

1.0 Cover Page



REGIONAL WEED MANAGEMENT PLAN

1.1 Plan Title: *Riverina Johnson grass Management Plan* No. **XXX**

1.2 Plan Proponents / Applicant Contact Details
Regional Weeds Advisory Committee: Eastern and Western Riverina Noxious Weeds Advisory Group
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Signature: Eastern Group Chairperson: Date:
Signature: Western Group Secretary: Date:

1.3 Name of Plant(s) **WONS - No**
Scientific name: *Sorghum halepense* Common name: Johnson grass
1.4 Plan Period
Starting date: 01/07/2005 Completion date: 30/06/2010

1.5 Area of Operation:
Region 5, extending from Tumut in the east to Wentworth/S.A border in the west and Carrathool in the north to the Murray River in the South. The Local Control Authorities and Rural Land Protection Boards this region encompasses are all representatives of the Eastern and Western Riverina Noxious Weeds Advisory Groups (**E/WRNWAG**).

1.6 Aim:
 To contain and reduce Johnson grass infestations preventing further spread across the Riverina.

1.7 Objectives:

- a. All new Johnson grass infestations treated within two weeks of discovery.
- b. All known rare and isolated infestations eradicated by 2010.
- c. Marginal infestations reduced by 25% and core infestations contained and prevented from spreading for the length of the plan.
- d. A public awareness and education program developed and implemented seasonally.

2.0 STAKEHOLDERS

2.1 Signatories

The following Local Control Authorities (LCA) members of the Eastern and Western Riverina Noxious Weeds Advisory Groups (E/WRNWAG): Albury City, Balranald Shire, Bland Shire, Carrathool Shire, Central Murray County, Coolamon Shire, Cootamundra Shire, Corowa Shire, Greater Hume Shire, Griffith City, Gundagai Shire, Hay Shire, Jerilderie Shire, Junee Shire, Leeton Shire, Lockhart Shire, Murrumbidgee Shire, Narrandera Shire, Temora Shire, Tumbarumba Shire, Tumut Shire, Urana Shire, Wagga Wagga City, Wakool Shire, Wentworth Shire, Balranald RLPB, Gundagai RLPB, Hay RLPB, Hillston RLPB, Hume RLPB, Murray RLPB, Narrandera RLPB, Riverina RLPB, Wagga Wagga RLPB, Wentworth RLPB.

2.2 Other Stakeholders

The Noxious Weeds Advisory Committee (NWAC), NSW Department of Primary Industries (NSW DPI), Landcare (L), Catchment Management Authorities (Murrumbidgee, Murray and Lower Murray Darling CMA's), Department of Environment and Conservation (DEC - NPWS), Roads and Traffic Authority (RTA), Telstra, Country Energy, Rural Fire Services (RFS), NSW Farmers (NSWF), Department of Lands (DoL), Australian Rail Track Corporation (ARTC), Murray ROC Linear Reserves Project, Murray Irrigation Ltd, Murrumbidgee Irrigation and Coleambally Irrigation.

3.0 BACKGROUND AND GENERAL FACTS

3.1 Plan Justification and Description of the Problem

Johnson grass (*Sorghum halepense*) is a native of the Mediterranean region. It was probably introduced to Australia as a potential fodder, and was recorded as naturalised at Balranald in 1895. It is very invasive and is now found scattered on roadsides and properties across the Riverina.

Johnson grass is considered one of the 10 worst weeds in the world. It causes severe crop losses as a result of direct competition, allelopathic action and by acting as an alternate host for several insect, nematode and disease pests of sorghum and maize. It also acts as host to the Sorghum midge, *Cantarinia sorghicola* that causes severe yield loss in sorghum crops. It presents a safety hazard on roads by restricting visibility; is potentially toxic to livestock and provides a source of pollen contamination to nearby grain sorghum crops. Johnson grass pollen also contaminates sorghum grown for seed. Consumption of the underground rhizomes has also caused fatalities in pigs.

In the Riverina Johnson grass is mainly restricted to roadsides, rail verges, channel banks, fence lines and waste places. Several core infestations occur on private property in the Irrigation Areas.

Johnson grass is a serious weed of pastures. It is generally considered to be a useful food source for grazing animals, but it can be very toxic during the periods of vigorous growth. Johnson grass is a vigorous competitor, producing up to 600 kilometres of rhizomes per hectare and 5,000 shoots per plant in one growing season.

Based on reports from LCAs that have Johnson grass infestations, 60% of LCAs have decreased the number of infestations in their shire over the last 5 years – the rest remained static. No LCAs indicated an increase in the number of infestations. 80% of shires indicated a reduction in the density

of their infestations with the rest remaining static for the last 5 years. Half of the shires with Johnson grass infestations have successfully eradicated 1 or more sites over the last 5 years.

3.2 The “Do Nothing” Option

Without this plan and a consistent and coordinated approach, Johnson grass has the potential to spread rapidly along roadsides and cause considerable impact on agricultural production. Johnson grass would spread from roadsides to private property and numbers would continue to increase making subsequent future control impossible.

The cropping industry would see increases in disease and pest numbers; increased contamination of crops such as sorghum and higher rates of cross-pollination. Waterways, drainage lines and roadsides would also be highly infested within 5 years. If no control were undertaken along railway corridors, the fuel loads would be enormous and fire potential high.

3.3 Distribution of Infestations

Refer to Appendix 1. for distribution of Johnson grass in the Riverina. All infestations classed as rare and isolated (light/scattered), will be targeted for eradication over this 5 year plan.

3.4 Weed Biology

Johnson grass is a vigorous erect perennial grass, growing to 2m tall. Reproducing from seed and rhizomes, germination from seed occurs in spring or early summer. Flowering occurs about 7 weeks after germination and continues along with rhizome production until autumn.

A single plant can produce as many as 28,000 viable seeds in a growing season.

Johnson grass seed will not germinate for a period of 4-5 months after maturity; however seed can remain viable in the soil for 2 years. With the short viability of seed, a 5 year control and monitoring program should successfully eradicate rare and isolated infestations.

3.5 Method and Rate of Spread

Johnson grass is spread by seeds and rhizomes. The detached spikelets are blown in the wind, float on water, stick to wool and fur, and pass relatively unharmed through animals and birds. Seed may also be spread as a contaminant in agricultural produce and mud sticking to machinery and other vehicles.

Localised spread occurs as rhizomes grow away from the parent plant and when rhizome fragments are moved during cultivation and road grading. The rhizomes themselves have a limited life span. Those produced in one growing season give rise to new plants in the following growing season and then die.

3.6 Species Management

Because of its ability to spread via rhizomes, the best option to manage Johnson grass in the Riverina is to treat plants prior to seeding. Johnson grass is highly visible over the summer months when surrounding vegetation is browned off. As seed longevity is limited to several years, early treatment to prevent seed production and rhizome establishment is recommended. Johnson grass is susceptible to glyphosate, this being the most viable option. An integrated management approach is advised for larger infestations; burn or slash the infestation then apply herbicide to the re-growth in February.

Infestations should never be cultivated, dug up or graded, as this aids spread through the movement of rhizomes. Any new found seeded plants need to be de-headed before treatment.

3.7 Key Land Managers

All land managers listed below are critical in the success or failure of this plan. Due to time constraints many key land managers have not yet been consulted. A major component of this plan will be to liaise with all industries and determine agreed targets. Without the cooperation of all land managers this plan will not be achievable.

LCAs, RLPBs, RTA, DEC, NSW DPI, Murray Irrigation Ltd, Murrumbidgee Irrigation, Coleambally Irrigation, Country Energy, DoLs, Australia Rail track Corporation, Telstra, Seed and Grain Storers & Sellers, Developers, Primary Producers and other Land managers.

4.0 LEGISLATIVE AND REGULATORY SITUATION

4.1 Current Declaration

Albury City	W2	Junee Shire	W2
Balranald Shire	W2	Leeton Shire	W2
Bland Shire	W2	Lockhart Shire	W2
Carrathool Shire	W2	Murrumbidgee Shire	W2
Central Murray County	W2	Narrandera Shire	W2
Coolamon Shire	W2	Temora Shire	W2
Cootamundra Shire	W2	Tumbarumba Shire	W2
Corowa Shire	W2	Tumut Shire	W2
Greater Hume Shire	W2	Urana Shire	W2
Griffith City	W2	Wagga Wagga City	W2
Gundagai Shire	W2	Wakool Shire	W2
Hay Shire	W2	Wentworth Shire	W2
Jerilderie Shire	W2		

4.2 Declaration Changes

None required

5.0 CONSIDERATIONS AND OPPORTUNITIES

5.1 Financial support to carry out the plan

Over the last 4 years Local Control Authorities in the Riverina have expended over \$130,000 on managing Johnson grass under the previous Regional Weed Management Plan. An additional \$97,000 was granted by the Noxious Weed Advisory Committee to assist in achieving the regional outcomes. Alternate funding will be sourced from every avenue.

5.2 Links to other Strategies

The Lower Murray Darling Regional Weed Strategy ranks Johnson grass as a Category C weed in cropping and horticulture areas. This means it is present with moderate distribution in the LMD catchment.

- Infestations managed as per declaration status.
- Hygiene practices promoted to prevent further spread of the weed.
- Send out media releases and conduct field days during the growing season.
- Map and treat all infestations and monitor for re-emergence.

5.3 Barriers and Contingencies

The following barriers will delay or obstruct the operation of this Johnson grass regional plan:

- Spread by human movement – machinery etc. (Obj c, action 4; Obj d, action 1)
- New seedling plants difficult to find until the plant is visible above other vegetation. (Obj a, b & c, action 1)
- Lack of control in irrigation areas and railway corridors. (Obj d, action 2)

The following contingencies may delay or obstruct the operation of this Johnson grass regional plan:

- Wind dispersal of seed (Obj b, action 2)
- Drought – because of its extensive rhizome system Johnson grass can re-establish after adverse conditions such as drought. (Obj b & c, action 1)
- Seed dormancy – survives in the soil; for at least 2 years. (Obj b, action 1)

6.0 PERFORMANCE INDICATORS AND ACTIONS

Objective a: All new Johnson grass infestations removed within two weeks of discovery.		
ACTIONS	PERFORMANCE INDICATORS	RESPONSIBILITY
1. Inspect for Johnson Grass (JG) as part of routine property inspection program.	Property inspection program implemented	LCAs
2. Control new infestations prior to seed set.	Infestations controlled before seed maturity	All stakeholders
3. If plants have already seeded, remove the heads and then control the infestations.	Seed heads removed off plants before control implemented	All stakeholders
4. New infestations mapped locally and added to regional map	Map developed and updated as new infestations are found	LCAs, RLPBs and RNWPO
5. Field staff and landholders encouraged to report new infestations to weed officers	Infestations reported are controlled as above	All stakeholders
Objective b: All known rare and isolated infestations removed by 2010.		
ACTIONS	PERFORMANCE INDICATORS	RESPONSIBILITY
1. Inspect all known infestations in November.	100% of infested properties and roadsides inspected annually	LCAs
2. Control all outbreaks prior to end of December	All infestations treated prior to seed set	All stakeholders
3. Reinspect areas in January and follow-up with control if required.	100% of infested properties and roadsides reinspected and compliance achieved	LCAs
4. Update maps as infestations are eradicated after being monitored for re-emergence.	As infestations are eradicated maps are updated	LCAs, RLPBs and RNWPO
Objective c: Marginal infestations reduced by 25% and core infestations contained and prevented from spreading for the length of the plan.		
ACTIONS	PERFORMANCE INDICATORS	RESPONSIBILITY
1. Inspect all infested areas annually.	100% of infested properties and roadsides are inspected annually	LCAs
2. Treat all known infestations prior to seed set.	All known infestations treated prior to seed set.	All stakeholders
3. Update maps as infestations are reduced.	Maps updated as infestations are reduced.	LCAs, RLPBS, RNWPO
4. Encourage improved hygiene practices between LCAs and other key stakeholders to contain the infestations and reduce further spread.	Hygiene practices improve, infestations contained and further spread minimised.	All stakeholders

Objective d: A public awareness and education program developed and implemented seasonally.		
ACTIONS	PERFORMANCE INDICATORS	RESPONSIBILITY
1. Develop and implement a roadside vegetation management training program for roadside vegetation conservation.	Roadside workers trained in hygiene practices. Workshops run through the Murray Catchment	Murray ROC through the Linear Reserves Project.
2. Run extension program across the Riverina, targeted at the general public and industry organisations	<ul style="list-style-type: none"> - One workshop / field day run within the region annually. - 3 media releases run over the plan period - Information sheets/handouts given to all stakeholders as they are produced as well as seasonally. - This regional plan circulated to stakeholders for their endorsement. - Relevant LCA and RLPB staff attend at least 3 regional field days (e.g Henty)/year. - Run a grass Id training workshop across the Riverina for Local Government operational staff. 	ERNWAG/ WRNWAG All stakeholders RNWPO

7.0 MONITOR AND REVIEW PROCESS

Plan participants meet each autumn (eg mid march) to review previous years activities, check are on track to meet this plans overall aim / objectives / performance indicators. All stakeholders' local plans /worksheets to be presented at this meeting to ensure they are achieving performance indicators outlined in these plans. Should they not be met, without an appropriate explanation, group pressure may be applied to encourage them to be met in future years. Participants will go over planned activities for upcoming season, arrange resource sharing and familiarise each other as to what activities are to be conducted (especially adjoining LCAs). Where appropriate renew plan commitment and discuss regional GP funding application for Johnson grass so that it can be developed in time for the May 1st deadline.

8.0 BENEFITS

This plan aims to protect and thus be of benefit to the following regional endeavours/assets:

- Grain growers.
- Livestock growers will have reduced pasture competition and less wool contamination.
- LCA, RTA and land managers will have reduced management and maintenance costs.
- General community – clean natural /native environment – visually aesthetic.
- Grain Industry - better yielding crops.
- Primary Industries such as the Sorghum and Grazing Industries will benefit through increased levels of production, reduced grain contamination, fewer stock losses.
- Roadsides – increased visibility once Johnson grass (safety hazard) is removed.

This plan also aims to improve networks between stakeholders within the Riverina. Benefits will accrue as a result of this plan bringing together people with a common interest in the management of Johnson grass.

Cost savings through preventing this weed from spreading further, although difficult to quantify, will be significant.

9.0 RESOURCES

♦ References and Further Readings

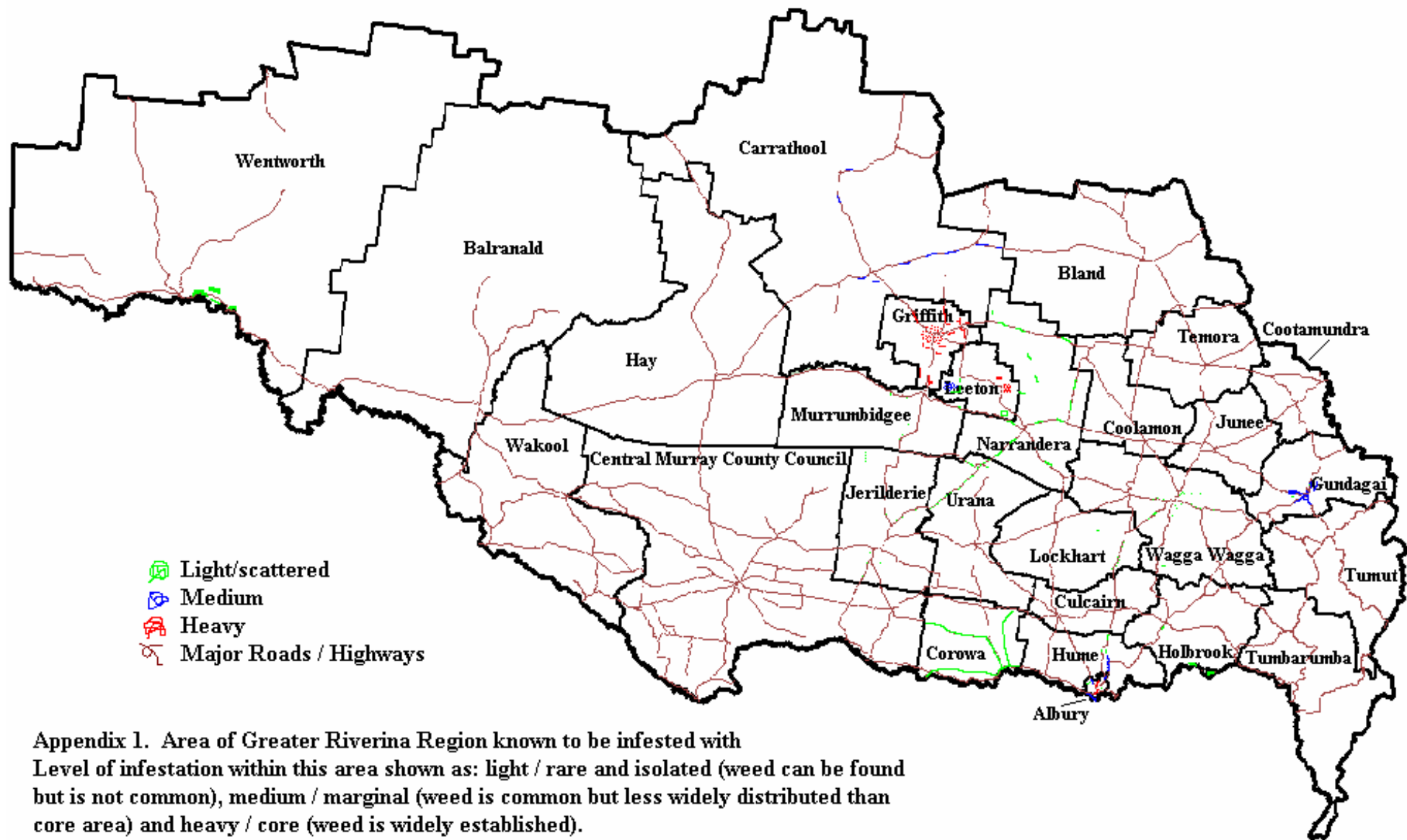
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The authors wish to thank the stakeholders who assisted with the production of this document. Their contributions have enriched this regional weed management plan.



Appendix 1. Area of Greater Riverina Region known to be infested with
Level of infestation within this area shown as: light / rare and isolated (weed can be found
but is not common), medium / marginal (weed is common but less widely distributed than
core area) and heavy / core (weed is widely established).

Note: Base map derived from data provided by and copyright of Land and Property Information New South Wales. Road data is copyright of the Australian Land Information Group (AUSLIG). This general image determined by the regions, LCA Weeds Officers (WO) and RLPB Rangers (R). Generally, weed distribution remains similar on LCA and RLPB managed lands.