062130

DEPARTMENT OF CONSERVATION AND LAND MANAGEMENT

Form C.L.M. 80B

BUSSELTON Office,

To Executive Director,
Department of Conservation
and Land Management,
50 Hayman Road,
COMO

17th October 19 85
Western Australia
Reference-H.O.
Local 643

Attention: Environmental Protection - Mr K. Low

SUBJECT:

RE: DECLARED PLANT CONTROL HANDBOOK 1985

Reference your letter 441.1 dated 11the October, 1985.

We have had copies of the new A.P.B. Handbook you forwarded for a period of approximately 2 months.

As discussed with Mr Batini we are in the process of producing a new Herbicide section for the Chemicals Manual.

In approximately 3 weeks time our chemicals officer (Ian Scott) will have put together the system for discussion and comment.

At this stage we will arrange a meeting with Environmental Protection Branch to discuss the results.

The aims of the new system are as follows:-

a) Part I of the Herbicides Section of the chemicals manual deals with all declared plants listed in the Control Handbook 1985 issued by the A.P.B.

It is intended to issue the handbook to all manual holders when this is completed to be used as the technical instructions for control of declared plants.

b) Part II of the Herbicides Section of the chemicals manual will be headed "Control of Non-Declared plants" (ie. Euc/ Coppice and Grasses, nursery weeds etc.).

A technical instruction book is being prepared for Part II to be used in conjunction with the 729's in Part II.

In other words we will have a set of instructions for Part I and II produced by A.P.B. and CALM Departments backed up by 729's which correspond, with the technical instruction books. It is hoped by this method we can cover all options given within the instruction books.

This will enable the District Manager to select the correct chemical or combination of chemicals to control plants within all environmental situations.

Copy to:
Safety Branch,Como - Mr Kesners
Chemical Officer, Bunbury - Mr Scott

R.F. Silviculture
CENTRAL FOREST REGION

JCG:AW

40593/5/85—50M—MS/3998

USE OF THIS MANUAL

This manual has been divided into two sections, Declared Plants and Specified Non-declared Plants. Indexed chemicals have been cross referenced with relevant pages of the Chemical Users Manual.

It is intended that the information recorded in this manual becomes the technical data necessary for writing out job prescriptions at district level, while the Chemicals Users Manual deals with all safety requirements necessary for using a particular chemical. All employees required to use any chemical must sight and understand the relevant FD 729.

1. Declared plants:

Plants that are determined by the Agriculture Protection Board which require eradication or control because they are a threat to Agriculture.

Technical Instructions and Chemicals for treatment of these plants are recommended by the A.P.B. Work carried out on Declared Plants by the Department of Conservation and Land Management is done as per these instructions "Appendix A". Alternative trade names to the listed herbicides are indicated in "Appendix B". Updating of this section is done by using the A.P.B.'s annual handbook for treatment of declared plants.

Preferred chemical treatments are indicated by an asterick.

2. Specified Non-Declared Plants:

This refers to plants requiring eradication or control in C.A.L.M. situations because they have the potential to compete with the preferred crop, for grass eradication to form firebreaks or ecological reasons.

Trials for developing techniques and herbicides for treating these plants are the responsibility of Research Branch.

As new techniques and herbicides are proved successful the following procedure should apply to ensure these instructions are correctly updated.

1. Research to advise the relevant Departmental Branch of it's findings.

2. Completed Technical Instructions Sheets and FD 729's (Instructions for Use of Chemicals) are hte responsibility of Research Branch.

   This information is to be forwarded to Safety Branch via the Chemical Officer at Bunbury. Once approval from the Public Health Department is granted for the chemical, the Technical Instruction Sheet will be placed in the Instruction Manual ready for use by Districts.

Alternative herbicide trade names for Specified Non-Declared Plants are listed in "Appendix C".

Technical Instruction Sheets for Non-Declared Plants are listed in "Appendix D".

INTRODUCTION TO PLANT CONTROL.

Chemicals are used extensively to control weeds, grasses and trees. There are a great many herbicide types and an even greater number of products available.

The use of herbicides gives the operator a degree of flexibility in his control of the plant that he does not have in using other methods. he can vary the timing and size of the operation and in most cases, at reasonably low cost.

Active Ingredient - The "Active Ingredient" of a commercial product is that part which produces a herbicidal effect. The correct expression of active ingredient is in terms of grams per kilogram or litre. For example, Roundup is sold in a formulation of 360 g of glyphosate in every litre of product. Glyphosate being the active ingredient.

Surfactants - The word 'surfactant' is a contraction of the words "surface active agent", and includes both emulsifiers and wetting agents. Emulsifiers are usually added to the product by the manufacturers to allow the herbicide to mix with water. A wetting agent is added to many spray mixtures, particularly when the plant to be sprayed has leaves with a waxy or hairy surface, or is otherwise difficult to wet.

Wetting agents should be used only when recommended, and then at no higher than the recommended rate. in some circumstances the use of a wetting agent will cause too much of the spray material to run off the foliage, resulting in reduced uptake of the Chemical Surfactant (wetting agent) should never be used for selective plant control (ie., crops and pastures) unless specified in recommendations.

APPLICATION OF HERBICIDES.

Read The Label - Study the label and FD 729 before opening the container. Some materials require great care in handling, and a few minutes spent in noting the precautions listed on the label may save considerable trouble later. No matter what equipment is used, possible damage to nearby plants should be considered, as the person applying the herbicide may be held legally responsible should damage occur.

Some herbicides are wettable powders which must be kept in suspension while spraying. Efficient agitators in the supply tank are necessary when using this type of material. Suitable jets and filters as recommended by the manufacturers, should be used.

Accuracy Of Application - The boomspray is at present the most accurate way of applying herbicides; it should be used wherever possible.

The accuracy of "spotspraying" is subject to the operator - himself, his speed or walking and his estimation of the "point of runoff".

..../2

METHODS OF CHEMICAL APPLICATION.

Boomspraying - The boomsprayer is used when large areas of land is to be sprayed, and when the size of plant and the terrain allow it to be used. The rate of herbicide to be used is expressed in litres or kilograms of product per hectare. They are usually mounted on tractors. Nursery, firebreak and pre-planting grass control is carried out by this method.

Side Delivery Nozzles - Alternative to using a boomspray when long distances need to be covered and the terrain does not allow boomspray use. Used on roadside and firebreak grass control, mounted on tractors or truck mounted tank/pumper units. The rate of herbicide to be used is expressed in litres or kilograms of product per hectare.

Spotspraying - This involves individual treatment of plants and can be carried out either by a knapsack sprayer or hand-lead from power equipment. The rate of application is expressed as millilitres or grams of product to add per litre of the diluent (water).

Foliar spray of Eucalypt coppice and advance growth is treated by this method.

Notching - Individual applications of herbicide injected into cuts placed horizontally around unwanter Eucalypts, used in both Hardwood and Softwood establishment. Rate of application is expressed as millilitres or grams of product to add per litre of the diluent (water).

Cut Stump - Individual applications of herbicide applied to the cambium area of tree stumps immediately the tree has been felled. The herbicide being applied by pressurized knapsack or paintbrush. This operation is used in Softwood and Hardwood establishment. Rate of application is expressed as millilitres or grams of product to add to the diuent (water).

PRINCIPLES OF GOOD SPRAY APPLICATION.

There are a number of important principles which affect the performance of a herbicide on plants and on the environment:

* Make sure that the correct rate of herbicide is being applied. Regularly calibrate the spray equipment, and check the output of the nozzles particularly after using abrasive chemicals. Nozzles wear out, and should be replaced when their output is more than 5 per cent above or below the correct output. More importantly the evenness of distribution of each nozzle should be checked regularly.

..../3

* Spray as evenly as possible at all times. This is particularly important when spot spraying or when using a mister.

* Spray in light wind conditions if possible. This ensures that as much herbicide as possible reaches the target plants, and minimises the danger of drift onto desirable vegetation.

* The plants should be sprayed at the correct size or stage of growth.

* The weeds should be sprayed when they are actively growing. This will ensure that maximum uptake and translocation of the herbicide will take place. This means that weeds should not be sprayed when they are under stress, either through lack of water (drought), too much water (waterlogging), disease, insect or mechanical damage.

* Avoid spraying while rain is falling or is imminent. Herbicide may be washed off the leaves before it can be absorbed. This does **not** apply to soil-active, root-absorbed herbicides where rainfall may be necessary before the chemical takes effect.

* Do not spray at a higher volume than is necessary. Contact herbicides need to thoroughly wet the weed, to the point of runoff, translocated herbicides do not necessarily need such thorough coverage. Soil-active herbicides do not need to cover the plant at all, but an even application over the soil is desirable.

* Do not use more surfactant (wetting agent) than is recommended, otherwise excessive runoff from the leaf surface may occur. In addition, large amounts of froth formed in the spray tank may cause application difficulties.

* Do not apply the herbicide at a pressure higher than is necessary to obtain good coverage of the plant. With many nozzle designs high pressure may generate excessive numbers of small droplets in the spray, which increases the danger of drift onto desirable plants, and increases the hazard to the operator.

CALIBRATION OF SPRAY EQUIPMENT

CALIBRATION OF TERRA NOZZLES AND SIDE DELIVERY NOZZLES

Measure the water put out in 1 minute, then use the formula:

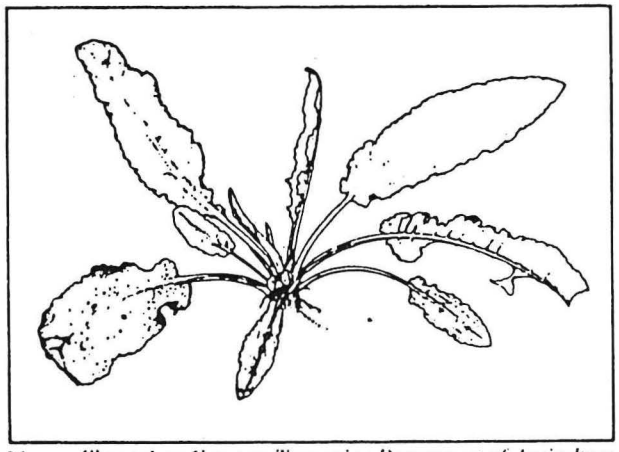
$$\text{Output in litres/ha} = \frac{\text{litres water used in 1 min.} \times 600}{\text{width of spray swath (m)} \times \text{speed (km/hr)}}$$

CALIBRATION OF MISTER

Fill the tank with water and run the mister at operational speed for exactly one minute. Then measure the quantity of water needed to refill the tank to exactly the same point.

$$\text{Output in litres/ha} = \frac{\text{litres water used in 1 min.} \times 600}{\text{distance between each run (m)} \times \text{speed (km/hr)}}$$

The distance between each run should be spaced so that the spray swath is overlapping the previous swath by 1/2 to 2/3.



CALCULATION OF PESTICIDE IN SPRAY TANKS

Having first calibrated the equipment to be used for the spray operation, the next step is to calculate the amount of pesticide to be used per tankful.

1. Record calibration results
2. Determine volume of spray tank:-

   For square or rectangular tanks –

   Multiply length × breadth × height to give volume in cubic metres.

   (Measurements in m)

   For cylindrical tanks –

   Multiply π ($^{22}/_{7}$) × radius squared × height to give volume in cubic metres.

   For spherical tanks –

   Multiply $^{1}/_{3} \times \pi$ ($^{22}/_{7}$) × radius cubed to give volume in cubic metres.

   Multiply resulting volume of the tank in cubic metres by 1000 to give capacity of tanks in litres.

   1 cubic metre = 1000 litres.
3. Determine recommended application rate of product.

   This may be expressed as volume or mass, e.g. litres, millilitres or kilograms, grams per hectare.
4. Calculate the amount required per tank as follows:

$$\text{Recommended application rate of chemicals (ml or g/ha)} \times \frac{\text{spray tank capacity (l)}}{\text{output of spray unit (l/ha)}}$$

DECONTAMINATION

All traces of one chemical should be washed from your boom spray before using another. If chemicals like 2,4-D amine or ester are used, then you must decontaminate your boom spray with 'cloudy ammonia' before using other chemicals particularly if spraying is to continue in sensitive crops or pasture.

Rate: 1 litre of cloudy ammonia to every 50 litres of water.

Method: Mix up 50-100 litres of cloudy ammonia solution in your tank, stir it up or drive around to splash the sides of the tank, run about 20 litres of solution through your pump, nozzles etc., then flush out thoroughly with clean water.

STORAGE

At the end of your spraying season flush out your boom spray with clean water, removing nozzles and strainers for thorough cleaning. Run a mixture of water and soluble oil (e.g. Crop oils) through your pump relief valve and nozzles. Soluble oil is available from fuel depots.

Support the boom so that it will not be damaged by other machinery.

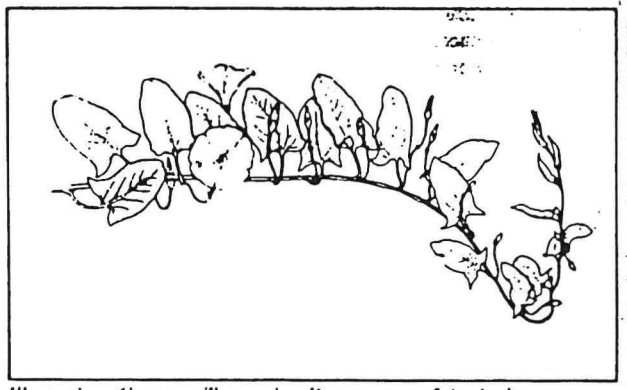


Illustration: Courtesy Tasmanian Department of Agriculture

Illustration: Courtesy Tasmanian Department of Agriculture

INDEX

DECLARED PLANTS

INDEX
DECLARED PLANTS

INDEX

A HERBICIDES

PART 1 - Recommended Control of Declared Plants

TARGET SPECIES	TRADE NAME & COMPANY	ACTIVE INGREDIENT	FD 729 NO.
AFRICAN THISTLE	2, 4D Amine 500 (Dow)	500g/l 2, 4D Amine as dimethlamine salt	A:20
APPLE OF SODOM	*Weedazol TL Plus (Ciba-geigy)	250g/l Amitrole 220g/l Ammonium thiocyanate	A:32
	Garlon 480 (Dow)	480g/l triclopyr as butoxyethanol ester	A:36
	Roundup (Monsanto)	360g/l Glyphosate	A:18
ARTICHOKE THISTLE	Tordon 50-D (Dow)	200g/l 2, 4D 50g/l picloram both as tri isopropandamine salts	A:21
ARUM LILLY	*Glean (Du Pont)	750g/l Chlorsulfhuron	A:37
	2, 4D Amine 500 (Dow)	500g/l 2, 4D as dimethlamine salt	A:20
BATHURST BURR			
	Roundup (Monsanto)	360g/l Glyphosate	A:18
BLACKBERRY	*Garlon 480 (Dow)	480g/l triclophyr butoxyethanol ester	A:36
	Roundup (Monsanto)	360g/l Glyphosate	A:18
CALOTROPIS	Tordon 50-D (Dow)	200g/l 2, 4D 50g/l picloram	A:21
CAMELTHORN	*Tordon 50-D	200g/l 2, 4D 50g/l picloram	A:21

INDEX

A HERBICIDES

PART 1 - Recommended Control of Declared Plants

TARGET SPECIES	TRADE NAME & COMPANY	ACTIVE INGREDIENT	FD 729 NO.
CAPE TULIP	*2, 4D Amine 500 (Dow)	500g/l 2, 4D as dimethlamine salt	A:20
	Flowable Vorox AA (Ciba-geigy)	320g/l Amitrole 320g/l Atrazine	A:30
	Glean (Du Pont)	750g/l chlorsulfhuron	A:37
COMMON HELIOTROPE	*2, 4D Amine 500 (Dow)	500g/l 2, 4D Amine	A:20
COTTON BUSH	*Roundup (Monsanto)	360g/l Glyphosate	A:18
	Garlon 480 (Dow)	480g/l triclopyr as butoxyethanol ester	A;36
DOCKS	Banex Weedkiller (I.C.I. Aust.)	200g/l dicamba as dimethlamine salt	A: 1
	*Glean (Du Pont)	750g/l chlorsulfhuron	A:37
	Roundup (Monsanto)	360g/l Glyphosate	A:18
DOUBLEGEE	*Banex Weedkiller (I.C.I. Aust.)	200g/l dicamba as dimethlamine	A: 1
	Roundup (Monsanto)	360g/l Glyphosate	A:18
	*Glean (Du Pont)	750g/l chlorsulfhuron	A:37
DOVEWEED	*2, 4D Amine 500 (Dow)	500g/l 2, 4D Amine	A:20
	Weedoben M Bindi Weedkiller (Ciba-geigy)	200g/l Bromoxynil 200g/l M.C.P.A.	A:33
ELODEA-LEAFY ELODEA (& other submerged aquatics)			

INDEX

A HERBICIDES

PART 1 - Recommended Control of Declared Plants

TARGET SPECIES	TRADE NAME & COMPANY	ACTIVE INGREDIENT	FD 729 NO.
FIELD BINDWEED	*Tordon 50-D (Dow)	50g/l picloram 200g/l 2, 4D	A:21
	2, 4D Amine 500 (Dow)	500g/l 2, 4D as dimethlamine salt	A:20
	Roundup (Monsanto)	360g/l Glyphosate	A:18
GERALDTON CARNATION WEED	*Flowable Vorox AA (Ciba-geigy)	320g/l Amitrole 320g/l Atrazine	A:30
	*2, 4D Amine (Dow)	500g/l 2, 4D as dimethlamine salt	A:20
	Garlon 480 (Dow)	480g/l triclopyr as butoxyethanol	A:36
GLAUCOUS STAR THISTLE	(See Saffron Thistle)		
GORSE	*Garlon (Dow)	480g/l triclopyr as butoxyethanol ester	A:36
	Weedazol TL Plus	250g/l Amitrole 220g/l Ammonium thiocyanate	A:32
[illegible]RTERIA	*Flowable Vorox AA (Ciba-geigy)	320g/l Amitrole 320g/l Atrazine	A:30
HARRISIA CACTUS	(See Prickly Pear)		
HOARY CRESS	*Tordon 50-D (Dow)	50g/l picloram 200g/l 2, 4D	A:21
HOREHOUND	*2, 4D Amine (Dow)	500g/l 2, 4D as dimethlamine salt	A:20
MESQUITE	*Garlon 480 (dow)	480g/l triclophyr as butoxyethanol	A:36
	Velpar (Du Pont)	250g/l Hexazinone	A:28

INDEX

A HERBICIDES

PART 1 - Recommended Control of Declared Plants

TARGET SPECIES	TRADE NAME & COMPANY	ACTIVE INGREDIENT	FD 729 NO.
MEXICAN POPPY	*2, 4D Amine (Dow)	500g/l 2, 4D as dimethlamine salt	A:20
MINTWEED	2, 4D Amine (Dow)	500g/l 2, 4D as dimethlamine salt	A:20
	Tordon 50-D (Dow)	200g/l 2, 4D 50g/l picloram	A:21
NOOGOORA BURR	2, 4D Amine	500g/l 2, 4D Amine	A:20
PARKINSONIA	*Garlon 480 (Dow)	480g/l triclopyr as butoxyethanol ester	A:36
PARROT'S FEATHER	Glean (Du Pont)	750g/l chlorsulfhuron	A:37
	Roundup (Monsanto)	360g/l Glyphosate	A:18
PATTERSON'S CURSE	Flowable Vorox AA (Ciba-geigy)	320g/l Amitrole 320g/l Atrazine	A:30
	2, 4D Amine (Dow)	500g/l 2, 4D Amine	A:20
	2, 4D Amine (Dow)	500g/l 2, 4D Amine	A:20
	Glean (Du Pont)	750g/l chlorsulfhuron	A:37
PENNYROYAL	*Garlon (Dow)	480g/l triclopyr as butoxyethanol ester	A:36
	Roundup (Monsanto)	360g/l Glyphosate	A:18
PERENNIAL THISTLE	Tordon 50-D (Dow)	200g/l 2, 4D Amine 50g/l picloram	A:21

INDEX

A HERBICIDES

PART 1 - Recommended Control of Declared Plants

TARGET SPECIES	TRADE NAME & COMPANY	ACTIVE INGREDIENT	FD 729 NO.
PRICKLY PEAR	Garlon (Dow)	480g/l triclopyr as butoxyethanol	A:36
RAGWORT	2, 4D Amine	500g/l 2, 4D Amine	A:20
SAFFRON THISTLE	*2, 4D Amine (Dow)	500g/l as dimethlamine salt	A:20
SALVINIA	Velpar L (Du Pont) This strength chemical is no longer registered in W.A. but it in in the Chemical Safety Manual	250g/l Hexazinone	A:28
SILVER-LEAF NIGHTSHADE	Tordon 50-D (Dow)	200g/l 2, 4D + 50g/l picloram	A:21
SKELETON WEED	**(Report any plants to A.P.B)**		
SOURSOB	*Glean (Du Pont)	750g/l chlorsulfhuron	A:37
	Roundup (Monsanto)	360g/l Glyphosate	A:18
...MLESS THISTLE	2, 4D Amine (Dow)	500g/l 2, 4D Amine	A:20
ST JOHN'S WORT	*2, 4D Amine (Dow)	500g/l 2, 4D Amine	A:20
THORNAPPLE	2, 4D Amine (Dow)	500g/l 2, 4D Amine	A:20
VARIEGATED THISTLE	2, 4D Amine (Dow)	500g/l 2, 4D Amine	A:20
WATER HYACINTH			
WATER LETTUCE			

INDEX

A HERBICIDES

PART 1 - Recommended Control of Declared Plants

TARGET SPECIES	TRADE NAME & COMPANY	ACTIVE INGREDIENT	FD 729 NO.
YELLOW BURR WEED	*Weedoben M Bindi Weedkiller (Ciba-geigy)	200g/l Bromoxynil 200g/l M.C.P.A.	A:33
	Glean (Du Pont)	750g/l chlorsulfhuron	A:37

Recommendations for control of declared plants

RECOMMENDATIONS FOR CHEMICAL CONTROL

Weed	Herbicide	Active ingredient	Product dilution for spotspraying	Knapsack amount of product per litre of water	Rate of product/ hectare	Wetting[1] agent dilution	When to apply	Remarks	Other control methods
AFRICAN THISTLE P	2,4-D	800 g/l ester	1:330	3 ml	3 litres	1:1000	Spring – before flowering	Thorough wetting is essential due to hairy leaf surface. Use 500 g/l product (amine) in restricted spraying areas.	
		500 g/l amine	1:200 in water	5 ml	5 litres in water				
APPLE OF SODOM P	Amitrole T* (eg. Weedazol TL plus)	250 g/kg	1:100 in water	10 ml	N.R.	1:600	Almost any time of year spring, summer preferred.	Mature plants killed by single treatment but follow-up needed as new seedlings emerge.	Grub and burn large plants. Remove roots also. Control of seedlings may be necessary for several years.
	Garlon® 480	480 g/l	1:250	4 ml	N.R.	1:400 + 1:400 Summer spraying oil may be useful	When actively growing spring-summer	1:400 + wetting agent effective in Busselton region.	
	Roundup®	360 g/l	1:100 in water	10 ml	N.R.		When actively growing spring-summer.	Not as effective as other treatments	
ARTICHOKE THISTLE P	Picloram + 2,4-D (Tordon 50-D)	50 g/l + 200 g/l	1:300 in water	3.5 ml	N.R.		September-November before running-up to flower.	Residual effects of picloram will persist for 1-2 seasons affecting legumes but not grasses.	Individual plants may be grubbed. Remove crown or regrowth will occur.
ARUM LILY P	Glean®*	750 g/kg	1 g in 50 litres (see remarks)	0.02 g	20 g	1:400	June-October (best results when flowering)	Agitate well to ensure good mixing when using small quantities of Glean® – dissolve before adding to tank. The spot spraying dilution is based on 20 g/ha. For spot spraying small areas 1 g:10 litres or similar may be more practical to measure out. Don't forget the wetting agent.	Roundup® can be used at 1:100 but results are only fair. Use only in restricted spraying areas.
	2,4-D	800 g/l ester	1:330	3 ml	3 litres	1:1000	June-October before end of flowering.	Treatments must be repeated each year for at least 3 years, to control regrowth from underground storage bulb. Use Glean® in restricted spraying areas. Busselton region recommend 1:80 2, 4-D Amine.	
		500 g/l amine	1:200 in water	5 ml	5 litres in water	1:1000			

The asterisk (*) in the "Herbicide" column indicates the preferred treatments where alternatives are given.

1 In many instances the recommendations for the addition of wetting agents or oil additives is based on limited trial data. Certainly rate recommendations have not been accurately defined. In non-selective situations the addition of wetting agents or oils is unlikely to result in adverse results so their inclusion is recommended even if their value is in doubt. Since wetting agents vary considerably in their active ingredient content, rates indicated in these recommendations are given as a guide only. Always refer to the herbicide label for recommendations on the use of surfactants. Use only non-ionic surfactants unless recommendations state otherwise.

RECOMMENDATIONS FOR CHEMICAL CONTROL

Weed	Herbicide	Active ingredient	Product dilution for spotspraying	Knapsack amount of product per litre of water	Rate of product/ hectare	Wetting[1] agent dilution	When to apply	Remarks	Other control methods
BATHURST BURR A	2,4-D*	800 g/l ester	1:160 in water	6 ml	N.R.		Summer – as early as possible – before flowering	Apply 1000 g/l product (Technical ester) through mister only. 25-40 ml of Tech Ester/l of distillate enhances drying of plants prior to burning.	Roundup® through splatter gun at 1:20 mixture. Mow, slash, grub and burn plants to prevent burr formation.
		1000 g/l tech. ester	1:330 to 1:250 in distillate	N.R.					
	Roundup®	360 g/l	1:100	10 ml	N.R.		When actively growing		Dicamba and Dicamba-phenoxy mixes, Tordon 50D etc. are also effective on Bathurst burr.
BLACKBERRY P	Garlon®**	480 g/l triclopyr	1:150 (a) 1:250 (b) 1:500 (c)	6 ml (a) 4 ml (b) 2 ml (c) See remarks column for explanation of (a), (b), (c).	N.R.	1:400 plus summer spraying oil at 1:400 may be useful	Flowering to fruit maturity usually from December-April.	Rate varies with age of cane and density of absorptive surface. (a) sparse canes with low absorptive surface. (b) average regrowth in 2nd year or bushes damaged by insect attack. (c) dense growth with high absorptive surface. See separate leaflet for full details of control programmes.	In conjunction with spray treatment – burn or slash dead canes in spring – encourage heavy grazing of regrowth – respray regrowth in summer.
	Grazon®**	150 g/l triclopyr 50 g/l picloram	1:150	6 ml	N.R.	1:400 plus summer spraying oil at 1:400 may be useful	Flowering to fruit maturity (usually December to April)	Spray 1-2 metre strip around edge of infestation to help control suckering. Permit required in restricted spraying areas. Do not use close to trees or streams.	
	Roundup®	360 g/l	1:80	12 ml	N.R.	Nil	December-April	Use only when other herbicides are thought to be undesirable. Not as reliably effective as Garlon®. Best results usually obtained early-flowering to early fruit set. Repeat application every 12 months is essential.	
CALOTROPIS P	Picloram + 2,4-D (Tordon 50-D)	50 g/l + 200 g/l	1:30 in water	33 ml	N.R.		When plant is actively growing	Thorough wetting is essential. This treatment will control mature plants and seedlings.	Individual bushes can be mechanically removed, but root suckering may occur. Competition from other pasture species e.g. Buffel grass may assist.

RECOMMENDATIONS FOR CHEMICAL CONTROL

Weed	Herbicide	Active ingredient	Product dilution for spotspraying	Knapsack amount of product per litre of water	Rate of product/ hectare	Wetting agent dilution	When to apply	Remarks	Other control methods
CAMELTHORN P	Grazon™	50 g/l picloram + 150 g/l triclopyr	1:100 in water	10 ml	N.R.		When actively growing		2 litres/plant of 1:80 Grazon™ mix injected up to 1 metre into soil at base of plant has proved effective. (Kalgoorlie recommendation)
	Picloram* + 2,4-D (Tordon 50D)	50 g/l + 200 g/l	1:50 in water	20 ml	N.R.		When actively growing		
CAPE TULIP (ONE-LEAF) AND (TWO-LEAF) P	2,4-D*	800 g/l ester	1:330	3 ml	1.5 litres	1:600	August-September (1-leaf) July-end August (2-leaf)	Burn paddock in late summer to induce a high germination of corms. Respraying at lower rates will be necessary for several years to exhaust dormant corms and cormils. See separate leaflet.	Cultivate after a good emergence. Repeat after a few weeks. Repeat for several years to exhaust dormant corms.
		500 g/l amine	1:250 in water	4 ml	2 litres				
	2,4-DB	400 g/l	1:250 in water	4 ml	3 litres		As above	Use where it is important to maintain clover content of pastures.	Grub individual plants and burn. Chemical control preferred.
	2,2-DPA (Dalapon)	740 g/l	550g in 100 litres water	5 g			Full emergence to early August	This treatment is recommended only for early control. More expensive than 2,4-D.	
	Amitrole-Atrazine (eg. Flowable Vorox AA + 2,4-D amine	320 g/l + 320 g/l mixture 500 g/l	200 ml + 200 ml in 100 litres water	2 ml + 2 ml	2 litres + 2 litres in water	1:600	As above	Use for roadside control only. Treatment leaves ground bare which will encourage sprouting of corms in the following year. Can give control at a later stage than 2,4-D.	Roundup™ on One-leaf with a rope-wick applicator is effective. Less satisfactory results are achieved on two-leaf.
	Diuron	800 g/kg	2 kg in 100 litres water	20 g	N.R.		As above	Use only for eradication of small infestations. Leaves bare patch which simplifies location in following year.	Glean™ through a rope wick applicator warrants investigation.
	Glean™	750 g/kg	1 g in 50 litres water (see remarks)	0.02 g	20 g	1:400	Wheat pre-sowing or post-emergence. Barley and oats post-emergence only. In pasture – yet to be accurately defined. Control can be achieved from early emergence (pre-emergence?) to flowering of the Cape tulip. Less damage occurs to most non-legume components if applied late post-emergence.	Recommended for control of tulip in cereal crops and non-legume pastures, particularly if Paterson's curse, soursob or dock is also a problem. Dilution rate for spot spraying is based on 20 g/ha. More concentrated 1:10 mixes are acceptable for spot spraying small areas – ensure Glean™ is well dissolved before adding to tank when handling small quantities. See Infonote 5/85.	

RECOMMENDATIONS FOR CHEMICAL CONTROL

Weed	Herbicide	Active ingredient	Product dilution for spotspraying	Knapsack amount of product per litre of water	Rate of product/ hectare	Wetting[1] agent dilution	When to apply	Remarks	Other control methods
COMMON HELIOTROPE A	2,4-D*	800 g/l ester	1:330	3 ml	3 litres	1:400 + summer spraying oil at 1:400 may be useful	Summer – as soon as possible after germination.	Retreatment will be necessay after each successive germination – usually following summer rainfall. Larger plants become resistant. Avoid spraying in very hot conditions. Crop oil additives as anti-evaporants may be useful when boom spraying.	Cultivation after each germination is effective. Grub individual plants.
		500 g/l amine	1:250 in water	4 ml	4 litres in water				
	Gramoxone or Reglone™	200 g/l Paraquat or Diquat	150 ml in 100 l water	1.5 ml	1.5 litres in water	1:600	As above	More effective than 2,4-D on larger plants.	
COTTON BUSH (Narrow Leaf) P	Roundup™*	360 g/l	1:100	10 ml	N.R.	Wetting agent and/ or summer spraying oil may be beneficial under some circum-stances.	When actively growing – September-December before fruit forms.	This is effective on mature bushes, regrowth and seedlings. Good coverage is required.	Slash established bushes during winter, and burn, cultivate or grub seedlings and regrowth.
	Garlon™ 480	480 g/l	1:250	4 ml	N.R.		Spring – December	Use when annual pastures are still growing to avoid damage to grasses.	Grazon™ is also reasonably effective but further work required. Dicamba is effective on seedlings.
DOCKS P	Dicamba (eg. Banvel)	200 g/l	1:200 in water	5 ml	1 litre		In cereals – when crop has from 5 leaves Zadoks 15-22.	At this rate, Dicamba is selective in cereals. Docks should be as small as possible for best results.	Cultivation will kill seedlings, but established docks will regrow from severed root stock. Repeat for several years to exhaust dormant seed and rootstock reserves. Spray-graze in pastures. Dicamba and Glean™ will kill legumes.
	Glean™*	750 g/kg	1g in 50 litres water	0.02 g	20 g	1:400	Wheat pre-sowing or post-emergence. Barley and oats post-emergence only.	Glean™ is preferred because it is effective even on large plants. Spot spraying dilutions are based on 20 g/ha. Higher concentrations can be used for spot spraying e.g. 1:10. Ensure good mixing when using small quantities of Glean™.	See Dept. of Agric. weed spraying chart.
	Roundup™ 360 g/l	1:200 in water	5 ml	1.5 litres			In non-selective situation – before docks set seed.	Use for spotspraying docks only. Other pasture species will be killed.	

RECOMMENDATIONS FOR CHEMICAL CONTROL

Weed	Herbicide	Active ingredient	Product dilution for spotspraying	Knapsack amount of product per litre of water	Rate of product/ hectare	Wetting[1] agent dilution	When to apply	Remarks	Other control methods
DOUBLEGEE A	Dicamba* (eg. Banvel)	200 g/l	1:600 in water	1.6 ml	700 ml		In crops from 5 leaf stage to beginning of tillering. For spot spraying – winter-spring when plants are small.	Herbicides containing Dicamba are effective on doublegee e.g. Dicamba + MCPA	Grub individual plants and burn. Spray graze infestations in pasture.
	Roundup®	360 g/l	1:200 in water	5 ml	1.5 litres		Winter-spring	Use Roundup® in non-selective situations only. Repeat each year until dormant seed in soil is exhausted.	See Department of Agriculture weed spraying chart for other alternatives in crops e.g. Diuron/MCPA and rates and timing of application.
	Glean®*	750 g/kg	N.R.	N.R.	20g		Wheat pre-sowing only.	For control in crops Glean® is preferred treatment prior to planting. Glean® is not very effective on doublegee post-emergence.	Use Vorox or similar for residual control in appropriate situations.
	2,4-DB	400 g/l	1:250 in water	4 ml	1.5 litres		For selective control in pasture as early as possible after weed germination.	Slight damage to clover may occur. Spray when conditions are still warm e.g. May rather than mid-winter for best results. Use higher rates (3 litres/ha) in lower south west.	
	Tribunil	700 g/kg	100 g in 100 litres water	1 g	850 g		In crops 2-4 leaf stage Zadoks 12-15.	sub clover is tolerant	
DOVEWEED A	2,4-D*	800 g/l ester	1:330	3 ml	3 litres	1:600	November-December when plants are small. Follow-up spray may be necessary in January-February.	Spray after good emergence of seedlings. Increase rate to 3.5 l/ha (800 g/l product) for larger plants up to flowering. Use 1000 g/litre product (Technical ester) under hot dry conditions.	Repeated cultivation will be effective. With summmer rainfall, cultivation may encourage further germination. Trial use only: Garlon® Glean®. Use of summer spraying oil may prove very beneficial.
		500 g/l amine	1:250 in water	4 ml	4 litres in water				
		1000 g/l tech. ester	1:350in distillate	3 ml	2.8 litres in distillate				
	Bromoxynil + MCPA	200g/l + 200 g/l	1:500 in water	2 ml	2 litres in water		As above	For smaller plants, or early spraying, 1.5 litres/ha may be effective. More expensive than 2,4-D.	

The asterisk (*) in the "Herbicide" column indicates the preferred treatments where alternatives are given.

1 In many instances the recommendations for the addition of wetting agents or oil additives is based on limited trial data. Certainly rate recommendations have not been accurately defined. In non-selective situations the addition of wetting agents or oils is unlikely to result in adverse results so their inclusion is recommended even if their value is in doubt. Since wetting agents vary considerably in their active ingredient content, rates indicated in these recommendations are given as a guide only. Always refer to the herbicide label for recommendations on the use of surfactants. Use only non-ionic surfactants unless recommendations state otherwise.

RECOMMENDATIONS FOR CHEMICAL CONTROL

Weed	Herbicide	Active ingredient	Product dilution for spotspraying	Knapsack amount of product per litre of water	Rate of product/ hectare	Wetting agent dilution	When to apply	Remarks	Other control methods
ELODEA *(Elodea canadensis)* LEAFY ELODEA *(Egeria densa)* A (and other submerged aquatics).	Reglone℠	200 g/l Diquat	N.R. A concentration of 0.5 to 1.0 ppm must be maintained throughout the entire water body. 1 ppm = 5 ml Reglone℠ per m³	20 ml	25-50 litres product/ha/ m depth	N.R.	Summer – when plant is actively growing.	Diquat should be sprayed onto or injected into still or slow moving water. Mixing of the water is desirable but don't stir up the mud. Observe a 10 day withholding period for irrigation. Very high volume application 2500 litres/ha.	Small infestations may be removed mechanically. Flowing water can be treated with Acrolein℠ *(License required)*. Drain channel or dam and treat with residual herbicides, if not used for irrigation.
FIELD BINDWEED A	Picloram + 2,4-D (Tordon 50-D)*	50 g/l + 200 g/l	1:50 in water	20 ml	N.R.		Early flowering	Tordon is a residual herbicide. It may affect crops and pasture legumes for several years.	Grubbing and cultivation not effective due to regeneration from root fragments.
	2,4-D	500 g/l Amine	1:250 in water	4 ml	4 litres		As early as possible, repeat at monthly intervals	Use 500 g/l product (Amine) in townsites or when residual effects or Picloram are undesirable. Not as effective as Tordon.	
	Roundup℠	360 g/l	1:100	10 ml	N.R.		When actively growing		
GERALDTON CARNATION WEED A	Amitrole/Atrazine mixture (eg. Flowable Vorox AA*) + 2,4-D amine	320 g/l and 320 g/l + 500 g/l	200 ml + 200 ml in 100 l water	2 ml + 2 ml	2 litres + 2 litres in water	1:600	Winter-spring. Flowering to seed maturity.	Most effective on young plants. Not selective.	Cultivation and grubbing is ineffective.
	Garlon℠ 480	480 g/l	1:250	4 ml	4 litres		Winter-spring. From flowering to seed maturity.	More effective on older plants.	Try Roundup℠ at 1:100.
GLAUCOUS STAR THISTLE A	See Saffron thistle								

RECOMMENDATIONS FOR CHEMICAL CONTROL

Weed	Herbicide	Active ingredient	Product dilution for spotspraying	Knapsack amount of product per litre of water	Rate of product/ hectare	Wetting[1] agent dilution	When to apply	Remarks	Other control methods
GORSE A	Garlon® 480*	480 g/l	1:250 in water	4 ml	N.R.	1:400 + 1:400 Summer spraying oil may be of benefit.	Apply from spring to mid summer	Alternative to 2,4,5-T. Thorough wetting is essential. Seeds will continue to germinate for several years. Equal quantities of Garlon® 480 and distillate mixed prior to adding water may assist wetting.	
	Amitrole-T (eg. Weedazol TL Plus)	250 g/kg	1:50 in water	20 ml	N.R.	1:600	Summer months	Use in restricted spraying areas. Wet bush thoroughly. Repeat as necessary.	
	Grazon®	150 g/l triclopyr + 50 g/l Picloram	1:100	10 ml	N.R.	1:400	Use for autumn-treatment on older hard-to-kill plants.		
GORTERIA A	Amitrole/Atrazine* (eg. flowable Vorox AA).	320 g/l + 320 g/l	625 ml in 100 litres water	6 ml	6.25 litres in water	1:600	Winter – as soon as possible after emergence	Repeat treatment for several years to eliminate dormant seed	Grub or cultivate individual plants
	Amitrole/Atrazine mixture + Paraquat	320 g/kg of each + 200 g/l	200 ml + 150 ml in water	2 ml + 1.5 ml	2 litres + 1.5 litres in water	1:600	As above	As effective as Amitrole/ Atrazine mixture alone, but less expensive and results in a quicker kill on larger plants.	
HARRISIA CACTUS P	See prickly pear								
HOARY CRESS P	Picloram + 2,4-D* (Tordon 50-D).	50 g/l + 200 g/l	1:80 in water	12.5 ml	N.R.		Winter-spring from rosette to per-flowering	Re-treatment may be necessary	Cultivation is ineffective as root fragments will regenerate. Amitrole T at 1:50 in water can be used in restricted spraying areas. Dicamba, Dicamba + MCPA or 2, 4-D and Roundup® are effective.
	2,4-D	800 g/l ester	1:330 to 1:250 in water	3ml to 4 ml	3 litres to 4.5 litres in water		As above	Suitable for larger areas. Re-treatment will be necessary. Not as effective as picloram.	

The asterisk (*) in the "Herbicide" column indicates the preferred treatments where alternatives are given.

1 In many instances the recommendations for the addition of wetting agents or oil additives is based on limited trial data. Certainly rate recommendations have not been accurately defined. In non-selective situations the addition of wetting agents or oils is unlikely to result in adverse results so their inclusion is recommended even if their value is in doubt. Since wetting agents vary considerably in their active ingredient content, rates indicated in these recommendations are given as a guide only. Always refer to the herbicide label for recommendations on the use of surfactants. Use only non-ionic surfactants unless recommendations state otherwise.

RECOMMENDATIONS FOR CHEMICAL CONTROL

Weed	Herbicide	Active ingredient	Product dilution for spotspraying	Knapsack amount of product per litre of water	Rate of product/ hectare	Wetting[1] agent dilution	When to apply	Remarks	Other control methods
HOREHOUND P	2,4-D*	800 g/l ester	1:330	3 ml	3 litres		Late autumn to early spring	Use for broadacre application. Repeat applications will be necessary. Use the 500 g/l product (amine) in restricted spraying areas.	Multiple cropping combined with spraying in the crop (1.4 l/ha of 2,4-D amine (500 g/l), 1.0 l/ha of 2,4-D ester or Dicamba + 2,4-D or MCPA at 1.4 l/ha (800ml/l) at 5 leaf to mid tillering stage) will reduce weed density.
		500 g/l amine	1:250 in water	4 ml	4 litres in water				
	2,4-D + Garlon™ 480	800 g/l ester + 480 g/l	1:500 + 1:1000 in water	2 ml + 1 ml	2 litres + 1 litre in water		As above	This treatment is effective on old woody plants.	Isolated plants should be grubbed before flowering and burnt. Cultivation is effective if followed by cropping or pasture establishment and spraying. Other residual herbicides such as diuron will be equally effective as Bromacil.
	Bromacil (Hyvar X)	800 g/kg	1100 g in 100 litres water	11 g	11kg in water	1:600	As above	Use for eradicating small patches of weed. This rate will leave the soil bare for up to 2 years.	
MESQUITE P	Garlon™ 480*	480 g/l	1:50 – 1:100 in distillate	10-20 ml in distillate	N.R.		When actively growing.	Apply as a basal bark spray to mature trees. Poor results can be expected if treatment undertaken during or after long dry spell. Use 1:50 on large mature trees.	Individually trees can be removed mechanically. Watch for seedling regrowth in subsequent years.
		480 g/l	1:250 in water	4 ml in water	N.R.			Use to treat seedlings and small plants as overall foliar spray.	Use 2,4,5-T if stocks available at 1:60 in distillate. While proven to be effective further trial work is required to refine rates for Garlon™ and Grazon™.
	Grazon™	150 g/l Triclopyr + 50 g/l Picloram	1:50 in distillate	20 ml	N.R.		When actively growing	Should be cheaper than Garlon™ treatment.	Trial work proceeding with Lontrel, Velpar™, Garlon™ etc.
	Velpar™	250 g/l Hexazinone	Use neat at 4 ml/ metre of tree height or diameter at dripline.	N.R.	N.R.		At any time. Inject into soil (sub-surface) if dry. Use spotgun.	Needs rain to activate. Distribute dose around dripline of large trees. Keep clear of desirable trees. Still under trial.	

RECOMMENDATIONS FOR CHEMICAL CONTROL

Weed	Herbicide	Active ingredient	Product dilution for spotspraying	Knapsack amount of product per litre of water	Rate of product/ hectare	Wetting[1] agent dilution	When to apply	Remarks	Other control methods
MEXICAN POPPY A	2,4-D	800 g/l ester	1:220	4 ml	4.5 litres		Winter – before flowering.	Re-treatment will be necessary	Grub individual plants.
		500 g/l amine	1:150 in water	7 ml	7 litres in water				
MINTWEED A	2,4-D*	800 g/l ester	1:660 in water	2 ml	1.5 litres		Apply to seedlings where possible	Use 2,4-D on seedling mintweed	Bromoxynil, MCPA, Dicamba, Roundup® and Atrazine are alternative herbicides. Trial Glean®
		500 g/l amine	1:330	3 ml	3 litres				
	Tordon 50 D	Picloram 50 g/l + 2,4-D 200 g/l	1:330 in water	3 ml	3 litres	1:600	Mature plants	Use Tordon 50 D on mature plants	
NOOGOORA BURR A	2,4-D	800 g/l amine	1:500	2 ml	2 litres	1:600	As early as possible before burr formation.	Use double rate if burrs are forming.	Grub individual plants. Roundup® at 1:100 if burrs not forming.
		800 g/l amine	1:300 in water	3 ml	3.5 litres in water				
PARKINSONIA P	Garlon® 480*	480 g/l	1:50 in distillate	20 ml in distillate	N.R.		When actively growing.	Apply as basal-bark spray to mature trees. May need follow-up treatment.	Grub individual plants.
	Velpar® L	250 g/l Hexazinone	Use neat through spot gun. Apply to soil at 4 ml/ metre of tree height or diameter at drip line	N.R.	N.R.		Apply to moist soil if possible. Use sub-surface treatment if dry.	Needs rain to activate. Keep clear of desirable trees. Clean spotgun thoroughly after use.	Use 2,4,5-T at 1:60 in distillate as basal bark if stocks still available.
PARROT'S FEATHER P	Glean®	750 g/kg Chlorsulfuron	1 g/10-20 litres water	0.1 - 0.05 g	50-100 g	1:400	When actively growing November – February	Apply as fine spray to above water foliage. Good coverage essential. Wetting agent necessary. Dissolve in water prior to adding to tank. Mix throughly in tank.	Roundup® or Reglone® will give short term control. Residual soil herbicides can be used in dry drains.
	Roundup®	360 g/l	1:100 in water	10 ml	N.R.		When actively growing November – February	Do not create wavewash over sprayed plants.	

The asterisk (*) in the "Herbicide" column indicates the preferred treatments where alternatives are given.

1 In many instances the recommendations for the addition of wetting agents or oil additives is based on limited trial data. Certainly rate recommendations have not been accurately defined. In non-selective situations the addition of wetting agents or oils is unlikely to result in adverse results so their inclusion is recommended even if their value is in doubt. Since wetting agents vary considerably in their active ingredient content, rates indicated in these recommendations are given as a guide only. Always refer to the herbicide label for recommendations on the use of surfactants. Use only non-ionic surfactants unless recommendations state otherwise

RECOMMENDATIONS FOR CHEMICAL CONTROL

Weed	Herbicide	Active ingredient	Product dilution for spotspraying	Knapsack amount of product per litre of water	Rate of product/ hectare	Wetting[1] agent dilution	When to apply	Remarks	Other control methods
PATERSON'S CURSE A	Amitrole/Atrazine (eg. flowable Vorox AA) + 2,4-D amine	320 g/kg each + 500g/l	200 ml Vorox + 200 ml 2,4-D in 100 litres water	2 ml + 2 ml	N.R.	1:600	Winter – from three weeks after germination.	Use on roadside infestations only	Cultivation is effective. Grub individual plants. Glean® and 2,4-D ester can prevent seed formation if applied at first flower.
	2,4-D	500 g/l amine	N.R.	N.R.	0.75 litres in water		As above	"Spray-graze" technique for selective control in pastures.	A range of herbicides including Bromoxynil, MCPA, Linuron + MCPA/2,4-D Igran etc. can be used to control Paterson's Curse.
	Glean®	750 g/kg	1 g in 50 litres water.	0.02 g	20 g	1:400	In cereals: Wheat pre-sowing. Wheat, Barley and oats post-emergence.	Ensure thorough dissolving of Glean® when using small quantities prior to adding to tank mix. May also be used for spot spraying, roadsides etc. can be used in non-legume pastures and is preferable to Amitrole/ Atrazine in any pasture situation. Spot spraying recommendations are based on 20 g/ha. More concentrated mixtures than those indicated may be used for spot spraying e.g . 1:10 in water + wetting agent.	Roundup® is suitable for spot spraying in non-selective situations.
PENNYROYAL P	Garlon® 480*	480 g/l	1:1000	1 ml	1 litre	1:600	Summer months, best results after summer rain	Do not use wetting agents when perennial pasture present. Will affect perennial clovers to some extent regardless.	Use 2,4,5-T if stocks available at 2 l/ha.
	Garlon® 480 /Diuron	480 g/l amine 500 g/l diuron	N.R.	N.R.	1 litre Garlon® 480 + 500 ml diuron.	1:600	Best results after rain in summer months	Use when high pennyroyal seed banks exist. Diuron helps control seedlings. Annual treatment essential. Substitute with Garlon® 480 after 1 or 2 years.	
	Grazon®	150 g/l triclopyr + 50 g/l picloram	1:150	6.5 ml	N.R.	1:600		Kills all clovers. Use only where non-selective control is acceptable. Residual herbicide.	
	Roundup®	360 g/l	1:100	10 ml	N.R.		Summer months.	Use in restricted spraying areas.	Roundup® could possibly be used in a ropewick applicator (hand held) at 1:2 in water.

RECOMMENDATIONS FOR CHEMICAL CONTROL

Weed	Herbicide	Active ingredient	Product dilution for spotspraying	Knapsack amount of product per litre of water	Rate of product/ hectare	Wetting[1] agent dilution	When to apply	Remarks	Other control methods
PERENNIAL THISTLE *(Canada thistle)* P	Picloram + 2,4-D (Tordon 50-D)	50 g/l + 100 g/l	1:100 in water	10 ml	N.R.		Winter-spring rosette-flowering	Re-treatment may be necessary as surviving rootstocks will reshoot.	Grubbing and cultivation ineffective due to ability to reshoot from rootstock and root fragments.
PRICKLY PEAR P	Garlon® 480	480 g/l	1:25 in water	40 ml	N.R.		When actively growing	Thorough coverage necessary.	Grub individual plants. Ensure that no slabs are left as they will regenerate new root system. Use 2,4,5-T while stocks remain at 1:400 in distillate. Other chemicals (not Garlon® 480) have given poor control. Garlon® 480 in distillate should work similarly to 2,4,5-T. Trials required as not registered for use in W.A. Recommendation given is registered for eastern states.
RAGWORT P	2,4-D	800 g/l ester	1:330	3 ml	3 litres		Winter-spring rosette stage	Re-treatment is usually necessary.	Grub individual plants. Pasture improvement reduces seedling emergence.
		500 g/l amine	1:250 in water	4 ml	4 litres in water				

The asterisk (*) in the "Herbicide" column indicates the preferred treatments where alternatives are given.

1 In many instances the recommendations for the addition of wetting agents or oil additives is based on limited trial data. Certainly rate recommendations have not been accurately defined. In non-selective situations the addition of wetting agents or oils is unlikely to result in adverse results so their inclusion is recommended even if their value is in doubt. Since wetting agents vary considerably in their active ingredient content, rates indicated in these recommendations are given as a guide only. Always refer to the herbicide label for recommendations on the use of surfactants. Use only non-ionic surfactants unless recommendations state otherwise.

RECOMMENDATIONS FOR CHEMICAL CONTROL

Weed	Herbicide	Active ingredient	Product dilution for spotspraying	Knapsack amount of product per litre of water	Rate of product/ hectare	Wetting[1] agent dilution	When to apply	Remarks	Other control methods
SAFFRON THISTLE A	2,4-D*	800 g/l ester	N.R.	N.R.	700 ml		For cereal crops: Winter-spring rosette stage. Crops must be in early tillering stage.		Grub individual plants. Cultivation is effective, but must be repeated to kill any late emerging seedlings.
		500 g/l amine			1.4 litres in water				
		800 g/l ester	1:1000 – 1:660	1-2 ml	1 – 1.5 litres		Seedling – small rosette		Multiple cropping effiectively reduces seed bank in soil. See Department of Agriculture weed spraying chart for other alternatives in crops. Saffron is readily controlled in crop with a range of herbicides.
		500 g/l amine	1:500 – 1:330 in water	2-3 ml	2-3 litres in water			Use in pasture but sub clovers may be damaged at these rates.	
		800 g/l ester	1:330	3 ml	3 litres		Late rosette – bolting – pre-flowering	2,4-D ester (800 g/l) can be used as a 1:20 spot-spray mixture with distillate.	"Spray-graze" may be used in pastures.
		500 g/l amine	1:250 in water	4 ml	4 litres in water				
		1000 g/l tech.ester	N.R.	N.R.	2 litres		As above	Use only through a mister.	
	Gramoxone® or Reglone®	200 g/l Paraquat or Diquat	1:330 in water	3 ml	3 litres in water	1:600	Bolting – early flowering stage	"Salvage" treatment only to prevent seed formation. May not be successful if sprayed too late or plant not throughly wetted.	
SALVINIA A	Velpar® L	250 g/l Hexazinone	1:125	8 ml	8 litres in water	1:600	Summer – when actively growing	Use when air temperature is greater than 25 deg. C, the higher the better. **Do not use on water bodies which are used for irrigation or in which desirable trees are feeding.** Expensive treatment. May need repeating.	Velpar® granules available in 200 g/kg formulation. AF100 at 1 part to 19 parts kerosene effective.
	Gramoxone® or Reglone®	200 g/l Paraquat or Diquat	1:200 in water	5 ml	5-10 litres per ha in water.	1:600	As above	Several re-applications will be necessary each summer as new regrowth appears. Results are not consistantly good.	Mechanical removal can eradicate it from a water body but every plant must be removed. This is a very long and tedious method. Under ideal conditions rate of weed growth is faster than mechanical removal.
SILVER-LEAF NIGHTSHADE P	Picloram + 2,4-D (Tordon 50-D)	50 g/l + 200 g/l	1:50 in water	20 ml	20 litres in water	1:600	Summer-December to March	Retreatment may be necessary. Spray 2 m outside the visibly infested area. Picloram is non-selective at these rates. Annual grasses will return after 12 months, legumes 2-3 years.	Cultivation or grubbing will not be effective due to regeneration from root fragments. Trials indicate Garlon® 480, Grazon®, AC292 and Lontrel may prove useful.

RECOMMENDATIONS FOR CHEMICAL CONTROL

Weed	Herbicide	Active ingredient	Product dilution for spotspraying	Knapsack amount of product per litre of water	Rate of product/ hectare	Wetting[1] agent dilution	When to apply	Remarks	Other control methods
SKELETON WEED P	Report any plants	to the Agriculture	Protection Board					All plants found must be reported immediately to the APB to be dealt with under the skeleton weed eradication project. It is essential that seeding is prevented.	
SOURSOB A	Glean®*	750 g/kg	1 g in 50 litres of water	0.02 g	15-20 g	1:400	Winter – at 2-4 leaf stage of crop. Within 3 weeks of emergence for wheat oats and barley Zadoks 12-14.	Spot spraying recommendation is based on 20 g/ha. May be easier and more practical to use 1:10 + wetting agent if spraying small areas. Mix well when using small quantities. Glean® is preferred treatment for soursob control.	Cultivation on large infestations is rarely successful unless continuously carried out from late May (bulb exhaustion stage) throughout the growing season.
	Roundup®	360 g/l	1:100 in water	10 ml	1.5-3 litres		During June and July	Use on roadside and non-crop infestations only. Do not use if likely to damage desirable plants.	When grubbing individual plants ensure that all the surrounding soil that is likely to contain bulbs is also removed. Amitrole/Atrazine or Diuron mixtures may be used on roadside infestations. Avoid tree damage with diuron.
STEMLESS THISTLE A	2,4-D	800 g/l ester	1:330	3 ml	3 litres		Winter-spring seedling – small rosette	Thorough wetting is essential due to hairiness of leaf. Resistance to 2,4-D increases as plants approach flowering, rates should be increased above those recommended.	Grub individual plant at any stage of growth. Cultivation is effective up to rosette stage. Roundup® at 1:100 to 1:200 for spot spraying. Paraquat/ diquat for salvage. Glean® 20-40 g/ha for trial use only.
		500 g/l amine	1:200 in water	5 ml	5 litres in water	1:600			
ST. JOHNS WORT P	2,4-D*	800 g/l ester	1:250	4 ml	4 litres		Spring – flowering stage	Re-treatment in following year will be necessary.	Grubbing and cultivation is not effective.
		500 g/l amine	1:160 in water	6 ml	6 litres				
	Diuron	500 g/l	1:20 in water	50 ml	N.R.		Spring – flowering stage	Use on small infestations only. Do not use near desirable trees and plants.	Competition for improved pasture is effective on broad scale infestations. Roundup® at 1:100 in non selective situations.

The asterisk (*) in the "Herbicide" column indicates the preferred treatments where alternatives are given.

1 In many instances the recommendations for the addition of wetting agents or oil additives is based on limited trial data. Certainly rate recommendations have not been accurately defined. In non-selective situations the addition of wetting agents or oils is unlikely to result in adverse results so their inclusion is recommended even if their value is in doubt. Since wetting agents vary considerably in their active ingredient content, rates indicated in these recommendations are given as a guide only. Always refer to the herbicide label for recommendations on the use of surfactants. Use only non-ionic surfactants unless recommendations state otherwise.

RECOMMENDATIONS FOR CHEMICAL CONTROL

Weed	Herbicide	Active ingredient	Product dilution for spotspraying	Knapsack amount of product per litre of water	Rate of product/ hectare	Wetting agent dilution	When to apply	Remarks	Other control methods
THORNAPPLE A	2,4-D	800 g/l ester	1:330	3 ml	N.R.	1:600	Summer – as early as possible before seed formation	Re-treatment of seedlings will be necessary	Grub individual plants. Spotspray with Roundup® at 1:100 in non-selective situations
		500 g/l amine	1:250 in water	4 ml					
VARIEGATED THISTLE A	2,4-D	800 g/l ester	1:660 – 1:330	1.5-3 ml	1.5-3 litres	1:600	Winter-spring, as early as possible after general emergence.	Use lower rates for seedlings, increasing to higher rates for plants running up to flower. Split application of 2 l/ha in early winter followed by 2 l/ha in spring often more effective. Higher spot spraying concentrations may be required under adverse situations.	Grub individual plants. Unsprayed large infestations can be slashed at flowering stage to prevent seeding. Spray-graze in pastures.
		500 g/l amine	1:500 – 1:200 in water	2-5 ml	2-5 litres in water				
WATER HYACINTH P	Reglone®	200 g/l Diquat	1:100 in water	10 ml	5-10 litres in water	1:600	Summer – when plant is actively growing.	Thorough wetting is essential. Repeat after four weeks to kill missed plants and seedlings.	Mechanically remove individual plants and small clumps. Trial use only: Glean®, Roundup® – Ensure not submerged after spraying. Amitrole T, Dichlobenil, 2,4-D also effective.
WATER LETTUCE P	Reglone®	200 g/l Diquat	1:100 in water	10 ml	5-10 litres in water	1:400	Summer – when actively growing	Mainly a problem under tropical conditions	Mechanical removal. Dry and burn. Glean®, Roundup®, trial use only. AF100 at 1 part to 20 parts kerosene effective.
YELLOW BURR WEED A	Bromoxynil + MCPA*	200 g/l + 200 g/l	N.R.	N.R.	1.4 litres in water		Winter – cereal should be at the 3-6 leaf stage	Where weed is larger than 5 cm in diameter increase rate to 2 l/ha	Repeated cultivation may be effective. "Spray-graze" can be used in pastures. Spot spray with Roundup® at 1:100, see Department of Agriculture publication: Herbicides for the Control of Weeds in Cereals.
	Terbutryne (Ingran)	475 g/l 25 g/l other triazines	N.R.	N.R.	850 ml in water	N.R.	As above		
	Glean®	750 g/kg	N.R.	N.R.	15 g in water	1:400	Pre-sowing or post emergence wheat. Post-emergence on barley.		

Alternative chemical trade names

ALTERNATIVE CHEMICAL TRADE NAMES.

CHEMICAL TRADE NAME	ACTIVE INGREDIENT	ALTERNATIVE T/NAME	SUPPLY COMPANY
A) 2, 4D Amine	500g/l 2,4D as dimethlamine salt		Dow
		Amine 50	Amalgamated
		Farmco 500	
		Selective Weedkiller	C.I.K.
		Elderado Ami-weed 500	Elders
		Amicide 50 Selective Weedkiller	Nufarm
B) Weedazol TL Plus	250g/l Amitrole 220g/l Ammonium thiocyanate		Ciba-geigy
		Amitrole - T	Nufarm
		Farmco Amitrole-T	C.I.K.
C) Garlon 480	480g/l triclopyr asbutoxyethanol		Dow
		Nufarm Garlon 480	Nufarm
D) Roundup	360g/l		Monsanto
E) Tordon 50 D	200g/l 2, 4D 50g/l Picloram		Dow
F) Glean	750g/l Chlorsulfuron		Dupont
G) Flowable Vorox AA	320g/l Amitrole 320g/l Atrazine		Ciba-geigy
		Amizine - AA Flowable	C.I.K.
H) Banex Weedkiller	200g/l Dicamba as dimethlamine salt		I.C.I.
		Farmco Dicamba Selective W/Killer	C.I.K.
		Banvel 200 Herbicide	Velsicol
		Dicamba Herbicide	Amalgamated
		Banvel 200 Herbicide	Ciba-geigy
		Dicamba 200 Herbicide	Nufarm
I) Weedoben M Bindi Weedkiller			Ciba-geigy
	200g/l Bromoxynil 200g/l MCPA	Brominil M Emulsifiable Selective Herbicide	Ciba-geigy
J) Velpar L	250g/l Hexazinone		Dupont

SECTION B - Specified Non-Declared Plants

Target Species	T.I.S. No.
Pre or post-planting control of annual broadleaved weeds and grasses when establishing pine plantations (dry sites)	B1
Pre or post-planting control of annual broadleaved weeds and grasses when establishing pine plantations (wet sites or where late germinating weeds occur)	B2
Post emergent control of annual and perennial broadleaved weeds and grasses around buildings and installations	B3
Pre-planting control of perennial broadleaved weeds and grasses when establishing pine plantations	B4
Pre-emergent control of annual herbaceous weeds and grasses in pine nurseries	B5
Eucalypt saplings and trees in pine plantations (stem-injection)	B6
Eucalypt saplings and trees (cut-stump)	B7
Eucalypt coppice and advanced growth (foliar spray)	B8
Bracken	B9

	T.I.S. No.
Pre or immediately post-emergent control of weeds in pine nurseries	B10
Woody weeds (Acacia, Pultenaea etc.) in pine plantations	B11
Pre emergent control of annual grasses and broadleaved weeds in eucalypt nurseries	B12, B14
Post-emergent control of summer grass and couch in nurseries	B13
Post-emergent control of annual weeds and grasses in eucalypt nurseries	B15
Firebreaks	B16
Eucalypt Saplings and trees, Banksia and Sheoak in Native forests	B17
Post planting weed control for the establishment of pines on sites inaccessible to machinery	B18
Post-emergent control of Sorrel and Dock before planting pines or eucalypts	B19
Pre-planting weed control for the establishment of eucalypts	B20

TECHNICAL INSTRUCTION SHEET

Recommendation for Chemical Control on Non-Declared Plants.

TARGET SPECIES:	ANNUAL BROADLEAVED WEEDS AND GRASSES (DRY SITES)
JOB DESCRIPTION:	i) Pre and post-planting weed control for the establishment of pines on pastured sites.
HERBICIDE:	Flowable Vorox AA Flowable Gesaprim 500 FW
ACTIVE INGREDIENT:	Flowable Vorox AA: 320 gm/litre amitrole plus 320 gm/litre atrazine Flowable Gesaprim 500 FW: 500 gm/litre atrazine.
RATE OF APPLICATION:	4 litres/ha. of Flowable Vorox AA mixed with 2 litres/ha of Flowable Gesaprim 500 FW applied in 150 to 250 litres/ha of water.
WETTING AGENT:	Ratio of 1:400
METHOD:	Pre-planting. Spray equipment should be assembled on the front of the tractor when combined with machine planting. Post-planting. Apply the tank mixture either immediately after or within one month of planting. Application must be made before the spring flush occurs. For band spraying apply a swathe 1.5-2.0m wide.

DATE: 5-4-89.

BRANCH MANAGER _____ CHEMICALS OFFICER T.A. Wood

TECHNICAL INSTRUCTION SHEET

Recommendation for Chemical Control of Non-Declared Plants.

TARGET SPECIES:	ANNUAL BROADLEAVED WEEDS AND GRASSES (WET SITES AND WHERE LATE GERMINATING WEEDS OCCUR).
JOB DESCRIPTION:	Pre and post planting weed control for the establishment of pine on pastured sites.
HERBICIDE:	Flowable Vorox AA Flowable Gesaprim 500 FW
ACTIVE INGREDIENT:	Flowable Vorox AA: 320 gm/litre amitrole plus 320 gm/litre atrazine. Flowable Gesaprim 500 FW: 500gm/litre atrazine.
RATE OF APPLICATION:	4 litres/ha of Flowable Vorox AA mixed with 5 litres/ha of Flowable Gesaprim 500FW applied in 150 to 250 litres/ha of water.
WETTING AGENT:	ratió of 1:400
METHOD:	Pre planting. Spray equipment should be assembled on the front of the tractor when combined with machine planting. Post planting. Apply the tank mixture either immediately after or within one month of planting. Application must be made before the spring flush occurs. For bandspraying apply a swathe 1.5 - 2.0m wide. On very wet sites mound planting lines one month before spraying.

DATE: 5-4-89

BRANCH MANAGER _____ CHEMICALS OFFICER T.H. Wood

TECHNICAL INSTRUCTION SHEET

Recommendation for Chemical Control of non-declared plants.

TARGET SPECIES:

ANNUAL AND PERENNIAL BROADLEAF WEEDS AND GRASSES (AROUND BUILDINGS, INSTALLATIONS, NURSERIES AND TO CONTROL PERENNIAL WEEDS PRIOR TO TREE ESTABLISHMENT)

JOB DESCRIPTION:

Post emergent application by boomspray, weed wick or pack spray.

HERBICIDE:

Roundup

ACTIVE INGREDIENT:

360 gm/litre glyphosate

RATE OF APPLICATION:

Boomspray application:

i) Perennial grasses: 3.5 to 9 litres/ha
ii) Perennial broadleaf weeds:6 litres/ha.
iii) Annual broadleaf weeds and grasses:1-4 litres/ha.

Weed wick application:
Mix 1 part Roundup to 2 parts water.

Packspray application:

i) Perennial grasses: 200ml of Roundup in 15 litres of water.
ii) Perennial broadleaf weeds: 150ml of Roundup in 15 litres of water.
iii) Annual broadleaf weeds and grasses: 100ml of Roundup in 15 litres of water.

WETTING AGENT:

Not required unless spraying perennial broadleafed weeds and woody weeds, in which case Pulse should be added at the ratio of 1 part Pulse to 500 parts of spray mixture.

METHOD:

For best results apply Roundup to actively growing plants. Always use clean water.

Boomspray:
i) Perennial grasses. Best results are achieved during spring and autumn when grasses are actively growing. If a rain event occurs in summer resulting in a flush of growth spraying is also effective. Output should not exceed 150 litres/ha.

ii) Perennial broadleaf weeds. Spraying should occur when plants are actively growing. Output should not exceed 150 litres/ha.

iii) Annual broadleaf weeds and grasses. Low application rates (1-2 litres/ha) will provide effective control provided weeds are small (<5cm). As weeds develop or sward is predominantly clover rates should be increased. Sprayer output should not exceed 100 litres/hectare.

When spraying weeds on sandy soils prior to establishing trees allow at least two weeks and >50mm of rain between the time of spraying and planting of trees.

Weed Wick: Best results are achieved at speeds of less than 8km/hr and where two applications are made in opposite directions (double pass).

Packspray: Adjust equipment to achieve an even spray pattern. Use minimum volume to achieve complete coverage, but not to the point of run off.

DATE: 28-3-90

BRANCH MANAGER: _____ CHEMICALS OFFICER: T A Wood

TECHNICAL INSTRUCTION SHEET

Recommendation for Chemical Control of Non-Declared Plants.

TARGET SPECIES:	PERENNIAL BROADLEAVED WEEDS AND GRASSES.
JOB DESCRIPTION:	Pre planting control for the establishment of pines on pastured sites.
HERBICIDE:	Roundup Flowable Gesaprim 500 FW Crystalline ammonium sulphate (adjuvant)
ACTIVE INGREDIENT:	Roundup:360 gm/litre glyphosate Flowable Gesaprim 500 FW:500 gm/litre atrazine
RATE OF APPLICATION:	3.5 to 9 litres/ha of Roundup mixed with 5 or 7 litres/ha of Flowable Gesaprim 500 FW plus 2% w/v ammonium sulphate. Apply in 50 - 150 litres/ha of water.
WETTING AGENT:	Ratio of 1:400.
METHOD:	Apply the tank mixture at least two weeks before planting. Where Kikuyu grass (Pennisetum clandestinum) occurs use lower rate of Roundup. Use high rate where Couch (Cynodon dactyton) predominates. Use the lower rate of Flowable Gesaprim 500 FW on dry sites and the higher rate on wet sites or where late germinating weeds occur. For bandspraying apply a swathe 1.5-2.0m wide. On wet sites mound planting lines one month before planting. Spray only when weeds are actively growing.

DATE: 5-4-89.

BRANCH MANAGER _____ CHEMICALS OFFICER T A Wood.

TECHNICAL INSTRUCTION SHEET

Recommendation for Chemical Control of non-declared plants.

TARGET SPECIES: EUCALYPT COPPICE AND ADVANCED GROWTH

JOB DESCRIPTION: "Foliar spray" for the control of Eucalypt coppice and advanced growth up to 80 cm high from stumps less than 15 cm diameter.

HERBICIDE: Roundup or Roundup CT

INGREDIENT: Roundup - 360 gm/litre glyphosate
Roundup CT - 450 gm/litre glyphosate

RATE OF APPLICATION:

JUNE-NOV
1 part Roundup to 15 parts water.
1 part Roundup CT to 19 parts water.

DEC-MAY
1 part Roundup to 5 parts water.
2 parts Roundup CT to 13 parts water.

Add Ciba-Geigy herbicide dye if required.

WETTING AGENT: 1 part Pulse * to 500 parts spray mixture.
* Pulse is an organo-silicone penetrant manufactured by "Monsanto".

METHOD:

Stumps <15 cm Diameter: Ensure complete coverage, however avoid excessive run off.
Until it can be determined that fire will not stimulate growth do not burn within 12 months after poisoning. Coppice develops very quickly - if not treated within 12 months of cutting (or burning), it will become too large for 'foliar spraying'.
DO NOT USE THIS METHOD WHERE STUMP IS GREATER THAN 15 cm DIAMETER AS THIS TECHNIQUE HAS LOW SUCCESS (40% kill). In this case wait until coppice is 3-5 cm diameter and notch (see Sheet No. B17).

Stumps >15 cm Diameter: Do not use this method as it has low success. (40% kill) Wait until coppice is 3-5 cm diameter and notch (see Sheet No. B17).

DATE: 11-7-89

BRANCH MANAGER _____ CHEMICALS OFFICER T.A. Wood

Sheet No. B9

TECHNICAL INSTRUCTION SHEET

Recommendation for Chemical Control of non declared plants.

TARGET SPECIES: BRACKEN (Pteridium esculentum)

JOB PRESCRIPTION: Pre-planting control of Bracken for the establishment of eucalypt and pine plantations.
Control of Bracken on firebreaks.

HERBICIDE: Brush-Off

ACTIVE INGREDIENT: 600 gm/kg Metsulfuron methyl

RATE OF APPLICATION: 50 gm/ha of Brush-off applied in 150 - 350 litres/ha of water

WETTING AGENT: Pulse penetrant at 0.2% V/V

METHOD: For best results burn of slash Bracken in spring and allow fronds to emerge and fully unfold before spraying with a boom sprayer. Brush-Off can be applied at any time of the year (except winter),although autumn is the most suitable time to spray. A minimum of 2 months should elapse before slashing or burning.
However a 3 month period is preferred. Spraying old Bracken (multi-aged fronds) is usually successful provided there is a high enough water volume to give total spray coverage. Trees must not be planted on sites sprayed with Brush-off within 2 months of treatment.

28-3-90
Date

Manager Silviculture Branch

T.H. Wood
Safety Officer

Sheet No. B11

TECHNICAL INSTRUCTION SHEET

Recommendation for Chemical Control of non-declared plants.

TARGET SPECIES:	WOODY WEEDS (Acacia, Pultenaea etc.)
JOB DESCRIPTION:	Post planting weed control in pine plantations.
HERBICIDE:	Velpar L
ACTIVE INGREDIENT:	250 gm/litre hexazinone
RATE OF APPLICATION:	5 to 11 litres/ha of Velpar L applied in 250-400 litres/ha of water.
WETTING AGENT:	Nil
METHOD:	Apply by boomsprayer over pines. Use lower rate when weeds are newly emerged and highest rate to mature growth. Spray before the spring growth flush. NOTE: Velpar L should not be applied in close proximity to desirable native trees or vegetation.

DATE: 28-3-90

BRANCH MANAGER _____ CHEMICAL OFFICER _____

TECHNICAL INSTRUCTION SHEET

Recommendation for Chemical Control of Non-Declared Plants.

TARGET SPECIES:	SUMMER GRASS (Digitaria sanguinalis) COUCH (Cynodon dactylon)
JOB DESCRIPTION:	Post emergent control of grasses in pine and eucalypt nurseries.
HERBICIDE:	Fusilade
ACTIVE INGREDIENT:	212 gm/litre fluazifop butyl.
RATE OF APPLICATION:	1.5 litres/ha in 350 litres/ha water.
WETTING AGENT:	Agral 60 at a ratio of 1:350 of tank mixture.
METHOD:	To be applied using boomsprayer to actively growing weeds in the 3 - 5 leaf stage. If weeds are too large they may re-shoot. A further application may be necessary to obtain total control.

DATE: 5-4-89

BRANCH MANAGER _____ CHEMICALS OFFICER T.H. Wood

Sheet No. B18

TECHNICAL INSTRUCTION SHEET

Recommendation for Chemical Control of non-declared plants.

TARGET SPECIES:	ANNUAL AND PERENNIAL BROADLEAVED WEEDS, GRASSES AND WOODY WEEDS
JOB DESCRIPTION:	Post planting weed control for the establishment of pines on sites inaccessible to machinery.
HERBICIDE:	Forest Mix.
ACTIVE INGREDIENT:	50 gm/kg hexazinone plus 170 gm/kg atrazine.
RATE OF APPLICATION:	**3gm/tree**
WETTING AGENT:	Nil.
METHOD:	Equipment: Modified "Weed-a-metre" granule applicator held at breast height (1.3m) and apply the dose from above each tree. The herbicide should be applied in late July or early August. Check calibration of each unit to ensure accurate dose is applied.

DATE: 28-3-90

BRANCH MANAGER: _____ CHEMICALS OFFICER: T A Wood

Sheet No. B19

TECHNICAL INSTRUCTION SHEET

Recommendations for Chemical Control of Non-Declared Plants.

TARGET SPECIES:	SORREL AND DOCK (Rumex spp)
JOB DESCRIPTION:	Post-emergent control of Sorrel and Dock before planting pines or eucalypts.
HERBICIDE:	Brush-Off
ACTIVE INGREDIENT:	600 gm/kg metsulfuron methyl
RATE OF APPLICATION:	15-20 gm/ha of Brush-Off applied in 150-350 litres/ha of water.
WETTING AGENT:	Agral 60 (or similar) at 1:350 of tank mixture.
METHOD:	Brush-Off can be applied at any time of the year (except winter) when plants are healthy and actively growing. Do not spray when leaves are covered with dew. The high rate (20 gm/ha) should be use on "old man dock" particularly after re-emergence in Autumn or after Summer rain, providing 3 or 4 leaves have emerged and unfurled. The lower rate of 15 gm/ha is effective against Sorrel and large actively growing Dock, provided weeds are not stressed. Allow a minimum of 1 month between spraying and planting.
NOTE:	Where germination of grasses and broadleaved annual weeds has occured prior to mounding, Roundup can be mixed with Brush-off. Apply Roundup at rates between 1 and 4 litres/ha and spray at output rates no higher than 150 litre/ha. Allow 2 weeks between spraying and mounding.

DATE: 28-3-90

BRANCH MANAGER _____ CHEMICALS OFFICER T.A. Wood

Sheet No. B20

TECHNICAL INSTRUCTION SHEET

Recommendations for Chemical Control of Non-Declared Plants

TARGET SPECIES:	ANNUAL AND PERENNIAL BROADLEAVED WEEDS AND GRASSES
JOB DESCRIPTION:	Pre-planting weed control for the establishment of eucalypts.
HERBICIDES:	Roundup Herbicide or equivalent other brand. Flowable Gesatop 500 FW or equivalent other brand.
ACTIVE INGREDIENT:	Roundup: 360 gm/litre glyphosate Flowable Gesatop 500 FW: 500 gm/litre simazine.
RATE OF APPLICATION:	1 to 4 litres/ha of Roundup mixed with 10 or 16 litres/ha of Flowable Gesatop 500 FW. Apply in 50 - 150 litres/ha of water.
WETTING AGENT:	Ratio of 1 part wetting agent to 400 parts tank mixture.
METHOD:	Where weeds are newly emerged or the sward is predominantly Capeweed (Arctotheca calendula) Roundup can be applied at 1 litre/ha. However, at this rate it is advisable to add ammonium sulphate to the mixture at 0.2% V/V. Where weeds are developed this rate should be increased to 3 or 4 litres/ha. Use the highest rate where clover (Trifolium spp) or Annual Rye grass (Lollum rigidum) occur. Where Sorrel or Dock occur Brush-off can be added to this mixture at a rate of 15-20 gm/ha (Refer to TIS B19)

Flowable Gesatop 500 FW is added to the mixture at 10 or 16 litres/ha. On well drained soils with average or low organic content apply Gesatop at 10 litres/ha. For soils with very high organic content Gesatop should be applied at 16 litres/ha. On seasonally waterlogged and poorly drained soils it is important to mound and drain the site before spraying. Allow a period (1 month) for the mound to consolidate before spraying.

When planting on light sandy soils allow a period of 4 weeks and 50 mm of rain between spraying and planting. On sandy loams or heavier soils allow a 2 weeks and 50 mm of rain before planting.

When band spraying apply herbicide in a swathe 1.5 - 2.0 m wide. On newly cleared land broadscale spraying is recommended to prevent germination of woody weeds.

When mixing Roundup and Gesatop in the spray tank always half fill the tank with water, and with the agitator operating add the Gesatop followed by the Roundup and lastly the wetting agent.

DATE: 28.3.90

BRANCH MANAGER _____ CHEMICALS OFFICER T A Wood

TECHNICAL INSTRUCTION SHEET

Recommendation for Chemical Control of non-declared plants.

TARGET SPECIES:	ANNUAL BROADLEAVED WEEDS AND GRASSES
JOB DESCRIPTION:	Pre and post-planting weed control for the establishment of pines.
HERBICIDE:	Velpar L Flowable Gesaprim 500 FW
ACTIVE INGREDIENTS:	Velpar L: 250 gm/litre hexazinone Flowable Gesaprim: 500 gm/litre atrazine
RATE OF APPLICATION:	6 litres/ha of Velpar L mixed with 4 litres/ha of flowable Gesaprim 500FW applied in 250-400 litres/ha of water
WETTING AGENT:	Pre-plant: Ratio of 1 part wetting agent to 400 parts of tank mixture. Post-plant: Nil
METHOD:	Apply by shrouded boomsprayer before or after pines are planted. Apply only when the soil is moist. Avoid overspraying when temperatures are above 24°C

Date: 28-3-90

Branch Manager _____ Chemical Officer T A Wood

Sheet No 22

TECHNICAL INSTRUCTION SHEET

Herbicide injection of "Sirex" trap trees.

TARGET SPECIES:	P. radiata, P. pinaster.
JOB DESCRIPTION:	Notching (poisoning) of trees in plots to create trap trees, (stressed trees) for detection of Sirex Wasp.
HERBICIDE:	Banex
INGREDIENT:	200g/litre dicamba as dimethylamine salt.
RATE OF APPLICATION:	2ml of undiluted chemical per notch.
WETTING AGENT:	NIL
METHOD:	Create a notch with an axe. Inject the outer sapwood at breast height of each tree with herbicide (use either a Phillips drenching gun or Vaxmaster vaccination gun). Use a rate of 2ml per 10cm of circumference for trees<20cm diameter and 2ml per 5cm of circumference for trees> 20cm diameter.
TIMING:	Mid Spring to early summer.
SAFETY:	Please note chemical to be applied using safety instructions for mixing on CALM 729 Sheet A1. Use PVC apron and gloves, long sleeved combination overalls, twin cartridge respirator with Agricultural filters and goggles on face shield.

BRANCH MANAGER: _____ DATE: 28-3-90

CHEMICALS OFFICER: T A Wood

INDEX

NON-DECLARED PLANTS

INDEX

A HERBICIDES

PART 2 - Recommended Control of Non Declared Plants

TARGET SPECIES	TRADE NAME & COMPANY	ACTIVE INGREDIENT	FD 729 No.	Tech. Instruct Sheet No.
BARNYARD GRASS	Caragard - (Pre-Post Emergent) (Ciba-geigy)	250g/l terbuthylazine 250g/l terbumeton	A 2	1
CRAB GRASS	Daconate 8 - (Selective Post Emergent (Agchem)	800g/l M.S.M.A.	A 4	2
VEGEWEED COUCH GRASS CRAB GRASS	Dacthal Weed Preventer - (Pre-Emergent) (Agchem)	750g/l Chlorthal dimethyl	A 5	3
COUCH GRASS KIKUYU WINTER GRASSES	Dowpon Systemic Grass Killer - (Non-Selective Post Emergent) (Dow)	740g/l 2, 2-DPA Sodium Salt	A 6	4
ANNUAL WEEDS	Flowable Gesatop 500 RW - (Selective Pre-Emergent) (Ciba-geigy)	500g/l Simazine	A10	5
ANNUAL BROAD LEAVED WEEDS & GRASSES	Flowable Gesaprim 500 FW - (Selective Post Emergent) (Ciba-geigy)	500g/l Atrazine	A11	6
ANNUAL GRASSES	Gesamil 50 - (Selective Pre-Emergent) (Ciba-geigy)	500g/l Propazine	A12	7
RYE GRASS WILD OATS	Hoegrass - (Selective Post Emergent) (Hoescht)	357g/l Dichlofop-methyl	A14	8
	Hyvar x Weedkiller Pellets - (Non-Selective Post Emergent) (Du Pont)	24g/kg Bromacil	A15	9

INDEX

A HERBICIDES

PART 2 - Recommended Control of Non Declared Plants

TARGET SPECIES	TRADE NAME & COMPANY	ACTIVE INGREDIENT	FD 729 No.	Tech Instruction Sheet No.
POST PLANTING SCRUB CONTROL				
Woody & Perennial Herbaceous Weeds	Velpar L (Du Pont)	25 g/l Hexazinone	A28	29
Pre Plant Weed Control	Roundup (Monsanto)	360g/l Glyphosate	A18	30
	Flowable Gesatop 500 RW (Ciba-geigy) & Roundup - mix (Monsanto)	500g/l Simazine	A10	30A
	Weedazol TL Plus (Ciba-geigy)	250g/l Amitrole 220g/l Ammonium Thiocyanate	A32	31
	Flowable Gesaprim 500FW & Weedazol TL Plus Mix (Ciba-geigy)	500g/l Atrazine	A11	31A
2.3 OTHER WEED CONTROL				
CONTROL OF BROAD LEAF WEEDS IN LAWNS				
	Weedoben M Bindi Weedkiller	200g/l M.C.P.A.	A33	32

INDEX

A HERBICIDES

PART 2 - Recommended Control of Non Declared Plants

TARGET SPECIES	TRADE NAME & COMPANY	ACTIVE INGREDIENT	FD 729 No.	Tech. Instruct Sheet No.
	Vorox AA - Powder - (Pre-Post Emergent Herbicide) (Ciba-geigy)	400g/l Amitrole 400g/l Atrazine	A29	20
	Gesaprim - Vorox Mix		A11	20A
FIREBREAK GRASS CONTROL				
	Vorox AA - Flowable - (Pre-Post Emergent) (Ciba-geigy)	320g/l Amitrole 320g/l Atrazine	A30	21
	Vorox AA - Pwder - (Pre-Post Emergent) (Ciba-geigy)	400g/kg Amitrole 400g/kg Atrazine	A29	22
FIREBREAK GRASS CONTROL				
KIKUYU, COUCH, PASPALUM, ANNUAL GRASS	Roundup - (Non-Selective Post Emergent) (Monsanto)	360g/l Glyphosate	A18	23
FIREBREAKS - BRACKEN CONTROL				
	Roundup (Monsanto)	360g/l Glyphosate	A18	24
2.2 SILVICULTURAL THINNING, EUCALYPT COPPICE & SCRUB CONTROL				
EUCALYPT CONTROL - HARDWOOD & SOFTWOOD				
FOLIA SPRAY	Roundup - (Non-Selective Post Emergent) (Monsanto)	360g/l Glyphosate	A18	25
CUT STUMP	Roundup - (Non-Selective Post Emergent) (Monsanto)	360g/l Glyphosate	A18	26
NOTCHING	Roundup - (Non-Selective Post Emergent) (Monsanto)	360g/l Glyphosate	A18	27
	Tordon 50-D - (Non-Selective Post Emergent) (Dow)	200g/l 2, 4D 50g/l Picloram both as tri isopropanolamine salts	A21	28

INDEX

A HERBICIDES

PART 2 - Recommended Control of Non Declared Plants

TARGET SPECIES	TRADE NAME & COMPANY	ACTIVE INGREDIENT	FD 729 No.	Tech. Instruction Sheet No.
BROAD LEAVED WEEDS A ANNUAL GRASSES	Linuron 50 - (Pre-Post Emergent) (Du Pont)	500g/kg Linuron	A16	10
ANNUAL GRASS COUCH GRASS SORRELL	Roundup - (non-Selective Post Emergent) (Monsanto)	360g/l Glyphosate	A18	11
BARNYARD GRASS IALS	Treflan Selective Herbicide - (Selective Pre-Emergent) (Nufarm)	400g/l Trifluralin	A26	12
ANNUAL WEEDS & PERENNIAL BROAD LEAVED WEEDS	Tryquat - (Post Emergent) (I.C.I. Aust.)	100g/l Paraquat 50g/l Diquat	A27	13
	Yield 25 - (Selective Pre-Emergent) (Nufarm)	125g/l Trifluralin 125g/l Oryzalin	A35	14
CRAB GRASS	Fusilade (I.C.I. Aust.)	212g/l Fluazifop	A38	15
BROAD LEAVED WEEDS ND GRASSES	Lexone DF Weedkiller (Du Pont)	750g/l Metribuzin	A39	16
BROAD LEAVED WEEDS AND GRASSES	Goal (Rohm & Hass)	240g/l Oxyflourfen	A40	17
PRE-PLANT WEED CONTROL				
	Gesaprim - (Selective Pre Emergent Herbicide) (Ciba-geigy)	500g/l Atrazine	A11	18
PRE-POST PLANTING WEED CONTROL				
	Vorox AA - Flowable - (Pre-Post Emergent Herbicide) (Ciba-geigy)	320g/l Amitrole 320g/l Atrazine	A30	19
	Gesaprim - Vorox Mix		A11	19A

Alternative chemical trade names

ALTERNATIVE CHEMICAL TRADE NAMES.

IEMICAL TRADE NAME	ACTIVE INGREDIENT	ALTERNATIVE T/NAME	SUPPLY COMPANY
A) Caragard	250g/l terbuthylazine 250g/l Terbumeton		Ciba-geigy
B) Daconate 8	800g/l Monosodium methyl arsenate (M.S.M.A)		Agchem
C) Dacthal Weed Preventer	750g/l Dimethyl 2, 3, 5, 6 Tetrachloroterph-thalate		Agchem
		Dacthal W75 Pre-Emergent Herbicide	Agchem
		Dacthal W75 Pre-Emergent Herbicide	SDS Biotech
D) Dowpon Systemic Grasskiller	740g/kg Sodium 2, 2-Dichloropro-prionic Acid		Dow
		Nu-pon Herbicide	Nufarm
		Prop-Pon 2, 2-DPA Systemic Grasskiller	C.I.K.
E) Flowable Gesatop 500 RW Liquid Herbicide	500g/l Simazine		Ciba-geigy
		Simatoc 50 Flocol Liquid Herbicide	I.C.I.
		Flowable Simazine - 500 Selectiver Herb.	C.I.K.
		Flowable Simazine Herbicide	Amalgamated
		Simazine 500 F Select. Herbicide	Hoechst
		Elderado Simazine Liquid Selective Herbicide	Elders
F) Flowable Gesaprim 500 FW Liquid Herbicide	500g/l Atrazine		Ciba-geigy
		Flowable Nu-trazine Liquid Herbicide	Nufarm
		Atradex 50 Flocal Liquid Herbicide	I.C.I.
		F.B.C. Atraflo 500 SC Select. Herbicide	Schering
		Atrazine Flowable Herbicide	C.I.K.
		Flowable Atrazine Herbicide	Amalgamated

ALTERNATIVE CHEMICAL TRADE NAMES.

EMICAL TRADE NAME	ACTIVE INGREDIENT	ALTERNATIVE T/NAME	SUPPLY COMPANY
G) Gesamil 50 Wettable Powder Select. Herbicide	500g/l Propazine		Ciba-geigy
H) Hoegras Selective Herbicide	375g/l Dichlofop - methyl		Hoechst
I) Hyvar x Weed-killer Pellets	24g/kg Bromocil		Du Pont
J) Linuron 50 Weedkiller Pellets	500g/kg Linuron	Afalon Selective Weedkiller Linuron 50 WP Weedkiller.	Du Pont Hoechst Schering
K) Roundup	360g/l Glyphosate		Monsanto
L) Tordon 50 D Weedkiller	200g/l 2, 4-Dichlophenoxyacetic Acid 50g/l Picloram - both as tri-isopropanolamine		Dow
M) Treflan Select. Herbicide	400g/l trifluralin	Tridan Herbicide Trifluralin Select. Herbicide Trifluralin Select. Herbicide Farmco Trifluralin Select. Herbicide Agan Triflurex 40 EC Select. Herbicide Elderado Trifluralin 400 Select. Herb.	Nufarm Amalgamated Nufarm I.C.I. C.I.K. Koor Elders
N) Tryquat	100g/l Paraquat 50 g/l Diquat		I.C.I.
O) Velpar L W/killer Miscible Liquid	250g/l Hexazinone		Du Pont
P) Vorox AA - Flowable	320g/l Amitrole 320g/l Atrazine	Amizine AA - Flowable	Ciba-geigy C.I.K.
Q) Weedoben M Bindi Weedkiller	200g/l Bromoxynil as octanoic acid ester. 200g/l MCPA as butoxyethanel ester.	Brominal Emulsifiable Concentrate Select. Herbicide	Ciba-geigy Ciba-geigy

ALTERNATIVE CHEMICAL TRADE NAMES.

IEMICAL TRADE NAME	ACTIVE INGREDIENT	ALTERNATIVE T/NAME	SUPPLY COMPANY
R) **Yield 25 EC**	125g/l Trifluralin 125g/l Oryzalin		Nufarm
S) **Fusilade**	212g/l Fluazifop		I.C.I.
T) **Lexone DF Weedkiller**	750g/kg Metribuzin		Du Pont
Goal	240g/l Oxyfluorfen		Rohm & Hass

Technical instruction sheets for non declared plants

TECHNICAL INSTRUCTION SHEET

Recommendation for Chemical Control of Non-declared plants.

TARGET SPECIES:	**BARNYARD GRASS**
JOB DESCRIPTION:	To control Barnyard Grass in Nannup Nursery using a boomspray. Pre-and early Post Emergent.
HERBICIDE:	Caragard - (Ciba-geigy)
INGREDIENT:	250 g/l terbuthylazine 250 g/l terbumeton
RATE OF APPLICATION:	4 litres of Caragard mixed with 450 litres of water applied over one hectare.
WETTING AGENT:	Wetting agent is not required.
WHEN TO APPLY:	Immediately Barnyard Grass has germinated and continue application if further germination occurs. This occurs in late Spring - early Summer. In P. radiata nurseries germination often coincides with the commencement of irrigation.
REMARKS:	Strict observation of the germination of Barnyard Grass must be made for control to be effective. This herbicide is used safely over young pine seedlings at the above rate.

DATE: 22/10/85

TECHNICAL INSTRUCTION SHEET

Recommendation for Chemical Control of Non-declared plants.

TARGET SPECIES: **CRAB GRASS**

JOB DESCRIPTION: Boomspray control of Crab Grass in nurseries. Post Emergent treatment.

HERBICIDE: Daconate 8

INGREDIENT: 800 g/l (MSMA) monosodium methyl arsenate

RATE OF APPLICATION: Mix 2-5 litres of Daconate 8 to 450 litres of water/ha.

WETTING AGENT: Wetting agent is not required.

WHEN TO APPLY:

REMARKS:

Complete coverage of the weed foliage is necessary for good results.

Daconate 8 is inactivated on contact with the soil and has no residual activity.

Daconate performs best under dry hot conditions. Disturbance of treated perennial weed species by cutting or cultivation can interfere with the action of the chemical.

This herbicide is used as a spray over young pine seedlings.

DATE: 22/10/85

TECHNICAL INSTRUCTION SHEET

Recommendation for Chemical Control of Declared Plants

TARGET SPECIES: BLACKBERRY *(Rubus fruticosus)*.

JOB DESCRIPTION: Chemical control of Blackberry on land controlled by the Department of Land Management.

HERBICIDE:

1. Grazon
2. Grazon DS
3. Roundup

A permit is required if Grazon or Grazon DS is used in restricted spraying areas

ACTIVE INGREDIENT:

1. Grazon: **150gm/L** of triclopyr + **50gm/L** of picloram.
2. Grazon DS: **300gm/L** of triclopyr + **100gm/L** of picloram.
3. Roundup: **360gm/L** of glyphosate.

RATE OF APPLICATION:

1. Grazon: **700ml**:100 litres of water.
2. Grazon DS: **350ml**:100 litres of water (young plants).
   500ml:100 litres of water (old plants).
3. Roundup: **1.25 litres**:100 litres of water.

WETTING AGENT:

Ratio of **1:400.** No wetting agent is required when using Roundup

METHOD:

Blackberry should be controlled by foliar spray between December and April provided that the plants are actively growing. Treatment is most effective during the period from flowering to fruit maturity.

Apply using tractor mounted hand spray unit, knapsack or CDA. Thoroughly cover the foliage to the pint of run-off. When using Grazon or Grazon DS spray a 1 - 2 meter strip around the edge of the infestation to help reduce suckering. Do **not** burn or slash Blackberry for 6 months after spraying.

A follow-up spray after 12 months is usually necessary to affect complete kill.

DATE 31-3-92.

BRANCH MANAGER Batini CHEMICALS OFFICER T.A. Wood

TECHNICAL INSTRUCTION SHEET

Recommendation for Chemical Control of Non-declared plants.

TARGET SPECIES:	**VEGEWEED, COUCH GRASS, CRAB GRASS, CAPEWEED**
JOB DESCRIPTION:	Pre-emergent treatment by boomspray of the above plants in the Nannup Pine nursery.
HERBICIDE:	Dacthal Weed Preventer
INGREDIENT:	750 g/kg Chlorthal dimethyl
RATE OF APPLICATION:	14 kg/ of Dacthal in 1,000 litres of water/ha.
WETTING AGENT:	Wetting agent is not required.
WHEN TO APPLY:	Immediately after sowing, if above weeds are likely to be a problem.
REMARKS:	Soil preparation must be to a fine even tilth. Dacthal is not effective against weeds that have already emerged. For best results application should be done on the same day as seeding. Pre-mix powder to a fine slurry with no lumps and add to a half filled tank of clean water with the spray agitator going to ensure Dacthal is well mixed.

DATE: 22/10/85

TECHNICAL INSTRUCTION SHEET

Recommendation for Chemical Control of Non-declared plants.

TARGET SPECIES:	**COUCH GRASS, KIKUYU, WINTER GRASSES**
JOB DESCRIPTION:	Post emergent Control of the above grasses in nurseries using a boomspray. (Used only in a non-crop situation)
HERBICIDE:	Dowpon Systemic Grass Killer (Dow)
INGREDIENT:	740 g/kg Sodium 2, 2-dichloroproprionic acid
RATE OF APPLICATION:	Mix: 100 g of Dowpon with 10 litres of water and apply over 25 sq m of grass area.
WETTING AGENT:	The addition of an improved non-ionic wetting agent increases the efficiency of the spray.
WHEN TO APPLY:	Apply when grasses are growing vigorously and before seed stems develop.
REMARKS:	Dowpon is slow acting and may take 6 - 8 weeks before the full effect is seen.

DATE: 22/10/85

TECHNICAL INSTRUCTION SHEET

Recommendation for Chemical Control of Non-declared plants.

TARGET SPECIES:	**ANNUAL WEEDS**
JOB DESCRIPTION:	Pre-emergent control of Annual Weeds in Nurseries using a boomspray.
HERBICIDE:	Flowable Gesatop 500 R.W. Liquid Herbicide - (Ciba-geigy)
INGREDIENT:	500 g/l Simazine
RATE OF APPLICATION:	4.5 litres of Flowable Gesatop 500 R.W. in 450 litres of water/ha.
WETTING AGENT:	Wetting agent not to be used.
WHEN TO APPLY:	Apply to moist cultivated soil.
REMARKS:	Can be sprayed safely over young pine seedlings at the above rate.

DATE: 22/10/85

TECHNICAL INSTRUCTION SHEET

Recommendation for Chemical Control of Non-declared plants.

TARGET SPECIES:	**BROAD LEAVED WEEDS AND ANNUAL GRASSES**
JOB DESCRIPTION:	Pre emergent control of the above grasses by boomspray in nurseries.
HERBICIDE:	Flowable Gesaprim 500 F.W. - (Ciba-geigy)
INGREDIENT:	500 g/l Atrazine
RATE OF APPLICATION:	2-4 kg/ha in water.
WETTING AGENT:	Not Required.
WHEN TO APPLY:	Before Germination.
REMARKS:	Gesaprim 500 F.W. is a residual herbicide and will not be used again in nurseries.

DATE: 22/10/85

TECHNICAL INSTRUCTION SHEET.

Recommendation for Chemical Control of non-declared plants.

TARGET SPECIES:	ANNUAL GRASSES
JOB DESCRIPTION:	Pre-emergent control of above weeds, by boomspray in Nannup nursery.
HERBICIDE:	Gesamil 50 (Ciba-geigy)
INGREDIENT:	500 g/kg propazine
RATE OF APPLICATION:	2 kg of Gesamil in 350-500 litres of water per ha.
WETTING AGENT:	No wetting agent is required
WHEN TO APPLY:	To moist bare soil just after sowing. Gesamil 50 is applied immediately after pine seeding for pre-emergent weed control.
REMARKS:	Pre-mix powder to a fine slurry with no lumps before adding to a half filled tank of clean water while pump agitator in operation.

DATE: 22/10/85

TECHNICAL INSTRUCTION SHEET

Recommendation for Chemical Control of Non-declared plants.

TARGET SPECIES: **RYE GRASS AND WILD OATS**

JOB DESCRIPTION: Post emergent control of the above grasses by boomspray in nurseries.

HERBICIDE: Hoegrass (Hoechst)

INGREDIENT: 375 g/l dichlofop-methyl

RATE OF APPLICATION: As per label instructions.

WETTING AGENT:

WHEN TO APPLY: Apply when majority of weeds are 2-4 leef stage generally 3-4 weeks after sowing.

REMARKS:

DATE: 22/10/85

TECHNICAL INSTRUCTION SHEET

Recommendation for Chemical Control of Non-declared plants.

TARGET SPECIES:	**BARLEY GRASS, RYE GRASS, WILD OATS, CAPEWEED, KIKUYU & NUTGRASS, COUCH GRASS**
JOB DESCRIPTION:	Post emergent control of the above weeds in nurseries.
HERBICIDE:	Hyvar x Weedkiller Pellets. (Du Pont)
INGREDIENT:	24 g/kg Bromacil
RATE OF APPLICATION:	2 - 5 kg of Hyvar x Pellets to 100 sq m of bed.
WETTING AGENT:	Not Applicable.
WHEN TO APPLY:	
REMARKS:	

DATE: 22/10/85

TECHNICAL INSTRUCTION SHEET

Recommendation for Chemical Control of Non-declared plants.

TARGET SPECIES:	**BROAD LEAVED WEEDS, ANNUAL WEEDS**
JOB DESCRIPTION:	Pre-Post emergent control of above weeds by boomspray in karri nurseries.
HERBICIDE:	Linuron 50 (Du Pont)
INGREDIENT:	500 g/kg Linuron
RATE OF APPLICATION:	500 g of Linuron in 450 litres of water per ha.
WETTING AGENT:	Do not add wetting agent.
WHEN TO APPLY:	Immediately after seeding.
REMARKS:	Higher rates of application have been found necessary. Surface of soil must not be disturbed after application of herbicide.

DATE: 22/10/85

TECHNICAL INSTRUCTION SHEET

Recommendation for Chemical Control of Non-declared plants.

TARGET SPECIES:	**BROAD LEAVED WEEDS, ANNUAL GRASSES, SORRELL, COUCH GRASS & PASPALUM**
JOB DESCRIPTION:	Post emergent grass and weed control in and around nurseries (fallow, drains & surrounds). Applied through weed wick, tractor mounted spray or packspray.
HERBICIDE:	Roundup (Monsanto)
INGREDIENT:	360 g/l Glyphosate
RATE OF APPLICATION:	Couch - 9 litres/ha or 200 ml of product mixed in 15 litres of water. Annual Grasses, Sorrel & Paspalum - 6 litres of product mixed in water/ha or 150 ml of product mixed in 15 litres of clean water. Weedwick Use - Mix 1 litre of Roundup with 2 litres of water to prepare a 33% solution.
WETTING AGENT:	Not Required.
WHEN TO APPLY:	As necessary.
REMARKS:	Apply to actively growing plants. Clean water is essential.

DATE: 22/10/85

TECHNICAL INSTRUCTION SHEET

Recommendation for Chemical Control of Non-declared plants.

TARGET SPECIES:	**BARNYARD GRASS, WILD OATS, RYE GRASS**
JOB DESCRIPTION:	Pre-emergent control of Barnyard Grass in nurseries by boomspray.
HERBICIDE:	Treflan Selective Herbicide.
INGREDIENT:	400 g/l Trifluralin
RATE OF APPLICATION:	Apply with a boomspray at 90 - 145 litres of water to the hectare.
WETTING AGENT:	
WHEN TO APPLY:	
REMARKS:	Treflan is a pre-emergence herbicide which must be mixed into the soil for long lasting control of annual grasses and certain broad leaved weeds. Treflan controls weeds as they germinate. For mixing add the required amount of Treflan to the spray tank when filling. Treflan must be mixed into the soil within 4 hours after spraying. Spray and mix in the same operation if possible. Treflan was on trial for above weeds - not currently being used.

DATE: 22/10/85

TECHNICAL INSTRUCTION SHEET

Recommendation for Chemical Control of Non-declared plants.

TARGET SPECIES:	**ANNUAL WEEDS & PERENNIAL BROAD LEAVED WEEDS AND GRASSES**
JOB DESCRIPTION:	Post emergent control of above grasses by boomspray or dribble bar in Manjimup and Nannup nurseries.
HERBICIDE:	Tryquat
INGREDIENT:	100 g/l parquat 50 g/l diquat
RATE OF APPLICATION:	Nannup - 4 litres of tryquat to 300 litres of water to the hectare. Manjimup - 1.5 litres of tryquat to 100 litres of water.
WETTING AGENT:	Use Plus 50
WHEN TO APPLY:	Use as necessary on fallow areas for control of Barnyard Grass. Weeds germinating between sowing and seed emergent should be controlled using Tryquat with a boomspray. In the karri nursery post emergent weed control is done by a "dribble bar" apply Tryquat between the rows of Euc's.
REMARKS:	Couch Grass on fallow areas should be treated with Roundup.

DATE: 22/10/85

TECHNICAL INSTRUCTION SHEET

Recommendation for Chemical Control of Non-declared plants.

TARGET SPECIES:

JOB DESCRIPTION: Pre-emergent control of Annual Rye Grass, Phalaris, Wineweed and Deadnettle in nurseries.

HERBICIDE: Yield 25 E.C.

INGREDIENT: 125 g/l Trifluralin. 125 g/l Oryzalin

RATE OF APPLICATION: As per label instructions.

WETTING AGENT:

WHEN TO APPLY:

REMARKS:

DATE: 22/10/85

TECHNICAL INSTRUCTION SHEET.

Recommendation for Chemical Control of non-declared plants.

TARGET SPECIES:	**CRAB GRASS**
JOB DESCRIPTION:	Used as a Eucalypt overspray. Post emergent control of Crab Grass in karri nurseries using a boomspray.
HERBICIDE:	Fusilade
INGREDIENT:	212 g/l Fluazifop
RATE OF APPLICATION:	3 litres of product/ha in 200 litres of water. This rate is dependant on the size of crab grass plants.
WETTING AGENT:	Wetting agent is necessary at 200 mls of agent to 100 litres of mix.
WHEN TO APPLY:	Better results are achieved when crab grass plants are small. Just after germination.
REMARKS:	Add the required amount of Fusilade directly to the spray tank and mix well by having the agitator in motion, then add the wetting agent. Fusilade is being trialed in Nannup Pine nursery this year.

DATE: 22/10/85

TECHNICAL INSTRUCTION SHEET.

Recommendation for Chemical Control of non-declared plants.

TARGET SPECIES:	**BROAD LEAVED WEEDS**
JOB DESCRIPTION:	Pre-emergent control of broad leaved weeds by boomspray in karri nurseries prior to weed germination over Eucalypt seedlings.
HERBICIDE:	Lexone D.F. Weedkiller.
INGREDIENT:	750 g/kg Metribuzin
RATE OF APPLICATION:	0.5 kg of product in 200 litres of water/ha.
WETTING AGENT:	Wetting agent is not required for this operation.
WHEN TO APPLY:	Apply immediately after seeding.
REMARKS:	Best results are obtained if treatment is made to moist soils. For mixing place the required amount of Lexone into the necessary volume of water in spray tank with agitator in motion. The material must be kept in suspension at all times by continuous agitation. Lexone is being trialed in the Nannup Pine Nursery this year.

DATE: 22/10/85

TECHNICAL INSTRUCTION SHEET.

Recommendation for Chemical Control of non-declared plants.

TARGET SPECIES:	**BROAD LEAVED WEEDS**
JOB DESCRIPTION:	Pre-emergent control of Broad Leaved weeds by boomspray in karri nurseries prior to weed germination.
HERBICIDE:	Goal.
INGREDIENT:	240 g/l Oxyfluorfen
RATE OF APPLICATION:	2 litres of product/ha in 200 litres of water.
WETTING AGENT:	Wetting agent is not required for a pre-emergent operation.
WHEN TO APPLY:	Immediately after seeding.
REMARKS:	Goal applied to well prepared weed free soil should not be incorporated or disturbed after application. When mixing fill the spray tank at least 1/3 full of clean water, add the recommended amount of goal while the pump and agitator is running, then complete filling the spray tank. Goal is being trialed in the Nannup Pine nursery this year.

DATE: 22/10/85

TECHNICAL INSTRUCTION SHEET

Recommendation for Chemical Control of Non-declared plants.

TARGET SPECIES:	**BROAD LEAVED WEEDS AND ANNUAL GRASSES**
JOB DESCRIPTION:	Pre emergent control of the above for establishing Eucalypt on the catchment areas in the Collie District.
HERBICIDE:	Gesaprim (Ciba-geigy)
INGREDIENT:	500 g/l Atrazine
RATE OF APPLICATION:	Apply 6 litre of Gesaprim/has mixed in water.
WETTING AGENT:	No
WHEN TO APPLY:	Prior to planting.
REMARKS:	Applied with tractor mounted boomspray, usually spraying planting lines only.

DATE: 22/10/85

TECHNICAL INSTRUCTION SHEET

Recommendation for Chemical Control of Non-declared plants.

TARGET SPECIES:	**BROAD LEAVED WEEDS & ANNUAL GRASSES**
JOB DESCRIPTION:	Pre and post emergent weed control for Eucalypt and pine establishment on pastured areas.
HERBICIDE:	Flowable Vorox AA + Gesaprim.
INGREDIENT:	320g/l Amitrole 320g/l Atrazine - Vorox AA 500g/l Atrazine - Gesaprim
RATE OF APPLICATION:	4l of Flowable Vorox AA and 2l Gesaprim mixed in clean water to the hectare.
WETTING AGENT:	Use Plus 50.
WHEN TO APPLY:	Prior to planting of Eucalypt or pine seedlings or immediately after pine planting.
REMARKS:	Applied with a boomspray on the planting machine or tractor mounted delivery nozzle, normally spraying only over the planting lines.

DATE: 22/10/85

TECHNICAL INSTRUCTION SHEET

Recommendation for Chemical Control of Non-declared plants.

TARGET SPECIES:	**BROAD LEAVED WEEDS & ANNUAL GRASSES**
JOB DESCRIPTION:	Pre and post emergent weed control for Eucalypt and Pine establishment on pastured areas.
HERBICIDE:	Flowable Vorox AA.
INGREDIENT:	320 g/l Amitrole 320 g/l Atrazine
RATE OF APPLICATION:	2 litres of Flowable Vorox AA mixed in clean water to the hectare.
WETTING AGENT:	Use Plus 50.
WHEN TO APPLY:	Prior to planting of Eucalypt or pine seedlin or immediately after pine planting.
REMARKS:	Applied with a boomspray on the planting machine or tractor mounted delivery nozzle, normally spraying only over the planting lines.

DATE: 22/10/85

TECHNICAL INSTRUCTION SHEET

Recommendation for Chemical Control of Non-declared plants.

TARGET SPECIES:	**BROAD LEAVED WEEDS AND ANNUAL GRASSES**
JOB DESCRIPTION:	Pre and post emergent weed control for Eucalypt and Pine establishment on pastured areas.
HERBICIDE:	Vorox AA - powder.
INGREDIENT:	400 g/l Amitrole 400 g/l Atrazine.
RATE OF APPLICATION:	4 kg of product mixed in clean water/ha.
WETTING AGENT:	Use Plus 50.
WHEN TO APPLY:	Prior to planting of Eucalypt or Pine seedlings or immediately after pine planting.
REMARKS:	Applied with a boomspray on the planting machine or tractor mounted delivery nozzle, normally spraying only over the planing lines.

DATE: 22/10/85

TECHNICAL INSTRUCTION SHEET

Recommendation for Chemical Control of Non-declared plants.

TARGET SPECIES:	**BROAD LEAVED WEEDS & ANNUAL GRASSES**
JOB DESCRIPTION:	Pre and post emergent weed control for Eucalypt and pine establishment on pastured areas.
HERBICIDE:	Vorox AA - Powder + Gesaprim.
INGREDIENT:	400g/l Amitrole 400g/l Atrazine - Vorox AA 500g/l Atrazine - Gesaprim
RATE OF APPLICATION:	4l of Flowable Vorox AA and 2l Gesaprim mixed in clean water to the hectare.
WETTING AGENT:	Use Plus 50.
WHEN TO APPLY:	Prior to planting of Eucalypt or pine seedlings or immediately after pine planting.
REMARKS:	Applied with a boomspray on the planting machine or tractor mounted delivery nozzle, normally spraying only over the planting lines.

DATE: 22/10/85

TECHNICAL INSTRUCTION SHEET

Recommendation for Chemical Control of Non-declared plants.

TARGET SPECIES:	**BROAD LEAVED WEEDS AND ANNUAL GRASSES**
JOB DESCRIPTION:	Pre and post emergent weed and grass control on firebreaks and building surrounds.
HERBICIDE:	Vorox AA Flowable.
INGREDIENT:	320 g/l Amitrole 320 g/l Atrazine
RATE OF APPLICATION:	5 litres of product mixed in clean water/hectare.
WETTING AGENT:	Use Plus 50.
WHEN TO APPLY:	Spray firebreaks in July-August each year after weeds have germinated and are actively growing.
REMARKS:	It is important to spray firebreaks on time. If spray application is done late in the season dead grasses may still cover the firebreak during the summer period and will require scraping.

DATE: 22/10/85

TECHNICAL INSTRUCTION SHEET

Recommendation for Chemical Control of Non-declared plants.

TARGET SPECIES:	**BROAD LEAVED WEEDS AND ANNUAL GRASSES**
JOB DESCRIPTION:	Pre and post emergent weed and grass control on firebreaks and building surrounds.
HERBICIDE:	Vorox AA - powder.
INGREDIENT:	400 g/l Amitrole 400 g/l Atrazine
RATE OF APPLICATION:	5 kg of Vorox AA mixed in clean water/ha.
WETTING AGENT:	Use Plus 50.
WHEN TO APPLY:	Spray firebreaks in July and August each year after weeds have germinated and are actively growing.
REMARKS:	It is important to spray firebreaks on time. If spray application is done late in the growing season dead grasses may still cover the firebreak during the summer period and will require scraping.

DATE: 22/10/85

TECHNICAL INSTRUCTION SHEET

Recommendation for Chemical Control of Non-declared plants.

TARGET SPECIES:	**KIKUYU, COUCH, PASPALUM AND ANNUAL GRASSES, SORRELL**
JOB DESCRIPTION:	Post-emergent control of the above grasses on firebreaks and around buildings.
HERBICIDE:	Roundup (Monsanto)
INGREDIENT:	360 g/l Glyphosate
RATE OF APPLICATION:	Couch Grass - 9 litres of product in clean water/hectare or 200 mls of product mixed in 15 litres of water. Annual Grasses, Sorrell, Paspalum and Kikuyu - 6 litres of product in clean water per hectare or 150 mls of product mixed in 15 litres of clean water.
WETTING AGENT:	Not Required
WHEN TO APPLY:	Complete spray operations early to give sprayed grasses time to break down and not remain as a fire hazard.
REMARKS:	Plants must be actively growing. Water must be clean.

DATE: 22/10/85

TECHNICAL INSTRUCTION SHEET.

Recommendation for Chemical Control of non-declared plants.

TARGET SPECIES:	**BRACKEN FERN**
JOB DESCRIPTION:	For controlling bracken on firebreaks and planting areas by means of a boomspray.
HERBICIDE:	Roundup (Monsanto)
INGREDIENT:	360 g/l Glyphosate.
RATE OF APPLICATION:	(A) Where bracken is dense with mature fronds (between 4-7 months old) use 6 litres of product/ha with 2-300 litres of water. (B) Sparse or uneven age bracken increase rate to 9 l/ha.
WETTING AGENT:	Not Required.
WHEN TO APPLY:	Burn or slash bracken in Spring. Apply herbicide with boomspray in Autumn.
REMARKS:	The use of an anti-evaporant (Ulvapron) is necessary on this job at 10 l/ha.

DATE: 22/10/85

TECHNICAL INSTRUCTION SHEET.

Recommendation for Chemical Control of non-declared plants.

TARGET SPECIES:	**EUCALYPT COPPICE AND ADVANCE GROWTH**
JOB DESCRIPTION:	"Foliar" spray" for control of Eucalypt coppice and advance growth from 300-800 mm high in softwood and hardwood establishment.
HERBICIDE:	Roundup (Monsanto)
INGREDIENT:	360 g/l Glyphosate
RATE OF APPLICATION:	Complete coverage of foliage is necessary. Advance growth - 1 part product to 15 parts water. Coppice - 1 part product to 10 parts water.
WETTING AGENT:	Wetting agent is not required. Add Cib-geigy herbicide dye if required.
WHEN TO APPLY:	Pine Plantations: Oct - February Hardwood: November - February
REMARKS:	To minimise drift, the spray should comprise a range of droplet sizes rather than a predominance of fine droplets. "Stump coppice" has had variable results and the treatment of extensive areas of coppice by this method is not recommeded till more reliable results can be re-produced Until it can be determined that fire will not stimulate growth, do not burn within 12 months of poisoning. Coppice develops very quickly - if not treated within 12 months of cutting (or burning), it will become too large for 'foliar spraying'.

DATE: 22/10/85

TECHNICAL INSTRUCTION SHEET.

Recommendation for Chemical Control of non-declared plants.

TARGET SPECIES:	**EUCALYPT SAPLINGS OR COPPICE THROUGH TO LARGE TREES**
JOB DESCRIPTION:	"Cut Stump" for control of Eucalypt saplings or coppice through to large trees in both softwood and hardwood establishment.
HERBICIDE:	Roundup (Monsanto)
INGREDIENT:	360 g/l Glyphosate
RATE OF APPLICATION:	Plantation:) 1 part product 10 parts water Hardwood:) Applied at 2ml per 25mm of stump diameter or 2ml per 75mm of stump circumference.
WETTING AGENT:	Wetting agent is not required. Add Ciba-geigy herbicide dye if necessary.
WHEN TO APPLY:	Plantations: October - April Hardwood: September - April
REMARKS:	Fell regrowth with a horizontal cut as close to the ground as possible. Apply herbicide to the cut surface, immediately after felling ensuring complete distribution around the cambium and sapwood of the stump. This application must be applied within 10-15 seconds of the cut being made. All stems in a stool must be treated. Until it can be determined fire will not stimulate growth, do not burn within 12 months of poisoning. If working arrangements cannot be devised to accomplish immediate application of the poison then treatment should be delayed till the stump coppices and it can be "folia sprayed" or "notched" at a later date.

DATE: 22/10/85

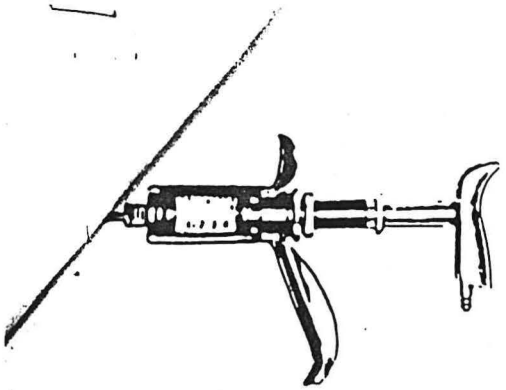


Figure 1

Vaccinator

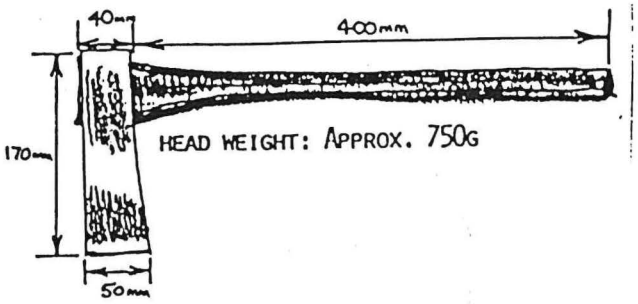
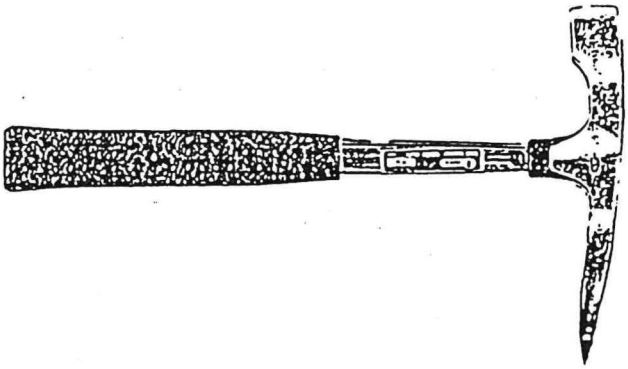


Figure 2

A recommended notching axe made by cutting a 3lb axe in half. Note importance of having the cutting face wider than remainder of head.



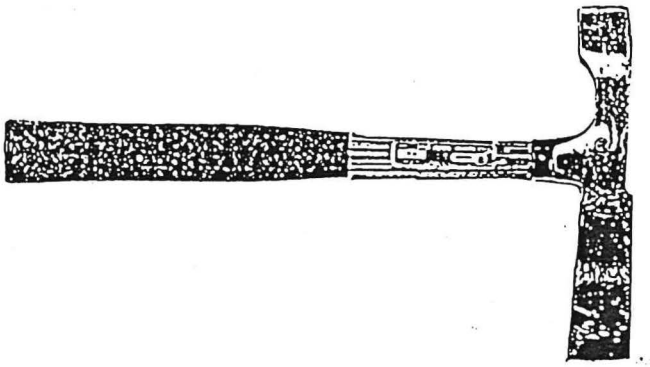


Figure 3

A. Standard 24oz brick hammer.

B. Notching axe made by cutting off the blade and welding it on at right angles. Weld with the bevelled face on the lower side (to suit right or left hander). Grind bevel so that it is not so pronounced.

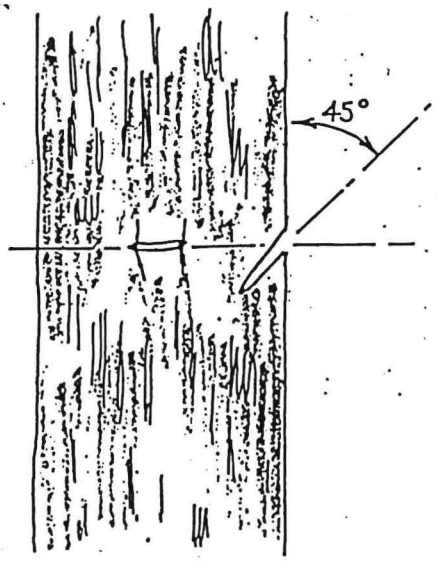


Figure 4

Correct angle of notch.

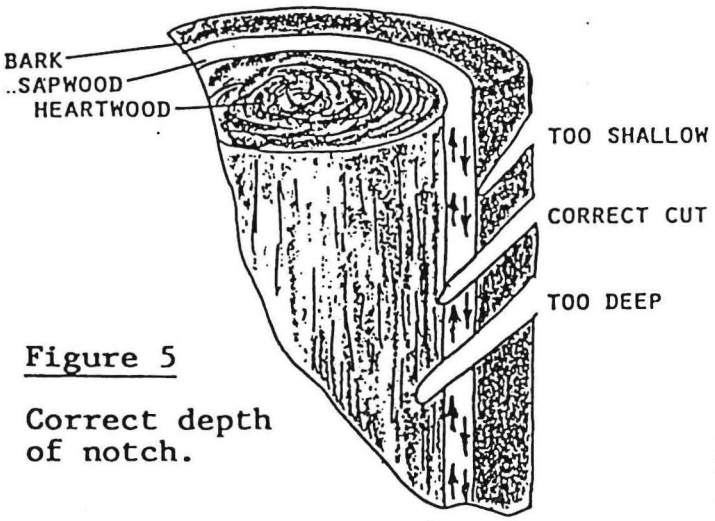


Figure 5

Correct depth of notch.

TECHNICAL INSTRUCTION SHEET.

Recommendation for Chemical Control of non-declared plants.

TARGET SPECIES:	**EUCALYPT SAPLINGS OR COPPICE THROUGH TO LARGE TREES**
JOB DESCRIPTION:	Stem Injection for controlling saplings or coppice establishment through to large trees (with a stem diameter greater than 100mm) in softwood and hardwood establishment
HERBICIDE:	Roundup
INGREDIENT:	360 g/l Glyphosate
RATE OF APPLICATION:	Plantation: 1 part Roundup to 1½ parts water. Apply 2ml of mixture into each notch spaced one for every 25cm of stem diameter. Hardwood: Spacing of notch - 15cm apart. Dose: <30cm dia bh 1ml/notch >30cm dia bh 1 part water 1 part Roundup to 1 part water
WETTING AGENT:	Wetting agent is not required. Add Ciba-geigy herbicide dye if required.
WHEN TO APPLY:	Plantation: October - April Hardwood: All year round. Not to be done if actually raining.

REMARKS:

- stand at arms length from the selected tree.
- Holding the axe in the preferred hand, drive the axe into the tree at waist high. The cut must be level and at 45° to the tree.

The axe must penetrate the sapwood. Push the handle away from the tree to widen the notch and withdraw the axe.

Immediately place the point of the nozzle of the gun into the sapwood part of the notch and inject the required amount of chemical.

This application must occur 10-15 seconds after notching is done.

Until it can be determined that fire will

P.T.O.

TECHNICAL INSTRUCTION SHEET.

Recommendation for Chemical Control of non-declared plants.

TARGET SPECIES:

JOB DESCRIPTION:

HERBICIDE: Tordon 50 D Weedkiller.

INGREDIENT: 200 g/l 2, 4-dicholorphenoxyacetic acid
50 g/l Picloram both as tri isopropanolamine salts

RATE OF APPLICATION: As per label instructions.

WETTING AGENT:

WHEN TO APPLY:

REMARKS: No longer in use.

DATE: 22/10/85

TECHNICAL INSTRUCTION SHEET.

Recommendation for Chemical Control of non-declared plants.

TARGET SPECIES:	**WOODY & PERENNIAL HERBACEOUS WEEDS**
JOB DESCRIPTION:	Foliar spray of above weeds in Pine Plantations after planting when weeds are small.
HERBICIDE:	Velpar L
INGREDIENT:	250 g/l hexazinone
RATE OF APPLICATION:	5 l of product mixed in water/ha applied with a boomspray.
WETTING AGENT:	No?
WHEN TO APPLY:	After Pine planting when weeds are small.
REMARKS:	Can be sprayed over pines.

DATE: 22/10/85

TECHNICAL INSTRUCTION SHEET

Recommendation for Chemical Control of Non-declared plants.

TARGET SPECIES: **PERENNIAL GRASSES AND HERBACEOUS WEEDS**

JOB DESCRIPTION: To control the above weeds before establishing pines or Eucalypts.

HERBICIDE: Roundup + Flowable Gesatop 500. Gesatop is to prevent the germination of annual weeds.

INGREDIENT: Roundup 360g/l Glyphosate/Gesatop.
500g/l Simazine

RATE OF APPLICATION:

Perennial Grasses & Broad Leaved Weeds -
6 lt of Roundup + 3-6 lt/ha of Gesatop.

Woody Weeds (newly emerged) -
2 lt/ha of Roundup + 3 lt/ha of Gesatop.

Annual Broad Leaved Weeds & Grasses -
3 lt/ha Roundup + 3-4 lt/ha Gesatop.

WETTING AGENT: Not Required.

WHEN TO APPLY: Prior to the establishment of pines or Eucalypts.

REMARKS:

Use clean water.
Fill the tank with half the required amount of water, add the Gesatop and mix thoroughly before adding the remaining water & Roundup.

Use the mix promptly.
For boomspray application spray volumes should be in range 50-100 l/ha.

NOTE: The ratio of Gesatop to Roundup should not exceed 2 to 1.

DATE: 22/10/85

TECHNICAL INSTRUCTION SHEET.

Recommendation for Chemical Control of non-declared plants.

TARGET SPECIES:	**PERENNIAL GRASSES AND HERBACEOUS WEEDS**
JOB DESCRIPTION:	To control the above weeds before establishing pines or Eucalypts.
HERBICIDE:	Roundup.
INGREDIENT:	360g/l Glyphosate
RATE OF APPLICATION:	Perennial grasses & Broad Leaved Weeds - 6 lt of Roundup Woody Weeds (newly emerged) - 2 lt/ha of Roundup Annual Broad Leaved Weeds & Grasses - 3 lt/ha Roundup
WETTING AGENT:	Not required
WHEN TO APPLY:	Prior to the establishment of pines or Eucalypts.
REMARKS:	Use clean water. Fill the tank with half the required amount of water before adding Roundup, then top up with water. Use the mix promptly. For boomspray application spray volumes should be in range 200 l/ha. For long term effect, use Gesatop.

DATE: 22/10/85

TECHNICAL INSTRUCTION SHEET.

Recommendation for Chemical Control of non-declared plants.

TARGET SPECIES: **ANNUAL HERBACEOUS WEEDS**

JOB DESCRIPTION: Pre planting weed control for establishing pines or Eucalypts.

HERBICIDE: Weedazol TL Plus.

INGREDIENT: 250g/l Amitrole
220g/l Ammonium Thiocyanate

RATE OF APPLICATION:

	Amitrole
Weeds 5 cm height	2.5 litres
Weeds 5-10 cm height	4 litres
Weeds 10-20 cm height	6.5 litres
Weeds 20 cm height	9 litres

WETTING AGENT: Wetting agent should be applied at 1 l/ha.

WHEN TO APPLY: At least two weeks before planting.

REMARKS: Use clean water.
Mix Atrazine where grasses especially rye grass, are the problem.

It is desirable to treat weeds when they are small to minimize Amitrole use.

For boomspray application output should be between 200-300 litres of water/ha.
This is an alternative to the Vorox AA treatment.

DATE: 22/10/85

TECHNICAL INSTRUCTION SHEET

Recommendation for Chemical Control of Non-declared plants.

TARGET SPECIES: ANNUAL HERBACEOUS WEEDS

JOB DESCRIPTION: Pre planting weed control for establishing pines or eucalypts.

HERBICIDE: Weedazol TL+ + Gesaprim.

INGREDIENT:

Amitrole T	+	Flowable Gesaprim
250g/l Amitrole		500g/l Atrazine
220g/l Ammonium Thiocyanate		

RATE OF APPLICATION:

	Amitrole	Gesaprim 500
Weeds 5 cm height	2.5 litres	3 - 7 Litres
Weeds 5-10 cm height	4 litres	"
Weeds 10-20 cm height	6.5 litres	"
Weeds 20 cm height	9 litres	"

WETTING AGENT: Wetting agent should be applied at 1 l/ha.

WHEN TO APPLY: At least two weeks before planting.

REMARKS:

Use Clean water.
Use higher rates of Atrazine where grasses especially rye grass, are the problem.

It is desirable to treat weeds when they are small to minimize Amitrole use.

For boomspray application output should be between 200-300 litres of water/ha.
This is an alternative to the Vorox AA + Gesaprim treatment.

DATE: 22/10/85

TECHNICAL INSTRUCTION SHEET.

Recommendation for Chemical Control of non-declared plants.

TARGET SPECIES:	**BROAD LEAVED WEEDS.**
JOB DESCRIPTION:	Control above weeds in lawns.
HERBICIDE:	Weedoben M Bindi Weedkiller.
INGREDIENT:	200 g/l Bromoxynil as octanoic acid ester 200 g/l MCPA as butoxyethanol ester
RATE OF APPLICATION:	4 ml of product per litre of water. Apply at 1-5 litres of mix to 10 m^2 of area.
WETTING AGENT:	Wetting agent is not required.
WHEN TO APPLY:	As required.

REMARKS:

DATE: 22/10/85