Fireweed Control
Spray Application Tips and Hints
Contents

• Facts about fireweed
• Pasture competition
• Herbicides registered for fireweed control
• Herbicide trial data
• Timing of the spray applications
• Why boom sprays are best for Fireweed

Handouts:
Fireweed Technote from Nufarm
Easy Boomspray Calibration guide
1 page handy hints and fireweed control guide
Fireweed Toxicity

- Contains toxic compounds called pyrrolizidine alkaloids
- Can lead to fatal liver damage
- Cattle & horses
- No treatment available
- Hay, silage, grain.
Facts about Fireweed

• From Southern Africa
• First recorded in Hunter Valley in 1918
• Now spread from Victoria to North Queensland
Facts about Fireweed

• Annual weed
• Can survive up to three years
  – Slashing promotes this
• Ideal germination temperatures
  15 – 27 degrees
• Seedlings can reach flower within 6 weeks
• 15% of seeds can remain dormant for up to 10 years
• Seeds buried deeper than 2cm won’t germinate
Facts about Fireweed

• How is it spread?
  – Most seed falls within 5m of the parent plant
  – Some travels further on windy days

Further than 1km...
  – Livestock
  – Vehicles, implements
  – Contaminated stockfood
  – Wild animals
Act Quickly

• Hand weed isolated plants
• Spot spray small outbreaks
  – Hotshot
  – Grazon DS
• New pastures
  – Bromicide 200 is very safe on young legumes and grasses
  – Boom spray
Pasture Competition

• Don’t overgraze if possible in autumn
  – Won’t strangle out existing plants
  – Will help reduce seed germination
# Registered Herbicides

## FIREWEED CONTROL IN PASTURES AND NON-AGRICULTURAL AREAS

<table>
<thead>
<tr>
<th>HERBICIDE</th>
<th>USE SITUATION</th>
<th>RATE AND FIREWEED SIZE</th>
<th>REGISTRATION STATUS</th>
<th>WHP</th>
<th>COMMENTS</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bromicide® 200</td>
<td>Pasture. Grass, Lucerne and Clover based and Fallow, Non crop, Roadsides and Rights of Way</td>
<td>1.5 L/ha (seedling control) 75 mL/100L (spot spray)</td>
<td>Registered</td>
<td>14  days</td>
<td>Add Activator 120ml/100L water to improve kill particularly when fireweed is flowering or stressed. Apply with low volume boom spray during autumn/winter, when weeds are young and actively growing. Not effective on mature plants. Do not apply when rain is expected within 3 hours. Do not spray when temperature is above 20°C or if this temperature may follow for several days after spraying as leaf scorching of clovers and lucerne will occur.</td>
</tr>
<tr>
<td>Minder® or Bentley</td>
<td>Pasture. Clover and/or lucerne based pasture (newly sown or established).</td>
<td>0.5 L/ha (up to 4 leaf stage)</td>
<td>Registered</td>
<td>14  days</td>
<td>Spray during autumn/winter when weeds are young and actively growing. Optimum results will be obtained if good soil moisture exists at and after application.</td>
</tr>
<tr>
<td>T-Rex®</td>
<td>Pasture. Newly sown and established clover based pasture, clover for hay and</td>
<td>1.0 L/ha (up to 4 leaf stage)</td>
<td>Registered</td>
<td>7   days</td>
<td>Spray during autumn/winter when weeds are young and actively growing. Optimum results will be obtained if good soil moisture exists at and after application.</td>
</tr>
</tbody>
</table>
PERMIT TO ALLOW MINOR USE OF AN AGVET CHEMICAL PRODUCT
FOR THE CONTROL OF FIREWEED IN PASTURES

PERMIT NUMBER - PER12105

THIS PERMIT IS IN FORCE FROM 24 MAY 2015 TO 30 MAY 2020.

Permit Holder:
NSW DEPARTMENT OF PRIMARY INDUSTRIES
161 Kite Street
ORANGE NSW 2800

Persons who can use the product under this permit:
Persons generally.
APVMA PERMIT 12105 (Cont’d)

CONDITIONS OF USE

Product to be used:
NUFARM BROMICIDE 200 SELECTIVE HERBICIDE
PLUS OTHER REGISTERED PRODUCTS
Containing: 200 g/L BROMOXYNIL as their only active constituent.

NUFARM AMICIDE 625 SELECTIVE HERBICIDE
PLUS OTHER REGISTERED PRODUCTS
Containing: 625 g/L 2,4-D AMINE as their only active constituent.

Directions for Use:

<table>
<thead>
<tr>
<th>Crop</th>
<th>Pest</th>
<th>Rate</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pasture</td>
<td>Fireweed</td>
<td>1.5 L/ha bromoxynil PLUS</td>
</tr>
<tr>
<td></td>
<td>(Senecio madagascariensis)</td>
<td>1.5 L/ha 2,4-D amine as a tank mix.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Ground based applications only.</td>
</tr>
</tbody>
</table>
Critical Use Comments:
- Apply as an overall spray when plants are actively growing.
- Legume component of pasture will be damaged, but will regenerate with appropriate pasture management.
- Pasture improvement will assist long-term weed control.
- Spraying after seed set will result in ineffective weed control.
- **DO NOT** spray if rain seems likely within 3 hours or when wind speed is less than 3 or more than 20 kilometres per hour as measured at the application site.
- **DO NOT** apply where there are aquatic areas or non-target terrestrial vegetation downwind of the application area.
- Use only coarse to very coarse spray quality or larger according to the ASAE S572 definition of nozzles.
- Avoid any spray drift into plantation trees.

Withholding Period:
GRAZING: **DO NOT** graze treated crop or cut for stockfood for 8 weeks after application.

Jurisdiction:
NSW only.

Use 14 days as per Brom 200 label
Thermal Inversions

COOL AIR SINKING

INVERSION LAYER

Under an inversion air can separate into layers (laminations)

Your chemical in a concentrated cloud

SPRAYING WHEN THERE IS NO WIND AT NIGHT TIME IS THE MOST DANGEROUS SITUATION FOR DRIFT
200g/L Bromoxynil

Very safe on grasses, clover, lucerne and herbs

New 14 day grazing WHP

Works as both as a desiccant and translocated herbicide

Nufarm have done over 25 years of trials on fireweed
<table>
<thead>
<tr>
<th>Treatment Name</th>
<th>Rate</th>
<th>Rate Unit</th>
<th>Week 2 Control Rating /10</th>
<th>Week 2 Flower Head Control Rating /10</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bromicide 200</td>
<td>1</td>
<td>l/ha</td>
<td>9</td>
<td>10 (No yellow flowerheads remain)</td>
</tr>
<tr>
<td>Minder</td>
<td>0.5</td>
<td>l/ha</td>
<td>7</td>
<td>9</td>
</tr>
<tr>
<td>Nugrex</td>
<td>0.5</td>
<td>l/ha</td>
<td>2</td>
<td>3</td>
</tr>
<tr>
<td>Amicide 625</td>
<td>1</td>
<td>l/ha</td>
<td>3</td>
<td>5</td>
</tr>
<tr>
<td>Bromicide 200 Associate</td>
<td>1</td>
<td>l/ha</td>
<td>9</td>
<td>10</td>
</tr>
<tr>
<td>Associate</td>
<td>20</td>
<td>l/ha</td>
<td>9</td>
<td>10</td>
</tr>
<tr>
<td>Amicide 625 Associate</td>
<td>1.5</td>
<td>l/ha</td>
<td>4</td>
<td>6</td>
</tr>
<tr>
<td>Associate</td>
<td>20</td>
<td>l/ha</td>
<td>4</td>
<td>6</td>
</tr>
<tr>
<td>Associate</td>
<td>40</td>
<td>g/ha</td>
<td>4</td>
<td>2</td>
</tr>
<tr>
<td>Conqueror</td>
<td>100</td>
<td>ml/ha</td>
<td>1</td>
<td>2</td>
</tr>
<tr>
<td>Bromicide MA</td>
<td>1</td>
<td>l/ha</td>
<td>9</td>
<td>9</td>
</tr>
</tbody>
</table>
Application date: 15/5/1996
Total Volume: 208L/ha

<table>
<thead>
<tr>
<th>Trt No</th>
<th>Treatment &amp; Rate/Ha</th>
<th>10DAT#</th>
<th>20DAT</th>
<th>40DAT</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Untreated</td>
<td>0.0</td>
<td>0.0</td>
<td>0.0</td>
</tr>
<tr>
<td>2</td>
<td>Amicide 1.89L</td>
<td>25.0</td>
<td>d</td>
<td>34.2</td>
</tr>
<tr>
<td>3</td>
<td>Amicide 3.78L</td>
<td>32.5</td>
<td>c</td>
<td>40.0</td>
</tr>
<tr>
<td>4</td>
<td>Bromicide 1.4L</td>
<td>41.7</td>
<td>b</td>
<td>60.0</td>
</tr>
<tr>
<td>5</td>
<td>Bromicide 2.8L</td>
<td>46.7</td>
<td>ab</td>
<td>66.7</td>
</tr>
<tr>
<td>6</td>
<td>Bromicide 1.4L + Broadstrike 30g</td>
<td>43.3</td>
<td>b</td>
<td>60.0</td>
</tr>
<tr>
<td>7</td>
<td>Bromicide MA 2.1L</td>
<td>44.2</td>
<td>ab</td>
<td>60.0</td>
</tr>
<tr>
<td>8</td>
<td>Brushkiller 15g</td>
<td>20.0</td>
<td>d</td>
<td>23.3</td>
</tr>
<tr>
<td>9</td>
<td>Buttress 3.2L</td>
<td>20.0</td>
<td>d</td>
<td>20.0</td>
</tr>
<tr>
<td>10</td>
<td>MCPA 750ml + Nuquat 750ml</td>
<td>50.0</td>
<td>a</td>
<td>60.0</td>
</tr>
<tr>
<td>11</td>
<td>Tornado 2.7kg</td>
<td>31.7</td>
<td>c</td>
<td>38.3</td>
</tr>
<tr>
<td>12</td>
<td>Tornado 2.7kg + Activator 0.1%</td>
<td>32.5</td>
<td>c</td>
<td>40.0</td>
</tr>
<tr>
<td>13</td>
<td>Tornado 2.7kg + LI-700 0.1%</td>
<td>33.3</td>
<td>c</td>
<td>37.5</td>
</tr>
<tr>
<td>14</td>
<td>Tornado 2.7kg + Chemwet 0.1%</td>
<td>31.7</td>
<td>c</td>
<td>38.3</td>
</tr>
</tbody>
</table>

Fireweed Size: Flowering
### Application: 16/05/1996  Fireweed size: Flowering
Total volume: 206L/ha

<table>
<thead>
<tr>
<th>Table No:</th>
<th>3</th>
<th>Title: Control of Fireweed in Pasture</th>
</tr>
</thead>
<tbody>
<tr>
<td>Trial No:</td>
<td>H96wjh02</td>
<td>Location: Bega NSW</td>
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</table>

<table>
<thead>
<tr>
<th>Trt No</th>
<th>Treatment &amp; Rate/Ha</th>
<th>10DAT#</th>
<th>20DAT</th>
<th>40DAT</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Untreated</td>
<td>0.0</td>
<td>*</td>
<td>0.0</td>
</tr>
<tr>
<td>2</td>
<td>Amicide 1.89L</td>
<td>28.3</td>
<td>de</td>
<td>38.3</td>
</tr>
<tr>
<td>3</td>
<td>Amicide 3.78L</td>
<td>35.0</td>
<td>cd</td>
<td>50.0</td>
</tr>
<tr>
<td>4</td>
<td>Bromicide 1.4L</td>
<td>43.5</td>
<td>bc</td>
<td>53.3</td>
</tr>
<tr>
<td>5</td>
<td>Bromicide 2.8L</td>
<td>50.0</td>
<td>ab</td>
<td>58.3</td>
</tr>
<tr>
<td>6</td>
<td>Bromicide 1.4L + Broadstrike 30g</td>
<td>36.7</td>
<td>cd</td>
<td>55.0</td>
</tr>
<tr>
<td>7</td>
<td>Bromicide MA 2.1L</td>
<td>51.7</td>
<td>ab</td>
<td>56.7</td>
</tr>
<tr>
<td>8</td>
<td>Brushkiler 15g</td>
<td>25.0</td>
<td>ef</td>
<td>43.3</td>
</tr>
<tr>
<td>9</td>
<td>Buttress 3.2L</td>
<td>18.3</td>
<td>f</td>
<td>35.0</td>
</tr>
<tr>
<td>10</td>
<td>MCPA 750ml + Nuguat 750ml</td>
<td>55.0</td>
<td>a</td>
<td>55.0</td>
</tr>
<tr>
<td>11</td>
<td>Tornado 2.7kg</td>
<td>31.7</td>
<td>de</td>
<td>43.3</td>
</tr>
<tr>
<td>12</td>
<td>Tornado 2.7kg + Activator 0.1%</td>
<td>31.7</td>
<td>de</td>
<td>44.2</td>
</tr>
<tr>
<td>13</td>
<td>Tornado 2.7kg + Li-700 0.1%</td>
<td>31.7</td>
<td>de</td>
<td>42.5</td>
</tr>
<tr>
<td>14</td>
<td>Jaguar 1.0L</td>
<td>50.0</td>
<td>ab</td>
<td>57.5</td>
</tr>
</tbody>
</table>

Minder 1.0L
Site: Beachmont QLD  
Fireweed size: Flowering  
Application date: 2/07/96

### Table 5: Fireweed control ratings flowering application

<table>
<thead>
<tr>
<th>Treatment Description</th>
<th>8 DAT Mean</th>
<th>ABC's</th>
<th>38 DAT Mean</th>
<th>ABC's</th>
<th>150 DAT Mean</th>
<th>ABC's</th>
</tr>
</thead>
<tbody>
<tr>
<td>Untreated</td>
<td>0</td>
<td>c</td>
<td>0</td>
<td>e</td>
<td>18</td>
<td>e</td>
</tr>
<tr>
<td>Amicide 500</td>
<td>38</td>
<td>b</td>
<td>63</td>
<td>bc</td>
<td>85</td>
<td>ab</td>
</tr>
<tr>
<td>Baton</td>
<td>38</td>
<td>b</td>
<td>62</td>
<td>bc</td>
<td>85</td>
<td>ab</td>
</tr>
<tr>
<td>IPA 2,4-D Dry</td>
<td>40</td>
<td>b</td>
<td>58</td>
<td>bc</td>
<td>65</td>
<td>cd</td>
</tr>
<tr>
<td>Bromoxynil 200</td>
<td>70</td>
<td>a</td>
<td>95</td>
<td>a</td>
<td>98</td>
<td>a</td>
</tr>
<tr>
<td>Butress</td>
<td>27</td>
<td>b</td>
<td>30</td>
<td>d</td>
<td>62</td>
<td>d</td>
</tr>
<tr>
<td>MCPA 500</td>
<td>40</td>
<td>b</td>
<td>72</td>
<td>b</td>
<td>78</td>
<td>bc</td>
</tr>
<tr>
<td>LVE MCPA</td>
<td>33</td>
<td>b</td>
<td>55</td>
<td>c</td>
<td>73</td>
<td>bcd</td>
</tr>
<tr>
<td>Surpass</td>
<td>37</td>
<td>b</td>
<td>62</td>
<td>bc</td>
<td>72</td>
<td>bcd</td>
</tr>
<tr>
<td>Tornado</td>
<td>37</td>
<td>b</td>
<td>62</td>
<td>bc</td>
<td>80</td>
<td>b</td>
</tr>
</tbody>
</table>

Means ranked alphabetically using LSD based on P=0.05
Summary of Trials

> After 40 days:

> Bromicide 200 controlled >90% of all plants into the early flowering stage

> Bromicide 200 provided the highest rating of flower desiccation (10/10)
Bromicide vs Minder

- **Go Bromicide 200**
  - When any legumes or herbs are present
  - When the fireweed is starting to get too big
    - Add Activator Surfactant 120ml/100L
  - When at the salvage stage (desiccating flowers)
    - Add Activator Surfactant 120ml/100L
    - Increase water volume to 200L/ha

- **Go Minder**
  - When it’s just a straight grass pasture
  - When fireweed is very small
  - Beware of bleaching
## Fireweed Control Guide

<table>
<thead>
<tr>
<th>Fireweed Stage</th>
<th>Pasture Type</th>
<th>Product</th>
<th>Rate per ha (Boom)</th>
<th>Rate per 100L (Handgun)</th>
<th>Comments</th>
</tr>
</thead>
<tbody>
<tr>
<td>Small, no flowers</td>
<td>Just Grass</td>
<td>Minder</td>
<td>500ml</td>
<td>50ml</td>
<td>Ensure good coverage</td>
</tr>
<tr>
<td>Small, no flowers</td>
<td>Grass, herbs &amp; legumes</td>
<td>Minder</td>
<td>500ml</td>
<td>50ml</td>
<td>Ensure good coverage</td>
</tr>
<tr>
<td>Early Flowering</td>
<td>Just Grass</td>
<td>Minder</td>
<td>1L</td>
<td>100ml</td>
<td>Ensure other “on label” weeds are present</td>
</tr>
<tr>
<td>Early Flowering</td>
<td>Grass, herbs &amp; legumes</td>
<td>Bromicide 200</td>
<td>1.5L</td>
<td>75ml</td>
<td>Good coverage with Handgun</td>
</tr>
<tr>
<td>Late Flowering</td>
<td>Just Grass</td>
<td>Bromicide 200 + Amine 625 + Activator</td>
<td>1.5L + 1.5L + 120ml/100L</td>
<td>Boom only. Ref APMVA Permit 12105</td>
<td></td>
</tr>
<tr>
<td>Late Flowering</td>
<td>Grass, herbs &amp; legumes</td>
<td>Bromicide 200 + Activator</td>
<td>1.5L + 120ml/100L</td>
<td>75ml + 120ml / 100L</td>
<td>Good coverage is critical. Flower dessication will prevent seed setting.</td>
</tr>
</tbody>
</table>
Minder – Other Weeds

Fireweed at the early flowering stage needs 1L/ha of Minder (pasture rate on the label).
1L/ha is still ok to use as long as there are also one of the following weeds in the pasture:

- farmers friends,
- small cobblers peg (fleabane),
- thistles,
- Sida (paddy’s lucerne),
- turnip weed,
- deadnettle,
- spiny emex,
- fat hen,
- marshmallow,
- wireweed.

Refer to labels for specific weed sizes
Timing of the Spray Applications

If it’s old and flowering... add a wetting agent

Activator Surfactant 120ml/100L

You will probably damage some legumes but that’s the trade off in leaving it too late.
Boom Sprays are Better on Fireweed

• Very effective
• Controls more plants. Especially the ones that you can’t see!
• Get’s the job done faster
• More economical vs handgun
Boom Spray Calibration

• You need to know how many litres of water per hectare you are applying.

• Simple calibration
  – Measure out 100m
  – Stop watch
  – Measuring jug
  – Calculator
  – Takes about 30 mins to complete

This will tell you how many litres of water per hectare you are applying.
REFER TO SEPARATE ATTACHMENT FOR CALIBRATION STEPS
Ideal Boom Sprayer Set-Up For Fireweed

• 100 – 200L/ha water is ideal
  2.5 – 3 Bar pressure
  6 – 8km/hr travel speed
  110-02 nozzle

• Coarse droplet nozzles:
  Agrotop 110-02 Air Induction Nozzles (yellow).
  Or
  Hardi MiniDrift 110-02 Air Induction nozzles (yellow)
Managing Spray Drift

• Booms
  – Coarse droplets (Air Induction Nozzles)
  – 2.5 – 3 bar pressure
  – Boom height: 50cm above the target
  – Choice of wetter (Activator is low drift)
  – DO NOT spray when there is NO wind
  – DO NOT spray at night
  – Buffer Zones – READ THE LABEL
  – Spray when the wind is blowing away from the sensitive crop.
Summary

• Acting quickly and pasture competition plays a big role
• Chemical control is only part of the solution
• Bromicide 200 does a great job on fireweed
• It is soft on herbs and legumes
• 14 day grazing WHP
• Boom sprays are better
Multiply: 3.33 x 1.5 = 5.05 of chemical required in the tank.

If the chemical you are applying says 1.5 ltr/m² then you:

If you have a 400 l tank it will do 400 / 120 = 3.33ha

Step 6: Calculating how much chemical to put in the tank

\[
\text{Boat width (m)} = \frac{6}{7.2 \times 100} \times \frac{\text{Total volume (l)}}{100} \times \text{Total boom width} = 6m
\]

Total volume = 600ml x 12 nozzles = 7200ml (7.2l)

Let's say you have 12 nozzles on your boom.

Step 5: Calculating your water volume per hectare.

100m (60.55 sec), use a jug and stopwatch and record (6900ml per nozzle).

Total measure the amount of water from each nozzle for the time it takes to drive and measure out the boom arms and with the sector running at the selected RPM.

Step 4: Fold out the boom arms and with the sector running at the selected RPM, start at zero and do it several times to get an average. Maintain desired revs.

Step 3: Time how long it takes to drive 100m in seconds (69.55 seconds). A running gear, high range, about 1400 RPM.

Step 2: Select a suitable gear and revs to cover the 100m (e.g. Bm/hr would be 2x)

Step 1: Measure out 100 meters.

You will need a long tape measure, a stop watch, 1l measuring jug and a calculator.

Easy Boom Spray Calibration Procedure.
Easy Boom Spray Calibration

Step 1  Measure out 100m
Step 2  Select suitable gear and revs
  
  Gear  Revs

Step 3  Time how long it takes to drive 100m  Time (secs)

Step 4  Measure water from each nozzle for time taken to drive 100m

  Nozzle  Nozzle  Nozzle  Nozzle  Nozzle  Nozzle

  Average volume of nozzles  L

Step 5  Calculate water volume per ha

  Total volume = Average volume of all nozzles X number of nozzles

  Total volume (L)  

  Boom width (m)  

  Litres per ha =  \( \frac{\text{Total volume (L) \times 100}}{\text{Boom Width (m)}} \)

  Litres per ha =  

Step 6  Calculate how much chemical to put in the tank

  Tank Capacity (L)  L/ha =  number of ha sprayed per tank

  Chemical rate per ha =  

  Chemical required in the tank = number ha sprayed per tank x chemical rate per ha

  L
Handy hints for fireweed control

Fireweed is toxic – use gloves if hand pulling.

Target fireweed when it’s at the early flowering stage.

Boom sprays are best because they control the smaller, unseen weeds. Use 150 – 200L/ha water for best results with a boom

Bromicide 200 outperforms metsulfuron and 2,4-D Amine mixtures.

Bromicide 200 is soft on clovers and legumes and has a 14 day grazing WHP.

Bromicide 200 costs about the same as a mix of metsulfuron + 2,4-D Amine and a wetter combined.

Bromicide 200 boom spray rate:
1.5L/ha

Bromicide 200 spot spray rate:
75ml/100L and ensure good coverage.

If plants are big, flowering and woody, add Activator Surfactant at 120ml/100L water.

Bromicide 200 can be mixed with 2,4-D Amine 625
– ref APVMA permit 12105

The last resort is slashing. It only creates a tougher, harder to kill plant.
Ideal Boom Sprayer Set-Up For Fireweed

100 – 200L/ha water is ideal
2.5 – 3 Bar pressure
6 – 8km/hr travel speed
110-02 nozzle

Coarse droplet nozzles:
Agrotop 110-02 Air Induction Nozzles (yellow).
Or
Hardi MiniDrift 110-02 Air Induction nozzles (yellow)

Managing Spray Drift

Booms....
– Coarse droplets (Air Induction Nozzles)
– 2.5 – 3 bar pressure
– Boom height: 50cm above the target
– Choice of wetter (Activator is low drift)
– DO NOT spray when there is NO wind
– DO NOT spray at night
– Buffer Zones – READ THE LABEL
– Spray when the wind is blowing away from the sensitive crop.
Thanks
Comments and Questions?
Slashing

• Before 25% of plants are flowering
• More slashing will be required about every 6 weeks
• Wait 2 weeks before grazing

• When you slash too late…
  – Stimulates plants to re-shoot (summer survival)
  – Harder to control next year