minimum tillage techniques to restrict bringing buried seed to the surface. Use a direct drill planter or surface broadcasting and rolling techniques. Plant fast-growing pasture grasses at triple the standard sowing rates to compete with weedy *Sporobolus* seedlings.
3. Fertilise the pasture for fast pasture establishment.
4. Spot spray or hand chip weedy *Sporobolus* seedlings.

(b) Pressurised wick wiper option

To be effective, this option requires three treatments over an 18-month period.

First treatment (midsummer)

1. Make sure there is a 30 cm height difference between weedy *Sporobolus* and other pasture plants by selective grazing of the 'good' pasture.
2. Wick wipe weedy *Sporobolus* grass using glyphosate as per label or permit directions.
3. Graze using increased stocking rates after wick wiping.

Second treatment (late summer or autumn)

Wick wipe weedy *Sporobolus* grass using glyphosate as per label or permit directions.

Third treatment (next summer)

Wick wipe weedy *Sporobolus* grass using glyphosate as per label or permit directions.

Dense infestations on non-arable land

Choose **one** of the following options:

(a) In summer, apply glyphosate through a pressurised wick wiper (if terrain and timber allow).

(b) In summer, boom or blanket spray with glyphosate in split applications as per label or permit directions (see Table 2) and replant the pasture using fast-growing pasture grasses at double the standard sowing rates.

(c) In winter or spring, boom or blanket spray with flupropanate as per label or permit directions.

Further information

Further information is available from your local government office, or by contacting Biosecurity Queensland (call 13 25 23 or visit our website at www.biosecurity.qld.gov.au).

Also refer to *Weedy Sporobolus grasses: best practice manual* (Queensland Department of Primary Industries, revised edition 2007).

Table 1. Best practices for management of weedy *Sporobolus* infested paddocks

Dos	Don'ts
Cattle	
• Manage the grazing and stocking rate to maintain good ground cover of pasture.	• Don't overgraze, as this will create bare patches that allow weedy *Sporobolus* grass seedlings to emerge.
• Muster only in the afternoon when plants and seeds are dry.	• Don't muster on wet days or when the soil is muddy.
• Restrict cattle to a small paddock or a laneway (on hay) for five days after grazing the weedy S*porobolus* paddock.	• Don't deliberately overstock paddocks infested with weedy S*porobolus*.
• Muster on foot or on horseback to prevent seed contamination of machinery.	• Avoid creating bare ground from trampling around mineral licks etc.
Machinery	
• Provide a specific hose-down tarmac to clean contaminated machinery.	• Don't slash infested paddocks unless they are part of a wick wiping program.
• Keep roadways, laneways, stock routes and machinery corridors free of weedy S*porobolus*.	• Don't drive vehicles through infested paddocks.
General hygiene	
• Enclose specimens for identification in tied fertiliser bags.	• Don't drive around the farm with a suspected weedy *Sporobolus* specimen in the cabin or in the back of the ute.
Pasture management	
• Maintain pasture vigour with a maintenance fertiliser program.	• Don't allow soil fertility run-down, as this favours weedy S*porobolus* establishment.
• Use band seeding if possible, as this is the 'safest' method to plant legumes into an infested pasture.	• Don't renovate an infested pasture.
• Plant the recommended competitive pasture grasses.	• Don't burn the pasture unless it is part of a wick wiping, pre-cropping pasture replacement strategy.
Hay and pasture seed	
• Determine the origin of hay and ask for a weed hygiene declaration.	• Don't knowingly purchase hay contaminated with weedy *Sporobolus*.
• Feed hay in a yard, feedlot or small holding paddock.	• Don't buy seed without knowing its origin.
• Only purchase seed from a reputable seed merchant.	• Don't buy seed unless it has a weed hygiene declaration.
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Control strategies	
• Choose the best control strategy based on the paddock situation and the weedy *Sporobolus* population before starting the job.	• Don't spot spray with glyphosate using a high-pressure gun from the cabin of the ute.
• If dairy or beef cattle will be in the paddock at any time in the future, carefully consider the exclusion and withholding requirements of the herbicides and their long-term implications before commencing treatments.	• Don't wave the spray gun around—if the weedy *Sporobolus* is dense, you should not be spot spraying.
• If spot spraying with glyphosate, operate close enough to step on the plant and spray downwards.	• Don't overspray with glyphosate past the point of spray run-off.
• Use low-pressure spraying equipment to reduce the risk of overspraying.	
• Always spot spray the single 'scout' plants around the perimeter of the infestation first, then work inwards.	

The herbicides in Table 2 are permitted under PER9792, which expires on 30 November 2015. You **must** read the permit if you wish to prepare or use products for the control of *Sporobolus* weeds in situations other than those specified on the product label. The permit is available on the APVMA website, www.apvma.gov.au

Table 2. Herbicides permitted for the control of *Sporobolus* weeds

Situation	Application method	Herbicide[1]	Rate	Comments
Pasture, grazed woodlands and agricultural situations prior to sowing; tree and vine crops; lucerne; agricultural non-crop situations	Boom spraying	Glyphosate (360 g/L)	6 L/ha	
Wasteland; forest and conservation areas; margins of aquatic areas; roadsides and easements; rights of way; commercial and industrial areas; public service areas	Boom spraying Double knockdown split application	Glyphosate (360 g/L)	3 L/ha + 3 L/ha	Follow up the first treatment with a later knockdown treatment such as herbicide or tillage.
Pasture, grazed woodlands and agricultural situations prior to sowing; tree and vine crops; lucerne; agricultural non-crop situations	Spot spraying	Glyphosate (360 g/L)	1 L per 100 L water	
Wasteland; forest and conservation areas; margins of aquatic areas; roadsides and easements; rights of way; domestic, commercial and industrial areas; turf; playing fields; golf courses; public service areas; areas surrounding agricultural buildings	Double knockdown split application	Glyphosate (360 g/L)	1 L + 1 L per 100 L water	Follow up the first treatment with a later knockdown treatment such as herbicide or tillage.
	Wick wiping	Glyphosate (360 g/L)	3.3 L per 10 L water	
Pasture; grazed woodlands; agricultural non-crop situations Wasteland; forest and conservation areas; roadsides and easements; rights of way; commercial and industrial areas	Boom spraying	Flupropanate (745 g/L)	1.5–2 L/ha	**Do not** use in channels, drains or watercourses. **Do not** reseed treated areas until at least 100 mm of leaching rain has fallen. **Do not** spray near desirable susceptible trees. **Do not** apply above 3 L/ha to steeply sloping sites. Allow 3–12 months for control, depending on weather conditions and growth stage of plant. High rates will kill native grasses. Apply once per year. Monitor treated areas regularly for any regrowth.
	Suppression of seedlings in improved pasture	Flupropanate (745 g/L)	0.5–2 L/ha	
Pasture; grazed woodlands; agricultural non-crop situations Wasteland; forest and conservation areas; roadsides and easements; rights of way; commercial and industrial areas; golf courses; public service areas; areas surrounding agricultural buildings	Spot spraying	Flupropanate (745 g/L)	200 mL per 100 L water	
	Wick wiping	Flupropanate (745 g/L)	500 mL per 10 L water	

[1] Read APVMA permit PER9792 for rates for products containing glyphosate at 450 g/L or 540 g/L.

Withholding periods

Glyphosate

Not required when used as directed.

Flupropanate

- Broadacre: **Do not** graze or cut for stock feed for at least 4 months after application.
- Spot spray: **Do not** graze or cut for stock feed for at least 14 days after application.
- **Do not** allow stock to graze in treated areas for at least 14 days prior to slaughter.
- **Do not** allow lactating cows or goats to graze in treated areas.

Records

If you graze cattle on more than 2000 ha in the Wet Tropics, Burdekin Dry Tropics or Mackay Whitsunday catchments, you must keep records on the use of flupropanate. See the Reef Wise Farming website, www.reefwisefarming.qld.gov.au

Vendor declarations

If any stock from a flupropanate-treated area are sold, the seller must ensure that details relating to the grazing of stock on the treated land are disclosed in accordance with the obligations outlined on the national vendor declaration relating to that type of livestock. See the Meat & Livestock Australia website, www.mla.com.au, for further details on national vendor declarations.

Fact sheets are available from Department of Employment, Economic Development and Innovation (DEEDI) service centres and our Customer Service Centre (telephone 13 25 23). Check our website at www.biosecurity.qld.gov.au to ensure you have the latest version of this fact sheet. The control methods referred to in this fact sheet should 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, DEEDI does not invite reliance upon it, nor accept responsibility for any loss or damage caused by actions based on it.

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