Organic methods of rhododendron control

Julian Miller
Kehoe Countryside Ltd
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)

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

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

<table>
<thead>
<tr>
<th>Method</th>
<th>Cost per stump (£)</th>
<th>Cost per hectare (£)</th>
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</thead>
<tbody>
<tr>
<td>Herbicide spray²</td>
<td>£0.20</td>
<td>£500.00</td>
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<tr>
<td>Bud rubbing³</td>
<td>£2.00</td>
<td>£4800.00</td>
</tr>
<tr>
<td>Mulch matting⁴</td>
<td>£5.00 +</td>
<td>£12500.00 +</td>
</tr>
<tr>
<td>Winching⁵</td>
<td>£8.00 – £20.00</td>
<td>£20000 - £50000</td>
</tr>
</tbody>
</table>

¹ Assumes 2500 stems / hectare
² Assumes two treatments with Glyphosate + mixture B, at 2% vol, knapsack sprayer, one treatment per annum for two years.
³ Assumes two treatments per annum for two years
⁴ Assumes 1m² mat cover required per plant, no subsequent maintenance
⁵ Cost varies widely with size and location of plant, type of substrate. Includes costs of disposal of pulled stumps.
Results after one year

Control method

Winch: 96% vigorous regrowth, 1% partial regrowth, 9% no growth
Mulch: 51% vigorous regrowth, 28% partial regrowth, 21% no growth
Budrub: 51% vigorous regrowth, 40% partial regrowth, 9% no growth
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.
KEHOE COUNTRYSIDE LTD

Countryside Contractors and Consultants

Tyddyn Isaf, Talybont, Bangor, Gwynedd LL57 3YE

Tel: 01248 370244 / 07779 653014 / 07905 895611

Email: enqs@kehoecountryside.com

Web: www.kehoecountryside.com