

1.0 COVER PAGE



NSW DEPARTMENT OF
PRIMARY INDUSTRIES

REGIONAL WEED MANAGEMENT PLAN

1.1 PLAN TITLE: **Johnson and Columbus Grass**

1.2 PLAN PROPONENTS

Regional weed advisory committee: Macquarie Valley Weeds Advisory Committee

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1.3 NAME OF PLANT(S)

WONS n

Botanical name: *Sorghum halepense*
Sorghum x almun

Common name: Johnson Grass
Columbus Grass

1.4 PLAN PERIOD (not to exceed five years)

Starting date: 01/07/2008

Completion date: 30/06/2013

1.5 AREA OF OPERATION

All Local Control Authorities (LCA's) and Rural Lands Protection Boards (RLPB's) of the Macquarie Valley Weeds Advisory Committee.

1.6 AIM

To successfully manage Johnson Grass in the Macquarie Valley.

1.7 OBJECTIVES

1.7.1 Considerably reduce impacts of existing weeds

1.7.2 Prevent new weed problems

1.7.3 Improve coordination and cooperation

1.7.4 Raise awareness of weeds issues within region

2.0 STAKEHOLDERS

2.1 SIGNATORIES

Participating Councils (LCA's):

- Bogan Shire Council
- Bourke Shire Council
- Brewarrina Shire Council
- Cabonne Council
- Cobar Shire Council
- Dubbo City Council
- Mid Western Regional Council
- Narromine Shire Council
- Orange City Council
- Parkes Shire Council
- Unincorporated area of Western Division
- Wellington Council

Participating County Council:

- Castlereagh Macquarie County Council
- Upper Macquarie County Council

Participating Rural Lands Protection Boards:

- Bourke
- Brewarrina
- Central Tablelands
- Coonabarabran
- Coonamble
- Dubbo
- Hillston
- Molong
- Nyngan
- Walgett

2.2 OTHER STAKEHOLDERS

- NSW Department of Primary Industries (DPI)
- State Forests
- NSW Department of Environment and Climate Change (DECC) – National Parks and Wildlife Service (NPWS)
- Department of Lands
- Catchment Management Authorities (CMA's)
- Regional Landcare Coordinators
- Aboriginal Lands Councils
- Service providers – Country Energy, Telstra, Australian Rail Track Corp (ARTC)

3.0 BACKGROUND AND JUSTIFICATION

3.1 PLAN JUSTIFICATION AND DESCRIPTION OF PROBLEM

Johnson grass (*Sorghum halepense*) is a serious weed in most parts of the world. Columbus Grass is thought to be derived from a natural cross between an unknown cultivated variety of sorghum and the Johnson Grass weed. Because of the difficulty in distinguishing Johnson Grass from Columbus Grass plants and seeds, Columbus Grass is also declared noxious. Similarly, the seeds of silk forage sorghum and Johnson Grass are very difficult to distinguish from each other. For the sake of this plan, all three species will be referred to as Johnson Grass.

Johnson grass is considered one of the world's worst weeds. It causes severe crop loss as a result of direct competition, allelopathic action and by acting as an alternate host to crop pests and diseases. While seed spread is the main source of new infestation it is the spread from rhizome segments that exacerbates its problem. Once Johnson grass invades arable lands, cultivation rapidly spreads the infestation. It is capable of taking over whole paddocks where highly productive cultivation land can be severely affected.

The seed sorghum industry is very important in the Macquarie Valley and the possibility of seed contamination is a very serious concern.

3.2 THE 'DO NOTHING' OPTION

If Johnson Grass and Columbus Grass were not controlled, effects would include:

- Decreases in production through increases in pests affecting seed sorghum crops, as Johnson Grass harbours the sorghum midge
- Decreases in production through increases in pests affecting sugar cane crops, as Johnson Grass acts as a host for sugar cane mosaic virus
- Contamination of seed sorghum crops from Johnson Grass pollen
- Increased stock losses as consumption of Johnson Grass can cause hydrocyanic acid poisoning in grazing animals such as sheep or cattle
- Increased stock losses as consumption of Johnson Grass rhizomes can cause fatalities in pigs
- Decreases in biodiversity, especially on roadsides, as Johnson Grass is a vigorous competitor
- Increases in infestation sizes and distributions as Johnson Grass spreads quickly, especially after cultivation or grading.

3.3 DISTRIBUTION OF INFESTATIONS

Johnson Grass has spread rapidly in Australia since about 1970 and is a declared noxious plant in the whole of New South Wales. It is a problem mainly on areas that have been cropped and also occurs along roadsides, railway lines and watercourses.

The following LCA's have rare and isolated infestations: Brewarrina, Castlereagh Macquarie County Council and Orange.

The following LCA's have marginal infestations: Bogan, Bourke, Cabonne, Cobar, Dubbo, Mid Western, Narromine, and Wellington.

The following LCA's have core infestations: Parkes.

3.4 WEED BIOLOGY

Seeds germinate in spring and early summer. Seedling growth is slow at first as rhizomes and secondary tillers develop from auxiliary buds on the basal portion of the seedling shoot about 3 weeks after emergence. Growth rate of the leaves increases rapidly thereafter, equally and exceeding the rate of root growth. Rhizome growth rate remains slow until flowering, which commences about 7 weeks after emergence, then accelerates. Flowers and rhizome production continue until autumn, but there are two separate main periods of panicle emergence, early summer, later summer and early autumn. Rhizomes become dormant in late autumn and frosts kill aerial growth. New shoots develop from the rhizomes the following spring. Rhizome shoots exhibit a similar growth pattern but they emerge earlier in the season and due to their greater energy reserves the young plants grow faster in the field than seedling plants and are more dominant.

3.5 METHOD AND RATE OF SPREAD

Seed is the principal means of spread into clean areas although rhizomes may be spread in soil. The detached spikelets are blown in the wind, float on water, stick to wool and fur, and pass relatively unharmed through animal and bird digestive tracks. Seed may also be spread as a contaminant in agricultural produce and in mud sticking to machinery and other vehicles. Localised spread occurs as rhizomes grow away from the parent plant, and when the rhizomes are moved during cultivation and road grading. This spread by rhizomes is what makes the Johnson grass so difficult to control in cultivation land.

3.6 SPECIES MANAGEMENT

As with most species, Johnson Grass requires integrated weed management to achieve successful control.

Physical removal – All parts of the plant must be removed as regrowth occurs easily from fragmented rhizomes

Cultivation – Not generally recommended as it can cause high levels of root fragmentation. However, crop rotation can help to smother Johnson grass infestations. Tillage should cut and bring rhizomes to the surface for desiccation rather than distributing the fragments throughout the site. Crops should include winter-annual small grains and legume forages to smother and out-compete Johnson Grass.

Chemical – Only registered herbicides should be used. Spot spraying is effective selective control. A wick wiper can be used in situations where Johnson Grass is growing taller than desired species.

3.7 KEY LAND MANAGERS

- LCA's
- RLPB's
- Landholders
- National Parks
- State Forests
- Department of Lands
- Service providers – Country Energy, ARTC
- RTA

4.0 LEGISLATIVE AND REGULATORY SITUATION

4.1 CURRENT DECLARATION

Sorghum halepense and *Sorghum x almun* (Common name: Johnson Grass and Columbus Grass) is declared as a class 3 noxious weed. The plant must be fully and continuously suppressed and destroyed

LCA	Johnson Grass	Columbus Grass	Silk Forage Sorghum
Bogan Shire Council	Class 3	Class 3	Class 3
Bourke Shire Council	Class 3	Class 3	Not declared
Brewarrina Shire Council	Class 3	Class 3	Not declared
Cabonne Council	Class 3	Class 3	Class 3
Castlereagh Macquarie County Council	Class 3	Class 3	Class 3
Cobar Shire Council	Class 3	Class 3	Not declared
Dubbo City Council	Class 3	Class 3	Class 3
Mid Western Regional Council	Class 3	Class 3	Class 3
Narromine Shire Council	Class 3	Class 3	Class 3
Orange City Council	Class 3	Class 3	Not declared
Parkes Shire Council	Class 3	Class 3	Class 3
Unincorporated area of Western Division	Class 3	Class 3	Not declared
Upper Macquarie County Council	Class 3	Class 3	Not declared
Wellington Council	Class 3	Class 3	Class 3

4.2 DECLARATION CHANGES

No changes in declaration status are anticipated.

5.0 CONSIDERATIONS AND OPPORTUNITIES

5.1 FINANCIAL SUPPORT TO CARRY OUT THE PLAN

The majority of the financial support for this plan will be provided as part of LCA/RLPB weed control programs. Further support will be sought through DPI's group project funding program. Any other funding source deemed relevant by MVWAC will also be explored.

5.2 LINKS TO OTHER STRATEGIES

- Australian Weed Strategy
- NSW Invasive Species Plan
- MVWAC Regional Weed Strategy
- Catchment Action Plans

5.3 BARRIERS AND CONTINGENCIES

Barriers:

- High levels of regrowth from rhizomes
- Desirability of Silk Forage Sorghum as a pasture species
- Lack of identification skills of land managers
- Spread of seed through the seed sorghum industry

Contingencies:

- Variable seasonal conditions
- Resource shortfall occurs when an ideal seasonal condition allows a prolific growth and such a growth is beyond the resources of individual LCA and Land Managers.

6.0 ACTION PLAN

Objective	Action	Performance indicator	By whom
1.7.1 Considerably reduce impacts of existing weeds	All public lands to be inspected annually	100% of all roadsides, reserves and Travelling Stock Routes (TSR's) inspected.	LCA weed officers & RLPB rangers
	Control methods to be carried out on all infestations on LCA & RLPB lands as seasonal conditions allow	Existing infestations on LCA/RLPB lands reduced by 80%	LCA weed officers & RLPB rangers
	All private properties identified as having infestations are to be inspected annually and regulatory action taken as required	100% of identified properties inspected Existing core infestations on private lands reduced by 50% Existing marginal infestations on private lands reduced by 60% Existing rare and isolated infestations on private lands reduced by 80%	Landholders & LCA weed officers
1.7.2 Prevent new weed problems	Inspect for Johnson Grass as part of routine property inspection program	Johnson Grass is included in the inspection routine	LCA weed officers & RLPB rangers
	Aspects of the rapid response program to be implemented when a new infestation is discovered	100% of located new infestations recorded and mapped 100% of new infestations	Landholders, LCA weed officers & RLPB rangers

		treated 100% of new infestations to be monitored and follow-up treatment programs implemented	
	All infestations to be contained to prevent new weed problems	Buffer zones established around sites known to be infested	Landholders, LCA weed officers & RLPB rangers
1.7.3 Improve coordination and cooperation	All infestations to be recorded and mapped	Maps produced and updated regularly Data recording standards adhered to	LCA weed officers & RLPB rangers
	Plan implementation to be monitored and reviewed	Review process (as outlined in section 7.0) carried out	RPO, LCA weed officers & RLPB rangers
	Actively seek partnerships with other weed management agencies	Partnerships developed where necessary	RPO, LCA weed officers & RLPB rangers
	Develop on-ground management plans with neighbouring landholders, LCA's and RLPB's	Plans of management entered into and partnerships developed with neighbouring landholders, LCA's and RLPB's	LCA weed officers & RLPB rangers
1.7.4 Raise awareness of weeds issues within region	Johnson Grass to be part of a regional weeds awareness program	Advertisements on television Field days held Displays at local shows attended by Weed Officers Weed pamphlets distributed to landholders during property inspections Weed Calendars distributed by LCA's and RLPB's	DPI, RPO, LCA weed officers & RLPB rangers

7.0 MONITOR AND REVIEW

There will be an annual review of the Johnson Grass Regional Management Plan to ensure the performance indicators are realistic and are being met. Member LCA/RLPB's weed officers and rangers will participate in the review process. This would include discussions on increases or decreases of range, new incursions, successful management strategies, expectations and results.

8.0 BENEFITS

Genuine long term benefits are expected to flow from this plan. The industries expected to directly benefit across the region are:

- Grain Sorghum Seed Production
- Horticulture
- Viticulture
- Cotton
- Other Intensive Cropping

9.0 RESOURCES

Auld, B.A and Medd, R.W 1992 “*Weeds*” Inkata Press, Victoria

Bunn, K. 2004. *Johnson Grass Weed Information Sheet*. Lower Hunter and Central Coast Regional Environmental Management Strategy.