

Rhododendron ponticum control using approved herbicides

Rhododendron control workshop

24th May 2005.

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Objectives of a Control Program

“ ...the effective control (death) of target bushes, without damaging non-target species and with minimal disturbance to the environment, in a way that prevents or lessens re-establishment of *R. ponticum* seedlings, eventually returning the site to a state similar to pre-rhododendron establishment or better”



Herbicides currently approved for use on *R. ponticum*

- Ammonium sulphamate (e.g. Amcide)
- 2,4-D/dicamba/triclopyr (e.g. Broadshot)
- Glyphosate (e.g. Roundup ProBiactive)
- Triclopyr (e.g. Timbrel)

No longer approved – but included as bench mark:

- Imazapyr (Arsenal 50F)

The Toxicology of Some Commonly Encountered Chemicals

Product	Active ingredient	Oral LD ₅₀ for rats. (mg/kg body wt)	Quantity in humans which causes fatality by oral ingestion	Hazard rating on product label
Whiskey	Ethyl alcohol	13.7	?	None (price?!)
Benson & Hedges	Nicotine (1.1 mg/cig)	50-60	60mg	Government health warning
Table salt	Sodium chloride	3,000	1 g/kg	Taste
Roundup	Glyphosate (360 g/l)	4,230	206 ml	Harmful



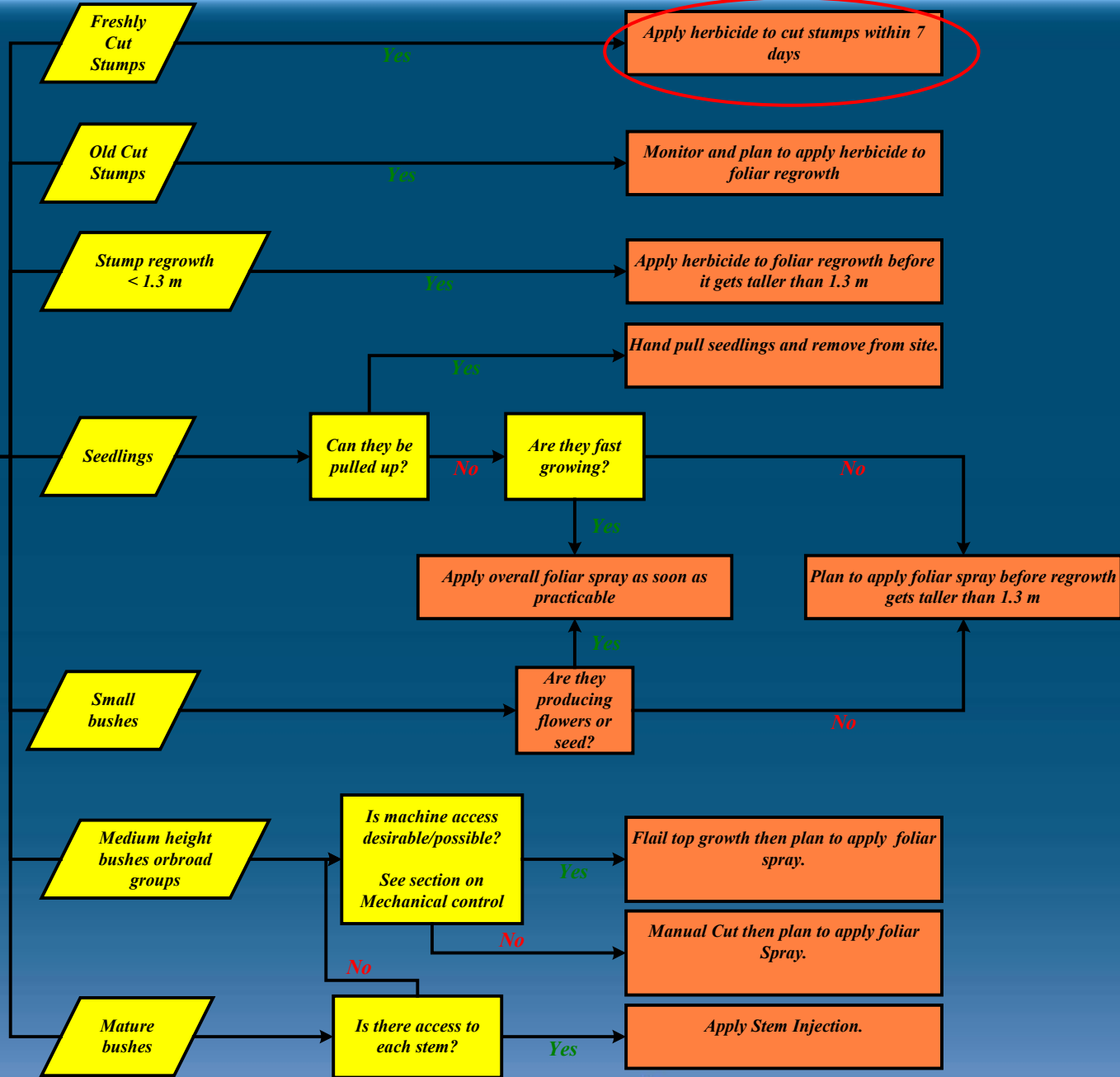
Bush Type for Treatment

Bush type	Description
Freshly cut stumps	Recently cut stumps that can be treated with herbicide within a 7 day period from cutting.
Old cut stumps	Stumps from previous control operations that may have buds but do not have live shoots.
Stump regrowth	Shoot regrowth from previously cut stumps that is below 1.3 m height and not yet flowering.
Seedlings	Seedlings that have recently germinated and established. These tend to be shallow rooted, and relatively young.
Small bushes	Bushes below 1.3 m in height with less than 3m bush circumference.
Medium height bushes or broad groups	Bushes above 1.3 m in height with no access to individual stems or small bushes or groups with a circumference greater than 3m.
Mature bushes	Bushes above 1.3 m height, with stems of > 3 cm diameter that can be individually accessed.

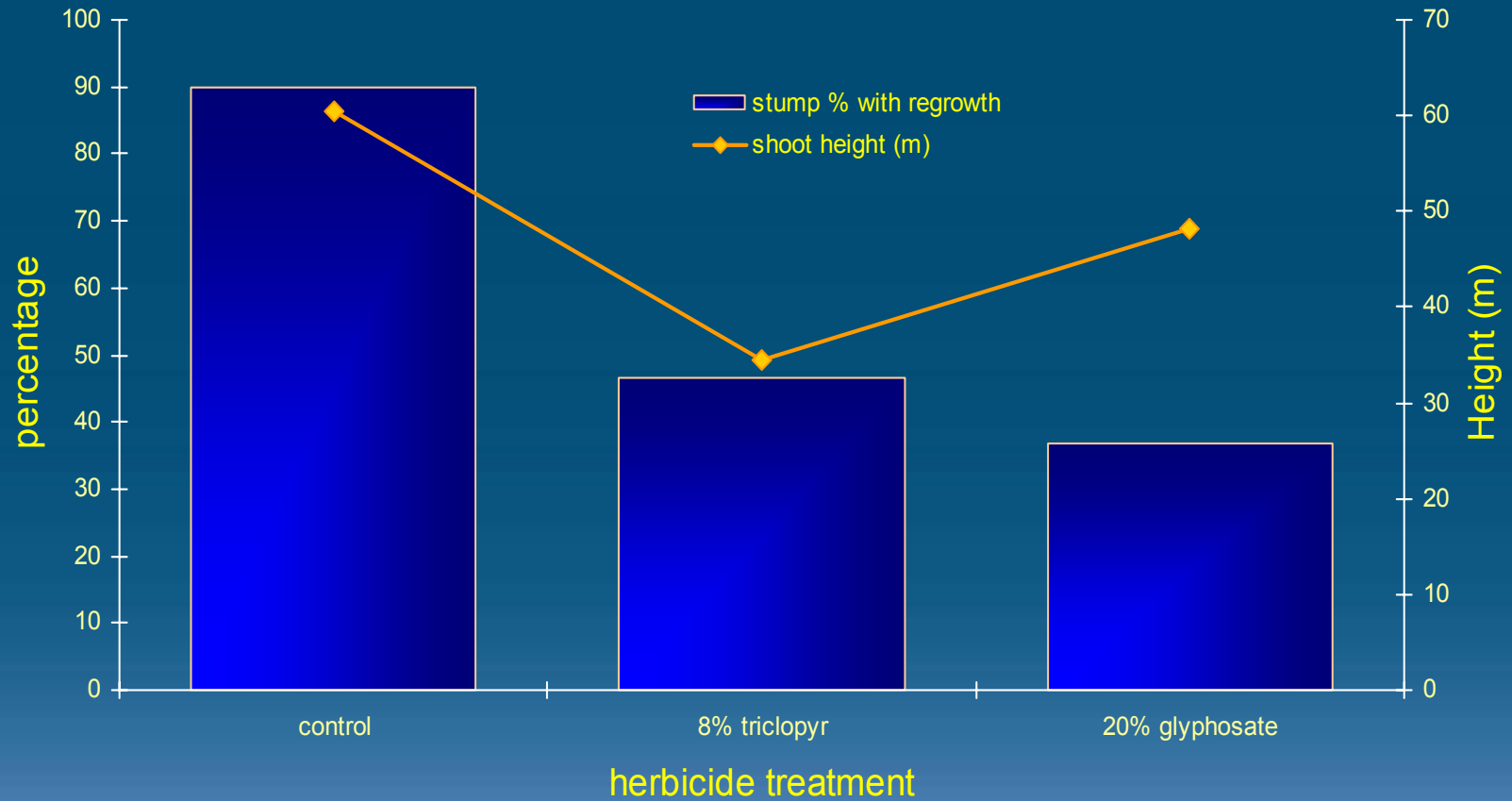


Choice of application technique

INITIAL SITE SURVEY:
Size or type of bush present on site:



Cut Stump Applications



Cut stump treatment under a broadleaved canopy. Bush health scored 1-6, where 1 = healthy, and 6 = dead.

	Date of Assessments								
	Health			% cover			Ht (cm)		
	11/97	10/98	09/99	11/97	10/98	09/99	11/97	10/98	09/99
Control	1	1.0	2.0	24.0	24.0	39.0	62.6	103.0	123.2
Glyphosate	1	1.0	1.8	12.0	6.6	15.0	43.0	69.8	91.6
Imazapyr*	1.8	2.0	2.2	3.2	2.4	6.0	40.2	84.2	73.4

* Presented for information only



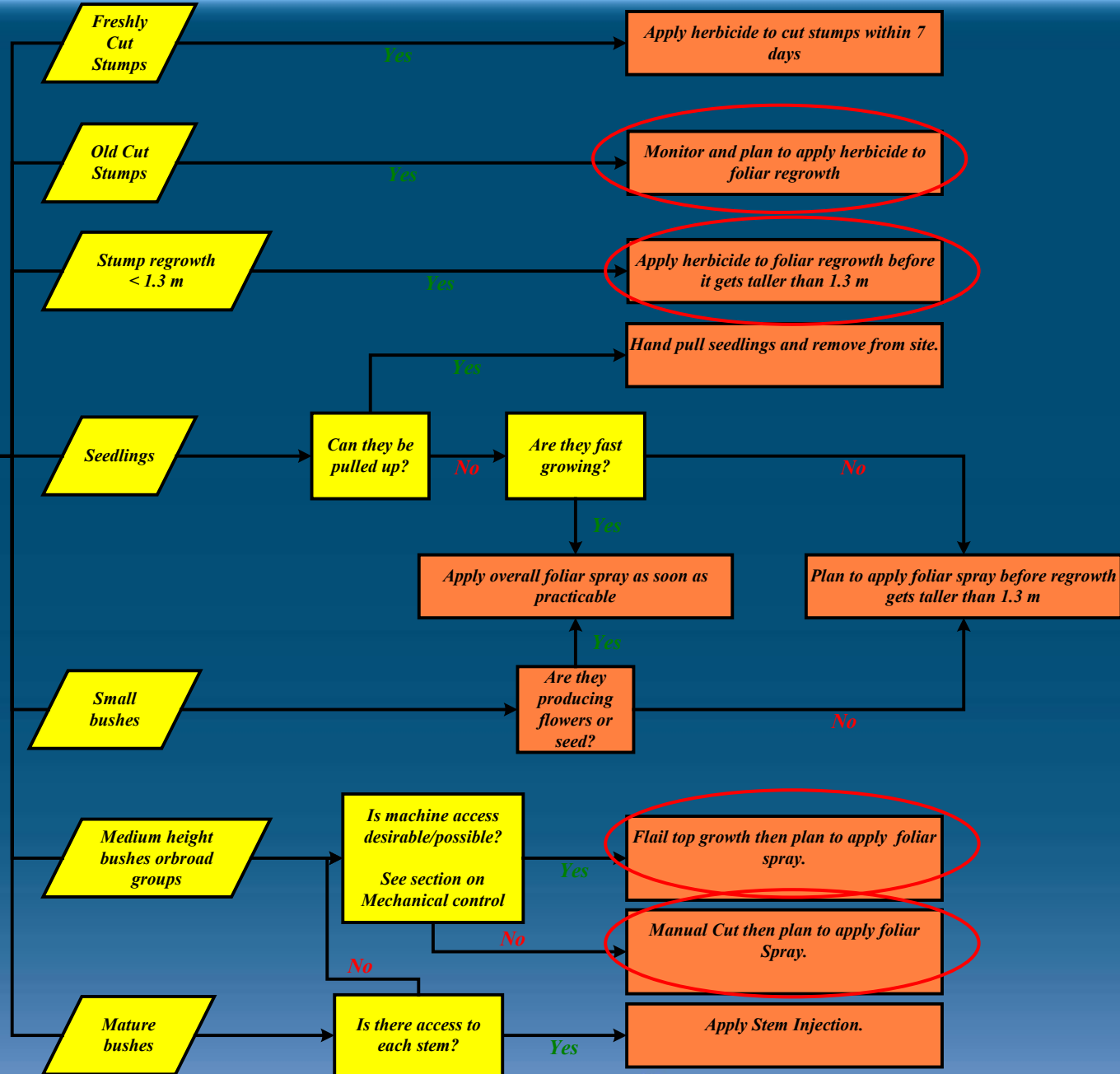
Herbicide Application: Cut Stump

- Must be applied within 7 days from stump severance
- Possibility of missing stumps - allows regrowth to occur
- Possibility of double-treating stumps
- Will not kill layered stems
- May not enable treatment of seedlings



Choice of application technique

INITIAL SITE SURVEY:
Size or type of bush present on site:



Age of regrowth at application of glyphosate
(Loch Awe 12). Health scored 1-6, where 1 =
healthy; 6 = dead.

Age of regrowth when herbicide applied	Date of assessment	
	6 month	12 month
Control	1	1
3 months	6	6
4 months	6	6
5 months	6	6
7 months	5.5	6
13 months	6	-
16 months	6	-



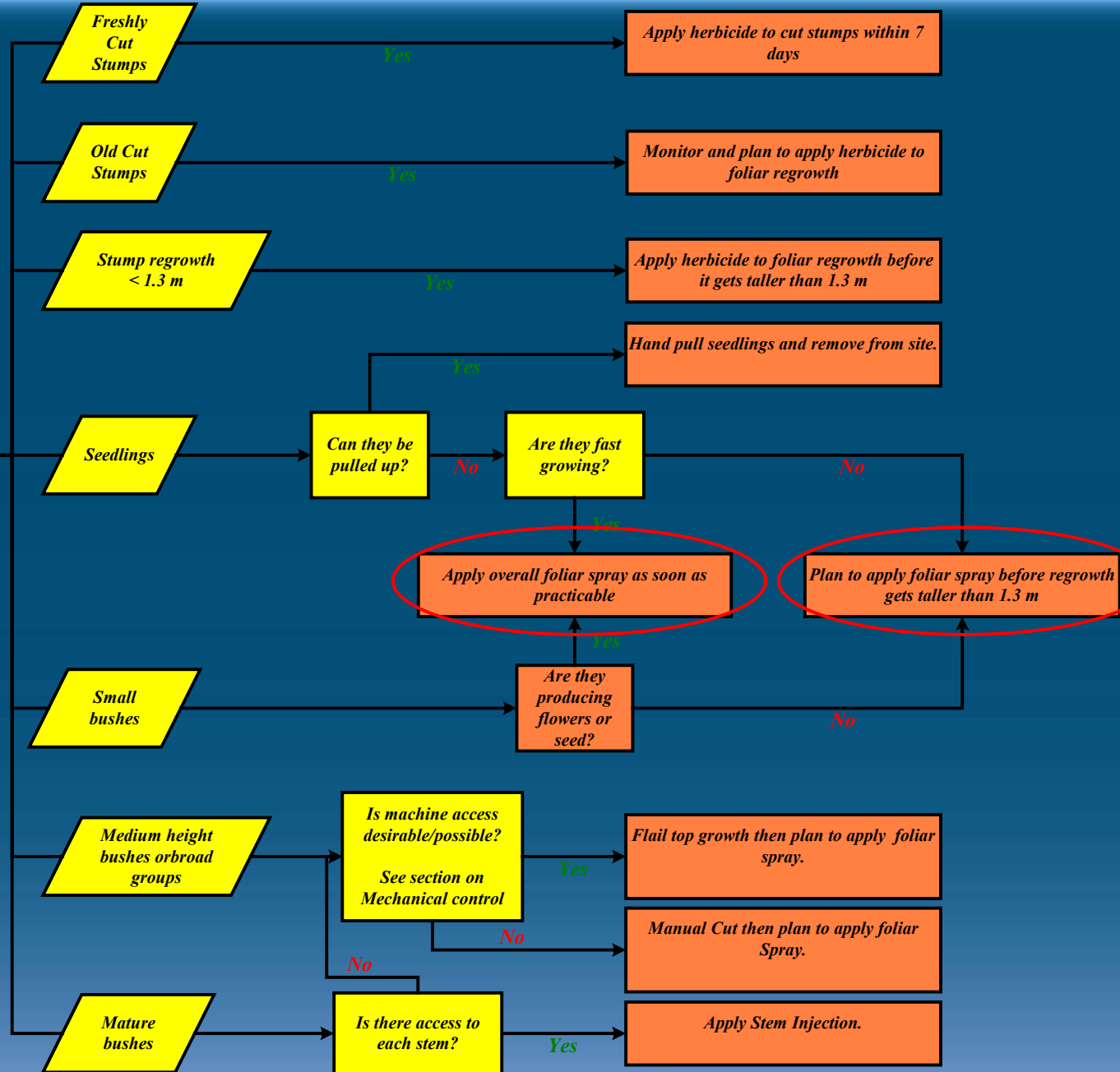
Successful Foliar Regrowth Applications

- Leave adequate period for foliar growth after cutting
 - 1 growing season, <1.3 m height
 - applying *high* rates of herbicide too soon after regrowth starts is not effective
- Ensure *all* foliage is treated
 - Partial applications will not be translocated through the bush,



Choice of application technique

INITIAL SITE SURVEY:
Size or type of bush present on site:



Successful Foliar Applications

- Apply during rain free period (> 6 hours)
- Use a surfactant where possible - *But not near water*
- Ensure *all* foliage is treated - Partial applications will not be translocated through the bush.

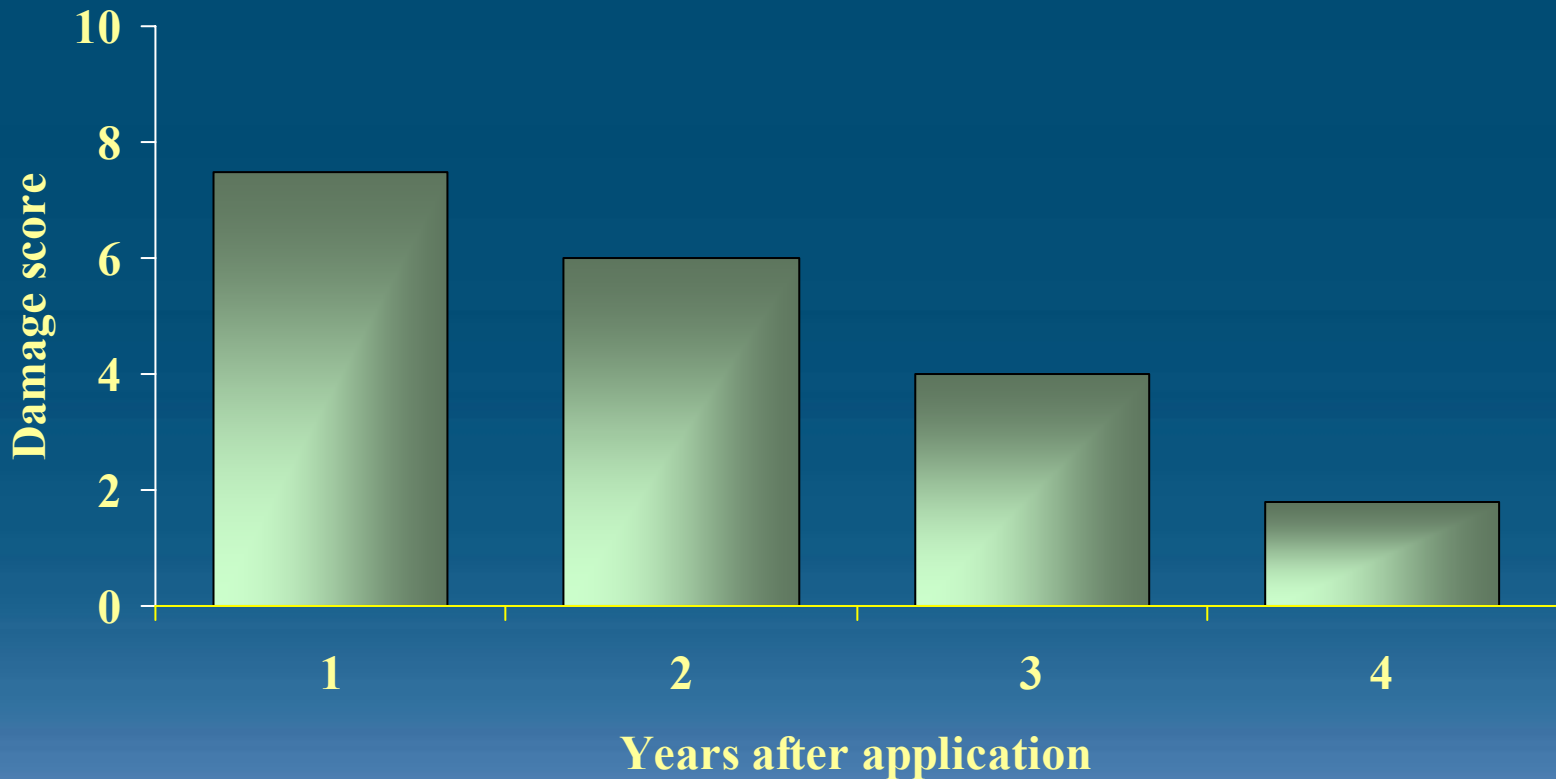


Date of foliar application (Kintyre 22). Health scored 1-6, where 1 = healthy; 6 = dead

Application date	Date of health assessment		
	6 month	12 month	18 month
19 Oct 2001	5	6	6
16 May 2002	5.8	6	6
27 May 2002	5	6	6
7 June 2002	6	6	6
20 June 2002	6	6	6
5 July 2002	5.7	6	6
16 Aug 2002	5.8	6	6
2 Sept 2002	5.8	6	6
16 Sept 2002	6	6	6
3 Oct 2002	5.7	6	-
Control	1	1	1



Bush health score over four years following spot application with glyphosate, (0 = healthy; 10 = dead)



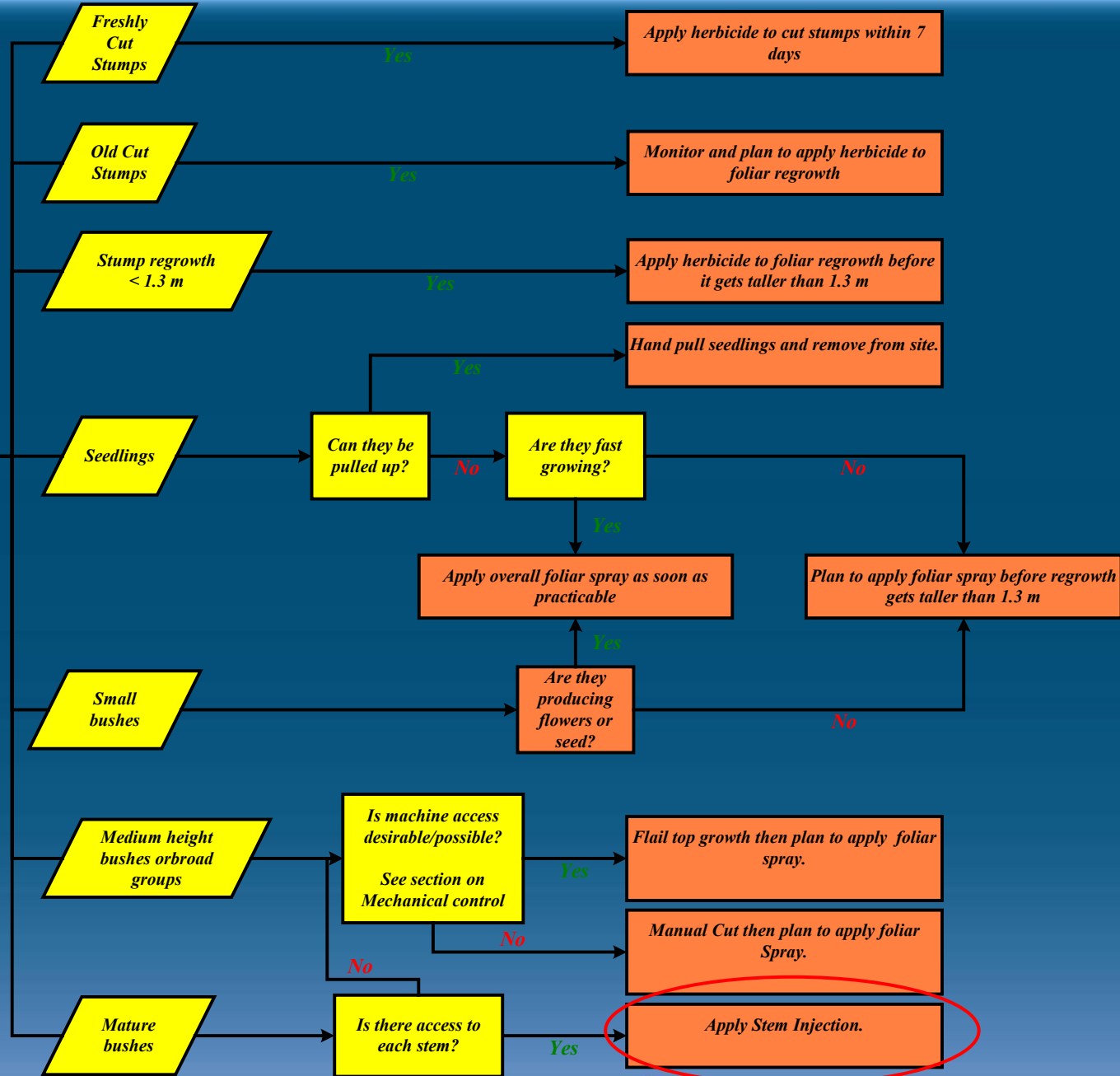
Successful Foliar Applications

- Apply herbicides at the approved rate - *More is not better!*
- Apply to foliar wetness - just before run-off

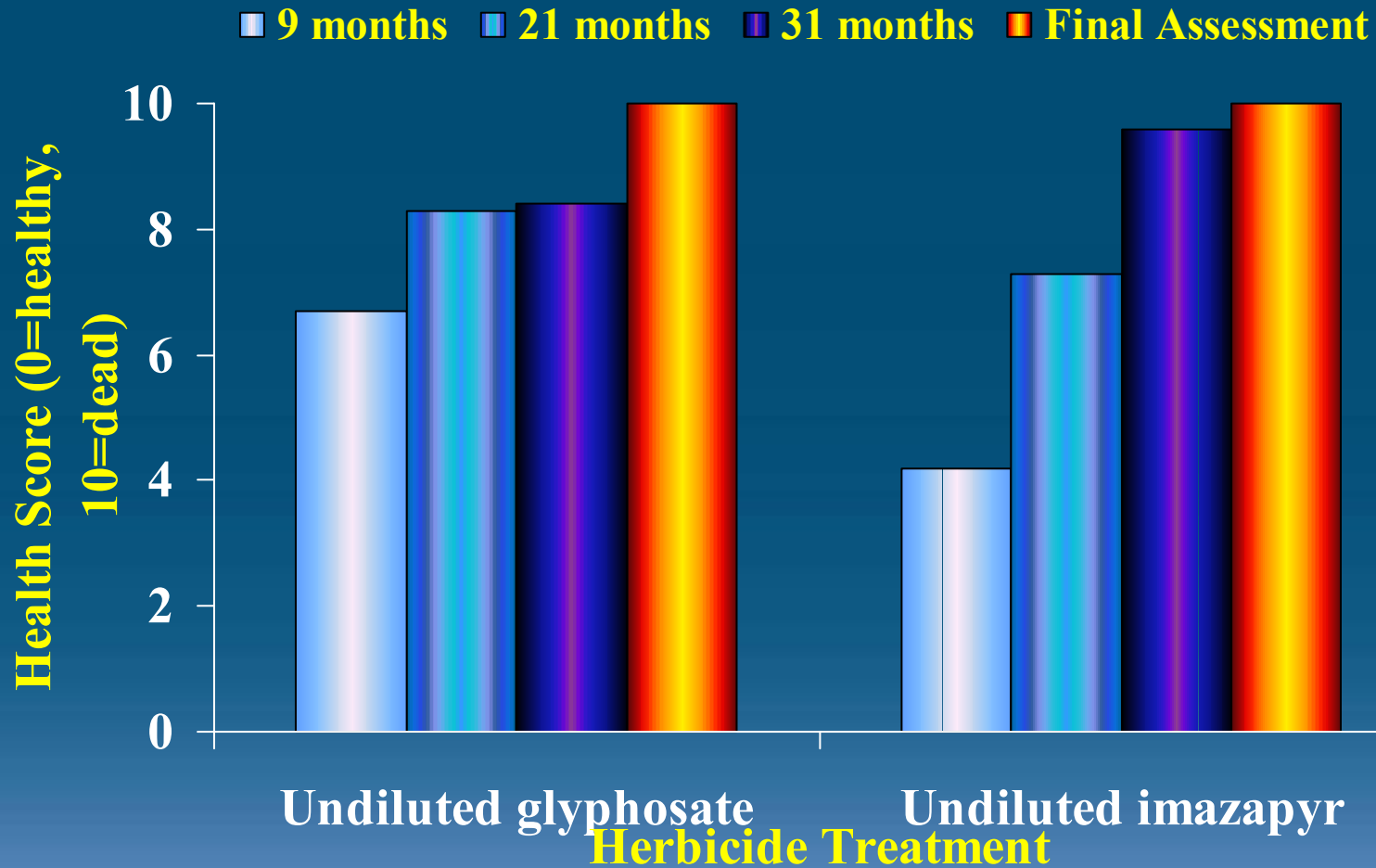


Choice of application technique

INITIAL SITE SURVEY:
Size or type of bush present on site:



Stem injection applications



Health score of treated stems 12 & 30 months after application (Kintyre 21). Health scored 1 – 6, where 1 = healthy and 6 = dead.

Treatment	12 month assessment	30 month assessment
Control	1.4	1.2
Girdling	1.8	3.6
Water	2.6	1.6
Undiluted Glyphosate	6.0	6.0
50% Solution Glyphosate	6.0	6.0
25% Solution Glyphosate	6.0	6.0



Ineffective control following mature bush clearance



- Shoot regrowth on majority of severed stumps allows bushes to re-dominate site
- Disturbance associated with bush removal creates seedbed conditions for new seedling establishment.
- Holistic approach needed to prepare a long-term eradication plan.

Summary of recommended herbicides and adjuvant for use on *R. ponticum*, in order of preference.

Herbicide	Hazard classification for products	Selectivity	Application method & rates
Glyphosate	Roundup ProBiactive and Envision – none For other products, refer to FC practice guide and product labels	Non-selective	Cut stump -20% solution Foliar spray – 2% solution (plus 2% Mixture B) Stem injection – 25% solution
Triclopyr	Irritant to eyes and skin Harmful if swallowed or in contact with the skin Harmful to aquatic life	Perennials and woody weeds	Cut stump - 8% solution Foliar spray – 2.5% solution
2,4-D/dicamba/triclopyr	Irritant to eyes and skin Harmful if swallowed Harmful to aquatic life	Annuals, perennials and woody weeds	Foliar spray – 7.5% solution
Adjuvant (High Trees Mixture B)	Irritant to eyes and skin Harmful if swallowed Harmful to fish		Foliar spray – 2% total spray volume

