

Trial of Control Methods for Red Valerian (*Centranthus ruber*) at Te Mata Park

Report to Te Mata Trust Board. K. Griffiths, January 2010



Aim

To find the best way to control Red Valerian in ecologically sensitive rocky areas where rare and endangered plants exist and are important to keep alive; and in open areas where only Red Valerian is present.

Introduction

Excerpt below taken from the Te Mata Park Weed Control Operational Plan – Jan 2008 – Jan 2010

Species : Red or Spur Valerian (*Centranthus ruber*)

Threat Ranking: High. Although unclassified by DoC and other agencies, this weed has rampant potential in this environment

Known Infestation (see maps): Dense localized patches; starting to scatter around cliffs

Source: Wind blown seed, may have started from dumping

Control Aim : Control around certain areas ?? or control to zero density in park??

Control achieved to date : None

Comments: there is little information about this plant and its weedy characteristics in New Zealand - but information from other countries shows that it is invasive – particularly in open areas with plants of low stature as in Te Mata Park.

Method

We marked out 10 plots – five in rocky areas and five in open/grassy areas. Each plot was 1.5m x 2.0m and were marked with small fibre-glass pegs. Five different treatments were randomly allocated, with each treatment repeated in an open and rocky site. The exception being hand pulling which is not practical in an open /grassy site so this treatment was replaced with an application of Buster, a contact herbicide. All herbicides were applied by knapsack and marker dye was added to each herbicide mix.

The plots were marked out on the 30th of September 2009 and treatments applied on the 1st October 2009.

At each plot vegetation was recorded as percentage cover and by species present and a visual record taken by digital photograph. This information was taken prior to treatment, at two weeks after treatment, 10 weeks after treatment and 16 weeks after treatment.

PLOT	Treatment	Type
1	Buster (15ml / litre)	Open
2	Cut and paste with stump mix*	Open
3	Transorb (Glyphosate 10 ml / litre) & pulse (1ml)	Open/ rocky
4	Grazon (Triclopyr 8ml/ litre) & pulse (1ml)	Open/ rocky
5	Transorb (Glyphosate 10 ml / litre) & pulse (1ml)	Rocky
6	Meturon (Metsulphuron 1/2gm /litre) & Pulse (1ml)	Rocky
7	Meturon (Metsulphuron1/2gm /litre) & Pulse (1ml)	Open
8	Grazon (Triclopyr 8ml/ litre) & pulse (1ml)	Open
9	Hand pull	Rocky
10	Cut and paste with stump mix	Rocky

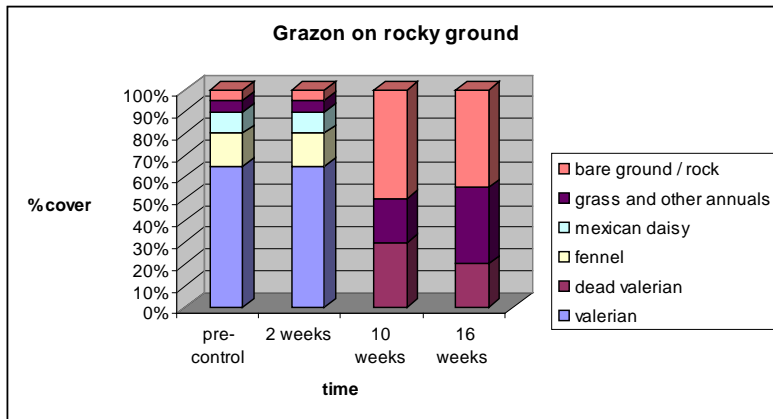
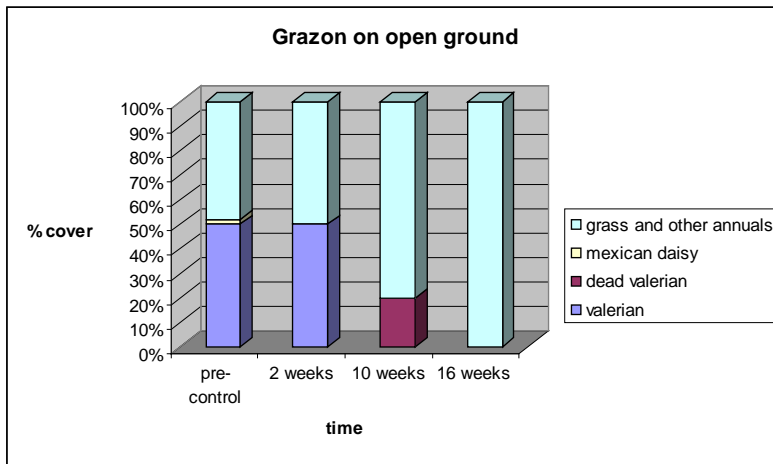
*Stump mix = 25% Transorb, 25% Codacide and 1gm/l metsulphuron

Results

Only two out of the five treatments resulted in red valerian being killed completely – these were the application of Grazon and Meturon as shown in the table below. And only one of the treatments allowed quick recovery of grass and other annuals which may help to prevent regeneration of more valerian.

PLOT	Treatment	Type	Result after 16 weeks
1	Buster (Glufosinate-ammonium 15ml / litre)	Open	Roots still alive
9	Hand pull	Rocky	Lots of re-growth from bits that broke off
2	Cut and paste with stump mix	Open	Stump mix didn't kill the roots completely so resulted in re-growth; little harm to surrounding vegetation.
10	Cut and paste with stump mix	Rocky	
3	Transorb (Glyphosate 10 ml / litre) & pulse (1ml)	Open/rocky	Roots appeared not to be completely dead even after 16 weeks and valerian seedlings were appearing in plots already. Damage to surrounding plants was minimal
5	Transorb (Glyphosate 10 ml / litre) & pulse (1ml)	Rocky	
6	Meturon (Metsulphuron 1/2gm /litre) & Pulse (1ml)	Rocky	Roots were certainly dead, and so was everything else in plot; no seedlings or grass re-growth evident
7	Meturon (Metsulphuron 1/2gm /litre) & Pulse (1ml)	Open	
4	Grazon (Triclopyr 8ml/ litre) & pulse (1ml)	Rocky	Roots dead but took a long time to die – were still alive in December. Grass in plots not killed so re-growth was mainly grass,
8	Grazon (Triclopyr 8ml/ litre) & pulse (1ml)	Open	

The graphs below show the progression from valerian dominant vegetation cover to grass dominant vegetation cover over a 16 week period, with the use of Grazon to control the valerian. What we don't know is what happens next?



Discussion

To get the most effective long term control of red valerian in both the open and rocky areas we really need to know what happens next in the plots where herbicide killed the target plant. If Grazon allows grass and other annuals to take over the vegetation within 16 weeks, does that mean there will be less chance of seedlings germinating and so less follow up control required? Or are the areas treated with Meturon, where there is very little of anything coming back after 16 weeks, less likely to allow the germination of valerian seedlings?

Both these questions are connected to the seed bank and viability of red valerian – of which there is a small amount of information available.

Christchurch City Council is controlling red valerian in some places on the Port hills, with good results. They have used Vigilant gel to cut and stump treat in rocky outcrops, and Tordon Brushkiller in open roadsides. They are in the early stages of the control program, but so far have seen little evidence of a long lived seed bank.

In the rocky area that the plots were placed, there appeared to be little native vegetation, with red valerian, fennel, Mexican daisy and Hieracium species being the most dominant. Grass and annuals such as plantains were also present. It may be that controlling all these species on the rocky cliffs is desirable. However, it is likely that they will just be replaced with more of the same species, as the source of all these plants is so close. It may be most desirable to concentrate on red valerian and fennel in the rocky cliffs first, and then assess how that is working.



Plot 4 – Grazon on rocky ground

Recommendations

1. Continue to monitor plots to see what happens with subsequent vegetation particularly valerian seedlings. Continue to find information about red valerian seed bank.
2. Treat the cliffs in Webbs Bush valley first, and the front cliffs to try and stop the spread of red valerian
3. Use Grazon on rocky areas except where any native plants exist in which case a mix of cutting and stump treating with a stronger herbicide mix (such as 5% Transorb or Vigilant gel) should be used. This should protect those precious plants while still killing the red valerian.
4. Use Grazon on open ground where grass is the dominant other vegetation



Webb Bush valley and cliffs that is being invaded by red valerian