



Information Sheet

10. WEEDS

10.7 Alien plant control - methods and registered chemicals

This information sheet describes control methods and registered chemicals for the different categories of alien plants. Refer to information sheet 10.3 for an understanding of category 1, 2 and 3 plants, and for detailed action steps on setting up a control programme.

CHEMICAL CONTROL METHODS

FOLIAR

Apply to seedlings and coppice 0.5-1.5 m high. Slash taller plants and spray regrowth at 0.5 m high.



CUT STUMP

Cut stems as low as possible. Apply to the sapwood (cambium) region of freshly cut stumps



TOTAL STUMP

Cut stems as low as possible. Apply to cut surface, sides and exposed roots of stumps.



BASAL BARK

Apply up to a height of 0.25-0.5 m to stems, and to all exposed roots and root crowns.



TOTAL FRILL

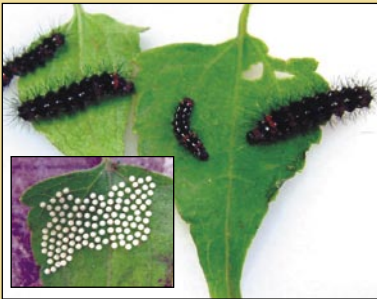

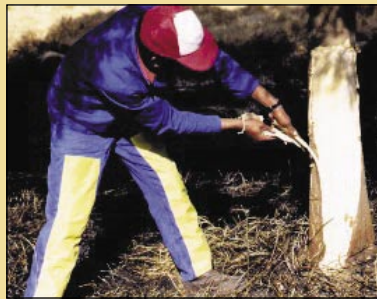



Cut into sapwood (cambium) and twist flaps open. Place cuts as low as possible on the stem. Avoid spillage out of the cuts.



PRE- TO EARLY POST-EMERGENCE CONTROL



BIOLOGICAL AND MECHANICAL CONTROL METHODS

BIOLOGICAL CONTROL	HANDPULL SEEDLINGS Low density infestations only. Good wet weather work.	STRIPBARK Bark strips easily during rainy season.
		
RINGBARK	SLASH AND BURN Slash plants and allow material to dry out. Burn according to local fire regulations.	BURN HIGH FUEL LOADS GRASS Burn according to local fire regulations. Direct the fire to run into the alien plants.
		

EQUIPMENT AND TARGET FOR APPLICATION OF HERBICIDES

Equipment and application		Foliar	Total stump	Cut Stump	Frill	Basal Stem
EQUIPMENT	Paintbrush	X	✓	✓	✓	✓
	Knapsack sprayer with solid cone nozzle tips, e.g. TG1, CE1 or similar.	✓	✓	✓	X	✓ a
	Handsprayer	X	✓	✓	✓ a	✓ a
	Calibrated syringe	X	X	X	✓	X
	Diesel-resistant seals in sprayer system	X	✓	X	X	✓
APPLICATION	Coarse spray at low sprayer pressure	X	✓	✓	✓	✓
	Volume of tank mixture: herbicide + water or diesel required per hectare or per 1000 stems	200-400 L per hectare	14 L per 1000 stems	8 L per 1000 stems	4-12 L per 1000 stems	30 L per 1000 stems
SITUATION	Treat each stem in multi-stemmed plants	✓	✓	✓	✓	✓
	Regrowth or seedlings with high stem density	✓	X	X	X	X
	Regrowth or seedlings with low stem density	✓	✓	✓	✓	✓
	High stem density near water course	✓	X bc	✓ c	✓ c	X bc

a = Apply at low pressure (medium to large diameter trees only) **b** = Avoid high volumes of diesel **c** = Avoid trees falling and blocking water course



REGISTERED TREATMENTS FOR THE CONTROL OF CATEGORY I ALIEN PLANTS

Alien plant	Control Method	Target and treatment	Herbicide Rate
<i>Anreda cordifolia</i> (Madeira vine)	Chemical	Foliar - Garlon	50 ml/10 L water
	Mechanical	Uproot whole plant and burn	-
<i>Argemone mexicana</i> (Yellow-flowered Mexican poppy)	Chemical	Pre-emergence – Velpar (hexazinone), Extreme Plus, Velpar (hexazinone) + acetochlor	Refer to labels
		Pre to early post-emergence – metribuzin + diuron, metribuzin + diuron + Gramoxone, Velpar (hexazinone) + diuron, Tebusan SC + ametryn + Adjuvant, Tebusan SC + diuron + Adjuvant	Refer to labels
		Post-emergence - metribuzin + diuron, metribuzin + ametryn, metribuzin + ametryn + Gramoxone, Velpar (hexazinone) + diuron, Velpar (hexazinone) + ametryn, Falcon Gold + metribuzin + Gramoxone, Terbo	Refer to labels
	Mechanical	Handpull seedlings; Dig out whole plant	-
<i>Caesalpinia decapetala</i> (Mauritius thorn)	Chemical	Foliar - Garlon + Adjuvant	50 ml/10 L water
		Foliar - Roundup / Mamba / Glyphosate	1.5% (3 L/hectare)
		Foliar - Touchdown Forte Hitech	0.99% (1.98 L/hectare)
	Biological	1 agent targeting seed	-
Mechanical	Handpull seedlings; Dig out whole plant	-	
<i>Cardiospermum grandiflorum</i> (Balloon vine)	Mechanical	Handpull seedlings; Dig out whole plant	-
<i>Cestrum laevigatum</i> (Inkberry)	Chemical	Cut Stump - Chopper	200 ml/10 L water
		Total Stump - Garlon	100 ml/10 L diesel
		Basal Bark - Garlon	100 ml/10 L diesel
		Frill - Chopper	20 ml/1 L water
	Mechanical	Handpull seedlings	-
<i>Chromolaena odorata</i> (Triffid weed)	Chemical	Foliar - Brush-Off	25 g/100 L water
		Foliar - Garlon + Adjuvant	37.5 ml/10 L water
		Foliar - Roundup / Mamba / Glyphosate	1.5% (3 L/hectare)
		Foliar - Touchdown Forte Hitech	0.66% solution
		Cut Stump - Chopper	200 ml/10 L water
		Total Stump - Garlon	100 ml/10 L diesel
	Biological	2 agents targeting leaf	-
	Mechanical	Handpull seedlings, Slash and burn. Burn high fuel loads of surrounding grass	-
<i>Cinnamomum camphora</i> (Camphor tree)	Mechanical	Handpull seedlings; Dig out whole plant; Stripbark	-
<i>Convolvulus arvensis</i> (Field bindweed)	Chemical	Pre to early post-emergence – Lumax + Gramoxone + Adjuvant	4 L + 0.5 L /hectare
		Foliar - Roundup / Mamba / Glyphosate	3% (6 L/hectare)
		Foliar - Touchdown Forte Hitech	3.96 L/hectare
<i>Eichhornia crassipes</i> (Water hyacinth) (Aquatic weed)	Chemical	Foliar - Midstream + Adjuvant	7.5-10 L/hectare
		Foliar - Roundup/Mamba	3% (6 L/hectare)
		Foliar - Touchdown Forte Hitech	3.96 - 5.28 L/hectare)
	Biological	6 agents targeting leaf, petiole and stem	-
	Mechanical	Cut and remove plants Raise/lower floating cables to break up dense infestations	-
<i>Lantana camara</i> (Lantana/Tickberry)	Chemical	Foliar - Access + Adjuvant	75-100 ml/10 L water
		Foliar - Chopper	200 ml/10 L water
		Foliar - Roundup / Mamba / Glyphosate	300-400 ml/10 L water (6 L/hectare)
		Foliar - Touchdown Forte Hitech	1.98% (3.96 L/hectare)
		Cut Stump - Access + Adjuvant	100 ml/10 L water
		Cut Stump - Chopper	200 ml/10 L water
		Total Stump - Tordon Super	100 ml/10 L diesel
	Biological	7 agents targeting leaf, stem, seed	-
Mechanical	Handpull seedlings; Dig out whole plant; Slash and burn	-	



Alien plant	Control Method	Target and treatment	Herbicide Rate
<i>Litsea glutinosa</i> (Indian laural)	Mechanical	Handpull seedlings; Dig out whole plant	-
<i>Macfadyena unguiscati</i> (Cat's claw creeper)	Biological	1 agent targeting leaf	-
	Mechanical	Cut down and dig out tubers	-
<i>Montonoa hibiscifolia</i> (Montonoa tree daisy)	Mechanical	Handpull seedlings; Dig out whole plant	-
<i>Pereskia aculeata</i> (Pereskia) (Barbados gooseberry)	Chemical	Foliar - Garlon + Adjuvant	50 ml/10 L water
	Biological	1 agent targeting leaf	-
	Mechanical	Uproot whole plant and burn	-
<i>Rubus cuneifolius</i> (American bramble)	Chemical	Foliar - Access + Adjuvant	50 ml/10 L water
		Foliar - Browser	44 ml/10 L water
		Foliar - Brush-Off	2.5 g/10 L water
		Foliar - Confront	70 ml/10 L water
		Foliar - Garlon + Adjuvant / Triclon / Viroaxe	50 ml/10 L water
		Foliar - Roundup / Mamba / Glyphosate	3% (6 L/hectare)
	Foliar - Touchdown Forte Hitech	1.98% (3.96 L/hectare)	
Mechanical	Burn high fuel loads of surrounding grass. Browse using goats.	-	
<i>Schinus terebinthifolius</i> (Brazilian pepper tree)	Chemical	Basal Bark - Garlon	200 ml/10 L diesel
<i>Sesbania punicea</i> (Red sesbania)	Chemical	Foliar - Garlon + Adjuvant	50 ml/10 L water
		Foliar - Roundup / Mamba / Glyphosate	1.5% (3 L/hectare)
		Foliar - Touchdown Forte Hitech	0.99% (1.98 L/hectare)
		Cut Stump - Chopper	200 ml/10 L water
		Cut Stump - Garlon + Adjuvant	100 ml/10 L water
		Total Stump - Garlon	50 ml/10 L diesel
	Biological	3 agents targeting seed, stem and flower bud	-
Mechanical	Handpull seedlings	-	
<i>Solanum mauritianum</i> (Bugweed)	Chemical	Foliar - Chopper	63 ml/10 L water
		Foliar - Garlon + Adjuvant	50 ml/10 L water
		Foliar - Roundup / Mamba / Glyphosate	50 – 100 ml/10 L water
		Foliar - Starane 200 + Adjuvant	12.5 ml/10 L water
		Foliar - Touchdown Forte Hitech	0.99% (1.32 L/hectare)
		Cut Stump - Access + Adjuvant	100 ml/10 L water
		Cut Stump - Chopper	200 ml/10 L water
		Cut Stump - Timbrel + Adjuvant	300 ml/10 L water
		Basal Bark - Garlon	200 ml/10 L diesel
		Basal Bark - Starane 200	100 ml/10 L diesel
	Frill - Chopper	20 ml/1 L water	
	Biological	1 agent targeting leaf	-
Mechanical	Handpull seedlings; Ringbark	-	

Categories of alien plants:

Category 1: plants are prohibited on any land or water surface in South Africa

Category 2: plants are allowed only in demarcated areas under controlled conditions

Category 3: further plantings are prohibited e.g. ornamental plants are included here

Note:

Pre-emergence: Application to weed seedlings prior to their emergence above the soil surface.

Post-emergence: Application to weed seedlings less than 3 cm high (refer to label).

Mechanical control: Use mechanical control methods for species without registered chemical control treatments.



REGISTERED TREATMENTS FOR THE CONTROL OF CATEGORY 2 ALIEN PLANTS

Alien plant	Control Method	Target and treatment	Herbicide Rate
<i>Acacia dealbata</i> (Silver wattle)	Chemical	Foliar - Garlon + Adjuvant	25-75 ml/10 L water
		Cut Stump - Access + Adjuvant	150 ml/10 L water
		Cut Stump - Mamba	2L/10 L water
		Cut Stump - Timbrel + Adjuvant	300 ml/10 L water
		Total Stump - Tordon Super	100 ml/10 L diesel
		Total Stump - Garlon	200 ml/10 L diesel
		Basal Bark - Tordon Super	100 ml/10 L diesel
		Frill – Mamba	200 ml/1 L water
	Biological	1 agent targeting seed	-
Mechanical	Handpull seedlings; Stripbark; Ringbark	-	
<i>Acacia mearnsii</i> (Black wattle)	Chemical	Foliar - Garlon + Adjuvant	25-75 ml/10 L water
		Foliar – Roundup / Mamba / Glyphosate	1.5% (3 L/hectare)
		Foliar - Starane 200 + Adjuvant	12.5 ml/10 L water
		Foliar - Touchdown Forte Hitech	0.99% (1.98 L/hectare)
		Cut Stump - Access + Adjuvant	150 ml/10 L water
		Cut Stump – Chopper	1 L/10 L water
		Cut Stump - Timbrel + Adjuvant	300 ml/10 L water
		Total Stump - Tordon Super	100 ml/10 L diesel
		Basal Bark – Garlon	200 ml/10 L diesel
		Basal Bark - Tordon Super	100 ml/10 L diesel
		Frill - Access + Adjuvant	60 ml/1 L water
		Frill – Chopper	100 ml/1 L water
		Biological	2 agents targeting seed and stump
	Mechanical	Handpull seedlings; Stripbark; Ringbark	-
<i>Eucalyptus grandis</i> (Bluegum) and other <i>Eucalyptus</i> species	Chemical	Foliar - Brushoff + Adjuvant	8 g/10 L water
		Foliar – Chopper	125 ml/10 L water
		Foliar – Garlon	75 ml/10 L water
		Cut Stump - Access + Adjuvant	200-300 ml/10 L water
		Cut Stump - Brushoff + Adjuvant	18 g/10 L water
		Cut Stump – Chopper	500-1250 ml/10 L water
		Cut Stump - Timbrel + Adjuvant	300 ml/10 L water
		Cut Stump – Roundup	500-700 ml/10 L water
		Cut Stump – Timbrel + Adjuvant	300 ml/10 L water
		Total Stump – Garlon	200 ml/10 L diesel
		Frill - Chopper	50 – 125 ml/1 L water
		Frill - Timbrel + Adjuvant	35 ml/1 L water
		Mechanical	Handpull seedlings; Stripbark; Ringbark
	<i>Leucaena leucocephala</i> (Leucaena)	Biological	1 agent targeting seed
Mechanical		Handpull seedlings; Dig out whole plant	-
<i>Pinus patula</i> (Pine tree)	Mechanical	Handpull seedlings; Dig out whole plant; Fell; Ringbark	-
<i>Populus X canescens</i> (Poplar)	Chemical	Cut Stump - Access + Adjuvant	200 ml/10 L water
		Cut Stump – Chopper	500 ml/10 L water
		Cut Stump - Timbrel + Adjuvant	600 ml/10 L water
		Frill – Chopper	50 ml/1 L water
<i>Psidium guajava</i> (Guava)	Chemical	Cut Stump – Chopper	1,25 L/10 L water
		Frill – Chopper	125 ml/1 L water
<i>Ricinus communis</i> (Castor oil bush)	Chemical	Cut Stump – Chopper	300 ml/10 L water
		Frill – Chopper	30 ml/1 L water
	Mechanical	Dig out whole plant; Handpull seedlings	-

Alien plant	Control Method	Target and treatment	Herbicide Rate
<i>Schinus terebinthifolius</i> (Brazilian pepper tree)	Chemical	Basal Bark – Garlon	200 ml/10 L diesel
	Mechanical	Dig out whole plant; Handpull seedlings	-
<i>Sorghum halepense</i> (Sorghum)		Pre-Emergence (incorporated) Eptam Super	3-7 L/hectare
		Late post-emergence – MSMA, MSMA + Ametryn, MSMA + diuron	Refer to label
		Roundup / Mamba / Springbok	2% (4 L/hectare)
		Foliar - Touchdown Forte Hitech	1.32% (2.64 L/hectare)
	Mechanical	Dig out whole plant	-
WEEDS AND ALIEN PLANTS PROPOSED FOR LISTING UNDER CATEGORY 2			
<i>Cynodon dactylon</i> (Couch grass, kweek)	Chemical	Foliar - Roundup/Mamba/Springbok	3% (6 L /hectare)
		Foliar - Touchdown Forte Hitech	3.96 L/hectare
<i>Pennisetum clandestinum</i> (Kikuyu)	Chemical	Foliar - Roundup/Mamba/Springbok	2% (4 L/hectare)
		Foliar - Touchdown Forte Hitech	1.32% (2.64 L/hectare)
<i>Pennisetum purpureum</i> (Napier fodder/grass)	Mechanical	Dig out whole plant	-

REGISTERED TREATMENTS FOR THE CONTROL OF CATEGORY 3 ALIEN PLANTS

Alien plant	Control Method	Target and treatment	Herbicide Rate
<i>Jacaranda mimosifolia</i> (Jacaranda)	Chemical	Cut Stump - Chopper	1 L/10 L water
		Frill - Chopper	100 ml/1 L water
	Mechanical	Handpull seedlings	-
<i>Melia azedarach</i> (Syringa)	Chemical	Cut Stump - Chopper	300 ml/10 L water
		Basal Bark - Garlon	200 ml/10 L diesel
		Frill - Chopper	30 ml/1 L water
	Mechanical	Handpull seedlings	-
<i>Morus alba</i> (White mulberry)	Mechanical	Handpull seedlings	-
<i>Senna didymobotrya</i> (Peanut butter cassia)	Mechanical	Handpull seedlings	-

SELECT COMMON APPLICATION METHODS AND RATES = 'BEST FIT' TREATMENTS

USE THE COMMON DOSAGE REQUIRED FOR MOST OF THE SPECIES SEND IN A "HIT SQUAD" SEPARATELY TO TREAT TOUGH ALIEN SPECIES						
Control mature plants	Dosage	2%	3%	5%	10%	12.5%
Best fit, e.g. Cut stump Chopper	Species	Inkberry Chromolaena Lantana Sesbania Bugweed	Castor oil Syringa	Blue gum Poplar	Black wattle	Guava Hard gum species
Control regrowth	Dosage	0.375%	0.5%		0.75%	
Best fit, e.g. Foliar Garlon	Species	Chromolaena	Madeira vine Mauritius thorn Pereskia Bramble	Sesbania Bugweed Black wattle Silver wattle	Blue gum	

Read and follow carefully the instructions on herbicide labels. Use registered products only, as use of unregistered herbicides is at the growers' own risk with no guarantee of success.

Compiled using:

- Literature from the Plant Protection Research Institute, Agricultural Research Council, P/Bag X134, Pretoria, 0001.
- Grobler, H., Vermeulen, J.B., van Zyl, K. (2000). A guide to the use of herbicides. Published by the National Department of Agriculture.

Growers may contact the Agronomy Department at SASRI for any queries relating to alien plants, as information is updated regularly.

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