

# Organic methods of rhododendron control

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# Why organic control?

Organic farming schemes may prohibit use of herbicides.

Potential for collateral damage by spray drift on sensitive sites .

Need to reduce pesticide usage in line with national sustainability policies .

Shortage of suitably qualified personnel / contractors to carry out herbicidal control.

# Potential organic control techniques

Uprooting by hand

Uprooting by winching (hand operated or tractor-mounted winch)

Chainsaw cutting of rootball

Light deprivation : mulch matting

“Bud rubbing” – manual removal of regrowth

# Hand pulling

## Pros:

Low technology : minimal investment in equipment required

Low skill : minimal investment in training required

Proven effectiveness

## Cons:

Labour intensive : depending on density of infestation

Only suitable for small plants / seedlings

Even small plants can be difficult to remove on rocky substrate

Care needed to ensure pulled plants do not re-root.

# Mechanical removal : winching

## Pros:

May utilise machinery already owned by landowner / contractor.

Effective on larger bushes

## Cons:

Requires suitable anchor point for winching or tractor access to site.

Labour intensive , skilled labour required

Soil disturbance may be unacceptable on fragile / sensitive sites

Difficult to deal with removed stumps

Leaving stumps high to provide winch leverage can increase initial clearance costs by impeding movement through site.

# Chainsaw removal of rootball

## Pros:

- Effective on larger bushes (up to 20cm diameter) in soft soils
- Reduced soil disturbance compared to winching
- Can be used in conjunction with winching methods

## Cons:

- Skilled and trained operators required.
- Chains may require frequent sharpening; specialised chains / equipment expensive; increased wear and tear on chainsaws.
- Not suitable for areas with hard (igneous) rocks.
- Disposal of removed rootballs

# Light deprivation: mulch matting

## Pros:

Reduced soil disturbance

Minimal training required

## Cons:

Time consuming / labour intensive

Materials costs.

Difficult to secure matting on rocky areas / steep slopes

Possible disturbance of mats by stock / weather / vandalism

Additional cost of removal / disposal of mats following treatment

Effectiveness not yet proven

Negative landscape impact if used on large areas

## Mulch matted area : Craflwyn





# Bud rubbing

## Pros:

- Low technology : minimal investment in equipment required
- Low skill : minimal investment in training required
- Can be used on large and small stumps

## Cons:

- Labour intensive : depending on density of infestation
- Repeated visits necessary to maintain control; timing important.
- Effectiveness not yet proven.

# Experiments at Craflwyn & Hafod y Llan (1)

Two small-scale experimental sites have been established in Beddgelert: at Craflwyn (approx 0.25ha) and Hafod-y-Llan (approx 2ha).

Craflwyn site consisted of dense rhododendron cover, multistemmed plants, 15cm dbh, over 4m high.

Hafod y Llan site consisted of smaller, more scattered rhododendron within oak woodland; mixture of regrowth from previously cut stems and new growth.

Rhododendron on both sites was cut and burned between March and May 2004.

# Experiments at Craflwyn & Hafod y Llan (2)

Treatments investigated:

Winching  
Light deprivation  
Bud rubbing

Objectives: to investigate:

Any operational difficulties associated with treatments  
Costs of treatments relative to herbicide application.  
Effectiveness of treatments.  
Environmental impact of treatments

# Operational difficulties (winching)

Method:	Problems:
Winching	<p>Need to leave stumps high to provide winch leverage: impedes initial clearance</p> <p>Lack of anchor points within work areas</p> <p>Difficult to remove whole root system: combine with chainsaw cutting.</p> <p>Larger stumps require tractor winch.</p> <p>Very labour intensive</p> <p>Unacceptable level of ground disturbance.</p> <p>Disposal of pulled stumps : soil covered so difficult to burn : mulch matting used.</p>

# Soil disturbance caused by winching: one year after stump removal



## Disposal of winched stumps .

- 1) Regrowth from pile of stumps
- 2) Pile of stumps covered to prevent regrowth



## Operational difficulties (light deprivation)

Method	Problems
Mulch matting	<p>Thick matting or multiple layers required to exclude light.</p> <p>Difficult to fix matting on rocky or steep areas: rocks used to hold matting down .</p> <p>Need to ensure whole stump is covered: may need large areas of matting</p> <p>Firm fixing required to prevent lifting by wind / stock.</p> <p>Biodegradable matting appears to degrade too quickly: recommend use of quadruple layer of terram membrane.</p>

# Regrowth under mulch matting





# Mulch mat degradation / disturbance



## Operational difficulties (bud rubbing)

No major difficulties.

Useful to cut stump as low as possible to reduce amount of new buds.

Difficult to reach some new buds: used thin steel strip to rub in inaccessible crevices etc.

# Regrowth from bud-rubbed stumps



# Comparison of treatment costs

Method	Cost per stump (£)	Cost per hectare (£) <sup>1</sup>
Herbicide spray <sup>2</sup>	£0.20	£500.00
Bud rubbing <sup>3</sup>	£2.00	£4800.00
Mulch matting <sup>4</sup>	£5.00 +	£12500.00 +
Winching <sup>5</sup>	£8.00 – £20.00	£20000 - £50000

<sup>1</sup> Assumes 2500 stems / hectare

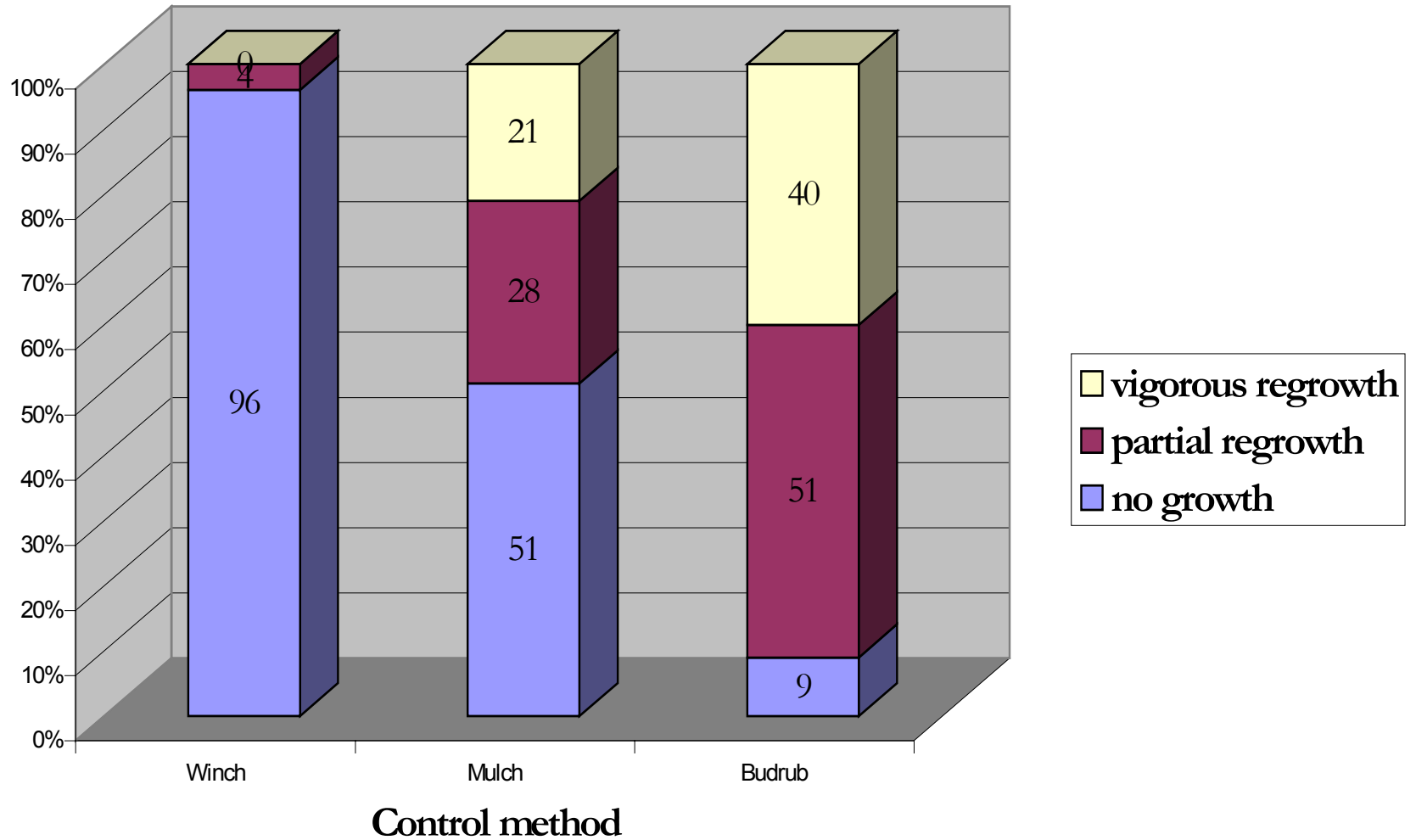
<sup>2</sup> Assumes two treatments with Glyphosate + mixture B, at 2% vol, knapsack sprayer, one treatment per annum for two years.

<sup>3</sup> Assumes two treatments per annum for two years

<sup>4</sup> Assumes 1m<sup>2</sup> mat cover required per plant, no subsequent maintenance

<sup>5</sup> Cost varies widely with size and location of plant, type of substrate. Includes costs of disposal of pulled stumps.

## Results after one year



## Effectiveness: summary

- Interim results one year after initial clearance.
- Winching appears to be very effective: regrowth only occurred where small parts of the stem had been left in the ground.
- Light deprivation has a definite impact on regrowth. Vigorous regrowth only occurs when the matting is too small, disturbed or degraded. Too early to say whether existing weak regrowth will survive or not...
- Bud rubbing currently appears least effective although some effect is noticeable. Too early to say whether the method will be fully effective with further treatment.... Frequent monitoring will be required to ensure timely repeat treatment.

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