

Appendix 2

Suggested weed prevention measures

Management Requirement	Best Known Practices (Also see Appendix 5: Integrated Weed Management)
Roads	
Ensure only personnel trained in weed management are involved in roadside maintenance .	Any person involved in roadside maintenance to undertake weed identification courses.
	All spraying of roadside weeds should be carried out by those with appropriate chemical accreditation.
Incorporate weed prevention into road layout, design, and alternative evaluation.	During transportation planning and alternative development, consider all weed risk factors (i.e. presence of weeds, habitat type, aspect, shading, etc.) to evaluate road location and design.
Remove seed source that could be picked up by passing vehicles and limit seed transport into relatively weed-free areas.	Before equipment moves into a relatively weed-free area mow, grade, or otherwise treat all seed-bearing high and medium priority weed on access roads. Treated sites must be revegetated only with local native plants.
	Slashing, mowing, grading should be done at time when weeds are not seeding.
	Ensure that all graders mowers slashers etc work into any known weed infestations to prevent the spread of weeds outwards.
	Clean off all equipment (power or high-pressure cleaning) of all mud, dirt, and plant parts before moving into relatively weed-free areas. Check radiators for presence of weed seeds.
Retain native vegetation on road verges to suppress weeds.	All work should be carried out to maintaining native vegetation by minimising the removal of trees and other roadside vegetation during road construction, reconstruction, and or maintenance.
	The use of grader blades for maintaining roadside vegetation should be discouraged as bare soil is easily colonised by weeds.
Re-establish vegetation on bare ground to minimize weed spread.	For all construction, reconstruction, and maintenance activities, seed all disturbed soil as soon as work has been completed at each site. Use a seed mix that includes fast, early-growing species to provide quick, dense revegetation. Seed should be weed-free. See direct seeding manual Parks & Wildlife Commission or Greening Australia NT for rates etc..
Stop weed spread caused by moving infested gravel and fill material to relatively weed-free areas.	Gravel and fill to be placed in weed-free areas. To minimise the risk of weed invasion fill must come from weed-free sources (including pasture species). Inspect gravel pits and fill sources to identify weed-free sources.
Minimise sources of weed seed in areas not yet revegetated.	Keep road construction sites including old gravel pits closed to vehicles to limit establishment of weeds.

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Ensure establishment and maintenance of local native vegetation to prevent weeds.	Regularly monitor all seeded sites. Reseed as needed. Use only native, pioneer species for seeding (which are low nutrient demanding) to minimize the need for fertilization.
Eliminate roadside sources of weed seed that could be transported to other areas.	Road maintenance programs should include monitoring for all weeds. Weed infestations should be mapped and Transport & Works notified of treatment required.
Conservation areas, Roadless Areas, Recreation areas	
Minimise transport of weed seed by animals. (e.g. horses in Nhulunbuy area)	Encourage the use of weed-free feed for owners using horses in weed-free areas Encourage owners to brush tail and manes to remove any weed seed before moving horses.
Encourage a weed-free user's ethic.	Install appropriate signs for weed awareness and weed prevention techniques.
Ensure that recreation areas under permit have on-site weed control and minimise spread to other areas.	Permits could have weed education material incorporated. Permits should have information that emphasises the need to keep to made roads only to discourage vehicles wandering off road in search of fishing or camping spots etc. in order to reduce weed spread.
	In permit areas the transportation of hay and mulch should require written permission and vehicles inspected before entry to ensure safeguards have been carried out. In some cases community rangers could carry out this duty.
	Washdown facilities should be established and vehicles of all types encouraged to use them before entering permit areas.
Minimise the spread of weed seeds through transport hay and mulch.	Any hay or mulch travelling through natural areas should be certified weed free (include all weed types and potential weeds) and be adequately covered.
Cultural management	
Ensure all bare ground is covered by desirable vegetation to discourage weeds.	Any archeological site excavations or sacred site protection should be treated according to integrated management techniques (see Appendix 5).
Pastoral areas	
Minimise the creation of bare soil and other factors that support weeds	Manage country to prevent excessive soil disturbance at watering sites, and sensitive soil conditions
Minimize weed seed transport to relatively weed-free areas.	Prevent movement of stock from infested to non-infested areas after weed seed set. Livestock should be "emptied" before transport. Stock to be held in yards with water only for 12 hours before transport.
	Trucks moving stock should be washed down after each job.
	Introduced stock on properties should be quarantined for 7-14 days in a holding paddock.

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	All machinery between jobs, properties or where necessary, paddocks, be washed down to remove weed seeds.
	All contractors and land managers need to work together to make sure all machinery brought onto a property is weed free.
Ensure success of revegetation efforts to minimize weed spread.	Avoid grazing any reseeded sites until vegetation is well established.
Retain desirable roadside vegetation to discourage weeds.	Roadside vegetation should not be grazed to protect integrity and prevent infestation with weeds.
Introduction of species (e.g. improved pastures)	
Ensure that consideration is given to the potential of introduced species to become weeds.	Ensure that appropriate Weed Risk Assessments have been carried out before any species is introduced onto country. (Rely on Australian Weed Science assessments not local).
	Ensure that landowners have adequate culturally appropriate information on the potential weediness of any introduced pasture species.
Plantations (e.g. <i>Acacia mangium</i> type)	
Ensure that weed prevention is considered in all timber establishment projects.	Consider weed risk and prevention factors (e.g. maximize shade and minimize soil disturbance).
Minimise the creation of sites suitable for weed establishment.	Minimise soil disturbance, no more than needed for tree establishment, ensure prompt regeneration to maximize shading.
Remove seed source that could be picked up by passing vehicles and limit seed transport into relatively weed-free areas	Before equipment moves into a relatively weed-free areas treat all seed-bearing weed plants on the roadside.
	Clean equipment (power or high-pressure cleaning) of all mud, dirt, and plant parts before moving into relatively weed-free areas. Check radiators for presence of weed seeds.
Examine weed prevention and treatment needs, and funding sources.	Make sure funds are allocated to prevent, monitor, and treat soil disturbance or weeds as needed during and after timber harvest and regeneration activities.
Mining	
Minimise chances of weed establishment in mining operations.	Include weed prevention and treatment in all mining plans of operation and reclamation plans, including the exploration phase. Consider retainer bonds for weed control until the site is returned to vegetative conditions matching the surrounding area.
Remove seed source and limit seed transport into relatively weed-free.	Before equipment moves into a relatively weed-free area treat all weeds along existing access roads. Make sure management of treated sites follow integrated control principles as outlined in Appendix 5.

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	Clean equipment (power or high-pressure cleaning) of all mud, dirt, and plant parts before moving into relatively weed-free areas. Check radiators for presence of weed seeds.
Ensure that all disturbed soil is revegetated as soon as possible to discourage weeds.	Reseed all bare soil as soon as possible (see Parks & Wildlife Commission NT direct seeding manual or Greening Australia NT)
Ensure that follow-up surveys are carried out to detect weed infestations.	Survey the areas of mining activities around mine, camps and along all exploration and access tracks. Ensure funds are available for at least three years of survey work. Costs of survey should be borne by exploration company.
General	
Incorporate weed prevention in all lands projects.	Consider the risk of weed prevention in any project.
	Require weed control until the site is returned to a vegetative condition that matches the native vegetation in the surrounding area.
	Ensure that any weed control program is linked to feral animal control for maximum efficiency.
Ensure quick re-establishment of appropriate native vegetation to discourage weeds.	Follow practices outlined in Appendix 5.

Appendix 3

Summary of recommended weed control methods

Recommended control methods for high and medium priority weeds

SPECIES	LAND MANAGEMENT	MECHANICAL CONTROL	BIOLOGICAL CONTROL	CHEMICAL CONTROL
<i>Acacia nilotica</i> (Prickly Acacia)	Reduce grazing, hygiene, revegetation.	Hand-pulling of small infestations. Pushing, chaining grubbing, stick raking.	On going.	Garlon 600 (Triclopyr) 1:50 with diesel as a basal bark or cut stump application; or Brush Off (Metsulfuron methyl)
<i>Acanthospermum hispidum</i> (Star Burr)	Reduce grazing, Hygiene.	Cultivation may be effective. Hand pulling of small infestations with incineration of seeds is effective especially during the wet season.	None available.	Banvel 200 (Dicamba) at 1:100 with water as a high volume spray or 1 % mixture of 2,4-D (Amicide) or 1:1 mixture of 2,4-D (Amicide) and Starane at 1% dilution.
<i>Allamanda cathartica</i>	Select other non-invasive ornamental species. Hygiene.	Handpulling is effective.	None available.	Glyphosate (360) 1:100 with water.
<i>Alternanthera dentata</i> (Metal Weed)	Hygiene; select other non-invasive ornamental species. Revegetation of disturbed areas	Handpulling is effective.	None available.	Glyphosate (360) 1:100 with water or Banvel 200 (Dicamba) 1:200 with water
<i>Alternanthera pungens</i> (Khaki Weed)	Revegetation of disturbed areas to shade out seedlings. Hygiene.	Small infestations can be dug out and the plants with seeds destroyed. Need to make sure the root is dug up also. Burning with a drip torch has proved successful in removing seeds especially after first using herbicide.	None available.	Glyphosate (360) 1:100 with water; or Banvel 200 (Dicamba) 1:1000 for seedlings (25 ml/15 L of water for knapsack application) or 1:200 with water for actively growing young mature plants or 1 % mixture of 2,4-D (Amicide) or 1:1 mixture of 2,4-D (Amicide) and Starane at 1% dilution.
<i>Alysicarpus ovalifolius</i> (Buffalo Clover)	Choose other non invasive species for improved pastures.	Hand pulling for small areas, slashing for larger areas.	None available.	Glyphosate (360) 1:100 with water.
<i>Anacardium occidentale</i> (Cashew)	Choose other non-invasive species.	Handpull seedlings	None available.	Basal bark application or paint cut stumps with 1:1 diesel mixed with undiluted Glyphosate (360) or Banvel.

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<i>Andrographis paniculata</i>	Hygiene.	Slashing before seed set.	None available.	Glyphosate (360) 1.5:100 or 1:50 with water until runoff.
<i>Andropogon gayanus</i> (Gamba Grass)	Choose other non-invasive species for improved pastures.	Grubbing out after seed head removal.	None available.	Glyphosate (360) 1.5:100 with water using high volume spray equipment when the plant is actively growing, not under stress i.e. mid wet season; spraying during the late dry is ineffective. Spray until runoff. Add a wetting agent 1:1000.
<i>Annona reticulata</i>	Choose other less invasive species	Handpulling for seedlings. Grubbing or felling for older trees.	None available.	Basal bark application or paint cut stumps with 1:1 diesel mixed with undiluted Glyphosate (360) or Banvel.
<i>Antigonon leptopus</i> (Coral Vine)	Choose other less invasive species.	Handpull and burn. Make sure tubers are also dug up and destroyed	None available.	None available.
<i>Ardisia humilis</i>	Choose other less invasive species.	Handpulling and grubbing or smaller plants	None available.	None available.
<i>Argemone ochroleuca</i> (Mexican poppy)	Reduce grazing and hygiene	Hand pulling, grubbing, slashing, cultivation.	None available.	Glyphosate (360) 1:100 or Amicide 500 (2,4-D) 1:100 in water plus wetting agent.
<i>Aristolochia elegans</i> (Dutchman's Pipe)	Choose other less invasive species.	Handpull and burn.	None available.	None available.
<i>Arundo donax</i> (False Bamboo)	Choose other less invasive species.	Handpulling and grubbing of smaller plants.	None available.	Glyphosate (360) 1:100 with water
<i>Asystasia gangetica</i>	Choose other less invasive species.	Hand pulling for small areas, slashing for larger areas.	None available.	Glyphosate (360) 1.5:100 or 1:50 with water until runoff.
<i>Azadirachta indica</i> (Neem)	Choose other less invasive species.	Handpulling and grubbing for smaller plants. Larger trees need to be felled.	None available.	Basal bark application or paint cut stumps with 1:1 diesel mixed with undiluted Glyphosate (360) or Banvel.

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<i>Barleria prionitis</i>	Choose other less invasive species.		None available.	None available.
<i>Calopogonium mucunoides</i> (Calopo)	Choose other species for pastures. Don't overgraze.	Burning, hand-pulling or chipping after seed has germinated early in the wet season.	None available.	Banvel 200 (Dicamba) 1:1000 for seedlings. Banvel 200 (Dicamba) 1:500 for young plants; or Amicide 500 (2,4-D) 1:200 plus Banvel 200 (Dicamba) at 1:100 with water or Starane at 1:130 applied to actively growing plants. Some success with Glyphosate (360) 1:100 with water.
<i>Calotropis procera</i> (Rubber Bush) <i>C. gigantea</i> .	Reduce grazing, revegetation	Grubbing can be effective, however large spongy roots make mechanical removal difficult. Dry and burn pulled material.	None available.	Foliar spray; Garlon DS 1:100 or Arsenal 1:400 or Brush-off (Metsulfuron methyl) 15gm per 100 l or Tordon 50D 1:75. Basal bark spray; Garlon 600 (Triclopyr) 1:30 with Diesel, or Arsenal 1:30 with Diesel or Tordon 75D 1:50 with Diesel sprayed 360 degrees around trunk to a height of 30 cm from the ground. Cut stump; The stem should be cut as close cut to ground as possible and immediately painted with Garlon 1:30 diesel on the wound.
<i>Caryota mitis</i> (Fish Tail Palm)	Choose other less invasive species.	Grubbing and hand pulling of seedlings. Larger trees need to be felled.	None available.	None available.
<i>Cascabela thevetica</i> (Yellow Oleander)	Choose other less invasive species.	Grubbing and hand pulling of seedlings. Larger trees need to be felled.	None available.	None available.
<i>Cassia fistula</i> (Golden Shower Tree)	Choose other less invasive species.	Grubbing and hand pulling of seedlings. Larger trees need to be felled.	None available.	Basal bark application or paint cut stumps with 1:1 diesel mixed with undiluted Glyphosate (360).
<i>Catharanthus roseus</i>	Choose other less invasive species.	Handpulling and slashing.	None available.	None available.

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<i>Cenchrus biflorus</i> , <i>C. ciliaris</i> (Buffel Grass) <i>C. echinatus</i> (Mossman River Grass) <i>C. setigerus</i> .	Select other non-invasive pasture species. Hygiene	Slashing and cultivation. Handpull for isolated plants and burn.	None available.	Glyphosate (360) 1:100 with water.
<i>Centrosema molle</i> (Centro)	Select other non-invasive pasture species. Hygiene	Handpull and chipping.	None available.	Glyphosate (360) 1:100 with water may be used for seedlings or Amicide 500 (2,4-D) 1:100 in water plus wetting agent.
<i>Chloris inflata</i> (Purple-top Chloris) <i>Chloris gayana</i> (Rhodes grass), <i>Chloris virgata</i> (Chloris).	Select other non-invasive pasture species. Hygiene	Handpulling and chipping effective.	None available.	Glyphosate (360) 1:100 with water.
<i>Citrullus colocynthis</i> and <i>C. lanatus</i> (Paddy Melon)	Hygiene.	Hand pulling. Removal of dried seed pods before they break open.	None available.	Glyphosate (360) 1:100 with water or Amicide 500 (2,4-D) 1:100 in water plus wetting agent.
<i>Clitoria ternatea</i> (Butterfly Pea)	Select other non-invasive pasture species. Hygiene	Handpull and chipping.	None available.	Glyphosate (360) 1:100 with water may be used for seedlings
<i>Crotalaria goreensis</i> (Gambia Pea) <i>Crotalaria pallida</i>	Hygiene.	Prevention of seeding by slashing or mowing of plants.	None available.	Amicide 500 (2,4-D) 1:100 with water; or Amicide 500 (2,4-D) 1:100 with Banvel 200 (Dicamba) 1:100; or Glyphosate (360) 1:100 with water - a double treatment within several days of each other has worked well or Starane (Fluroxpyr) 1:100.
<i>Cryptostegia grandiflora</i> and <i>Cryptostegia madagascariensis</i> (Rubber vine)	Select other non-invasive species. Hygiene.	Manual removal effective for small infestations.	Two agents are available; a rust and a leaf feeding larvae.	Banvel 200 (Dicamba) mixed with diesel distillate as a basal bark spray.

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<i>Cynodon dactylon</i> (Couch)	Hygiene.	Handpulling and chipping effective.	None available.	Glyphosate (360) 1:100 with water.
<i>Cynodon radiatus</i>				
<i>Cyperus involucratus</i> (Windmill Sedge)	Select other non-invasive species.	Handpulling and grubbing of smaller plants	None available.	Glyphosate (360) 1:100 with water
<i>Cyperus rotundus</i> (Nut Grass)	Hygiene.	Handpulling and chipping effective. Need to remove all the underground roots and destroy.	None available.	Glyphosate (360) 1:100 with water
<i>Dactyloctenium aegyptium</i>	Hygiene.	Handpulling and chipping effective	None available.	Glyphosate (360) 1:100 with water
<i>Delonix regia</i> (Poinciana)	Select other non-invasive species. Hygiene.	Felling of large trees, hand pulling and slashing of seedlings.	None available.	Basal bark application or paint cut stumps with 1:1 diesel mixed with undiluted Glyphosate (360) or Banvel.
<i>Desmodium tortuosum</i> (Florida Beggar Weed)	Hygiene.	Handpulling and chipping effective for small populations. Slashing for larger.	None available.	Glyphosate (360) 1:100 with water.
<i>Echinochloa colona</i>	Hygiene	Handpull isolated plants.	None available.	Glyphosate (360) 1:100 with water
<i>Eichhornia crassipes</i> (Water Hyacinth)	Do not cultivate this species as a water plant for dams or tanks etc. Hygiene.	Physical removal of small infestations, plants then dried and burned. Plants may germinate from seed for many years.	Four insects are available.	Velpar L (Hexazinone) at 2-3 kg/ha of water surface or at 1:100 mix with water. Extreme caution is needed with non-target flora.
<i>Eleusine indica</i>	Hygiene.	Handpulling and chipping effective	None available.	Glyphosate (360) 1:100 with water.
<i>Euphorbia cyathophora</i> , <i>E. heterophylla</i> (Annual Poinsettia)	Hygiene.	Handpulling and chipping effective.	None available.	Glyphosate (360) 1:100 with water or Amicide 500 (2,4-D) 1:300 with water or Grazon DS.
<i>Gomphrena celosioides</i>	Revegetation of disturbed areas to shade out seedlings Hygiene.	Handpulling of individuals.	None available.	Banvel 200 (Dicamba) at 1:100 with water as a high volume spray

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<i>Gossypium hirsutum</i> (Cotton Bush)	Hygiene.	Pull plants out. If mature remove any cotton balls first.	None available.	Basal bark application or paint cut stumps with 1:1 diesel mixed with undiluted Glyphosate (360).
<i>Gmelina arborea</i> (Gmelina)	Select other non-invasive species. Hygiene.	Felling of large trees, hand pulling and slashing of seedlings.	None available.	Basal bark application 1:1 diesel mixed with undiluted Glyphosate (360) or Banvel. or paint cut stumps with undiluted Glyphosate (360) or Banvel.
<i>Hibiscus sabdariffa</i> (Rosella)	Do not cultivate this species where it can escape out of garden situations. Hygiene.	Hand pulling or chopping before seeding (early part of wet season) is very effective.	None available.	Glyphosate (360) 1:100 with water. Or Starane (Fluroxpyr) 1:100 with water.
<i>Hymenachne amplexicaulis</i> (Olive Hymenachne)	Select other non-invasive ponded pasture species. Hygiene. Reduce grazing.	Slashing and cultivation.	None available.	Glyphosate (360) 1.5 :100 with water. When plants are actively growing.
<i>Hyptis suaveolens</i> (Hyptis)	Hygiene.	Hand pulling, chipping or mowing during the wet season before seed sets.	None available. But research is ongoing.	Amicide 500 (2,4 D) 1:100; or Amicide 500 (2,4 D) 1:200 plus Banvel 200 (Dicamba) 1:100 with water; or Glyphosate (360) 1:100 with water. Spray while actively growing.
<i>Ipomoea carnea</i>	Do not cultivate this species as an ornamental, select other less invasive species.	Felling of large shrubs hand pulling and slashing of seedlings. Destroy all material or it will regrow from stem sections.	None available.	Basal bark application 1:1 diesel mixed with undiluted Glyphosate (360) or Banvel. or paint cut stumps with undiluted Glyphosate (360) or Banvel
<i>Ipomoea pes-tigridis</i> , <i>I. quamoclit</i> and <i>I. triloba</i> (Morning Glory)	Hygiene.	Handpull and burn.	None available.	Glyphosate (360) 1:100 with water or Amicide 500 (2,4-D) 1;100 in water plus wetting agent.
<i>Jatropha curcas</i> and <i>J. gossypifolia</i> (Physic Nut and Bellyache Bush)	Hygiene. Reduce grazing.	Burning and grubbing effective followed by chemical on new growth.	None available.	Basal bark application or paint cut stumps with 1:1 diesel mixed with undiluted Glyphosate (360); or Banvel 200 (Dicamba) at 1:100 with water plus wetting agent; or Brush Off (Metsulfuron-methyl) 100 g/100L of water with 20 ml Pulse wetting agent.

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<i>Khaya senegalensis</i> African Mahogany	Do not cultivate this species as an ornamental, select other less invasive species.	Felling of large trees, hand pulling and slashing of seedlings	None available.	Basal bark application 1:1 diesel mixed with undiluted Glyphosate (360) or Banvel. or paint cut stumps with undiluted Glyphosate (360) or Banvel.
<i>Lantana camara</i> (Lantana)	Do not cultivate this species as an ornamental, select other less invasive species	Hand pulling, grubbing slashing and cultivation		Glyphosate (360) 1:100 with water as a foliar spray. Banvel 200 (Dicamba) mixed with diesel distillate as a basal bark spray.
<i>Leonotis nepetifolia</i> (Lion's Tail)	Reduce grazing, hygiene	Handpulling slashing and cultivation.	None available.	Glyphosate (360) 1:100 with water or Amicide 500 (2,4-D) 1:100 in water plus wetting agent.
<i>Leucaena leucocephala</i> (Coffee Bush)		Small plants hand pulled or grubbed out.	None available.	Banvel 200 (Dicamba) or Starane (Fluroxpyr) 1:50 with diesel as cut stump or basal bark application. A couple of drops Velpar as cut stump.
<i>Macroptilium atropurpureum</i> (Siratro) <i>M. lathriodes</i> (Phasey Bean)	Select other non-invasive ponded pasture species. Hygiene	Hand pulling of small areas.	None available.	Glyphosate (360) 1:100 with water or Amicide 500 (2,4-D) 1:100 in water plus wetting agent.
<i>Malachra capitata</i> (Malachra or Pox weed)	Hygiene.	Hand pulling of small areas.	None available.	Glyphosate (360) 1:100 with water.
<i>Martynia annua</i> (Devil's Claw)	Hygiene.	Handpulling, grubbing and slashing	None available.	Foliar spray Grazon DS 1:300 with water and wetting agent or Starane(Fluroxpyr) 1:200 or 2,4-D Amine 1:200 or Dicamba 200 1:100 sprayed till run off. Garlon 600 (Triclopyr) 1:50 with diesel as a basal bark application or cut stump application.
<i>Melia azadirachta</i> (White Cedar)	Do not cultivate this species as an ornamental, select other less invasive species.	Felling of large trees, hand pulling and slashing of seedlings	None available.	Basal bark application 1:1 diesel mixed with undiluted Glyphosate (360) or Banvel. or paint cut stumps with undiluted Glyphosate (360) or Banvel.

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<i>Melinis minutiflora</i> (Molasses Grass) <i>M. repens</i> (Red Natal Grass)	Do not select Molasses grass in seed mix for regeneration work. Hygiene.	Handpulling and slashing.	None available.	Glyphosate (360) 1:100 with water.
<i>Merremia aegyptia</i> <i>M. dissecta</i>	Hygiene.	Handpull and burn to kill seeds.	None available	Glyphosate (360) 1:100 with water.
<i>Mimosa pigra</i> (Mimosa)	Hygiene. Burning. Revegetation to shade out seedlings; use native species only.	Small plants can be hand pulled or grubbed out. Large infestations can be chained.	A range of biological control agents are available.	Velpar L (Hexazinone) ground injection at a rate of 4 ml shot/m ² under the drip zone of the plant plus Starane (Fluroxpyr) or Banvel 200 (Dicamba) at 1:100. Useful residual action when repeated access is difficult or rain imminent. Add 1/2 cup of cooking oil to pack of Velpar to stop gun clogging. Banvel 200 (Dicamba) 1:50 with diesel or Starane (Fluroxpyr) 1:100 with diesel as cut stump or basal bark application.
<i>Mimosa pudica</i>	Hygiene.	Hand pulling and grubbing for small infestations.	None available.	Starane (Fluroxpyr) 1:100 or Banvel 200 (Dicamba) at 1:100 for foliar application.
<i>Mucuna puriens</i> (Cow Itch)	Do not cultivate this species, select other less invasive species.	Handpull and burn to kill seeds.	None available.	None available.
<i>Parkinsonia aculeata</i> (Parkinsonia)	Reduce grazing. Revegetate to suppress seedling emergence. Hygiene.	Hand pulling and grubbing for small areas, juveniles or individual plants. Chaining and cultivation for large.	Seed beetles and leaf bug are widely available.	Velpar L (Hexazinone) ground injection at a rate of 4 ml shot/m ² under the drip zone of the plant plus Starane (Fluroxpyr) or Banvel 200 (Dicamba) at 1:100. Add 1/2 cup of cooking oil to pack of Velpar to stop gun clogging. Banvel 200 (Dicamba) 1:50 with diesel or Starane (Fluroxpyr) 1:100 with diesel, or Garlon 600 1:30 with diesel, or Tordon 50D 1:30 with diesel as cut stump or basal bark application.

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<i>Parthenium hysterophorus</i> (Parthenium)	Hygiene.	Handpulling and slashing	None available.	Glyphosate 1:100 with water sprayed to runoff or Amicide 500 (2,4-D) 1:400 with water.
<i>Passiflora foetida</i> (Wild Passionfruit)	Hygiene.	Hand pulling for small areas.	None available.	Amicide 500 (2,4-D) 1:500 with water.
<i>Pennisetum polystachion</i> (Mission Grass) <i>Pennisetum pedicellatum</i> (Annual Pennisetum)	Hygiene.	Most infestations are hand pulled at present. Grubbing of large plants.	None available.	Glyphosate (360) 1.5:100 with water plus DC Trate (surfactant) 1:100. Spray whilst actively growing until just after flowering.
<i>Phoenix dactylifera</i> (Date Palm)	Do not cultivate this species as an ornamental, select other less invasive species.	Hand pulling and grubbing for small infestations.	None available.	None available.
<i>Phyllanthus embellica</i>	Do not cultivate this species as an ornamental, select other less invasive species.	Felling of large trees, hand pulling and slashing of seedlings.	None available.	Basal bark application 1:1 diesel mixed with undiluted Glyphosate (360) or Banvel. or paint cut stumps with undiluted Glyphosate (360) or Banvel.
<i>Prosopis limensis</i> (Prosopis)	Reduce grazing. Revegetate to suppress seedling emergence. Hygiene.	Hand pulling and grubbing for small areas. Chaining and cultivation for large.	Two seed beetles are available.	Velpar L (Hexazinone) ground injection at a rate of 4 ml shot/m ² under the drip zone of the plant plus Starane (Fluroxpyr) or Banvel 200 (Dicamba) at 1:100. Banvel 200 (Dicamba) 1:50 with diesel or Garlon 600 1:30 with Diesel or Starane (Fluroxpyr) 1:100 with diesel as cut stump or basal bark application.
<i>Quisqualis indica</i> (Rangoon Creeper)	Do not cultivate this species as an ornamental, select other less invasive species.	Handpull.	None available.	None available.
<i>Ricinus communis</i> (Castor Oil Plant)	Hygiene.	Hand pulling, grubbing, slashing and cultivation	None available.	2,4-D(Amine) 4.2l/ha plus wetting agent or Garlon 600/Triclopyr 1.7l/100 in diesel as a basal spray or cut stump application.

Summary of recommended weed control methods

<i>Ruellia tuberosa</i> (Popping Seed)	Do not cultivate this species as an ornamental, select other less invasive species.	Hand pulling of young plants. Necessary to grub out as underground tuber can reshoot.	None available.	Glyphosate (360) 1.5:100 or 1:50 with water until runoff.
<i>Salvinia molesta</i> (Salvinia)	Hygiene. Do not grow this species as a water plant for aquariums, tanks or dams.	Large-scale mechanical control is impractical. The use of booms to contain Salvinia is effective.	Weevil is available.	AF100 (kerosene plus surfactant) for control of growth when integrated with biological control.
<i>Sesamum indicum</i> (Sesame)	Hygiene.	Hand pulling and slashing.	None available.	Glyphosate 1:100 with water sprayed to runoff.
<i>Senna alata</i> (Candle Bush) <i>Senna siamea</i>	Select other non-invasive species. Hygiene. Revegetation.	Most infestations are hand pulled. Hard long-lived seed stored in soil results in continued establishment of new plants.	None available.	Undiluted Glyphosate (360) mixed 1:1 with diesel used as a cut stump or basal bark application; or Garlon 600 (Triclopyr) 1:50 with diesel as a basal bark application; or Starane (Fluroxpyr) 1:100 for foliar application sprayed to runoff.
<i>Senna obtusifolia</i> , <i>S. occidentalis</i> and <i>S. tora</i> (Sicklepod and Coffee Senna)	Reduce grazing. Hygiene. Revegetation.	Hand pulling for small infestations. Slashing for larger.	None available.	Starane (Fluroxpyr) 1:100 for foliar application sprayed to runoff or Tordon 75-D 300 ml/100l of water plus wetting agent or Garlon DS (Picloram/Triclopyr) 200 ml/100l of water plus wetting agent.
<i>Sida acuta</i> and <i>Sida rhombifolia</i> (Spiny-head Sida and Paddy's Lucerne)	Reduce grazing. Hygiene. Revegetation.	Hand pulling, grubbing, cultivation and slashing.	Biocontrol available though with limited success.	Amicide 500 (2,4-D) 1:200 plus Starane (Fluroxpyr) 1:200 with water; or Glyphosate (360) 1:100 with water. Spray while actively growing before flowering.
<i>Sida cordifolia</i> (Flannel Weed)	Reduce grazing. Hygiene. Revegetation.	Hand pulling for small areas.	None available.	Glyphosate (360) 1:100 with water.
<i>Spathodea campanulata</i> (African Tulip Tree)	Select other non-invasive species. Hygiene.	Felling of large trees, hand pulling and slashing of seedlings.	None available.	Basal bark application 1:1 diesel mixed with undiluted Glyphosate (360) or Banvel. or paint cut stumps with undiluted Glyphosate (360) or Banvel.

Summary of recommended weed control methods

<i>Spermacoce assurgens</i> <i>S. hispida</i> <i>S. latifolia</i>	Hygiene. Revegetation.	Hand pulling for small areas, slashing for larger areas	None available.	Amicide 500 (2,4-D) 1:200 plus Starane (Fluroxpyr) 1:200 with water; or Glyphosate (360) 1:100 with water.
<i>Solanum nigrum</i>	Hygiene. Revegetation.	Handpulling and grubbing.	None Available.	None available.
<i>Solanum torvum</i>	Reduce grazing.	Handpulling, grubbing and slashing.	None available.	Foliar spray Grazon 1:300 with water and wetting agent or Starane(Fluroxpyr) 1:200 sprayed till run off. Garlon 600 (Triclopyr) 1:50 with diesel as a basal bark application or cut stump application.
<i>Stachytarpheta australis</i> , <i>S. cayenensis</i> , <i>S. jamaicensis</i> and <i>S. mutabilis</i> (Snakeweeds)	Reduce grazing and minimise disturbance.	Handpulling, grubbing and slashing.	None available	Amicide 500 (2,4-D) 1:200 plus Starane (Fluroxpyr) 1:200 with water; or Glyphosate (360) 1:100 with water. Spray while actively growing before flowering.
<i>Stylosanthes spp.</i> (Stylo)	Do not cultivate this species, select other less invasive pasture species. Revegetation.	Hand pulling for small areas.	None available.	Glyphosate (360) 1:100 with water.
<i>Themeda quadrivalvis</i> (Grader Grass)	Reduce grazing. Hygiene.	Hand pulling and chipping for small areas .Slashing for larger.	None available.	Glyphosate (360) 1:100 with water.
<i>Thunbergia grandiflora</i> (Thunbergia)	Hygiene.	Grubbing and handpulling.	None available.	Arsenal 250A 750ml/l of water, spray till run off.
<i>Tribulus cistoides</i> and <i>T. terrestris</i> . (Caltrop)	Hygiene.	Hand pulling and grubbing. Caltrop has a very quick life cycle (2 weeks to seeding) regular visits necessary.	None available.	Glyphosate (360) 1:100 with water for mats of seedlings and young plants. Spraying less effective on old plants.
<i>Triumfetta pentandra</i>	Reduce grazing.	Hand pulling and grubbing.	None available.	Glyphosate (360) 1:100 with water or Amicide 500 (2,4-D) 1:200

Summary of recommended weed control methods

<i>Urochloa maxima</i> (Guinea Grass)	Select other non-invasive ponded pasture species. Hygiene. Limited success with burning immediately prior to monsoonal flooding.	Hand pulling of small infestations.	None available.	Glyphosate (360) 1.5:100 with water plus Amicide (2,4-D) 1:1000 plus DC Trate (surfactant) 1:100 has been effective on stressed rather than actively growing plants.
<i>Urochloa mosambicensis</i> (Sabi Grass)				
<i>Urochloa mutica</i> (Para Grass)				
<i>Wedelia trilobata</i> (Singapore Daisy)	Select other non-invasive species. Hygiene.	Handpulling, making sure all roots are dug out.	None available.	Foliar spray; Amicide 500 (2,4-D) 1:100 in water or Banvel 1:100 in water plus wetting agent.
<i>Xanthium strumarium</i> (Noogoora Burr)	Hygiene.	Hand pulling, grubbing and slashing.	Several agents are available including stem borers, stem galling insects and a rust.	Foliar spray; Amicide 500 (2,4 D) 1:200; or Starane (Fluroxpyr) 1:200; or Glyphosate (360) 1:100, or Dicamba 200 1:100.
<i>Ziziphus mauritiana</i> (Chinee Apple)	Select other non-invasive species. Hygiene. Reduce grazing. Fire. Revegetation.	Felling of large trees, hand pulling and slashing of seedlings. Need to remove root or trees will regrow.	None available.	Foliar spray; Grazon DS [®] / Triclopyr and Picloram 0.35L / 100 L of water with wetting agent. Access [®] /Triclopyr & Picloram 1.7 L /100 L diesel or Garlon 1:50 in diesel or Starane 200 1:30 in diesel as cut stump or basal spray application. Spray 360 degrees around the trunk. Best applied when plants are actively growing.

Appendix 4

The Northern Territory Noxious Weeds Act



Northern Territory of Australia

Agnote No.566

PRIMARY INDUSTRY AND FISHERIES

F17

April 1998

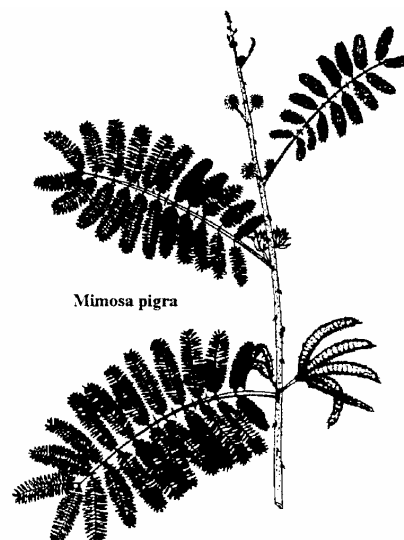
THE NORTHERN TERRITORY NOXIOUS WEEDS ACT

I. L. Miller, Principal Agronomist, Weeds Branch, Darwin. Updated by M. Crothers, Weeds Branch, Katherine, & I. L. Miller (Replaces Agnote August 1995)

History

The history of noxious weeds legislation in the Northern Territory goes back to the 1800s. The South Australian 'Thistle and Burr Act' of 1862 applied to the Northern Territory until 1916 when a 'Northern Territory Noxious Weeds Ordinance' was notified in the Commonwealth Gazette.

A number of weeds which were present in the Territory last century still occur and are declared as Noxious Weeds today. Hyptis (*Hyptis suaveolens*) was known as a common tropical weed and was found by the explorer Ludwig Leichhardt at Port Essington in 1845 [Bentham 1870]. It was also introduced into Darwin from Timor in the 1870s [Holtze 1892]



Thornapple (*Datura* spp.), snakeweeds (*Stachytarpheta* spp.), common sensitive plant (*Mimosa pudica*) and giant sensitive plant (*Mimosa rubricaulis*, probably a misnomer for *Mimosa pigra*) were included on a list of species which had become "comparatively numerous", some of which had become "troublesome pests" by 1891 [Holtze 1892; Miller and Lonsdale 1987].

The Northern Territory Noxious Weeds Act

Part of the stimulus for the Territory's own ordinance came in 1912 when the Director of the Department of Agriculture reported on attempts to eradicate weeds such as prickly pear (*Opuntia* spp.), lantana (*Lantana camara*) and sida (*Sida* spp.) in the vicinity of Darwin [Anon. 1913]. Some of these weeds appear to have been grown as ornamentals in the Botanic Gardens and at the time were spreading at an alarming rate. It was proposed that a judge assist in developing a noxious weeds ordinance, which resulted in the 1916 legislation. Other introduced plants which were reported as being weeds in the first quarter of this century included *Leucaena leucocephala* (coffee bush) and nut grass (*Cyperus rotundus*) [Goode 1926].

In 1959 the ordinance was amended and became known as the 'Noxious Weeds Ordinance 1916-1959'. It was again amended to the 'Noxious Weeds Ordinance 1962', essentially the same piece of legislation which became the 'Noxious Weeds Act' after self-government in 1978.

This Agnote explains the logic behind the need for a Noxious Weeds Act, its features and the reason why certain plants are declared noxious.

Need For Noxious Weeds Legislation

The aim of the Act is to prevent the introduction and spread of noxious weeds in the Northern Territory, and so protect responsible land managers from weeds on other persons' properties.

One would think that if a weed is affecting the productivity or other use of land or water, then the manager would take steps to keep that weed under control. Unfortunately this is not always the case because land managers vary in their management standards, motivation to control weeds and assessment of future risks posed by weeds. In some cases a plant not considered to be a problem by one person may have a detrimental effect on the land use aims of another, as it spreads and increases over time.

In northern Australia, extensive land management systems are practised on pastoral leases, and large areas of land are reserves or National Parks. It is important to protect the primary production, recreational or environmental potential of such areas for use by future generations. In all cases early protection minimises the cost of control later.

The above factors create the need for legislation which provides a basis upon which responsibilities for eradication or control of weeds can be delegated and legally enforced if necessary.

Important Sections of the Act

A summary of the most important sections is as follows:

- A plant may be declared to be a noxious weed, either over the whole or part of the Territory.
- Three classes of noxious weeds are recognised: Class A, B and C. The difference between these classes is explained below and the plants currently declared as noxious are listed in Table 1.
- Landholders or occupiers of land may be issued with a notice to eradicate or control a Class A or B noxious weed by specified means. Such a notice cannot be issued unless the Government is taking reasonable action to control the same weed on adjoining Crown Land.
- Persons in possession of hay or animal fodder containing seeds of noxious weeds may be issued with a notice not to sell, and to destroy the hay or fodder by specified means.
- Failure to comply with notices may result in a penalty (fines), conduct of the work by authorised persons and cost recovery action.
- Assistance to control noxious weeds in the form of materials, equipment and labour may be provided to persons issued with a notice.

Declared Noxious Weeds

For a plant to be declared noxious:

- It should constitute a significant threat to the productivity of land and water, flora and fauna resources or, in some cases, to human health;
- Means are available to kill the plant, feasibly eradicate it or limit its spread;
- There is an ability and a firm intention to enforce control; and
- A worthwhile benefit to the community can be anticipated from enforced control.

The Northern Territory Noxious Weeds Act

Classes of Noxious Weeds

Class A: to be eradicated. These are noxious weeds which pose a significant threat but which only occupy a relatively small area. There is a good chance of eradication being achieved.

Class B: growth and spread to be controlled. These weeds are more widely spread and are impractical to eradicate, but prevention of their further spread is desirable. Eradication may be possible if they occur in geographically isolated situations.

Class C: not to be introduced to the Territory. These are weeds which are not known to exist in the Territory but which could pose a significant threat if introduced. This class also includes all Class A and Class B weeds since further introductions of these weeds would only escalate the existing problems.

There are many other undesirable plants in the Territory that cause problems in pastures, crops, recreation reserves and home gardens. They are still considered weeds but are distinct from declared noxious weeds under the Act as they are easily controlled by cultural practices or their enforced control is impractical.

The initiative to declare a weed noxious, or to change the classification of a noxious weed, can originate from the NT Department of Primary Industry & Fisheries, other Government agencies, farmers, pastoralists and conservation organisations or from any concerned person.

Further Information

A copy of the Noxious Weeds Act can be purchased from
Northern Territory Government Publications
13 Smith Street Darwin
Tel: (08) 8999 7152 or from
Community Information Centre
Library Centre, Alice Springs
Tel: (08) 8952 2733.

Agnotes which describe all the declared noxious weeds, other weeds, plants which are quarantine threats and weed control methods are available from the Department of Primary Industry and Fisheries (see Tables 1 and 2 for Agnote order numbers).

Information on a herbicide subsidy scheme to assist landholders with noxious weed control can be obtained from Weeds Branch Officers in:

Darwin GPO BOX 990 DARWIN NT 0801	Jabiru PO Box 244 Jabiru NT 0886	Katherine PO Box 1346 Katherine NT 0851
Timber Creek PMB 149 Katherine NT 0852	Tennant Creek PO Box 159 Tennant Creek NT 0861	Alice Springs PO Box 8760 Alice Springs NT 0871

Acknowledgements

Mr J.D. Sturtz, formerly Director of Crops and Mr M. Chin, Department of Law commented on a draft of this Agnote.

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The Northern Territory Noxious Weeds Act

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Holtze, M. (1892) 'Introduced plants in the Northern Territory', *Transactions of the Royal Society of South Australia*, 15, pp 1-4.

Miller, I.L. & Lonsdale, W.M. (1987) 'Early records of *Mimosa pigra* in the Northern Territory', *Plant Protection Quarterly* 2, pp 140-142.

Table 4 Class A Noxious Weeds: to be Eradicated

BOTANICAL NAME	COMMON NAME	PART OF THE TERRITORY	AGNOTE ORDER NO.
<i>Acacia catechu</i>	cutch tree	All of the Territory	F24
<i>Acacia nilotica</i>	prickly acacia	" "	F50
<i>Alternanthera philoxeroides</i>			F37
<i>Asphodelus fistulosus</i>	onion weed	" "	F60
<i>Barleria prionitis</i>	barleria	" "	F81
<i>Cabomba</i> spp	fanwort	" "	F88
<i>Cryptostegia madagascariensis</i>	ornamental rubber vine	" "	
<i>Dalbergia sissoo</i>	dalbergia	N of 18° S latitude	F32
<i>Datura ferox</i>	longspine thornapple	All of the Territory	F41
<i>Echium plantagineum</i>	paterson's curse	" "	F51
<i>Eichhornia crassipes</i>	water hyacinth	" "	F5
<i>Jatropha curcas</i>	physic nut	" "	F70
<i>Lycium ferocissimum</i>	african boxthorn		F74
<i>Martynia annua</i>	devil's claw	" "	F8
<i>Mimosa pigra</i>	mimosa, giant sensitive plant	S of 14° S latitude	F2
<i>Parthenium hysterophorus</i>	parthenium weed	All of the Territory	F1
<i>Salvinia molesta</i>	salvinia	" "	F6
<i>Ziziphus mauritiana</i>	chinee apple, indian jujube	Outside Darwin city, Palmerston, Litchfield Shire, Alice Springs Region	F40

Table 5 Class B Noxious Weeds: Growth and Spread to be Controlled

BOTANICAL NAME	COMMON NAME	PART OF THE TERRITORY	AGNOTE ORDER NO.
<i>Acanthospermum hispidum</i>	Star burr, goat's head	All of the Territory	F35
<i>Alternanthera pungens</i>	Khaki weed	" "	F36
<i>Argemone ochroleuca</i>	Mexican poppy	" "	F82
<i>Calotropis procera</i>	Rubber bush	S of 16°30' S latitude	F64
<i>Carthamus lanatus</i>	Saffron thistle	All of the Territory	F75
<i>Cenchrus echinatus</i>	Mossman River grass	" "	F31
<i>Emex australis</i>	Spiny emex	" "	F71
<i>Hyptis suaveolens</i>	Hyptis	" "	F25
<i>Jatropha gossypifolia</i>	Bellyache bush	" "	F22
<i>Lantana camara</i>	Common lantana	Outside town areas	F29
<i>Lantana montevidensis</i>	Creeping lantana		F72
<i>Leonotis nepetifolia</i>	Lion's tail	All of the Territory	F45
<i>Mimosa pigra</i>	Mimosa, giant sensitive plant	N of 14° S latitude	F2
<i>Mimosa pudica</i>	Common sensitive plant	All of the Territory	F34

Table 5 Class B Noxious Weeds: Growth and Spread to be Controlled

<i>Opuntia</i> spp.	Prickly pears	S of 18° S latitude, outside town areas	F14
<i>Pennisetum polystachion</i>	Mission grass	All of the Territory	F38
<i>Pistia stratiotes</i>	Water lettuce	" "	F7
<i>Parkinsonia aculeata</i>	Parkinsonia	" "	F3
<i>Prosopis limensis</i>	Mesquite, algaroba	" "	F55
<i>Ricinus communis</i>	Castor oil plant	" "	F49
<i>Salvinia molesta</i>	Salvinia	" "	F6
<i>Senna alata</i>	Candle bush	Outside town areas	F18
<i>Senna obtusifolia</i>	Sicklepod	All of the Territory	F59
<i>Senna occidentalis</i>	Coffee senna	" "	F28
<i>Sida acuta</i>	Spinyhead sida	" "	F44
<i>Sida cordifolia</i>	Flannel weed	" "	F47
<i>Sida rhombifolia</i>	Paddy's lucerne	" "	F46
<i>Stachytarpheta</i> spp.	Snake weeds	Outside town areas	F30
<i>Tamarix aphylla</i>	Tamarisk, Athel pine	Alice Springs Region outside of home gardens	F61
<i>Themeda quadrivalvis</i>	Grader grass	All of the Territory	F9
<i>Tribulus cistoides</i>	Caltrop	" "	F69
<i>Tribulus terrestris</i>	Caltrop	" "	F68
<i>Xanthium occidentale</i>	Noogoora burr	" "	
<i>Xanthium spinosum</i>	Bathurst burr	" "	F10

Table 6 Class C Noxious Weeds: Not to be Introduced to the Northern Territory

(*Includes all Class A and Class B Noxious Weeds)

BOTANICAL NAME	COMMON NAME	AGNOTE	ORDER NO
<i>Acroptilon repens</i>	Creeping knapweed		F66
<i>Ageratina riparia</i>	Mistflower		F80
<i>Ambrosia artemisiifolia</i>	Annual ragweed		F65
<i>Ambrosia psilostachya</i>	Perennial ragweed		F65
<i>Baccharis halimifolia</i>	Groundsel bush		F67
<i>Cabomba</i> spp	Fanwort		F88
<i>Chromolaena odorata</i>	Siam weed		F58
<i>Cryptostegia grandiflora</i>	Rubber vine		F56
<i>Elodea canadensis</i>	Canadian pondweed		F53
<i>Eriocereus martinii</i>	Harrisia cactus		F42
<i>Hyptis capitata</i>	Knobweed		F26
<i>Lagarosiphon major</i>	Lagarosiphon		F27
<i>Mimosa invisa</i>	?Giant sensitive plant		F33

Table 6 Class C Noxious Weeds: Not to be Introduced to the Northern Territory

<i>Prosopis</i> spp.	Mesquite	F55
<i>Sorghum halepense</i>	Johnson grass	F43
<i>Xanthium</i> spp.	Burrs	

Table 7 Other Weed Agnotes

BOTANICAL NAME	COMMON NAME	AGNOTE ORDER NO
<i>Acacia farnesiana</i>	Needle bush	F63
<i>Chromolaena odorata</i>	Siam weed, Christmas bush	F58
<i>Cleome rutidosperma</i>	Spindletop	
<i>Echinochloa glabrescens</i>	Barnyard grass	
<i>Leptochloa</i> spp.	Sprangletop	
<i>Limnocharis flava</i>	Yellow sawah lettuce	F79
<i>Mikania micrantha</i>	Mile-a-minute	F57
<i>Mucuna pruriens</i>	Cow itch, pica-pica	
<i>Salvinia cucullata</i>	Small rat's ear	F54
<i>Salvinia natans</i>		F52
<i>Senecio madagascariensis</i>	Fireweed	F48

Appendix 5

Integrated weed control

General Principles

- Irrespective of the method of weed control chosen to remove weeds, the principles of bush regeneration should be followed.
- Always work from areas in good condition towards weed infested areas.
- Cause minimal disturbance.
- Let the regeneration of native plants determine the rate of weed removal.
- For annual and perennial grasses (e.g. mission, gamba and para grass) remove seed heads where possible, mow, burn, hand-pull or grub if a small infestation. If a large infestation, spray with Glyphosate to the point of run-off.
- Non-woody shrubs (e.g. hyptis and malachra): try slashing before seed set and late burning hand pull or grub out infestations; use recommended chemical control methods.
- Woody shrubs and small trees (e.g. candle bush, coffee bush and mimosa): remove flowers and seed heads; young plants should be physically removed; check recommended chemical control methods, usually cut stem and paint with herbicide, inject ground if large infestation.

Cultural methods

- Develop preventive measures, such as quarantine and closure, to reduce the spread of the infestation.
- Determine whether changes in livestock management will affect the high priority weeds.
- Determine whether changes in movement or type of livestock is necessary to reduce or contain the infestation due to movement of seeds on or in the animals.
- Determine whether containing livestock in a weed-free area before entering the area would prevent new infestations.
- Determine whether livestock or wildlife feeding programs can be managed to reduce weed infestations.
- Determine feasibility of changes in wildlife movement that would reduce or contain the infestation due to movement of seeds on or in the animals.
- Revegetate all bare soil following disturbance.
- Only allow weed-free equipment in an uninfested area; e.g. roadworks, mining, recreation.
- Limit, restrict, or modify recreational uses such as recreational vehicles, bicycling etc to reduce spreading weeds. In some cases, recreational sites may have to be quarantined.
- Defer or reduce soil disturbance, if possible, until weeds are controlled or under management.
- Obtain rock soil, sand etc from uncontaminated sources.
- Determine if exclusion of various uses would reduce weed spread.

Physical Control

- Determine if hoeing or grubbing will reduce the weed problem.
- Determine if hand-pulling weeds will reduce the seed source.
- Determine if mowing will reduce the weed problem
- Evaluate whether a controlled-burning program will reduce the weeds.
- Monitor heavy recreational use sites seasonally for early detection of new weeds.
- Mark and hand- pull weeds when found, especially before seed ripe.

Biological Controls

- Determine what biological control agents are available for specific weed species
- Determine whether the introduced biological control agent can survive in the environment of the treatment area.
- Determine whether the use of domestic animals can successfully control weeds.

Chemical Methods

Determine if the herbicides are labeled for:

- Use on the target weed.

Integrated weed control

- Use on the infested site (consider water, groundwater locations, climate, state labeling, soils, etc.).
- Ensure properly trained and licensed people apply the herbicide.

Appendix 6

List of weed species recorded on Aboriginal land

Table 8 Weed, Authors Common Names

PTERIDOPHYTA (FERNS)	
^{A/B} <i>Salvinia molesta</i> D.Mitch.	Salvinia
ANGIOSPERMAE (FLOWERING PLANTS)	
ACANTHACEAE	
<i>Andrographis paniculata</i> (Burman) Wallich ex Nees	
<i>Asystasia gangetica</i> (L.) T.Anderson	
^A <i>Barleria prionitis</i> L.	
<i>Ruellia tuberosa</i> L.	Popping seed
<i>Thunbergia grandiflora</i> Roxb.	Blue trumpet vine
AGAVACEAE	
<i>Agave attenuata</i> Salm-Dyck	Agavae, spiked aloe
<i>Agave sisalana</i> Perrine	
<i>Sansevieria trifasciata</i> Prain	Mother-in-law's touge
AIZOACEAE	
<i>Trianthema portulacastrum</i> L.	Giant pigweed, black pigweed
AMARANTHACEAE	
<i>Aerva javanica</i> (Burm.f.) Juss. ex Schult.	Kapok bush, snow bush
^B <i>Alternanthera pungens</i> Kunth	Khaki weed
<i>Alternanthera dentata</i> (Moench) Stuhl. cv rubra	Metal weed
<i>Amaranthus hybridus</i> L.	
<i>Amaranthus spinosus</i> L.	
<i>Amaranthus tricolor</i> L.	
<i>Amaranthus viridis</i> L.	Green amaranth
<i>Amaranthus</i> sp.	Collected from nhulunbuy.
<i>Gomphrena celosioides</i> Mart.	Gomphrena weed
ANACARDIACEAE	
<i>Anacardium occidentale</i> L.	Cashew nut

List of weed species recorded on Aboriginal land

<i>Mangifera indica</i> L.	Mango
ANNONACEAE	
<i>Annona reticulata</i> L.	Custard apple
APOCYNACEAE	
<i>Allamanda cathartica</i> L.	Yellow trumpet vine
<i>Alstonia scholaris</i> (L.) R.Br.	Cheesewood
<i>Cascabela thevetica</i> (Pers.) Merrill (syn. <i>Thevetia peruviana</i>)	Yellow oleander
<i>Catharanthus roseus</i> (L.) Don	Madagascar periwinkle
<i>Nerium oleander</i> L.	Oleander
<i>Tabernaemontana coronaria</i>	
ARECACEAE	
<i>Caryota mitis</i>	Clumping/clustered fishtail palm
<i>Phoenix dactylifera</i> L.	Date palm
<i>Phoenix sylvestris</i>	Wild date palm
<i>Ravenala madagascariensis</i>	Travellers palm
ARISTOLOCHIACEA	
<i>Aristolochia elegans</i> Mast.	Dutchman's pipe, calic flower
ASCLEPIADACEAE	
<i>Calotropis gigantea</i> (L.) R.Br.	.
^B <i>Calotropis procera</i> (Aiton) W.T.Aiton	Rubber bush, rubber tree, calotrope, kings crown
^C <i>Cryptostegia grandiflora</i> (Roxb.) R.Br.	Rubber vine
^A <i>Cryptostegia madagascariensis</i> Bojer ex Decne	Ornamental rubber vine
ASTERACEAE	
^B <i>Acanthospermum hispidum</i> DC.	Starburr, goats head
<i>Ageratum conyzoides</i> L.	
<i>Bidens bipinnata</i> L.	Cobblers pegs, beggars ticks
<i>Bidens pilosa</i> L.	Pitch-forks, stick-tights, burr marigold
<i>Conyza bonariensis</i> (L.) Cronq.	Tall fleabane, flax-leaf fleabane
<i>Eleutheranthera ruderalis</i> (Sw.) Sch.Bip.	
<i>Emilia sonchifolia</i> (L.) DC.	
^A <i>Parthenium hysterophorus</i> L.	Parthenium

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<i>Synedrella nodiflora</i> (L.) Gaertner	
<i>Tridax procumbens</i> L.	Tridax daisy
<i>Wedelia trilobata</i> (L.) Hitchc.	Singapore daisy
^{B/C} <i>Xanthium strumarium</i> L.	Noogoora burr
BIGNONIACEAE	
<i>Spathodea campanulata</i> P. Beauv.	African tulip tree
<i>Tecoma stans</i> (L.) Kunth	Yellow bells
BORAGINACEAE	
<i>Heliotropium indicum</i> L.	Blue heliotrope
CACTACEAE	
^B <i>Opuntia stricta</i> (Haw.) Haw.	Common prickly pear
CAESALPINIACEAE	
<i>Cassia fistula</i> L.	Golden shower; golden rain tree
<i>Cassia nodosa</i>	
<i>Delonix regia</i> (Boj. ex Hook.) Raf.	Poinciana, orange flame tree
^B <i>Parkinsonia aculeata</i> L.	Parkinsonia, jerusalem thorn
^B <i>Senna alata</i> (L.) Roxb.	Candlebush
^B <i>Senna obtusifolia</i> (L.) Irwin	Sickle pod
^B <i>Senna occidentalis</i> (L.) Link	Coffee senna,
<i>Senna siamea</i>	
<i>Senna tora</i> (L.) Roxb	Sickle pod
COMBRETACEAE	
<i>Quisqualis indica</i> L.	Rangoon creeper
CONVOLVULACEAE	
<i>Evolvulus nummularis</i> (L.) L.	
<i>Ipomoea batatas</i> (L.) L.	Sweet potato
<i>Ipomoea carnea</i> spp. <i>fistolsa</i> (Mart. Ex Choisy) D.F. Austin	
<i>Ipomoea pes-tigridis</i> L.	
<i>Ipomoea quamoclit</i> L.	Cupid's flower, star of bethlehem
<i>Ipomoea triloba</i> L.	
<i>Merremia aegyptia</i> (L.) Urban	
<i>Merremia dissecta</i> (Jacq.) Hallier f.	White convolvulus creeper

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CUCURBITACEAE	
<i>Citrullus colocynthis</i> (L.) Schrader	Bitter paddy melon
<i>Citrullus lanatus</i> (Thunb.) Manstum. & Nakai	Paddy melon, pie melon, wild melon, camel melon
<i>Cucumis</i> sp.	Collected from nhulunbuy
<i>Momordica balsamina</i> L.	Balsam apple, chinese lantern
CYPERACEAE	
<i>Cyperus brevifolius</i> (Rottb.) Hassk.	
<i>Cyperus compressus</i> L.	
<i>Cyperus involucratus</i> Roth	Windmill segde
<i>Cyperus rotundus</i> L.	Nut grass
<i>Cyperus sphacelatus</i> Rottb.	
DIOSCOREACEAE	
<i>Dioscorea bulbifera</i> cultivar	Round yam
EUPHORBIACEAE	
<i>Euphorbia cyathophora</i> J.A.Murray	Dwarf poinsettia
<i>Euphorbia heterophylla</i> L.	Painted spurge, annual poinsettia
<i>Euphorbia hirta</i> L.	Asthma plant, snake weed
<i>Euphorbia prostrata</i> Aiton	
^A <i>Jatropha curcas</i> Battery	Physic nut
^B <i>Jatropha gossypifolia</i> L.	Cotton-leaf physin nut, bellyache bush
<i>Jatropha multifida</i> L.	
<i>Manihot esculentia</i> Crantz	Cassava
<i>Micrococca mercurialis</i> (L.) Benth.	
<i>Phyllanthus emblica</i> L.	
<i>Phyllanthus amarus</i> Schumann & Thonn.	
<i>Pilea microphylla</i> (L.) Liebm.	
^B <i>Ricinus communis</i> L.	Castor oil plant
FABACEAE	
<i>Aeschynomene americana</i> L.	
<i>Aeschynomene villosa</i> Poiret	
<i>Alysicarpus ovalifolius</i> (Schumach.) J.Leon (<i>A. vaginalis</i>)	Buffalo clover
<i>Cajanus cajan</i> (L.) Millsp.	Guinea pea
<i>Calopogonium mucunoides</i> Desv.	Calopo

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<i>Canavalia gladiata</i> (Jacq.) DC.	
<i>Centrosema pascuorum</i> Mart. ex Benth.	
<i>Centrosema molle</i> Benth. (<i>C. pubescens</i>).	Centro
<i>Clitoria ternatea</i> L.	Butterfly pea, blue pea
<i>Crotalaria goreensis</i> Guillemin & Perrottet	Gambia pea
<i>Crotalaria pallida</i> Aiton	
^A <i>Dalbergia sissoo</i> Roxb.	Himalayan raintree
<i>Desmodium scorpiurus</i> (Sw.) Desv.	
<i>Desmodium tortuosum</i> (Sw.) DC.	Velcrose plant
<i>Desmodium triflorum</i> (L.) DC.	
<i>Indigofera glandulosa</i> Willd.	
<i>Indigofera hirsuta</i> L.	
<i>Indigofera tinctoria</i> L.	
<i>Macroptilium atropurpureum</i> (DC.) Urban	Siratro
<i>Macroptilium lathyroides</i> (L.) Urban	Phasey bean
<i>Mucuna puriens</i> (L.) DC.	Cow itch, velvet bean
<i>Stylosanthes guianensis</i> (Aublet) Sw.	Stylo
<i>Stylosanthes hamata</i> (L.) Taub.	Verano stylo, verano, caribbean stylo, stylo
<i>Stylosanthes humilis</i> Kunth	Townsville stylo, townsville lucerne
<i>Stylosanthes scabra</i> Vogel	Shrubby stylo
<i>Stylosanthes viscosa</i> Sw.	Sticky stylo
<i>Fabaceae</i> sp.	Collected nitmuluk n.p. (nms)
LAMIACEAE	
^C <i>Hyptis capitata</i> Jacq.	Knob weed
^B <i>Hyptis suaveolens</i> (L.) Poit.	Hyptis, mint weed
<i>Hyptis spicigera</i> L.	
^B <i>Leonotis nepetifolia</i> (L.) R.Br.	Lion's tail
MALVACEAE	
<i>Gossypium hirsutum</i> L.	Cotton
<i>Hibiscus sabdariffa</i> L.	Rosella
<i>Malachra capitata</i> (L.) L.	
<i>Malvastrum americanum</i> (L.) Torrey	Malvastrum, spiked malvastrum
<i>Malvastrum coromandelianum</i> (L.) Garcke	
^B <i>Sida acuta</i> Burm.f.	Spiny-head sida
^B <i>Sida cordifolia</i> L.	Flannel weed

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^B <i>Sida rhombifolia</i> L.	Common sida, queensland hemp; record needs confirmation
MELIACEAE	
<i>Azadirachta indica</i> A.Juss.	Neem tree
<i>Khaya senegalensis</i> A. Juss	African mahogany
<i>Melia azedarach</i> L.	Melia, china berry tree
MIMOSACEAE	
^A <i>Acacia nilotica</i> (L.) Willd. ex Delile	Prickly acacia
<i>Desmanthus virgatus</i> (L.) Willd.	
<i>Leucaena leucocephala</i> (Lam.) De Wit	Coffee bush
^{A/B} <i>Mimosa pigra</i> L.	Mimosa; giant sensitive plant
<i>Mimosa pudica</i>	
^{B/C} <i>Prosopis pallida</i> (Willd.) Kunth (<i>P. limensis</i>).	Mesquite, algaroba.
MYRSINACEAE	
<i>Ardisia humilis</i> Vahl	
PAPAVERACEAE	
^B <i>Argemone ochroleuca</i> Sweet	Mexican poppy.
PASSIFLORACEAE	
<i>Passiflora foetida</i> L.	Stinking passion flower
<i>Passiflora suberosa</i> L.	Corky passion flower
PEDALIACEAE	
^A <i>Martynia annua</i> L.	Devil's claw
<i>Sesamum indicum</i> L.	Sesame
POACEAE	
<i>Andropogon gayanus</i> Kunth	Gamba grass
<i>Arundo donax</i> L. var. <i>donax</i> L.	Giant reed, false bamboo
<i>Axonopus affinis</i> Chase	
<i>Axonopus compressus</i> (Sw.) Beauv.	
<i>Bothriochloa pertusa</i> (L.) A.Camus	Indian bluegrass
<i>Cenchrus biflorus</i> Roxb.	Gallons curse
<i>Cenchrus brownii</i> Roemer & Schult.	
<i>Cenchrus ciliaris</i> L.	Buffel grass

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^B <i>Cenchrus echinatus</i> L.	Mossman river grass, burr-grass
<i>Cenchrus pascorum</i>	
<i>Cenchrus setigerus</i> Vahl	Birdwood grass
<i>Chloris gayana</i> Kunth	Rhodes grass
<i>Chloris inflata</i> Link	Purple-top chloris, purple-top rhodes grass
<i>Chloris pilosa</i> Schumann	
<i>Chloris pumilo</i>	
<i>Chloris virgata</i>	
<i>Cynodon dactylon</i> (L.) Pers.	Couch grass
<i>Cynodon radiatus</i> Roth ex Roemer & Schult.	
<i>Dactyloctenium aegyptium</i> (L.) Beauv.	Coast button grass
<i>Digitaria bicornis</i> (Lam.) Roemer & Schult.	Hairy finger grass
<i>Digitaria ciliaris</i> (Retz.) Koeler	Summer grass
<i>Digitaria violascens</i> Link	
<i>Echinochloa colona</i> (L.) Link	Awnless barnyard grass, swamp grass, river grass
<i>Echinochloa crus-galli</i> (L.) Beauv.	
<i>Eleusine indica</i> (L.) Gaertner	Crowsfoot grass
<i>Eragrostis pilosa</i> (L.) Beauv.	
<i>Eragrostis tenella</i> (L.) P.Beauv. ex Roemer & Schultes	
<i>Hymenachne amplexicaulis</i> (Rudge) Nees	Olive hymenachne
<i>Melinis minutiflora</i> Beauv.	Melinis.
<i>Melinis repens</i> (Willd.) Zizka	Natal red top, red natal grass
<i>Oryza sativa</i> L.	Rice
<i>Paspalum notatum</i> Fluegge	Bahia grass
<i>Pennisetum pedicellatum</i> Trin.	
^B <i>Pennisetum polystachion</i> (L.) Schult.	Mission grass
<i>Setaria italica</i>	
<i>Setaria spacelata</i>	
<i>Sorghum almum</i> Parodi	Columbus grass, sorghum alum
<i>Sorghum bicolor</i> (L.) Moench	Forage sorghum, grain sorghum, cultivated sorghum
<i>Sporobolus coromandelainus</i> (Retz.) Kunth	
<i>Sporobolus jacquemontia</i>	
<i>Sporobolus natalensis</i> (Steud.) Fur. & Schinz.	
^B <i>Themeda quadrivalvis</i> (L.) Kuntze	Grader grass
<i>Urochloa gilvum</i> Lannert	
<i>Urochloa maxima</i> (Jacq.) R. Webster (Syn. <i>Panicum maximum</i>)	Guinea grass
<i>Urochloa mosambicensis</i> (Hackel) Dandy	Sabi grass

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<i>Urochloa mutica</i> (Forssk.) T.Q.Nguyen (Syn. <i>Brachiaria mutica</i>)	Para grass
POLYGONACEAE	
<i>Antigonon leptopus</i> Hook. & Arn.	Coral vine
PONTEDERIACEAE	
^A <i>Eichhornia crassipes</i> (C.Martius) Solms-Laub.	Water hyacinth
RHAMNACEAE	
^A <i>Ziziphus mauritiana</i> Lam.	Chinese apple, indian jujube
RUBIACEAE	
<i>Mitracarpus hirtus</i> (L.) DC.	
<i>Oldenlandia corymbosa</i> L.	
<i>Richardia scabra</i> L.	
<i>Spermacoce assurgens</i> Ruiz & Pav.	
<i>Spermacoce hispida</i> L.	
<i>Spermacoce latifolia</i> Aubl.	
SCROPHULARIACEAE	
<i>Scoparia dulcis</i> L.	Scoparia
SOLANACEAE	
<i>Capsicum annuum</i> L.	Chilli
<i>Lycopersicon esculentum</i> Miller	Tomato
<i>Solanum americanum</i> Miller	
<i>Solanum erianthum</i> D.Don	
<i>Solanum nigrum</i> L.	Black nightshade, black-berry nightshade
<i>Solanum torvum</i> Sw.	Devils fig
TAMARICACEAE	
^B <i>Tamarix aphylla</i> (L.) Karst.	Athel tree, athel pine
TILIACEAE	
<i>Corchorus olitorius</i> L.	
<i>Corchorus trilocularis</i> L.	
<i>Grewia asiatica</i> L.	
<i>Triumfetta pentandra</i> A.Rich.	

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TURNERACEAE	
<i>Turnera ulmifolia</i> L.	
VERBENACEAE	
<i>Gmelina arborea</i> Roxb.	Gmelina
^B <i>Lantana camara</i> L.	Common lantana
^B <i>Stachytarpheta australis</i> Mold.	Snake weed
^B <i>Stachytarpheta cayennensis</i> (Rich.) Vahl	Snake weed
^B <i>Stachytarpheta jamaicensis</i> (L.) Vahl	Snake weed
^B <i>Stachytarpheta mutabilis</i> (Jacq.) Vahl	Snake weed
ZYGOPHYLLACEAE	
^B <i>Tribulus cistoides</i> L.	Caltrop
^B <i>Tribulus terrestris</i> L.	Cat-head, caltrop, bindieye.

^A = gazetted noxious weed, class A ^B = gazetted noxious weed, class B ^C = gazetted noxious weed, class C